

Leg Ulcer – Clinical Guideline

Ref: CG-TISS/2017/001

Introduction

This guideline has been developed for use within UHDB for staff directly involved in patient care.

“A leg ulcer is defined as the loss of skin below the knee, on the leg or foot, which takes more than two weeks to heal” (NICE 2016)

The three most common causes of leg ulceration are linked to disorders of the circulation, with the vast majority (-70%) being caused by chronic venous insufficiency (CVI), followed by arterial disease (-20%) and thirdly a combination of venous and arterial (15-21%)^{1, 2}. There are of course other causes of ulceration such as malignancy, autoimmune disease, trauma, metabolic and so on but these will not be discussed in this guideline.

It is essential to understand the wound aetiology in order to treat the patient effectively. Selection of safe and effective leg ulcer treatment is dependent on the correct identification of wound aetiology and barriers to healing. (Appendix 1 for brief summary of venous and arterial circulation)

Aim and Purpose of this Guideline

A wound of any kind or duration has a burden associated with it; it will have an effect on the individual in terms of; general wellbeing, loss of income, social isolation, disruption of life and work, not to mention pain and the toll on mental health. There is also the burden on the NHS; in fact the cost is thought to be in the region of £4.5 billion a year. Managing people with wounds includes acute issues and admissions to hospital and longer term problems and the input needed to prevent deterioration and reoccurrence. If the NHS is to have a chance at treating these sufferers effectively then the system needs to focus on assessment and pathways to ensure the right people see these patients at the earliest opportunity^{3, 4}

Unfortunately there is widespread variation in practice and in the management of patients. Those unfortunate to suffer with a leg ulcer are very much at the mercy of local practice/policies and access to best practice may not be an option⁵. The aim of this guideline is to standardise the approach and ensure the assessment and management of patients is in place. This will ensure anyone admitted to UHDB with a lower limb wound regardless of duration can be assessed and treatment commenced at the earliest opportunity.

For the largest group of patients (CVI patients) affected by venous leg ulcers (VLUs) the standard treatment is to place them into Compression⁶ (bandages or wraps). This

treatment is applied after assessment and under the supervision of an appropriately trained HCP. This is to ensure the underlying aetiology has been established and any treatment is optimised.

Training

In order to improve outcomes and establish effective treatment pathways for patients, it is essential that they are individually assessed and any planned care is given by suitably trained HCPs. The addition of Compression training for those that require it has been added to the training programme for UHDB (see appendix 2). This training will allow the practitioner to expand their scope and become competent in applying the K2 systems. If the patient is assessed and deemed not suitable for compression then the Wound management plan should be followed as per the CNS/HCPs instructions.

Assessment

All patients admitted to UHDB with a leg ulcer should have a Holistic assessment of the wound(s) completed on admission (or at the earliest opportunity), using the Wound Management Pathway Document. It is essential as much detail is filled in as soon as possible, in particular;

- Wound photography
Photography/mapping is advised at regular intervals, this allows for progress (or deterioration) to be monitored and action taken as required.
- Wound mapping if photography not available
- Wound Dimensions
- Condition of Surrounding skin
- Wound swab if clinically indicated

As per policy a referral to Vascular CNS on Whiteboard is now the first port of call/referral unless the patient is known to another speciality for the leg/foot ulcer

Appendix 3 offers guidance in diagnosis for the identification of aetiology if any urgent concerns it is advisable to contact on call for surgery.

General Assessment

Look at the whole person, their lifestyle, health issues and any underlying issues, including;

- Medical history
- Family history
- Nutrition and hydration***MUST** score
- Dexterity
- Mobility
- Knowledge/understanding of situation

- Occupation
- Quality of life
- Sleep quality
- Social history
- Care and support network
- Expectations
- Weight/BMI

Psychological and lifestyle factors are key elements in dealing with patients with leg ulcers; from a **venous** point of view;

