# Clinical Guidance on the treatment of Leg Ulcers

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<td>CNS/Leg Ulcer Specialist</td>
</tr>
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1 Introduction

“A leg ulcer is a loss of skin below the knee in the leg or foot which takes more than 4 - 6 weeks to heal” (Dale et al.1983)

Leg ulcers are a chronic and recurring condition that affect between 1.5-3.0 people in every 1000 at any one time. (Graham et al 2003) The prevalence of leg ulceration increases with age and can be as many as 20 in every 100 people over the age of 80, (Moffatt et al 2004)

There is no single aetiology; however it is thought that approximately 70% of people with a leg ulcer are as result of venous hypertension (Moffatt and Franks, 1994, Chen & Rogers 2007) Arterial or mixed arterial/venous disease is responsible for a further 20% and the remaining are from other conditions such as diabetes, rheumatoid disease, malignancy and vasculitic conditions (Chen & Rogers 2007).

Inadequate assessment and ineffective treatment may result in the persistence of ulcers for many years, some never healing.

The annual cost to the NHS for chronic wounds is estimated at £300-600 million per annum with a large proportion of this coming from nursing time (NHS Centre for Reviews and Dissemination, 1997; Bosanquet, 1992; Baker et al.1991 McCollum 2004). Some individual health authorities are spending £0.9m to £2.1 million (Carr et al 1999).The cost to the NHS for treating venous ulceration, alone, mostly in primary care and through community nursing services, are at least £168-198 per year. (Posnett 2008).

Not only is it time consuming and costly to treat, but there are psychological implications to the patient in that the ulcer increases social isolation through limited mobility, uncontrolled exudate and odour, together with pain (Lindholm et al.1993; Charles,1995).

Careful evaluation of causative and contributory factors is of great importance in the management of patients with leg ulcers (Sarker and Ballantyne, 2000).

Research has shown that it is possible to heal up to 83% of venous ulcers with compression bandaging.( Franks et al 1995)

2 Guideline Standards

2.1 Aims of the Guidelines

- To ensure that all patients presenting with a leg ulcer receive a comprehensive assessment and subsequent diagnosis from a registered nurse who have additional competencies in leg ulcer management.
• To ensure that all patients diagnosed with a leg ulcer receive treatment according to agreed guidelines.

• To ensure that leg ulcer management guidelines are monitored and evaluated. It is intended that these guidelines undergo a bi-annual review.

The Guidelines will facilitate each practitioner to utilise and update skills, knowledge and competencies.

2.2 General Standards

• A guideline conforming to current best practice has been agreed by the Social Enterprise.

• Doppler machines must be available for each nurse undertaking leg ulcer assessment.

• A Bi-annual Audit of the use of the leg ulcer management guidelines should be carried out by the Tissue Viability Service in each Social Enterprise

2.3 Social Enterprises (SE)

• Each SE has at least one lead nurse to act as a source of expert advice.

• Each SE will work within these guidelines.

• Each SE has a responsibility to provide a nursing workforce who can offer assessment and multilayer bandaging as a skill and ensure their competency is maintained.

2.4 GP Practices

• Each GP practice is aware of the management of leg ulcers based on these guidelines and knows of a named individual who can act as a point of contact and expertise.

• Each GP practice ensures that all those patients presenting with a leg ulcer are appropriately assessed and treated.

3 Assessment and Diagnosis

The first step in successfully managing a patient with a leg ulcer is recognising the wound as a leg ulcer. Wounds that commonly fall into not being recognised as an ulcer are pre-tibial lacerations (or other trauma wounds) and surgical incisions where veins have been harvested for coronary bypass grafts. (Moffatt et al 2007).

A detailed assessment of the patient’s general health and past medical history is essential when diagnosing and determining treatment of the ulcer and should be carried out using the assessment tool incorporated within these guidelines (See
Section 2  Leg Ulcer Care Pathway / Appendix 1 Assessment & 1a Quick Assessment). Assessment is not a one off procedure but an ongoing one.

It is paramount that underlying disease processes are addressed and stabilised to ensure maximum potential to heal.

Many textbooks state that compression therapy should not be used in patients with diabetes. This is because of the concern that sensory neuropathy will prevent a patient detecting whether the compression is causing trauma and the risk of concurrent Peripheral arterial disease(PAD). However, patients with diabetes are just as likely to suffer from a venous ulcer as patients without diabetes. Healing may take longer but generally does occur. So if compression is the treatment of choice it should be used. (Moffatt et al 2007)

It is intended that the assessment should be carried out by a Nurse holding competencies in the theory and practice of the management of leg ulcers. (RCN 2006) Leg ulcer assessment is a highly complex skill, practitioners who lack the skill can tend to focus on the wound rather than the patient, not recognising the underlying causes that need to be addressed.

3.1 Doppler Assessment

Doppler Ultrasound / ABPI is an integral part of the assessment of leg ulceration. It enables an objective measurement of the blood flow to the limbs to be made, supporting the clinical findings and so aiding the planning and implementing of a management regime. Doppler assessment is two fold, comprising of interpretation of both signals and pressure index (Warboys 2006). This diagnostic test compares the Ankle systolic pressure to the brachial systolic pressure. Patients who have a normal arterial circulation will have an Ankle systolic pressure that is the same as, or higher than, their Brachial pressure. Ankle pressures lower than the brachial pressures are indicative of arterial disease. (See Appendix 2 & Appendix 7)

These measurements need to be interpreted with caution in the diabetic patient. Full Compression bandaging should not be applied until Assessment and Doppler ultrasound have been performed and the blood flow to the limb is confirmed as being sufficient. Neither should be used in isolation. A study day is available to learn about recording Doppler ultrasound. A period of practice with assessment by a mentor should follow.

PAD occurs at an early age and progresses more rapidly in patients with diabetes, compared with patients without diabetes. There is a difference in the distribution of disease in the patients with diabetes. Distal vessels, particularly the tibial and peroneal, are more frequently involved in patients with diabetes. In patients without diabetes, the femoral iliac and aorta are more commonly affected. Changes do occur in the micro circulation, particularly thickening of the capillary basement membrane that influences blood flow. Other regulatory mechanisms controlling local blood flow are effected, therefore influencing perfusion of the tissues.
A Doppler assessment can be carried out as soon as possible after the initial presentation but must be carried out within 4-6 weeks, as this is sufficient time to ascertain that there is delayed healing that requires investigation.

### 3.2 Diagnosis

Having made an assessment of the patient, the ulcer and the foot circulation, a working diagnosis should be formulated. Treat patients according to the underlying pathology of their diagnosis using the following flowcharts. Patients, who have a mixed picture, may be treated along the lines of their predominant pathological presentation.

Patients where diagnosis is unclear should be referred to a specialist nurse, in leg ulcer management.
Flow Chart for Venous Ulcers

Assessment including Ankle Brachial Pressure

**ABPI 0.8 and above**

- Normal Doppler Index with Triphasic and Biphasic sounds – and no other significant arterial factors
- Dress wound according to local wound formulary – where possible this should be a simple non adherent dressing
- Apply Full Compression (40mmHg) at the ankle

- Address pain control
- Address underlying disease e.g. Diabetes, Rheumatoid Arthritis – refer if unstable
- Address Dermatology issues – refer to Specialist Nurse for advice

Patient Education

**Ulcer Healed**

- Prevent reoccurrence
- Fit with compression hosiery - class 2 or 3 German RAL mod/high oedema British Standard BS if minimal oedema
- Refer to Vascular surgeon for assessment of veins for treatment if ulcers reoccurring despite hosiery.

**Ulcer Not Improving or Deteriorating**

- Reassessment and Re-doppler
- Refer to Specialist Nurse for further assessment

**Normal Doppler Index with Monophasic and Biphasic signals with difficult or muffled sounds and significant arterial factors indicating possible arterial component.**

- Dress Wound according to local wound formulary – where possible this should be a simple non adherent dressing.
- Reduced compression (20 mmHg) or short stretch initially) Increase to Full Compression (40 mmHg) if tolerated
Flow Chart for Mixed Venous and Arterial Ulcers

Assessment including Ankle Brachial Pressure

ABPI 0.5 – 0.8

Monophasic and Biphasic signals with difficult or muffled sounds significant arterial factors – Mixed venous / arterial ulcer

Appropriate dressing selection according to Local Formulary

Reduced Compression

20 mmHg

All Monophasic signals and significant arterial components – Predominantly Arterial Ulcer

Appropriate dressing selection according to Local Formulary

No Compression Refer to Specialist Nurse for opinion

Address pain control

Address underlying disease e.g. Diabetes, Rheumatoid Arthritis – refer if unstable

Address Dermatology issues – refer to Specialist Nurse for advice.

Patient Education

Healed

Not healed

Class 1 compression hosiery

German RAL for Mod/high level’s oedema BS for minimal oedema

Refer to Specialist Nurse if ulcers reoccurring

Class 2 compression hosiery

German RAL for Mod/high level’s oedema BS for minimal oedema

Refer to Vascular Surgeon for assessment of arteries and possible surgical treatment

0.5/0.6

0.7/0.8

0.5/06

0.7/08

Refer to Specialist Nurse for advice

Title: Leg Ulcer Care Guidelines

Author: Please see Development, Consultation and Ratification Process on page 32 of the Guidelines.
Flow Chart for Arterial Ulcers

Assessment indicating Arterial Components including Ankle Brachial Pressure

ABPI < 0.5

Urgent referral to Vascular Surgeon

Appropriate dressing selection according to Wound Formulary

Address underlying disease e.g. Diabetes, Rheumatoid Arthritis – refer if unstable

Address pain control

No Compression but layer one and layer 2 of the compression system applied with a spiral technique will offer some support.
4 General Management of Leg Ulcers

4.1 Essential skin hygiene and cleansing of the ulcer at each dressing or bandage change. Soak the leg for 10 minutes in a clean (plastic-lined) bucket of warm water, with an emollient to promote a healthy skin.

Dealey (1999) suggests that the aims of cleansing leg ulcers/legs are:

- To remove dry and flaky skin, especially when a bandaging system is in place.
- To remove the build up of emollients/topical steroids.
- For patients well being and comfort.

RCN (2006) Clinical Practice Guidelines suggest cleansing of the affected leg should be kept simple using warm tap water and a non lanolin based emollient. (Tap water on exposed bone or tendon is not recommended) (See Appendix 4)

Dry scales should be removed from the legs particularly around the ulcer edge to allow new growth of epithelium. (Sterile single use forceps should be used)

A bland non lanolin moisturiser should be applied to the legs after cleansing and drying. The emollient will help to form a waterproof barrier over the skin surface, which helps to prevent the water within the skin evaporating and keeps the underlying skin hydrated.( Coley 2009)

For additional information on skin care see Trouble Shooting Tips. (Page 22)

Standard Infection Control Procedures should be adhered to. See local policies re: ANTT and hand hygiene. See also Appendix 8 for safe systems of work within patients own home.

4.2 Local Wound care

Dressings do not heal leg ulcers but can be used to control symptoms such as odour or pain. They should be simple and cost effective; usually an N/A ultra or similar is the initial dressing of choice.

Refer to Local Wound Formulary or Guidelines.

4.3 Treatment of infection

When clinically assessing wounds, the practitioner should always be mindful of the presence of infection (White et al 2011)

Bacteria can usually be grown from a leg ulcer but in most circumstances they can be ignored as they don’t interfere with healing. All broken areas of skin will rapidly become colonised with bacteria in any normal environment.
Routine bacteriological swabbing is **unnecessary** unless there is evidence of clinical infection such as:-

- Inflammation/redness/cellulitis
- Increased pain, redness, swelling and exudate volume and viscosity, temperature to skin.
- Enlargement of the ulcer.  (RCN,2006)
- Delayed healing despite appropriate compression therapy
- Newly formed ulcers within inflamed margins, or extension of the wound margins (EWMA 2005)
- Discolouration ( for example dull, dark brick red)
- Friable tissue that easily bleeds
- Increase in malodour
- New onset dusky wound hue
- Sudden appearance of slough or increase
- Sudden appearance of necrotic black spots (EWMA 2005)

However some of the above signs are indicative of clinical inflammation resulting form high protease activity. (White et al 2011).