- weight, obesity in particular increases hydrostatic pressure in the veins of the lower limbs (legs)
- issues with mobility-this compromises the activation of the calf-muscle pump, which is the key to venous return
- Previous DVT, as already stated this causes damage to the valves which in turn effects venous return
- Varicose Veins-swollen and enlarged veins are caused by malfunctioning valves and put the sufferer at risk of tissue damage/ulcers/bleeds
- Previous injury to the leg(s) such as break or fracture or previous surgery to leg-can cause damage to veins, gait and function of venous and lymphatic system
- Increasing age-some find it harder to move around and arthritis issues may worsen
- Chronic oedema can compromise skin integrity
- Family history
- History of drug misuse

Arterial indicators (red flags)

- Reduction/absence of pulses (legs/feet)
- Rest pain
- Vascular history (may well be known to the vascular team)
- Cool/cold limb(s)
- Erythema, pallor and/or cyanosis
- Increased pain
- Unable to put legs up on couch/bed (the need to sit with legs dependent)

*If arterial involvement is suspected then it is advisable to contact the on-call surgical team.
Patients with arterial tissue loss are at high risk of deterioration*

ABPI Assessment

The ABPI provides an index to help the user establish evidence of arterial disease, however though it is objective, it is not a test to be used in isolation and interpreting the results can be more complex than just looking at the numbers. ABPI is not a common tool we use within the vascular team-instead we may use it as a small part of the overall assessment of a patient. It can however give false readings (false positives) in those with Renal disease, T1DM and T2DM as well as other diseases.

Appendix 4 shows the technique for measuring the ABPI but please, if you are going to carry out this procedure-please do not use it in isolation and ensure you have access to the correct equipment

Treatment

Will depend on the assessment carried out by the admitting ward and the CNS (or other HCP) and should be documented accordingly in the patients records

Compression therapy

Some patients are assessed and will not be suitable for compression, in these cases the Wound Management plan will reflect the most appropriate treatment required. The majority of patients however are those with venous disease and if compression has been established as safe to use then it should be applied without delay. There are risks with using compression and in some cases it is not advisable to use, for e.g. active cellulitis. We do however use compression with caution (modified/reduced) in those with heart failure, arterial disease and diabetes-historically these would have been contraindicated but with specialist input and supervision it is now common practice (CNS vascular would oversee this)

Pain

May be a sign of infection or due to underlying pathology and, in some cases another medical problem all together? Whatever the reason, it needs to be assessed regularly and if necessary pain medication needs to be titrated to planned care events (e.g. dressing changes). Documentation of pain and the effects of medication (and other strategies) should be updated regularly. The pain team (CNS Team) can be contacted by the ward staff to assess if necessary and advice on appropriate medications/strategies to aid treatment.

Infection

Can be managed in various ways, the patient may well be taking antibiotics and will be monitored accordingly and in some cases the dressing choice will reflect the need for certain dressing regimes. There is a "First Line Wound Management Guidance for Infected Leg Ulcers" on net-i (see appendix 5 for details)

Wound cleansers/irrigation/Debridement

It is important to clear any debris from the wound and surrounding area, to remove devitalised tissue and reduce the bio-burden on the wound. Cleansing the wound is also done to help minimise infection and callous build-up which can put pressure on the wound under the dressings.

In some cases it is not advisable to “wet” a wound further but if this was the case this would be documented and advised by the specialised team.

Dressings

The function of a dressing is to contribute to optimal wound healing; the actual choice of dressings is detailed in the Trusts Wound Formulary. If specialised or more complex dressings are required it will be under the supervision/request of the specialist HCPs.

Emollients, Moisturisers and Barrier creams

Strictly speaking emollients are lipid emulsions which occlude the skin surface-reducing water loss, whilst moisturisers are lipid emulsions that actively hydrate the skin by donating to the skin surface (usually a humectant such as urea or glycerine) and Barrier creams are designed to minimise the skin surface to harmful effects of excessive moisture ^{7,8}

Following a skin assessment and taking into consideration what the patient may already be using, a skin care regime should be followed.

Specialities involved in the care of patients with Leg Ulcers

TV team do not routinely see leg ulcers now and will await request for their service once vascular have reviewed the patient, if the problem is due to other factors they will review/advise

Vascular

All patients admitted to UHDB are now referred on Whiteboard direct to the Vascular Nurse team (CNS-Vascular). Patients are reviewed and any underlying disease process is identified and treated accordingly. Within this speciality any tests/investigations and treatments can be planned. Please note if the admitting medical team are concerned about a patients leg ulcer then they must contact “on call” for vascular/surgery immediately.