There may also be fever, malaise, neutrophil leucocytosis and high white cell count (raised CRP)

In most immunologically normal patients the infection is caused by Streptococcus pyogenes group A and/or Staphylococcus aureus. Pseudomonas aeruginosa is commonly grown but very rarely of pathological significance.

**Initial treatment should be with high dose oral antibiotics**

**Cellulitis**

Cellulitis is responsible for over 400,000 bed days per year in the English NHS at a cost of £96 million. ( Levell et al 2011). It is often misdiagnosed by General physicians and can be a lower limb dermatosis, commonly eczema, fungal infection, lymphoedema or chronic oedema ( Levell et al 2011)

This is a bacterial infection of the skin and the tissues below the skin surface. It is an acute spreading infection of the subcutaneous tissue. Cellulitis is mostly caused by group A beta-heamalytic streptocci, but can be caused by other bacteria such as Staphylococcus aureus. (see RCN 2006)

**Symptoms of cellulitis** (Cutting and Harding 1994)
Cellulitis often accompanies skin trauma and is usually unilateral (Levell et al 2011). It occurs where bacteria gain access through fissures and damage to the skin surface (Gabillot-Carre and Roujeau 2007).

The Patient may feel generally unwell, shivery or feverish.

Investigations may include bloods—Full blood count, erythrocyte sedimentation rate, liver function tests, urea and electrolytes to identify any contributory underlying pathology and wound swab if clinically indicated for culture and sensitivity.

Antibiotics are the main treatment for cellulitis, oral for a mild infection but intravenous antibiotics can be needed if:

- There is a more severe infection
- The infection has not responded to oral antibiotics
- The patient has other health problems.

Other treatment is aimed at:

- Treating any breaks in the skin that allowed the infection in E.G. dressing the ulcer or the fungal infection.
- Treating pain or swelling, with analgesia and elevation
- Gentle cleansing with a soap substitute
- Elevation and resting the limb

In patients with recurrent cellulitis, prophylactic penicillin is sometimes used; refer to nurse specialist re skin care management and advice.

Local microbiological advice should be sought if the clinical condition is not improving.

For further advice on infection issues see ‘Troubleshooting’.

**Bacterial swabs should only be carried out where there is clinical evidence of infection. A swab will only tell you what bacteria is present; it will not tell you if there is an infection.**

**MRSA: see local Guidelines re wound care & MRSA**

5 **Compression Bandaging for Venous Ulceration**

The key to the successful healing of chronic venous ulcers will be to correct the underlying venous hypertension using graduated compression therapy (EWMA, 2003, Moffatt 2007).
The application of high compression bandaging exerts pressure on the underlying skin and tissues reducing distension and pressure to the underlying superficial veins. This reduces oedema and increases the blood velocity in the deep veins, aiding venous return, thereby counteracting venous hypertension. 40mmHg pressure at the ankle is considered the optimum pressure required to reverse venous hypertension, graduating the pressure to 17mmHg just below the knee (Moffatt, 2000).

Compression may also be appropriate for the treatment of some other aetiologies; however caution should be taken where patients have evidence of the following conditions. Arterial disease, Diabetic ulceration, Rheumatoid ulceration, Peripheral neuropathy or loss of sensation to the lower limb.

Full compression bandage systems should only be applied after a full assessment and Doppler studies have been carried out. The above patients who have these aetiologies may not be suitable for the mini assessment.

It is important that the science of bandaging is considered if safe and effective compression is to be delivered.

**Laplace’s Law**

This Law of Physics states that there are a number of important factors which determine the pressure achieved under any given bandage.

\[
P = TN \times 4630
\]

\[
\text{CW}
\]

**Laplace relationship**

The level of pressure exerted by a compression garment on the leg is dependant on:

- The Tension (T) of the bandage / hosiery material.
- The Number (N) of layers of the compression applied.
- The Width (W) of the bandages used.
- The Circumference (C) of the limb.

Tension (T): is determined by the amount of elasticity of a bandage and the degree to which it is stretched.

Number of Layers (N): the more the layers applied to a leg, the higher the sub-bandage pressure obtained.

Width of bandage (W): higher pressures are achieved from narrow bandages and lower pressures with wider ones. A 10cm bandage is appropriate in most cases.
Circumference of the Limb (C): The thinner the leg, the higher the pressure that will be achieved from a given bandage. Dangerously high pressures can be obtained with compression bandages on thin legs. The larger the leg/ankle, the lower the pressure achieved from a given bandage.

It is vital that this principle is taken into account when instituting a regime of compression if therapeutic pressures are to be achieved in large limbs or pressure necrosis is to be prevented in those patients with small ankles.

Using Laplace’s law graduated compression is achieved because of the natural shape of the limb. Most legs are narrower at the ankle than the knee so graduated compression is achieved automatically if a bandage is applied at the same tension and overlaps all the way up the leg.

Where limbs are wider at the ankle than the calf due to oedema etc, padding needs to be applied to the calf to ensure it is approximately 10 -14cm larger than the ankle.

Always adhere to bandage manufactures recommendations regarding limb circumference.

6 The Multi-layer Elastic Compression Bandaging System

The best-validated means of achieving sustained compression is by a multi-layer technique, such as that pioneered at the Charing Cross Hospital venous ulcer clinic. This comprises of multi layers of elastic bandaging over a non-adherent dressing. These layers build up to give pressures of 40mmhg at the ankle. Multi-layer systems vary in the levels of compression in layers 3 and 4. The current system in use, the K system from Urgo, produces 20mmhg in both compression layers.

Iglesias et al (2005) found that multi-layer elastic bandages were more cost effective than multi-layer inelastic bandages for healing venous leg ulcers. The healing rates using the system were reported at 74% at 12 weeks compared with 30% healing with no compression and 45% with other elasticated bandages.

Elastic bandages follow the shape of the limb maintaining a constant pressure. The bandages move with the muscle contractions therefore only minor variations in pressure occur as the limb moves. The elasticity of the bandages mean that as the limbs oedema reduces as a result of the compression, the bandages will follow the limb in as it reduces in size thus maintaining a constant pressure on the limb. This means that the bandages have a fairly constant working pressure with smaller variation between when the patient is moving and when they are resting than occurs with inelastic systems.

The aim is to leave the bandages in place for a week; initially they may have to be changed more frequently if the exudate strikes through the bandage.
Layer 1, Orthopaedic wool:

This layer is applied directly over the primary dressing. It is laid on and no stretch applied during application. Its main functions are to protect bony prominences, act as an absorbent layer, and to reshape the limb. This layer applies no compression. Padding should be applied from the base of the toes to below the knee in a spiral.

Layer 2, conforming bandage:

This layer provides a second absorbent layer and smoothes the first layer in preparation for the 3rd and 4th layers. This layer should be applied in a spiral from the base of the toes to below the knee.

This layer can be used in conjunction with layer one to provide support bandaging to limbs that are not suitable for compression.

Layer 3, Light Compression bandage:

This is the first compression layer, giving 120mmHg at the ankle when applied in a figure of eight pattern at 50% stretch with a 50% overlap, to a leg with an ankle circumference between 18 and 25 cm. Apply with a 30-50% stretch on the foot depending on the level of oedema.

Layer 4, Elastic cohesive bandage:

This layer gives a moderate compression of 20mmHg at the ankle when applied toe to knee in a spiral technique at 50% stretch with a 50% overlap to a leg with an ankle circumference between 18 and 25 cm. The bandage is cohesive and helps to secure the bandage system in place and to maintain the compression for at least a week

Table 1: Bandage Combinations for multi-layer elastic compression systems

<table>
<thead>
<tr>
<th>Ankle circumference</th>
<th>Bandage combination</th>
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<tr>
<td>Less than 18cm</td>
<td>2 or more layer 1</td>
</tr>
<tr>
<td></td>
<td>1 x layer 2</td>
</tr>
<tr>
<td></td>
<td>1 x layer 3</td>
</tr>
<tr>
<td></td>
<td>1 x layer 4</td>
</tr>
<tr>
<td>Layer 1 is used to bring the circumference of the ankle up to a minimum of 18cm</td>
<td>1 x layer 1</td>
</tr>
<tr>
<td></td>
<td>1 x layer 2</td>
</tr>
<tr>
<td></td>
<td>1 x layer 3</td>
</tr>
<tr>
<td></td>
<td>1 x layer 4</td>
</tr>
<tr>
<td>18-25 cm</td>
<td>1 x layer 1</td>
</tr>
<tr>
<td></td>
<td>1 x layer 2</td>
</tr>
<tr>
<td></td>
<td>1 x layer 3</td>
</tr>
<tr>
<td></td>
<td>1 x layer 4</td>
</tr>
<tr>
<td>25-30 cm</td>
<td>1 x layer 1</td>
</tr>
<tr>
<td></td>
<td>2 x layer 3 (or 1 x high compression layer)</td>
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<tr>
<td></td>
<td>1 x layer 4</td>
</tr>
<tr>
<td>Greater than 30 cm</td>
<td>1 x layer 1</td>
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<tr>
<td></td>
<td>1 x layer 3</td>
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<tr>
<td></td>
<td>1 x high compression layer</td>
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<td></td>
<td>1 x layer 4</td>
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NB: The ankle circumference must be checked after the wool padding has been applied and the bandage regimen determined by that measurement.
Large limbs or limbs with ankle oedema and an ankle circumference greater than 25cm require a high compression stronger elastic bandage as part of their multi layer system to ensure adequate pressure is applied.

The ankle circumference should be measured every time the bandages are reapplied as it may alter with reduction of oedema.

Reduced compression levels can be used on limbs with ABPI's below 0.8 with advice from experienced practitioners. (See table 2)

Table 2: Bandage Combination for reduced compression using K system.

<table>
<thead>
<tr>
<th>ABPI</th>
<th>Bandage combination</th>
<th>Ankle Circumference</th>
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<tr>
<td></td>
<td>2 x layer 1 1 x Layer 2 1 x Layer 4</td>
<td>Under 18cm</td>
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<tr>
<td></td>
<td>Approx 20mmHg</td>
<td></td>
</tr>
<tr>
<td>0.7</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>1 x Layer 1 1 x Layer2 1 x Layer 4</td>
<td>18– 25cm</td>
</tr>
<tr>
<td></td>
<td>Approx 20mmHg</td>
<td></td>
</tr>
<tr>
<td>0.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 x Layer 1 1 x Layer 2 1 x Layer 3 1 x layer 4</td>
<td>25 – 30cm</td>
</tr>
<tr>
<td></td>
<td>Approx 20mmHg</td>
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<td>0.7</td>
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<td>0.6 – 0.5</td>
<td>2 x Layer 1 1 x Layer 2 1 x layer 3</td>
<td>Under 18cm</td>
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<td></td>
<td>Approx 20mmHg</td>
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<tr>
<td>0.6 – 0.5</td>
<td>1 x Layer 1 1 x Layer 2 1 x layer 3</td>
<td>18 – 25cm</td>
</tr>
<tr>
<td></td>
<td>Approx 17mmHg</td>
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<tr>
<td>0.6 – 0.5</td>
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<tr>
<td>0.6 – 0.5</td>
<td>1 x Layer 1 1 x Layer 2 1 x layer 4</td>
<td>25 – 30cm</td>
</tr>
<tr>
<td></td>
<td>Approx 15-20mmHg</td>
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<td></td>
<td>Depending on ankle size</td>
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</table>
The Short Stretch Bandage System

The short stretch bandaging system is a two-layer bandage system comprising of padding / reshaping layer and a compression layer.

The short stretch bandages extend and recoil very little, so when applied at full tension they maintain a semi-rigid cylinder around the leg that does not give when the muscle beneath expands. Contraction and expansion of the calf muscle against this cylinder re-directs the energy, forcing it back into the leg to squeeze the veins, thereby promoting venous return. This creates a high ‘working pressure’.

When the leg is inactive ‘low resting pressures’ are exerted on the leg. Because the bandages do not exert constant pressure on the limb, it may be useful for patients who do not tolerate compression well. It also may be considered for patients with arterial or sensory impairment and cardiac failure.

As the bandage is unable to follow the limb as it reduces in oedema it may slip initially and require reapplying more frequently. The aim is to leave the bandages in place for a week when there is no strikethrough or slippage.

There are two types of short stretch bandage available, cohesive and non-cohesive.

**Layer 1 – Orthopaedic wool**

This layer is applied directly over the primary dressing. The padding layer gives no compression. Its main functions are to protect bony prominences and other vulnerable areas, to act as an absorbent layer and reshape the limb.

**Layer 2 – Short stretch bandage**

The bandage is applied with even tension at full-stretch overlapping the bandage by 50% from the ankle to knee. If applying a second bandage (where the ankle circumference is greater than 25cm) apply ankle to knee in the opposite direction to the first bandage.

Table 3: Bandage Combinations for short stretch bandage systems

<table>
<thead>
<tr>
<th>Ankle Circumference</th>
<th>Bandage Regimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 18cms</td>
<td>2 or more layer 1</td>
</tr>
<tr>
<td></td>
<td>1 x Layer 2</td>
</tr>
<tr>
<td>Layer 1 is used to bring the circumference of the ankle up to a minimum of 18cm</td>
<td></td>
</tr>
<tr>
<td>18 cms to 25 cms</td>
<td>1 x Layer 1</td>
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<tr>
<td></td>
<td>1 x Layer 2</td>
</tr>
<tr>
<td>Greater than 25 cms</td>
<td>1 x Layer 1</td>
</tr>
<tr>
<td></td>
<td>2 x Layer 2</td>
</tr>
</tbody>
</table>
NB: The ankle circumference must be checked after the wool padding has been applied and the bandage regimen determined by that measurement.

8 Other Bandage Systems

8.1 KTWO® Calibrated 2-layer compression system- High compression.

KTWO® is a multilayer multi-component compression system, designed to ensure even distribution of pressure between two dynamic bandages. The system applies the effective therapeutic pressure required to treat venous leg ulcers and associated symptoms along with severe oedema in chronic venous insufficiency. Irrespective of leg shape the bandage system provides the correct level of pressure from the very first application thanks to its specific etalonnage system (pressure indicator). The system consists of two separate dynamic bandages:

K Tech (1st layer) which is a composite layer formed of wading and a moderately elastic compression fabric.

K Press (2nd layer) which is applied over the first layer, is a cohesive bandage.

KTWO is not recommended when an ABPI is below 0.8, KTWO reduced is advocated for these patients.

Both the KTWO and the KTWO reduced come in two ankle sizes 18-25cm and 25-32cm. 10CM bandage width for leg ulcer management.

8.2 3M™ Coban ™ 2layer Compression System.

The system is latex free and has been specifically developed to overcome some of the challenges associated with other compression systems, such as foot wear problems. The system is 2 layer bandage system consisting of an inner comfort layer and an outer compression layer. The unique foam comfort first layer replaces the orthopaedic wool layer and is latex free. The cohesive compression layer provides effective sustained compression and is also latex free. Once applied the two layers bind together to form a slim, single layer bandage that is designed to resist slippage and enables the patient to wear normal foot wear.

One size kit fits all ankle circumferences

Suitable for patients with an ABPI of 0.8. For patients with an ABPI there is the coban 2 lite kit. The system is a kit that contains two rolls and is designed to be used together and not in conjunction with any other compression bandages or orthopaedic wool. Each layer of the coban 2 layer system has a purple core to allow easy differentiation form the original coban self-adherent bandage.

9 Prevention of Recurrence in Venous Ulceration

While research relating to recurrence of ulceration remains sparse, studies suggest that the rate of recurrence is high (McDaniel et al 2002). Compliance with
wearing compression hosiery has shown to affect the rate of recurrence (Erickson et al 1995).

Education for patients regarding the need for life long support of the veins in their legs is paramount and should be emphasised from the beginning of treatment. It should also be stressed to the patient that healed ulcers will remain susceptible to breakdown following even minor trauma.

Once venous ulceration has healed, it is essential that all patients are measured and fitted with compression hosiery. It is important to ensure that they are managing the hosiery and subsequent advice and support are given to ensure concordance. Patients are more likely to comply with compression therapy that is easier to use and reduces pain and discomfort (Dowsett 2011)

9.1 Compression Hosiery (appendix7 & 8b)

Patients should not be prescribed compression hosiery until their skin is sufficiently robust to enable the stocking to be drawn over the ulcer site.

There are various classification standards. Currently available on prescription are the British Standard (BS) or German/ European Standard (RAL). It is important to be aware that the compression rates and the stiffness of the fabric are different for each classification Standard.

Hosiery is graded into three classes:-

Class 1 BS – Light support that gives 14 – 17 mmHg pressure at the ankle

Class 1 RAL 18-21.1mmHg

- Indicated for superficial or early varicose veins.
- Used as a treatment of reduced compression and in prevention of reulceration for people who can not tolerate class II

Class 2 BS – Moderate support that gives 18 – 25 mmHg pressure at the ankle

Class 2 RAL 23-32mmHg

- Indicated for varicose veins of medium severity,
- DVT Treatment
- Prevention of recurrence of venous ulceration for those who have healed in reduced compression or cannot tolerate class III.

Class 3 BS – Strong support that gives 25 – 35 mmHg pressure at the ankle

Class 3 RAL .34-46.mmHg
• Indicated for severe varicose veins,
• Treatment of venous ulceration when bandages cannot be tolerated and prevention of recurrence.
• DVT treatment recurrent and when flying

There are hosiery kits that give up to 40mmHg pressure at the ankle which may be useful for those patients whose ulcers reoccur when they finish their treatment with bandages. They can also be used as prophylaxis on patients with healed ulcers who need to be maintained at 40mmHg.

Selection of the correct size of stocking is very important. The patient’s legs must be carefully measured and ideally a class selected that will give the level of compression required preventing further venous ulceration. Made to measure stockings are available for those whose measurements fall more than 1cm outside the ranges catered for.

Ideally legs should be measured for stockings whilst still in compression bandages or first thing in the morning where bandaging has not been necessary, so that the legs are less swollen.

N.B: The restrictions with regard to arterial disease and compression bandages also apply to the use of stockings.

10 Recurrence of Ulceration

Once a leg ulcer patient always a leg ulcer patient

Once a Leg ulcer has healed the patient needs lifetime compression therapy due to the underlying venous pathology.

Despite the availability of compression hosiery ulcer recurrence rates varies from 33% to 67%.

67% will experience 2 or more episodes of reulceration.

21% will experience more than 6 episodes of reulceration.

Ulcers which are greater than 10cm in size, the chronicity of an ulcer, a history of deep vein thrombosis, clotting disorders, arterial disease along with the unsuitability or non concordance with hosiery are all risk factors that increase the chance of recurrence.

Consider referral for vascular surgical opinion for recurrence of unknown cause.

Practitioners fitting hosiery should have undertaken training in the measurement, selection and application of hosiery. This is essential to ensure maximum comfort and subsequent concordance from patients (Coull and Clark, 2005). (Appendix 8b)
10.1 Patient Education

Managing the transition from high compression bandaging to hosiery may be difficult. Oedema may occur if the pressure applied by the stocking is considerably less than that applied by the bandage. (Moffatt 2007)

It is essential to ensure that patients understand the risk of their ulcers recurring and the importance of caring for their legs in order to reduce this risk.

Key points to enforce include:

- The importance of complying with their hosiery
- Avoiding trauma to the delicate tissues in the healed ulcer.
- Regular exercise to improve circulation and improve the function of their foot and calf pump.
- Careful attention to foot hygiene, particularly in diabetics.
- The avoidance of ill-fitting footwear.
- Elevation of legs when sitting for long periods of time
- To seek treatment as early as possible if they notice any damage to skin on their legs
- Essential maintenance of skin.
- Renewal of Hosiery every 6 months
- Educate patient re care of hose and Aids of application

Written information should be given to patients relevant to their needs, as this has been found to be a factor in improving compliance.

10.2 Care of patients presenting with reoccurrence of ulceration

It is important to re-assess the patient including a repeat Doppler assessment. (As soon as possible)

Remember that new processes may have developed, such as deterioration in arterial competence in a patient who previously had a venous ulcer.

Patients whose ulcers recur may require additional psychological support as depression is a common factor in ulcer reoccurrence.

For some patients particularly susceptible to reoccurrence it will be necessary to increase the level of compression hosiery once healed. It might require a higher compression hose or a stiffer fabric hose e.g. RAL.
11 Invasive Treatments for Venous Insufficiency

11.1 Surgery

Compression bandaging and stockings form the mainstay of treatment directed at healing venous ulcers. Despite these treatments, ulcer recurrence rates run at over 1/3 of patients within one year. The reasons for this are not well understood, but probably include non-compliance and ill fitting (i.e. inadequate compression) compression hose as well as more severe pathology (total deep vein incompetence, arterial disease) and trauma.

A recent trial has shown that the addition of surgery to compression therapy both normalises venous physiology (Gohel et al. 2005) and reduces ulcer recurrence rates at one year (Barwell et al. 2004). This trial and a previous smaller trial suggested that surgery produced better healing and recurrence rates when compared to compression over a 3-year period (Zambori et al. 2003; Barwell et al. 2000). How ever recent long term results of the ESCHAR trial (Gohel et al 2007) surgical correction of superficial venous reflux in addition to compression bandages does not improve ulcer healing but reduces recurrence of ulcers at four years and results in greater proportion of ulcer free time.

The ESCHAR trial (Barwell et al 2004, Gohel et al 2007) used sapheno-femoral ligation with stripping as standard therapy but also undertook sapheno-femoral ligation under local anaesthesia for those unfit for general anaesthesia. The results of this trial can be generalised to a population with venous ulceration and superficial venous incompetence.

The message from these trials is that all patients with venous ulcers and venous disease should be considered for surgery after healing if there are problems of recurrence. Patients should be assessed by a trained vascular specialist. Venous ultrasound assessment may be required to supplement the examination findings if the diagnosis is in doubt.

The trials described have looked at venous physiology and shown that changes produced by surgery change abnormal reflux patterns back to normal. Healing and recurrence rates can also be related to changes in venous reflux and to the efficacy of the calf muscle pump. The difference between individuals goes someway to explaining the variation in healing rates with compression and following surgery.

Problems of surgery include, nerve injury, wound infection, DVT and recurrence of varicosities, rates of which vary from 10-25% at 10 years

11.2 Other treatments for venous disease

To date the main trials have focussed on the role of open surgery, in the healing or prevention of recurrence of venous ulcers. There are now a number of newer “minimally invasive” treatments being offered to patients
and this section attempts to provide an overview of less invasive alternatives to surgery.

a) VNUS closure.

This technique involves passing a probe up the saphenous vein, using ultrasound to accurately guide placement. Once correctly located near the junction with the deep veins, the vein is then surround by a cuff of injected saline containing local anaesthetic for pain relief. The probe is then heated up and withdrawn slowly. The probe heats the vein to a high temperature and denatures the vein wall causing fibrosis. The technique has a good success rate of over 80% (Nicolini, 2005). Further injections or phlebectomies may be required to remove residual varicosities.

Problems with this technique include cost (may be cost effective if time off work considered) (Tero-Rautio et al. 2002), saphenous nerve injury, skin burns and DVT. Long-term durability is not known. NICE guidance September 2003

b) Endovenous laser therapy

This technique is very similar to VNUS closure but uses a laser fibre passed into the vein under ultrasound guidance. Once correctly located, the leg is injected with saline and local anaesthetic to prevent heating of surrounding tissues and to minimise pain. The laser is then activated as the fibre is withdrawn, causing thermal injury to the vein wall. Subsequently, residual varicosities may need treatment. Again the technique has a good success rate of over 80% (Min Robert et al. 2003).

Problems include, recurrence (related to laser energy used (Proebstle et al. 2004) phlebitis, pain and bruising. Long-term durability is not known. (NICE, 2004)

c) Ultrasound guided foam sclerotherapy

Injection sclerotherapy has been promoted for the treatment of venous disease in mainland Europe for some years. The technique of creating foam by forcing air through sclerosing agents allows the injected foam to displace blood and come into contact with a significant proportion of the vessel wall. This makes it more effective than standard liquid sclerotherapy techniques (Hamel et al. 2003). A needle is located in the saphenous vein under ultrasound guidance and then the foam injected. The ultrasound probe is used to compress the vein and limit the flow of foam into deep veins once it reaches the junction with the deep system. The technique may obliterate all varicosities or subsequent injection or phlebectomy may be needed to remove residual varicosities as in a) and b).