If vascular disease is not the on-going issue (but may be an underlying factor) for the patient then they will be referred to the appropriate speciality and in some cases the vascular CNS team will work with other CNS teams to maintain continuity of care and offer the best treatment for the patient (shared care).

Dermatology

If the patient is already known to this team it seems appropriate to inform them the patient has been admitted as they may be able to see whilst in or offer advice on regime (especially if photographs are available for them to review alongside any other investigation or test results)

If there is suspicion of any of the following then a referral is necessary

- Malignancy
- atypical appearance of ulcer
- suspicion of other cause e.g. Pyoderma Gangrenosum (PG)
- resistant dermatitis
- Rash
- General advise

Lymphoedema

Is a Multi-disciplinary specialist team that manages the complex nature of Lymphoedema, they provide specialist advice and care. They are unable to see inpatients due to their workload but will offer advice if requested. Refer if

- Advised to do so by CNS/HCPs
- If patient already known to them
- if presentation is “in keeping” with that of chronic leg swelling/Lymphoedema

Development of Guideline: Laura Hodgman Senior Vascular Nurse Specialist and Senior Clinical Education Facilitator
Consultation with:
Approved By: Surgery DQRG – Feb 2022
Review Date: June 2024
Key Contact: Laura Hodgman Senior Vascular Nurse Specialist and Senior Clinical Education Facilitator

Appendix 1

Brief Summary of Venous and Arterial Circulation/disease

Venous Disease- can result in CVI. The normal venous system consists of deep veins, perforators and superficial veins that transport deoxygenated venous blood back to the heart. CVI most commonly occurs as a result of damage to the valves (in the veins) caused by venous thrombosis. If the venous system cannot work properly i.e. the valves do not close sufficiently then venous blood flows back down the veins, thus increasing pressure esp. around the ankle area. This is called venous incompetence as it restricts the normal flow and, over time this sustained pressure results in increased permeability of the capillaries, allowing proteins, fluid and blood cells to leak into surrounding tissue, this produces skin changes and oedema which are easily recognised to the trained eye as a manifestation of CVI.

The arterial circulation pumps blood rich in oxygen and other valuable nutrients through the arteries delivering it to the body's tissues, limbs and organs. Arteries are complex structures that are able to cope with high pressures in order to maintain life. When the health of the arteries is affected it will cause problems with the delivery of oxygen (and nutrients). Hardening of the arteries is the common term for atherosclerosis (PAD), fat, cholesterol, calcium, protein and inflammatory cells form as plaque in the walls of the arteries and this in turn leads to narrowing and in some cases blockage of the arteries, this will result in problems such as a heart attack, angina, a stroke or in the case of the lower limbs-acute limb ischemia, Intermittent Claudication, arterial ulcers and in some cases amputation.

Mixed venous and arterial ulcers are, as the name suggests a combination of the two diseases, and management can be complex and will need input from appropriately trained health care professionals (HCPs)

Appendix 2

Derbyshire vascular Services
Competency self-assessment for the safe use of Urgo KTwo compression bandages

INTRODUCTION

All healthcare professionals caring for patients receiving KTwo compression bandage therapy should demonstrate competence in the assessment of the patient and application of this therapy.

NAME:

CLINICAL AREA / ORGANISATION:

Assessment of Competence

All undertaking this role are responsible for accessing an assessor.

The practitioner must accept accountability for maintaining competence through regular clinical experience and keeping up to date with the supporting theoretical knowledge.