Problems include chemical phlebitis, skin staining, transient neurological disturbance (micro-bubbles may traverse cranial vessels) and DVT. Long-term durability is not known. (NICE, 2003)
11.3 Summary

There are a variety of treatments, suggesting that no one treatment is significantly superior to another. Practitioners looking after patients with venous ulceration are advised to consult the NICE website (www.nice.org.uk) for further updates on currently available treatments.

12 Trouble shooting Tips

12.1 Concordance

Compression therapy is the cornerstone of treatment for venous leg ulceration and further more there is increasing evidence that patients quality of life is improved while receiving this treatment (Moffatt, 2000). These benefits are not always seen immediately and it is vitally important that Nurses spend time explaining the importance of bandaging to heal patient’s legs and discuss expectations so that they understand the process.

Often the first few weeks can be difficult for patients and they will need a lot of encouragement and support. Pain should be addressed immediately and reassessed at every bandage change. Building a rapport and getting the patient working with you is essential. Consider developing a contract between the patient and yourself. Tracings, measurements and photos are an essential tool to monitor progress and are useful to demonstrate improvement to patients. Patient education leaflets should be used to reinforce advice.

Contact telephone numbers should be given to patients for both regular and out of hour’s services so that they can contact a practitioner for advice.

12.2 Pain

Health care professionals often overlook pain although 80% of patients do experience pain from leg ulceration (Hollingworth, 2001). It is important to remember that pain is individual and that venous and arterial ulcers can be equally painful.

Knowing and understanding a patient’s level of pain and type of pain is a vital element of leg ulcer assessment on two counts. One, it will help the practitioner in making a diagnosis; and two, even moderate levels of continuous uncontrolled pain can significantly impact on a person’s normal day–to–day activities work, rest, relationships and mental state – which in turn can delay leg ulcer healing.

Compression will improve pain over time for venous ulcers but sometimes pain levels can raise in the first few weeks, due to physiological changes in the central nervous system (Moffatt et al 2007). Analgesia should be addressed at the start of treatment. (Appendix 3). The following factors should be considered:

- Be aware of triggers that increase pain
• Remember that careful explanation is required for all procedures
• Handle the wound as little as possible and with great care
• Recognise that pain may extend some distance from the ulcer
• Recognise that cleaning, soaking and the temperature of the water may exacerbate pain
• Avoid wound exposure, which may cause pain
• Review dressing choice
• Cover the wound with cling film if waiting for the wound to be seen by a colleague
• Avoid draughts from windows or fans as these may also exacerbate pain.
• Involve the patient in the procedure—this gives them a greater sense of control and will help to reduce pain and anxiety.
• Allow patients to remove their own dressings if they wish
• Allow patients to halt or slow down procedures.
• Some patients have stated distraction through music and deep breathing helps pain reduction.
• Reassess pain and analgesia often. Regular analgesia is better than ad hoc administration.

12.3 Difficulty tolerating compression

If a patient expresses concern over tolerating compression bandages, it is worth applying the bandages as a reduced compression regime. It is essential to try and engage patients with compression by compromising. A reduced regime is better than none and often the level of compression can be increased gradually. Short stretch bandages produce low resting pressures and so may be better tolerated in some patients. Using Liners and hose kit components are also a good way of playing with the compression levels to aid concordance.

Practitioners frequently report that patients do not adhere to compression therapy because of pain, despite them having adequate arterial circulation (Moffatt 2004b) The main factors causing pain in these circumstances are due to;

• Inappropriate choice of compression bandage system
• Lack of adequate padding over boney and tendinous areas
• Failure to adapt the bandage to the limb size and shape
- Over stretching bandages at calf level causing a tourniquet effect
- Over stretching bandages below knee
- Too many or too few layers of bandage causing a lack of graduation
- Pressure damage to the skin
- Bandage slippage causing trauma
- Over stretching of bandage causing joint or muscle or joint pain
- Inability to wear shoes
- Trauma from footwear over bandaging

12.4 Managing Exudate

Patients who have heavily exuding legs may well experience exudate striking through the bandages daily or on alternate days initially, due to the compression. This should reduce in time. Patients should be reassured that the compression is working and that the leakage should reduce. Try using multilayer elastic bandages rather than short stretch as the layers provide more absorbency. Leave the bandages for as long as possible and supply the patients with large 20 x 40 cm dressing pads that can easily be wrapped around the outside of the bandage until the Nurse comes the following day. Good skin care regime is important to ensure the exudate is removed as it can act as an irritant to surrounding skin. A superabsorbent dressing could also be added short term to allow compression to stay in place longer and protect the surrounding skin. Theses dressing usually go directly on the ulcer and do not needed to be used once exudate is reduced. They should not be used as surgipads and never layered

**NB:** Strikethrough of exudate should not be left uncovered as this provides a port of entry for bacteria

You should also check that you have achieved full compression where appropriate, as this will improve reduction of exudate. Remember to measure ankle after the padding to maximise the effect. If strike through continues exclude varicose eczema as the cause before referring to a specialist nurse.

12.5 Footwear Problems

Reducing layers of bandages can ease this problem depending on the individuals’ requirements. A two layer system may be appropriate using either short stretch or elastic bandages. Hosiery kits that provide 40mmHg pressure at the ankle are available but this would only be suitable for ulcers that were minimally exuding. It is important to find an alternative rather than taking the compression off. Keraped boot is now available on drug tariff and can last over 3 months, which are ideal for bulky dressings and bandages on the foot.
12.6 Managing Varicose Eczema

It is essential to provide a good skin care regime for patients with eczematous change, due to their reduced skin barrier function. Clinically this will appear as a dry, scaly and inflamed skin, which could be broken. The regime should comprise of emollients for skin cleansing i.e. soap substitutes. Avoid using potential irritants such as soaps. The choice of emollient is dependant on the clinical appearance of the skin. For example, a thick, dry and scaly skin would benefit from a grease based emollient whereas a wet and weepy eczema would require a lighter cream based emollient. (Appendix 4 for recommended emollients)

When inflammation is present a topical steroid would be necessary. When deciding on a cream or ointment base for topical steroids, the same rationale as for emollient choice should be used. Usually a moderate potency topical steroid should be used on eczema of the lower leg. This may be increased to a potent topical steroid if short term if severe inflammation is present. Wet and weepy eczema with a lot of excoriation may benefit from a steroid with an antibacterial component short term. (Appendix 5)

If the topical regime is only being applied once weekly due to compression bandaging, it may be necessary to increase frequency of dressings to daily for one or two weeks to obtain full benefit from topical therapy. Compression bandages should be maintained but change to a more appropriate cost effective system. It is not acceptable to apply daily multilayer.

Occlusion may be used in the form of dry elasticated viscose stockinette or paste bandages to enhance the effects of the topical agents applied. Bandaging also acts as a mechanical barrier to prevent excoriation.

If response is poor after the above treatment regime has been instigated, contact dermatology specialist nurses for further advice.

12.7 Contact Sensitivities

When the lower limb is being treated for ulceration, 60% have the potential to develop contact sensitivity. If persistent inflammation is confined to a well-demarcated area and does not respond to topical steroid therapy, contact sensitivity should be suspected and a tubinet or comfifast liner can be added.

12.8 Cellulitis

Where cellulitis is present, individual assessment is required. Generally the oedema and pain associated with cellulitis can be eased with some compression. However if the cellulitis is extensive, consider reducing compression until the patient is able to tolerate existing compression regime. Close monitoring is required to ensure the cellulitis is resolving which will mean changing bandages more frequently. Advice should be sought from a Specialist Nurse or Medical Practitioner.
In those patients that suffer recurrent cellulitis, compression hosiery can often prevent recurrence. Essential skin care should be maintained. For recurrent cellulitis it would be helpful to seek specialist nurse advice. Refer to local guidelines for antibiotic treatment.

In uncomplicated cases of cellulitis (no ulceration) consider class 2 below knee compression hose for 4-6 months following acute phase, (hot swollen and pain) with emollients (Linsay & Stephens 2007).

12.9 Deep Vein Thrombosis (DVT)

If a new episode of DVT is identified leave compression off until treatment has commenced and medical advice sought. There is no consensus of when compression can be reapplied but usually 2-4 weeks after onset.

12.10 Hosiery

It is essential that hosiery is fitted well and the patients can manage either independently or with aid from relatives or carers. Fitting aids are available to help with application. It is important to follow patients up to ensure they are wearing their hosiery, as time and effort taken with this can make the difference between staying healed and a new episode of ulceration. Remember that for those patients who have difficulty either fitting or tolerating their hosiery a reduced compression is better than none. (See appendix 6)

If difficulties arise consider these options:

- Longer lengths of hosiery are available from some companies.
- Open toe hosiery may be more comfortable for some patients.
- Large arthritic knees, measure to mid thigh as this will be far more comfortable.

12.11 Bandage slippage

The rigid nature of short stretch bandages means that reduction in oedema sometimes allows bandages to slip down the leg initially and so they may need re-application.

When applying any bandage regime ensure the gradient from ankle to calf is not too steep, the calf measurement should be 10-14cm larger than the ankle. Use the orthopaedic wool to pad out the ankle and improve the gradient. Coban Layer 2 has shown good results with slippage reduction. Try to ensure the limb has a good leg shape, use as many layers 1 as needed to achieve this good shape.

12.12 Patients unable to attend clinic

If patients want to go on holiday or if they are unable to attend clinic for other reasons consider using hosiery instead of bandages if the exudate is manageable.
Flow Chart for non-healing Venous Ulcers
(No Progression in Healing)

Perform a full reassessment
Correct if possible any detected abnormality.

- Doppler ABPI. To rule out the advancement of Arterial Disease.
- Blood screening. To rule out new organic causes, such as anaemia, diabetes, hypothyroidism and low albumen levels.
- Wound bed assessment. To rule out wound infection, critical colonisation with bacteria and possible other aetiology of ulcer.
  Refer to specialist nurse if unsure.

No Abnormality detected on reassessment

Re measure ankle circumference
Has the correct bandage regime been applied for the ankle circumference and Doppler ABPI result?

Yes
No

Is the gradient of the lower leg normal?

Yes
No

Have you padded the lower leg with the wool layer to achieve a normal gradient?

Yes
No

Shape the leg with the wool layer to mimic the shape of the normal lower leg. P11

Refer to specialist nurse
13 Education, Training and Competencies

13.1 Aims of Education and Training

The aim is to ensure Nurses receive up-to-date evidence based training in order that:

- Appropriate assessment of patients with ulceration occurs
- Correct management of patients occurs that is proven and effective
- Resources are appropriately used
- Variation in practice is minimised
- Optimum health of the patient/client is maintained
- The cost of intervention is a proven effective resource

13.2 Training should cover:

- The Leg Ulcer Care Guidelines (This document)
- Pathophysiology of leg ulceration
- Leg ulcer assessment
- Introduction to the use of Doppler ultrasound for ABPI
- Normal and abnormal wound healing
- Compression Therapy – theory, management and application
- Dressing selection
- Skin care
- Health Education
- Prevention of recurrence
- Criteria for referral for Specialist assessment
- Hosiery – measuring, fitting, application

13.3 Competence in Application of Compression Bandages/hosiery

To be competent to apply compression bandaging unsupervised, candidates must have attended their Trusts Leg Ulcer management course covering the above and be assessed on core competencies of the course by a Mentor. (Appendix 8)
A mentor will be a registered Nurse who has undertaken the study days and who is currently practicing and experienced in Leg Ulcer Management.

If this is difficult in the candidates own work area, alternative mentoring must be found i.e. another work area.

13.4 Competence in Assessing patients and initiating compression therapy

To be competent in assessing patients and initiating compression therapy the candidate must first have achieved the core competencies for application of compression bandages, hosiery application and management of leg ulceration. (Appendix 8)

They should then undertake a further training course in Doppler Assessment.

The candidate will need to identify a mentor who will supervise them assessing patients until competence has been gained and they can be assessed on the core competencies for assessment of patients with leg ulceration. (Appendix 8a).

14 Development, Consultation and Ratification Processes

14.2 Development of Guidelines

These guidelines were based in part on the Avon Leg Ulcer Care Programme, issued in September 1995, version 2 Leg ulcer Guidelines (2005), and version 3 (2008)

The Leg Ulcer Guidelines were reviewed by Bristol Community Health wound care service;

Gail Powell CNS & Lead Leg ulcer service.

Val Helliar Wound care specialist Nurses

and

Linda Davies TVN North Somerset Community Partnership

Acknowledgements

Mr David Mitchell Vascular Consultant Bristol North
Appendix 1

It is intended that the assessment of leg ulceration is carried out by a Registered Nurse trained in the theory and practice of the management of leg ulceration. A detailed assessment of the patient’s general health is paramount in order to determine cause and maximise the patients potential to heal.

1. General Assessment

Age. Leg ulcers are more prevalent in the elderly and the ability to heal is decreased due to a delayed immune response to initiate healing, thinning of skin and delayed epithelialisation. There is also an increased risk of arterial involvement in the elderly.

- Weight and Height. - Malnutrition both in anorexia and obesity will affect healing
- BP / Pulse. - To detect hypertension and cardiac arrhythmias
- Capillary Blood Glucose. – To detect raised blood glucose levels.
- FBC , TFTs , U&E. - Anaemia, hypothyroidism and low albumin can delay healing
- (Rheumatoid factor does not exclude vasculitis, as there will be many false positives.)

2. Medical History

<table>
<thead>
<tr>
<th>Arterial Related</th>
<th>Venous Related</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peripheral Vascular disease</td>
<td>Varicose Veins / surgery</td>
</tr>
<tr>
<td>Arterial surgery</td>
<td>Pregnancy</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Phlebitis</td>
</tr>
<tr>
<td>Myocardial Infarction/Angina</td>
<td>Previous DVT</td>
</tr>
<tr>
<td>Stroke / Transient Ischaemic Attacks</td>
<td>Period of prolonged bed rest</td>
</tr>
<tr>
<td>Rheumatoid Arthritis</td>
<td>Trauma or orthopaedic surgery</td>
</tr>
<tr>
<td>Ulcerative Colitis</td>
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</tr>
</tbody>
</table>

3. Medication e.g.

- Warfarin Therapy.
- Steroids - Can thin skin, delay healing and can induce diabetes
- Anti inflammatory drugs - Can affect inflammatory phase of healing.
- Immunosuppressant drugs - Increased risk of infection
4. Allergies

- Medication
- Dressings
- Latex

It is important to know of any interactions to previous treatments.

5. Mobility

- Ability to mobilise / Distance
- Use of aids
- Abnormal walking gait

- Ability to use foot and calf pump.

- Sitting for long periods of time with legs dependant induces oedema and inability to use foot and calf pump contributes to venous hypertension.

6. Clinical Examination & Investigation

Both legs should be examined at the initial assessment.

Examination should note:

- Colour – staining / erythema / cellulitis
- Temperature of legs
- Condition of surrounding skin – eczema / maceration from exudate
- Oedema? Cardiac failure / Immobility
- Rash vasculitic

<table>
<thead>
<tr>
<th>Venous Disease</th>
<th>Arterial Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oedema</td>
<td>Shiny taut skin</td>
</tr>
<tr>
<td>Eczema</td>
<td>Dependent rubor</td>
</tr>
<tr>
<td>Ankle flare</td>
<td>Pale or blue feet</td>
</tr>
<tr>
<td>Lipodermatosclerosis</td>
<td>Gangrenous toes</td>
</tr>
<tr>
<td>Varicose veins</td>
<td>Cold legs / feet</td>
</tr>
<tr>
<td>Atrophie blanche</td>
<td>Punched out ulcers</td>
</tr>
<tr>
<td>Usually shallow</td>
<td>Poorly perfused wound bed</td>
</tr>
<tr>
<td>Usually gaiter area</td>
<td></td>
</tr>
</tbody>
</table>
It should be noted how the ulcer occurred and its site and duration. Venous ulcers tend to deteriorate slowly. The longer an ulcer is present, the harder it is to heal due to chronic changes that occur in the wound bed and the exudate.

**Site** – It is important to record the site accurately. Venous ulcers are common in the gaiter area, whereas arterial and diabetic ulcers are more commonly present on the foot. Small patchy painful ulcers are often indicative of vasculitis. Atypical distribution of ulcers or ulcers with abnormal appearance should be referred to either a General Practitioner or Dermatologist. Biopsy may be indicated.

**Condition of ulcer bed** – this should be assessed for the presence of slough, necrosis or granulation and wound care products used appropriately to prepare the ulcer bed to heal using the local Trusts Formulary. A simple non-adherent dressing is recommended under compression for venous ulcers.

**Exudate** – note the colour, consistency and amount of exudate produced. This may give an indication of bacterial burden if purulent, malodorous or excessive.

**Measurement** – The ulcer should be traced or measured and/or photographed using acetate, grid camera or camera using a tape measure in the photo. Digital photos can be printed and stored in the patients’ notes but they should not be stored on computers.

7. **Nutritional Status**
   - Appetite.
   - Dietary intake
   - Special dietary requirements
   - Malnourishment
   - Obesity
   - A person with a wound needs 10 – 20% more energy than a healthy person at rest. A balanced diet including Carbohydrate, protein, Vitamins A and C, zinc and iron is essential.

8. **Smoking Status**
   Arterial risk factor

9. **Pain** – appendix 3
   - Type of pain and when it occurs
   - Location
   - Use pain assessment tool in pathway
   - Current analgesia
• Formulate individual management plan.

10. Psychological Status

The psychological effects of painful ulceration should not be underestimated. Depression, even of a mild degree, may be exacerbated by pain and social isolation. The patient’s quality of life will be adversely affected these issues. This may make it difficult for the patient to comply with treatment. Strategies to help to break the cycle of poor concordance in non-healing ulcers may heal some that appear resistant to treatment. Kulik and Mahler (1993) claim:

Well supported patients are more likely to comply with treatments…emotional support reduces emotional distress which can itself impair treatment and recovery.

11. Patients Understanding of the Ulcer

• Patients’ understanding and involvement in their treatment is essential.

• Education leaflets are useful to reinforce.

• Consider use of contract between nurses and patient to enhance concordance.

• How is it affecting their quality of life; what can be realistically achieved?

12. Social Assessment

• Personal hygiene

• Family support

• Employment; prolonged standing or sitting.

• Accommodation, heating, living standards

• Financial concerns regarding prescriptions etc.
Appendix 1a

A Quick assessment guide for managing Venous Leg Ulcers short term

Quick Assessment **must** include

General Assessment from leg ulcer pathway – part 2
- Family history (CHD / Diabetes may be significant)
- Smoking history
- Past medical history
- Blood pressure

**Age – Arterial risk increases with age**
- <50 years unlikely to have significant arterial disease
- >80 years it is highly likely that there will be an element of arterial

- No arterial risk factors or other aetiology suspected
- < 2 arterial risk factors and no other suspected aetiology
- > 2 arterial risk factors

- **Check ankle circumference**
- **Fit up to 20mmhg compression until full assessment**
- **Take blood ready for full assessment**

**Date given for Full assessment**

Alter compression levels as appropriate

Full Assessment before applying any compression

This quick assessment guide has been designed to be used as a first line option, when as a practitioner; you know that compression applied as soon as possible will promote effective wound healing.
IT IS NOT DESIGNED TO TAKE THE PLACE OF THE FULL LEG ULCER ASSESSMENT PATHWAY AND A FULL ASSESSMENT SHOULD BE UNDERTAKEN WITHIN TWO WEEKS.

If a full assessment cannot be done within this time frame a quick assessment guide should not be considered.

When using these guidelines if you are unsure of your findings or the safest way to proceed please exercise caution and contact the leg ulcer specialist nurse or any of the specialist nurses.

The quick assessment guide must include:

- Part 2 of the leg ulcer care pathway form (General patient assessment) – This must be completed. These are actual arterial risk factors and must not be ignored. The arterial signs and symptoms need careful consideration.

- Age – It is generally considered that any person under the age of 50 years old it is unlikely to have developed significant arterial disease. It is likely that someone over the age of 80 years will have developed some element of arterial disease. Therefore you need to consider age as a potential risk factor. The higher the age the greater the arterial risk.

- Family history – If someone has a strong family history of coronary heart disease or diabetes again you need to consider this as a potential risk factor.

- Smoking – If they are a smoker this is a risk factor and with age the risk of arterial disease is increased. If they have quit, being a past smoker however long ago still needs to be considered.

- Past medical history – anything of significance that might lead you the practitioner to consider this ulcer may have other aetiology. If so do not apply any compression.

- Blood pressure – If this is raised it could be significant. Monitor further and consider when assessing the risk factors.

If you have the resource, skill and opportunity it is worth using the Doppler machine to listen to the foot pulses. If you consider they are monophasic, do not use these guidelines but undertake a full assessment before applying compression. This does not replace doing a full ABPI assessment but may be a helpful tool as part of your quick assessment.
Appendix 1b

**Flow Chart for Guide to Fitting Compression Hosiery**

When using these guidelines if you are unsure of your findings or the safest way to proceed, please be cautious and contact the leg ulcer specialist nurse or any of the named nurses with a specialist interest for advice and support. These you will find named in the appendix.

The assessment guide **must** include:

- **Part 2 of the leg ulcer care pathway form (General patient assessment)** – This must be completed. These are actual arterial risk factors and must not be ignored. The arterial signs and symptoms need careful consideration.

- **Age** – It is generally considered that any person under the age of 50 years old is not likely to have developed significant arterial disease. It is likely that someone over the age of 80 years will have developed some element of arterial disease. Therefore age is an increasing arterial risk factor and needs to be considered with other arterial risk factors.

- **Family history** – If someone has a strong family history of coronary heart disease or diabetes again you need to consider this as a potential risk factor.

- **Smoking** – If they are a smoker this is a risk factor and with age the risk of arterial disease is increased. If they have quit, being a past smoker however long ago still needs to be considered.

- **Past medical history** – anything of significance that might lead you the practitioner to consider this ulcer may have other aetiology. If so do not apply any compression.

- **Blood pressure** – If this is raised it could be significant. Monitor further and consider when assessing the risk factors.

If you have the resource, skill and opportunity it is worth using the Doppler machine to listen to the foot pulses. If you consider they are monophasic, do not use these guidelines but undertake a full assessment before applying compression. This does not replace doing a full ABPI assessment but may be a helpful tool to use as part of your assessment.
Assessment must include:

- General Assessment from leg ulcer pathway – Part 2
- Age – Arterial risk increases with age
- Family history (CHD / Diabetes may be significant)
- Smoking history
- Past medical history

No arterial risk factors

<50 years

Fit up to 24 mmHg compression. Class 1 RAL. Class 1 or 2 British hosiery

2 or less arterial risk factors

<50 years

Fit up to 24 mmHg compression with close monitoring Class 1 RAL. Class 1 or 2 British hosiery

More than 2 arterial risk factors

>50 years

Fit up to 21 mmHg compression hosiery until full assessment before applying

80 years and above will require close monitoring

Date given for full assessment using leg ulcer care pathway within 2 weeks

Alter compression levels as appropriate

Educate
- Ensure good fit of hosiery
- Any aids required to assist with concordance?
- Arrange for re issue – 6 monthly
- Importance of getting assistance if concerned
- Must know if worried to remove / cut off hosiery and seek help at the earliest opportunity

No follow up unless you identify reasons for

No arterial risk factors

>50 years

Fit up to 21 mmHg compression hosiery until full assessment before applying

>50 years

Fit up to 24 mmHg compression. Class 1 RAL. Class 1 or 2 British hosiery

Educate
- Ensure good fit of hosiery
- Any aids required to help concordance?
- Arrange for re issue
- Importance of getting assistance if concerned
- Must know if worried to remove / cut off hosiery and seek help at the earliest opportunity

Review annually
Appendix 2

Doppler assessment

Procedure:

a. The patient should lie as flat as possible and be allowed to relax for at least 15 minutes before any Doppler readings are taken to allow the blood pressure to equalise throughout the body. Any deviation from the patient lying flat should be recorded. The procedure can be explained and the patient history can be taken during this time.

b. Using the appropriate Doppler probe instead of a stethoscope, record the brachial systolic pressure in both arms.

c. Cover the ulcer with cling film and place the sphygmomanometer cuff around the leg just above the ankle. The sphygmomanometer bladder must circle two thirds of the leg. If it does not a larger / smaller cuff will be needed.

d. Identify the Dorsalis pedis, anterior Tibial and Posterior tibial pulses. Using plenty of ultrasound gel, locate the pulses with the Doppler probe and record the pressures on two of the pulses on each limb, even if only one limb is ulcerated.

e. Note the quality of the pulses and what type of signal is heard; i.e. triphasic, biphasic, monophasic or muffled sounds. If all pulses are equal sound & strength, pump up on the PTA and one other pulse.

f. Calculate the Ankle:Brachial Pressure Index (ABPI), by dividing the highest ankle pressure for that limb by the higher of the two brachial pressures.

g. For the patient with diabetes ABPI needs to be interpreted with caution due to the risk of micro vascular and macro vascular circulation problems.