Competence achieved

Assessor:

Signature:

Date:



**University Hospitals of
Derby and Burton**
NHS Foundation Trust

Theory of Compression Bandaging for venous leg ulceration

	Underpinning Theory	Details of assessment and experience	Date achieved	Signature of Assessor/practitioner
1.	Discuss the theory underpinning the mechanism of compression bandaging			
2.	Discuss the rationale for the appropriate & safe use of compression bandaging			
3.	Discuss the application, limitations and contraindications for the use of compression bandaging			
4.	Demonstrate an understanding of how to acquire the appropriate equipment required to initiate compression bandaging			

Practical skills in the care of patient with compression bandaging for venous leg ulceration

	Skills	Details of assessment and experience	Date achieved	Signature of Assessor/practitioner
1.	Discuss and demonstrate the role of patient education and information to ensure they understand & are concordant with compression bandaging (& can give informed			
2.	Demonstrate the ability to undertake patient/wound assessments (as part of a holistic approach to care)			
3.	Record the wound assessment using an appropriate tool			
4.	Demonstrate the ability to safely apply KTwo compression bandaging as per manufacturer's instructions (see data card below)			
5.	Demonstrate the ability to provide holistic care for the patient whilst receiving this			
6.	Discuss the identification & reporting of adverse events			

I have undertaken the required theoretical and practical study to practice with accountability.

I have read and understood the protocol for the use of KTwo compression bandage therapy in venous leg ulceration

Signature of Practitioner:

Date:

I have assessed this practitioner and found her/him to be competent as judged by the above criteria.

Signature of Supervisor:

Date:

Appendix 3

Characteristics of Venous/Arterial leg ulcers

Aetiology	Venous	Arterial
Medical History	<ul style="list-style-type: none"> • CVI • DVT • PTS • Trauma • Surgery 	<ul style="list-style-type: none"> • CHD • PAD/PVD • CVD/TIAs • Ischemia • Hypertension • Diabetes
Location Characteristics of Ulcer	<ul style="list-style-type: none"> ▪ Usually on lower leg/ankle/gaiter area ▪ Large, shallow wound with irregular margins ▪ Fibrinous tissue adhering to wound bed ▪ Varicose eczema or stasis dermatitis present ▪ Lipodermatorosclerosis ▪ Hyperpigmentation and Haemaciderin staining# 	<ul style="list-style-type: none"> ▪ Leg, ankle, foot, toes ▪ Deep ▪ Punched out margins ▪ Thick slough or necrotic tissue adhering to wound bed ▪ Painful, more so if patient tries to elevate or rest on bed (rest pain or critical ischemia)
Surrounding skin/tissue	<ul style="list-style-type: none"> ▪ Varicose Veins ▪ Painful ❖ May well be oedematous in ankle/feet, and eases when feet/legs are elevated ❖ Skin changes noted above ❖ Palpable foot pulses 	<ul style="list-style-type: none"> ❖ Peri-wound oedema ❖ Skin will be pale, mottled, dusky ❖ Absence of hair ❖ Thickened/calcified toe nails ❖ Pulses difficult to locate/absent

** Some leg ulcers are caused by a combination of the above diseases and this makes them a little more difficult to manage. These patients will be referred to the vascular service for management**

Some ulcers are caused by other disease processes (Vasculitis, SLE, RA, Malignancy-BCC, SCC, MM and will also need to be referred to appropriate team



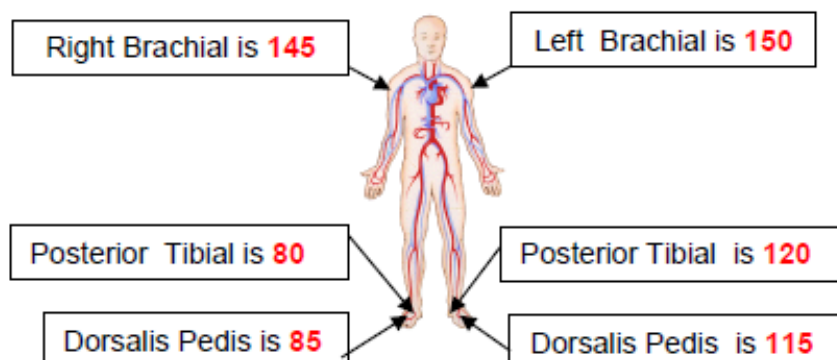
**University Hospitals of
Derby and Burton**
NHS Foundation Trust

Appendix 4

HOW TO UNDERTAKE AN ANKLE BRACHIAL PRESSURE INDEX (ABPI)