Table 4: Interpretation of ABPI

<table>
<thead>
<tr>
<th>ABPI</th>
<th>Signal</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;1</td>
<td>Triphasic</td>
<td>Normal</td>
</tr>
<tr>
<td>&gt; 0.8</td>
<td>Triphasic/Biphasic</td>
<td>No significant arterial disease. Considered safe to apply compression therapy</td>
</tr>
<tr>
<td>&gt; 0.8</td>
<td>Monophasic</td>
<td>Incompressible arteries. In this instance ABPI will not give an accurate indication of arterial flow to the foot (false high reading).</td>
</tr>
<tr>
<td>0.6 – 0.8</td>
<td>Mono/biphasic (unlikely to hear triphasic)</td>
<td>Mild to moderate arterial disease. Consider reduced compression and monitor closely.</td>
</tr>
<tr>
<td>0.4 – 0.6</td>
<td>Mono/biphasic (unlikely to hear triphasic)</td>
<td>Moderate to severe arterial disease.</td>
</tr>
<tr>
<td>&lt;0.4</td>
<td>Monophasic (unlikely to hear bi/triphasic)</td>
<td>Severe arterial disease. Symptoms i.e. rest pain may warrant urgent vascular referral</td>
</tr>
</tbody>
</table>
2) What to do about the ABPI?

The ABPI cannot be taken alone as an indicator of the safety of applying compression bandaging. It is important to remember that other factors are involved as identified in the holistic assessment.

Oedema and/or induration in the leg can give a false high reading because greater pressure is required to compress the artery under the accumulation of fluid in the limb.

The ABPI may be within normal indices in some patients with a history of arterial disease e.g. history of intermittent claudication pain. These patients should be referred for a stress or exercise tolerance test to detect arterial insufficiency.

In patients with disease affecting their small blood vessels such as rheumatoid arthritis and diabetes, the large vessels may be patent giving a good ABPI, but there may be severely compromised blood flow in the micro-vessels.

Patients with calcified arteries, common in diabetes, the blood vessels will be very difficult to compress with the sphygmomanometer cuff, and therefore, artificially high ABPI's will be obtained. TBPI (toe pressures) may be indicated, which will give a more accurate result in some conditions.

If there is any doubt as to the significance of the Doppler readings consult a specialist practitioner.

3) Frequency of Doppler Assessments

Patients who are healing well under compression will be appropriate for 6–12 monthly reassessments

All patients with an open ulcer in compression bandages should have their ABPI monitored; the frequency of this should be individually assessed.

Patients whose ulcers are static should be reassessed according to LU carepathway.

Patients whose ulcers are deteriorating should have an urgent reassessment in response to this.

Patients that have an elevated risk of their arterial circulation becoming compromised should have a reassessment performed 3 – 6 monthly.

Patients who develop a new ulceration or pain also need to be urgently Doppler assessment.

The patients that may fall into this group include:

- Diabetics
- Abnormal ABPI on initial assessment
- Mixed Aetiology
- Significant systolic difference between pedal pulses
Once patients have healed and are fitted with compression hosiery they should be asked to return for reassessment if they have any discomfort or deterioration in the general condition of their legs. Advice about signs and symptoms to look out for should be given. If patients have significant risk factors, they should be monitored.

**Appendix 3**

**Pain**

Pain can have a detrimental effect on a person’s health and quality of life as a result of the physical, psychological and social consequences of suffering pain.

The development of pain may indicate a number of possible causes including a change in aetiology of the ulcer, as is the case in deteriorating peripheral arterial occlusive disease. It may also indicate that an infection is developing or that treatment is not suiting the patient. In some cases it may signal that the treatment is being poorly or inappropriately applied, such as over tight compression bandages.

Assessment of pain is an important aspect of nursing documentation (Nash et al. 1999), found pain management is the key function of health care professionals and as nurses spend more time with patients than any other healthcare professional group have a major role to play in its management.

A review of the literature asserts that despite pain being the main feature of leg ulceration, venous and arterial, there is evidence to suggest, that it is an aspect that is ignored by healthcare professionals. (Husband, 2001; Douglas, 2001).

Varying patterns of pain and discomfort and experienced by patients with venous disease. Patients report aching heavy legs, particularly in the calf region, which is often relieved when the patient can lie or sit with their limb elevated and is worse during the summer. The symptoms are probably directly linked to the development of venous hypertension (high pressure in the superficial veins and micro circulation) which is relieved on high elevation.

Casey (1998) suggests that pain assessments should be carried out at every treatment of the wound. A pain scale should be used when assessing patients’ pain, (National Pain Society)

Hofman (1997) found that patients are usually pleased that their pain is understood and is being taken more seriously. Concordance is encouraged and patients more likely to tolerate treatments such as compression bandaging.

Pain assessments can help to demonstrate effective treatment. Normally as an ulcer heals, so the pain gets less, therefore pain charts alongside tracings and wound documentation can show progress and deterioration.

**Pharmacological therapy**

The World Health Organisation has created guidelines to assist clinicians to use a variety of drugs available for the pharmacological management of pain. A stepwise method of symptomatic therapy, known as the ‘analgesic ladder’ WHO (1996).

For mild to moderate pain, regular oral Paracetamol are appropriate.
If this fails to bring relief, they should be replaced by the regular administration of codydramol, cocodamol.

If this fails to bring relief, they should be replaced by the regular administration of a drug from the next ‘rung’ a weak opioid, i.e. codeine, dihydrocodeine (special care in elderly).

If pain relief is still not achieved with the maximum recommended dose, then movement upwards towards the next ‘strong analgesic rung’ opioids.

Non-opioid analgesics (non-steroidal anti-inflammatory drugs) are effective in treating mild to moderate pain when an inflammatory component is present, i.e. Ibuprofen, Diclofenac Sodium, Naproxen.

Adjuvant analgesics may be effective without concurrent analgesics i.e. anticonvulsants e.g. Carbamazepine, Gabapentin and Amitriptyline (Tricyclic drug) are used for the treatment of burning, stabbing pains Gabapentin is a class of drug called anticonvulsants and relieves the pain by changing the way the body senses pain. Amitriptyline works by increasing the amounts of natural substances in the brain and changes the way pain is felt. Amitriptyline should be introduced in small doses and due to their sedative action, be taken at night. Doses in excess of 30mgs may be required and it may take several weeks before the correct dose is achieved.

Nurses and doctors should examine their goals for pain relief, and work with the patients to achieve appropriate outcomes of pain management. Pain can be multidimensional and analgesia is just one aspect of management. Patients should be taught how to manage their pain effectively. Analgesia should be used regularly rather than waiting until pain has developed. Practical strategies such as written instructions and dosette boxes can significantly improve pain therapies.

A comprehensive approach to pain control advocated by the WHO (1996) should be adhered to, working, as a team is crucial for optimum care.
## Emollients

Emollients- this includes some of the commonly used emollients, however there are others available on prescription and/or over the counter.

### Criteria for choice

**Avoid soap, bubble bath and shower gels which strip skin of natural oils**

Emollients soothe, smooth and hydrate the skin and are indicated for all dry or scaling skin conditions. The affects are short lived and they need to be re-applied frequently.

Emollients should be applied in the direction of hair growth to prevent folliculitis. Severity of condition, patient preference, site of application and time available will influence the choice of emollient.

**Bath Additives:** Hydration can be improved by soaking in the bath for 10-20 minutes.

Warning: They can make people and surfaces slippery

<table>
<thead>
<tr>
<th>Emollients- listed from bath oils and light creams to greasy ointments.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bath Additives:</td>
</tr>
<tr>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spray:</th>
<th>Emollin</th>
</tr>
</thead>
<tbody>
<tr>
<td>useful for hard to reach areas, very light, care is needed with application as this can be sprayed onto surfaces as well as skin.</td>
<td>Dermol 500**</td>
</tr>
<tr>
<td></td>
<td>Aveeno lotion</td>
</tr>
<tr>
<td></td>
<td>QV Lotion</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lotions:</th>
<th>Double base Gel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Useful for application to large hair bearing areas or treatment of exudative areas.</td>
<td>Dermol 500**</td>
</tr>
<tr>
<td>Have a cooling effect, can sting when used over broken areas of skin if in alcohol basis preparation.</td>
<td>Aveeno lotion</td>
</tr>
<tr>
<td></td>
<td>QV Lotion</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gels:</th>
<th>Double base Gel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have high water content particularly suitable for application to scalp and face. Quick and easy to apply and absorbs well. Does not have the tacky messy feeling as with</td>
<td></td>
</tr>
<tr>
<td><strong>Grease based products.</strong></td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
<td></td>
</tr>
</tbody>
</table>

**Creams:** Generally well absorbed into the skin more cosmetically acceptable than ointments because less greasy and easier to apply, may contain anti-bacterials or fungicides. Can cause sensitivity reactions due to the preservatives.

<table>
<thead>
<tr>
<th><strong>Creams</strong></th>
<th><strong>Ointments</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cetraban cream*</td>
<td>Unguentum M*</td>
</tr>
<tr>
<td>Hydromol cream</td>
<td>Hydromol Ointment *</td>
</tr>
<tr>
<td>Epaderm cream*</td>
<td>Epaderm Ointment*</td>
</tr>
<tr>
<td>Dermol cream**</td>
<td>Emulsifying Ointment</td>
</tr>
<tr>
<td>QV cream</td>
<td>White soft paraffin liquid paraffin 50/50</td>
</tr>
<tr>
<td>Aveeno cream</td>
<td></td>
</tr>
</tbody>
</table>

**Ointments:** Greasy and more occlusive than creams, ideal for chronic dry skin conditions. Encourages hydration often have mild ant inflammatory effect and lock in the skins natural moisture and acts as a barrier to irritants.

Can mark clothing and fabrics.

Very effective but sometimes difficult for patients to use.

May be cosmetically unacceptable to some patients. Good under bandaging when left for a week.

**Aqueous cream:** Should only be used as a soap substitute not as leave on emollient as can cause irritation (Cork et al 2003).

The * denotes emollients suitable for use as soap substitute. This can also be used as a moisturizer unless a lighter or greasier moisturiser is preferred. As a general rule the drier the skin the greasier the moisturiser.

**Emollients with specific properties**

Antibacterial- **Dermol range useful for infected/excoriated eczema and MRSA. Should not be used as long term emollient therapy.**

Containing Urea a hydrating agent, useful for scaly conditions. May cause stinging. Aquadrate, BSN acute 5% & 10% Urea, Calmurid or Eucerin. Urea enhances absorption of topical steroids.

Balneum Plus contains urea and Lauramacrogols that have a local antipruritic action.
References


Best Practice In Emollient Therapy A Statement for Health care Professionals

Dermatological Nursing 2007


Looking after elderly skin- a simple guide, British Association of Dermatologists Patient information sheet, Prepared by the Senior Skin Group, October 2006
Appendix 5
Steroid Ladder

1 Potent
Dermovate
Dermovate NN
Betnovate
Betnovate C
Synalar Betnovate N
Diprosalic
Elocon
Locoid
Locoid C
Cutivate
Diprosone
Fucibet

2 Moderate
Betnovate RD
Eumovate
Trimovate
Calmurid HC
Haelan
Synalar 1:4

3 Mild
Hydrocortisone
0.5%, 1% & 2.5%
Fucidin H
Nystaform HC
Canestan HC
Synalar 1:10
Alphosyl HC
Daktacort
Timodene
Appendix 6 Compression Hosiery

Compression Hosiery

The use of hosiery in the management of leg ulceration has expanded in recent years.

The three areas in which it is predominantly used are:

- Healing
- Secondary prevention - Maintaining a healed state
- Primary prevention

Healing

There are now hosiery systems available that can be used instead of compression bandages where concordance maybe an issue. These systems with a liner and below-knee sock provide approximately 40mmHg pressure at the ankle.

It is also possible to use 'off-the-shelf' or 'made-to-measure' hosiery to achieve a healed state. It is important to be aware of the levels of compression that are being applied if using hosiery. Using hosiery, while effective, tends to have a slower healing rate. It is not always suitable for heavily exudating and/or large leg ulcers.

<table>
<thead>
<tr>
<th>Compression rate /Classification</th>
<th>Manufacturer</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>40mmhg RAL (Stiffer fabric)</td>
<td>Mediven leg ulcer kit 20:20 (Medi)</td>
<td>First choice when considering using hosiery kit due to fabric stiffness</td>
</tr>
<tr>
<td>Ankle 18cm – 32cm</td>
<td>Liner constant 20mmhg</td>
<td>Beige colour only</td>
</tr>
<tr>
<td>Calf 28cm – 52cm</td>
<td>Sock 20mmhg while active.</td>
<td>7 sizes available inc and regular and extra wide calf size.</td>
</tr>
<tr>
<td>Petite and regular length</td>
<td>Supplied with 2 liners and 1 sock.</td>
<td>Will need renewing 6 monthly</td>
</tr>
<tr>
<td></td>
<td>Liner sock available separately (2 per box)</td>
<td>Needs to be fitted correctly around heel to ensure correct compression rates</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.mediuk.co.uk/compression/lower-limb">www.mediuk.co.uk/compression/lower-limb</a></td>
<td></td>
</tr>
<tr>
<td>Compression Range</td>
<td>Product Details</td>
<td>Notes</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------</td>
<td>-------</td>
</tr>
<tr>
<td>40mmhg British (Softer fabric)</td>
<td><strong>Activa Leg ulcer hosiery kit</strong>&lt;br&gt; Linner 10mmhg&lt;br&gt; Sock average 30mmhg&lt;br&gt; Supplied 2 liners and 1 sock&lt;br&gt; Liners available separately (3 per box)&lt;br&gt; <a href="http://www.activahealthcare.co.uk/compression-hosiery">www.activahealthcare.co.uk/compression-hosiery</a></td>
<td>Available in black or sand&lt;br&gt; 5 sizes available&lt;br&gt; Will need renewing at 100 washes or approx 3 months</td>
</tr>
<tr>
<td>Ankle 19.5 – 34cm Calf 30.5 – 49cm</td>
<td><strong>Carolon Multi – layer compression systems (H&amp;R Healthcare)</strong>&lt;br&gt; 2 different kit sizes available&lt;br&gt; Linner sock 16 – 18mmhg&lt;br&gt; Sock mmhg varies&lt;br&gt; Supplied 2 liners and 1 sock&lt;br&gt; <a href="http://www.hrhealthcare.co.uk/carolon-multi-layer">www.hrhealthcare.co.uk/carolon-multi-layer</a></td>
<td>Available in black or beige&lt;br&gt; Short and regular length&lt;br&gt; Will last for 60 – 90 washes&lt;br&gt; 6 sizes available&lt;br&gt; Inc ankle circ 33.5 and calf 66cm</td>
</tr>
<tr>
<td>30 – 35mmhg&lt;br&gt; 35- 40mmhg USA (Softer fabric)</td>
<td><strong>Jobst Ulcercare (BSN)</strong>&lt;br&gt; Liner and sock compression rates individually not available&lt;br&gt; Liners available separately (3 per box)</td>
<td>Available in black and beige&lt;br&gt; 7 sizes&lt;br&gt; Available with or without zipper – needs to be opposite side to ulceration&lt;br&gt; Not recommended to wear over sock during bed rest&lt;br&gt; Custom made available – discuss with wound care service before ordering.</td>
</tr>
<tr>
<td>Ankle 18 – 35.5cm Calf 25.5 – 66cm</td>
<td><strong>Jobst Ulcercare (BSN)</strong>&lt;br&gt; Liner and sock compression rates individually not available&lt;br&gt; Liners available separately (3 per box)</td>
<td>Available in black and beige&lt;br&gt; 7 sizes&lt;br&gt; Available with or without zipper – needs to be opposite side to ulceration&lt;br&gt; Not recommended to wear over sock during bed rest&lt;br&gt; Custom made available – discuss with wound care service before ordering.</td>
</tr>
<tr>
<td>Ankle 18cm – 39cm Calf 29cm – 60cm</td>
<td><strong>Jobst Ulcercare (BSN)</strong>&lt;br&gt; Liner and sock compression rates individually not available&lt;br&gt; Liners available separately (3 per box)</td>
<td>Available in black and beige&lt;br&gt; 7 sizes&lt;br&gt; Available with or without zipper – needs to be opposite side to ulceration&lt;br&gt; Not recommended to wear over sock during bed rest&lt;br&gt; Custom made available – discuss with wound care service before ordering.</td>
</tr>
</tbody>
</table>
Secondary prevention - Maintaining a healed state

Once a leg ulcer has healed, the patient needs lifetime compression therapy due to the underlying venous pathology.

Recurrence rate varies from 33% to 67%.

- 67% will experience 2 or more episodes of reulceration
- 21% will experience more than 6 episodes of reulceration

Ulcers which are greater than 10cm in size, the chronicity of an ulcer, a history of deep vein thrombosis and clotting disorders, along with the unsuitability or non concordance with hosiery are all risk factors that increase the chance of recurrence.

The patients should be fitted hosiery with compression levels at 25 – 33mmhg at the ankle. RAL / European standard class 2 or British standard class 3. (RCN 2006)

If this is not possible the patient needs to be fitted with the highest level of compression they will tolerate but there will be an increased risk of reulceration. (RCN 2006)

A lower compression level will need to be used if you have healed the patient in reduced compression. Close monitoring and caution if fitting hose to mixed aetiology/arterial ulcers.

<table>
<thead>
<tr>
<th>Mmhg at ankle</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAL /European standard</td>
<td>Class 1</td>
<td>Class 2</td>
<td>Class 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>British standard</td>
<td>Class 1</td>
<td>Class 2</td>
<td>Class 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ideal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adapted from medi UK Ltd July 2012

Patients should not be fitted with compression hosiery until the skin is sufficiently robust enough to enable the stocking to be drawn over the ulcer site.
The patient or carer will require a hosiery fitting aid that suits them, due to fabric stiffness and level of compression in the hosiery. See appendix A.

Education for patients regarding the need for life long support of the veins in their legs is paramount and should be emphasised from the point of assessment.

**Recommended hosiery**

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Classification</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medi</td>
<td>RAL (European) standard – Mediven range inc socks for men</td>
<td>First choice when considering using hosiery due to fabric stiffness</td>
</tr>
<tr>
<td></td>
<td>7 sizes available for both regular and extra wide calf circumference</td>
<td>Will need renewing 6 monthly</td>
</tr>
<tr>
<td></td>
<td>Thigh circumference also in extra wide</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Petite and regular lengths</td>
<td>More information <a href="http://www.mediuk.co.uk/compression/lower-limb">www.mediuk.co.uk/compression/lower-limb</a></td>
</tr>
<tr>
<td></td>
<td>Foot length standard all sizes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>British standard – Duomed (stiffer fabric than normal British std hose)</td>
<td></td>
</tr>
<tr>
<td>Activa</td>
<td>European standard – Actilymph range</td>
<td>Activa is a finer knit hosiery that will pull into creases and deformities</td>
</tr>
<tr>
<td></td>
<td>5 sizes available – size ranges overlap for calf and thigh measurements</td>
<td>Actilymph is a stiffer knit fabric.</td>
</tr>
<tr>
<td></td>
<td>Petite and regular lengths</td>
<td></td>
</tr>
<tr>
<td>Brand</td>
<td>Description</td>
<td>Details</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>British standard – Activa range</td>
<td>inc unisex socks for men</td>
<td>Will need renewing at 100 washes or approx 3 months</td>
</tr>
<tr>
<td></td>
<td>5 sizes available</td>
<td>More information</td>
</tr>
<tr>
<td></td>
<td>One length</td>
<td><a href="http://www.activahealthcare.co.uk/compression-hosiery">www.activahealthcare.co.uk/compression-hosiery</a></td>
</tr>
<tr>
<td></td>
<td>Foot length variable</td>
<td></td>
</tr>
<tr>
<td>Bauerfeind</td>
<td>European standard -Venotrain range</td>
<td>Stiff fabric</td>
</tr>
<tr>
<td></td>
<td>regular and extra wide calf &amp; thigh circumference</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Short or long lengths</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Foot length variable</td>
<td></td>
</tr>
<tr>
<td>Medi – Mondi</td>
<td>Made to Measure</td>
<td>For standard shape and length legs the above listed ready - made hose will suit</td>
</tr>
<tr>
<td>BSN – Elvarex</td>
<td>Available as British or European standard</td>
<td>If you need to use made to measure – use the correct form of the manufacturer, they are not interchangeable. Available from company web sites</td>
</tr>
<tr>
<td>Activa – Actilymph</td>
<td>MTM</td>
<td>There can be a long manufacturing time. Speak to the wound care service or the rep for advice.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BSN -www.bsnmedical.co.uk - other web addresses above</td>
</tr>
</tbody>
</table>
Fitting Hosiery

Hosiery should be fitted by a practitioner who can demonstrate a knowledge and understanding of compression hosiery and is competently trained in hosiery application.

It is essential that it fits well.

Ideally hosiery should be removed at night and reapplied first thing in the morning. Advocating good skin care before reapplying is essential, along with checking the feet and legs for any damage. If this is not possible an extended wear time of up to 7 days is possible.

Patient dexterity, their cognitive ability and agility need to be considered when fitting hosiery. It may be that the patient needs supervision to apply their hosiery or it may need to be fitted by a carer. The use of various aids can also be a valuable tool for application, fitting and removal (see table in Aids section)

Measurement

Ideally measurements should be taken in the morning, following removal of compression bandages or after keeping the limb suitably elevated to reduce oedema.

Initial measurements need to be on bare legs and include:

- Ankle – the narrowest point just above the malleolus (approx 5cm). If there are ankle deformities the narrowest point may be too high up the leg to be accurate
- Calf – the widest point
- Foot length
- Thigh – the widest part or 5 cm below the groin, if stockings are required, rather than below the knee
- Below the knee width – 2 fingers below where the back of the knee creases (required for some kits)

If the patient does not fit into an ‘off-the-shelf’ range then ‘made-to-measure’ needs to be considered. It is important to use the correct measuring guide for the company you have chosen to ensure the correct fit.
Fabric stiffness

A stiffer knit fabric is preferable as it is less likely to cut into or cause a tourniquet effect to the limb. (Lymphoedema framework 2006).

British Standard items tend to be knitted using thinner yarn that produces a finer finish. Cosmetically may be more suitable but are more likely to cut in or tourniquet.

RAL / European standard items tend to be knitted with a thicker yarn that gives a stiffer and thicker finish but are less likely to cut in or tourniquet.

Style

It is important to work with the patient to find what will suit their lifestyle, be comfortable and aid concordance.

Open or closed toed - this can be the patients' choice providing there is not a clinical need for open toed.

Colour - again this should be the patients' choice. It is important to remember that the darker the colour of the hose the increased chance of skin sensitivities developing due to the dyeing process.

Below knee hosiery is usually suitable.

Thigh length hosiery is required if the patient has varicosities or oedema around the knee joint and / or the thigh area. Patients with arthritis may find thigh length more comfortable.

Most manufacturers have a range of compression socks for men - these are designed for the male foot, ankle and leg shape.

If the unaffected leg does not have significant arterial disease and the ABPI supports this, it is best to fit hosiery to both legs. If the unaffected leg is fitted with hosiery at the start of using compression bandages many of the problems can be overcome prior to the affected leg being suitable for hosiery when it is healed.

It is important that hosiery is renewed regularly to maintain the correct compression rates. Skin care products and regular washing will cause the hosiery to deteriorate. Generally one pair of hosiery will last between 3 - 6 months. The overall performance of hosiery will be affected if they have tears, ladders or holes. RAL / European lasts longer than British standard.
All wrinkles need to be removed and this can be done by smoothing upwards using a pair of household rubber gloves.

Hosiery must never be folded over at the top band.