<p>Patients should be informed that they will need to lie as flat as possible for 10-20 minutes.</p> <p>This removes the effect of gravity on blood flow.</p> <p>Venous hypertension causes the capillaries to become engorged and dilated leading to fluid leaking into the interstitial space. A meaningful ABPI can be difficult to achieve in patients with very oedematous legs. A two-layer light bandage system (for example, K-Soft and K-lite) may be advisable prior to undertaking an ABPI; the aim is to reduce the oedema. A large blood pressure cuff and a 5MHz Doppler probe are recommended to achieve more reliable results in these cases.</p>
<p>The blood pressure cuff is applied to the arm above the elbow. The brachial artery is located and ultrasound gel applied. The Doppler probe is held between 45-70 degrees to the skin and moved over the skin until a clear signal is heard.</p>
<p>The blood pressure cuff should be inflated until the signal disappears, then the cuff slowly released Listen carefully for the signal to emerge-this is recorded as the BRACHIAL SYSTOLIC PRESSURE</p>
<p>This is then repeated on the other arm. The highest systolic pressure is used to compare against the ankle pressures</p>
<p>The blood pressure cuff is then applied just above the patient's malleoli (ankle)</p>
<p>The Doppler probe is applied over the Dorsalis Pedis artery until the clearest signal is heard. Again, the blood pressure cuff should be inflated until the signal disappears, then the cuff slowly released while the nurse listens carefully for the signal to emerge. Record the Dorsalis Pedis reading</p>
<p>Repeat this procedure for the Posterior Tibial pulse. Record the Posterior Tibial reading.</p>
<p>The highest of the Dorsalis Pedis and Posterior Tibial readings should then be recorded as the ANKLE SYSTOLIC PRESSURE</p>
<p>Use the following calculation to obtain the ABPI:</p> $\frac{\text{Highest Ankle Systolic pressure}}{\text{Highest Brachial Systolic pressure}} = \text{ABPI}$

EXAMPLE



RIGHT ABPI

$$\frac{85}{150} = 0.57$$

LEFT ABPI

$$\frac{120}{150} = 0.8$$

Appendix 5

First line pathway for infected leg ulcers



Infected-Leg-Ulcer-Management-Pathway.

Definitions/Abbreviations

CHD Coronary Heart Disease

CVD Cerebrovascular Disease

PTS Post Thrombotic Syndrome

MUST Malnutrition Universal Assessment Tool

ABPI Ankle Brachial Pressure Index

TBI Toe Brachial Pressure Index

DVT Deep Vein Thrombosis

PAD Peripheral Arterial Disease

PVD Peripheral Vascular Disease

PG Pyoderma Gangrenosum

CVI Chronic Venous Disease

HCP Health Care Professional

SLE Systemic Lupus Erythematosus

RA Rheumatoid Arthritis

BCC-Basal Cell Carcinoma

SCC Squamous Cell carcinoma

MM Malignant Melanoma

Reference list

NICE (2021) National Institute for health and clinical Excellence

<https://cks.nice.org.uk>

1-Harding K, Dowsett C. and Fias L (2015) Simplifying venous leg ulcer management: consensus recommendations. Wounds International. Available at:
<http://www.woundsinternational.com/consensus-documents/view/simplifying-venous-leg-ulcer-management>

<https://tinyurl.com/y4h5k6gd>

2-Neil K and Turnbull K. Use of specialist knowledge and experience to manage patients with mixed aetiology leg ulcers. JWC 2012;21(4):168-174

3-The vascular society of Great Britain and Ireland. The provision of services for patients with vascular disease (2018)

<https://www.vascularsociety.org.uk> (accessed 14/9)

4- Guest JF et al. "Health economic burden that different wound types impose on the UKs National Health Service". Int.Wound J (2017) Apr;14(2):322-330

5-Dowsett C (2015) breaking the cycle of hard to heal wounds: Balancing cost and care Wounds Int. 6(2) pp. 17-21

6-Harding as in no1

7-Marks, R (2001) Sophisticated Emollients (2nd ed) Georg Thieme Verlag, Stuttgart

8-Newton, H (2005) Skin care in wound management. Medical communications UK. Holsworthy