Hosiery should be washed in non-biological detergents and should not be dried over direct heat.

**Prescription information**

Do not order hose generically on prescription. Ensure the prescription has Manufacturer and range, Class and Standard, Size, Length, Open or Closed toes, Colour and any aid required.

**Education**

This needs to start at the point of the assessment and should include:-

- The importance of skincare
- Importance of a good fit
- Care of hosiery
- Renewal of hosiery
- Importance of concordance with hosiery
- Early referral with possible skin break downs
- Avoidance of self treatments from over the counter
- Maintaining mobility and exercise
- Footwear
- Diet

**Aids available to aid application, removal or wearing**

Patients who are having hosiery applied by home care services need to have an applicator aid prescribed when hosiery are ordered on prescription.

<table>
<thead>
<tr>
<th>Aid</th>
<th>Type / manufacturer</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bath / Shower</td>
<td>Limbo</td>
<td>FP10</td>
</tr>
<tr>
<td></td>
<td>Slim build</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Slim build / short leg</td>
<td>Short leg suits 5’2” – 5’4” height</td>
</tr>
<tr>
<td></td>
<td>Normal build</td>
<td>normal leg 5’5” – 6’ height</td>
</tr>
<tr>
<td></td>
<td>Normal build / short leg</td>
<td>Slim build 35 – 39cm leg circ</td>
</tr>
<tr>
<td></td>
<td>Large build</td>
<td>Normal build 39 – 54cm leg circ</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Large 52cm – 6’</td>
</tr>
</tbody>
</table>
| Large build / short leg | Adult short leg | Adult short wide leg (leg circ >16"

- Seal tight
  - FP10
  - Heel to seal length 23” for both

Applicators

- Open Toes
  - Chinese slippers
  - Supermarket carrier bag
  - Easy slide - Credenhill
  - Available with some hose
  - FP10

- Closed toes & Open toes
  - Actiglide
  - Medi 2 in 1
  - Venotrain glider
  - FP10
  - FP10
  - Non prescription

- Closed toe
  - Easy slide Caran - Credenhill
  - Non prescription

- General
  - Household rubber gloves

- Removal Aids
  - Easy off – Medi
  - Medi 2 in 1
  - Non prescription
  - FP10

- Frames
  - Sockade - urgo
  - Valet - Medi
  - FP10
  - Non prescription – various sizes

- Avoid slipage
  - Suspenders
  - Silicone bands
  - Glue
  - Waist Attachments
  - FP10
  - Can be added to some hose
  - Non FP10
  - Available with some thigh
**Primary prevention**

This might present opportunistically and prevention is always a better option than cure.

GP’s will sometimes request fitting hosiery rather than using diuretics for oedema.

It may be that this group of patients can be managed in class 1 British or RAL standard, but it will depend on the level of oedema.

Use the ‘Guideline to fitting hosiery’ flow chart Appendix 1b when considering fitting compression hosiery, especially as a preventative measure.
Appendix 7 Competencies

Roles and Responsibilities for Students undertaking practice competencies: Compression Bandaging/Doppler assessment & Hose management.

Leg Ulcer Management

Core Competencies for Venous leg Ulcer management

These core competencies should be used in conjunction with the BCH CIC Leg ulcer programme.

To be competent you must have attended the two and a Half day leg ulcer study day and fulfilled the criteria for assessment with your mentor. It is expected that the competencies should be completed within a six month frame work or earlier. During this period you are expected to practice with a mentor and be supported until you are confident and competent in your practice ready for assessment.

A mentor is someone who has undertaken the study days and has been deemed competent to practice normally in your own work area. This may prove difficult for some and so an alternative mentor must be found i.e. another work area.

Students must carry out the adapted Dacum/AMOD Self Assessment scale at the beginning and end of the competency programme.

Competence is achieved at level 3

Advanced practitioners you would expect to see at the higher levels 4 and above

<table>
<thead>
<tr>
<th>Level</th>
<th>Associated Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Cannot perform this activity satisfactorily to participate in the clinical environment</td>
</tr>
<tr>
<td>1</td>
<td>Can perform this activity BUT not without constant supervision and some assistance.</td>
</tr>
<tr>
<td>2</td>
<td>Can perform this activity satisfactorily but requires some supervision and / or assistance</td>
</tr>
<tr>
<td>3</td>
<td>Can perform this activity without supervision and/or assistance (knows how to access resources for support)</td>
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<tr>
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</tr>
<tr>
<td>5</td>
<td>Can perform this activity satisfactorily with more than acceptable speed and quality of work and with initiative and adaptability to special problem situations</td>
</tr>
<tr>
<td>6</td>
<td>Can perform this activity with more than acceptable speed and quality, with initiative and adaptability and can lead others in performing this activity</td>
</tr>
</tbody>
</table>
Core competencies and training in the management of Venous leg Ulceration

Date candidate attended 2 day leg ulcer study days…………………………..

The candidate has been assessed and has achieved the core competencies

Assessor signature………………………………………………………………………

Print Name………………………………………………………………………………

Candidate signature……………………………………………………………………

Print Name………………………………………………………………………………

Date of assessment……………………………………………………………………

Place of work…………………………………………………………………………...
Assessment of Clinical Practice

Compression Bandaging

Meets KSF – HWB6/7

Name of Candidate: __________________________ Name of Assessor: ___________________________________

<table>
<thead>
<tr>
<th>Knowledge Base</th>
<th>Date Trained</th>
<th>Date first assessment</th>
<th>Date second assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1 Demonstrates knowledge of comprehensive assessment (I.C.P) and ABPI results</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K2 Demonstrates an awareness of Laplace’s law in clinical practice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K3 Discuss bandage system for all leg sizes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K4 Demonstrates knowledge of purpose of each layer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K5 Demonstrates knowledge of limb reshaping</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K6 Demonstrates a knowledge and purpose of each layer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K7 Discuss patient information and health promotion that should be considered when treating patients with leg ulceration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge Base</td>
<td>Date Trained</td>
<td>Date first assessment</td>
<td>Date second assessment</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------</td>
<td>--------------</td>
<td>-----------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>K8 Discuss the decision making pathways you would take to decide if you need to refer on</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance</th>
<th>Date Trained</th>
<th>Date first assessment</th>
<th>Date second assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1 Communicates with individuals and carers in a manner which encourages an open exchange of views and information whilst treating them with dignity and respect.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P2 Demonstrate the individual understands the intended assessment is fully informed and has capacity to give consent and records this accurately.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P3 Provides appropriate management to the ulcer site and surrounding skin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P4 Accurately measures the ankle circumference</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P5 Assemble correct bandage system pertaining to patient circumstances and/or aetiology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P6 Demonstrates correct padding of the leg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P7 Demonstrates accurate application of compression with each layer applied</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P8 Achieves appropriate and accurate graduated compression therapy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P9 If appropriate offers appropriate health promotion and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>educational advise to the patient and/or carer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>P 10</strong> Develops strategies for managing potential problems in negotiation with the patient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>P11</strong> Correctly documents management system used</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>P12</strong> Implements an appropriate management strategy for the patient and healthcare teams</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Assessment Criteria**

Two service user demonstrations with two different service users. One piece of written work (reflective account or case history).

Candidates Signature: _________________________________ Assessors Signature: ___________________ Date __________
Core competencies and training in Doppler Assessment in Leg Ulcer Management

Date candidate attended workshop/Study Day………………………….

The candidate has been assessed and has achieved the core competencies

Assessor signature………………………………………………………………………………

Print Name…………………………………………………………………………………………

Candidate signature………………………………………………………………………………

Print Name…………………………………………………………………………………………

Date of assessment………………………………………………………………………………

Place of work…………………………………………………………………………………………
Roles and Responsibilities

Mentors for practice competencies Doppler Ultrasound ABPI assessment

Mentors must carry out adapted Dacum / AMOD Self Assessment scale and achieve level 6.

Recommended period of student achieving competencies - 6 months

Mentors should:

- Meet initially with their students to discuss the competency documentation.
- Meet midway through the 6 month period in order to identify potential problems
- Meet at the end of the period to discuss the final assessment and results

Dacum / AMOD rating scale

Rating Scales – Level of achievement

<table>
<thead>
<tr>
<th>Level</th>
<th>Associated Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Cannot perform this activity satisfactorily to participate in the clinical environment</td>
</tr>
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</tr>
</tbody>
</table>

Competence is achieved at level 3

Advanced practitioners you would expect to see at the higher levels 4 and above
Roles and Responsibilities

Students undertaking practice competencies: Doppler Ultrasound ABPI assessment

It is the students' responsibility to work with their named mentors within 2 weeks of completing the Doppler Workshop course.

Students must carry out adapted Dacum / AMOD Self Assessment scale at the beginning and end of the competency programme.

It is expected that the competencies should be completed within a six month frame work.

You will need to complete at least two assessments prior to your final assessment.

The student may wish to negotiate time spent within the Vascular Studies department at the BRI. This is not an essential component of the competencies but may enhance future practice. It may be appropriate to arrange this once the 6 month period has passed and the student has experience of dopplering routinely.

Dacum / AMOD rating scale

Rating Scales – Level of achievement

<table>
<thead>
<tr>
<th>Level</th>
<th>Associated Statement</th>
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<tbody>
<tr>
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</tbody>
</table>

Competence is achieved at level 3

Advanced practitioners you would expect to see at the higher levels 4 and above
### Assessment of Clinical Practice

**Doppler Ankle Brachial Pressure Index**

Meets KSF – HWB6/7

Name of Candidate: __________________________ Name of Assessor: __________________________

<table>
<thead>
<tr>
<th>Knowledge Base</th>
<th>Date Trained</th>
<th>Date first assessment</th>
<th>Date second assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1 Demonstrates knowledge of comprehensive assessment (I.C.P)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K2 Knowledge of appropriate position and rest period</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K3 Demonstrate knowledge of effect of the immediate environment on the procedure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K4 Demonstrates an understanding of need to check and maintain equipment</td>
<td></td>
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<tr>
<td>K5 Demonstrates knowledge of all ABPI results and associated pathways of care</td>
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<tr>
<td>Performance</td>
<td>Date Trained</td>
<td>Date first assessment</td>
<td>Date second assessment</td>
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<tr>
<td>P1 Communicates with individuals and carers in a manner which encourages an open exchange of views and information whilst treating them with dignity and respect.</td>
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<tr>
<td>P2 Demonstrate the individual understands the intended assessment is fully informed and has capacity to give consent and records this accurately.</td>
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<tr>
<td>P3 Demonstrates an ability to take a comprehensive patient assessment</td>
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<tr>
<td>P4 Provides appropriate management to the ulcer site</td>
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<tr>
<td>P5 Assemble correct equipment with appropriate probe</td>
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<tr>
<td>P6 Selects correct gel for procedure and uses appropriately</td>
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<tr>
<td>P7 Distinguish arterial and venous blood supply</td>
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<td>P8 Distinguish normal and abnormal sounds</td>
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<td>P9 Select correct readings to calculate ABPI</td>
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<tr>
<td>P 10 Perform calculation appropriately and reaches correct answer</td>
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<tr>
<td>P11 Interpret the results and explain the significance of the findings</td>
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<tr>
<td>P12 Correctly documents the results</td>
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<tr>
<td>P13 Implements an appropriate management strategy for the patient and healthcare teams</td>
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</tbody>
</table>
Assessment Criteria

Two service user demonstrations with two different service users. One piece of written work (reflective account or case history).

Candidates Signature: ____________________________  Assessors Signature: ___________________  Date _______
Core competencies and training in Compression Hosiery

Date candidate attended workshop/Study Day………………………………………

The candidate has been assessed and has achieved the core competencies

Assessor signature………………………………………………………………………

Print Name………………………………………………………………………………

Candidate signature……………………………………………………………………

Print Name………………………………………………………………………………

Date of assessment……………………………………………………………………

Place of work……………………………………………………………………………
Roles and Responsibilities

Students undertaking practice competencies: Compression Hoisery

It is the students’ responsibility to work with their named mentors.

Students must carry out adapted Dacum / AMOD Self Assessment scale at the beginning and end of the competency programme.

It is expected that the competencies should be completed within a six month frame work.

You will need to complete at least two assessments prior to your final assessment.

Dacum / AMOD rating scale

Rating Scales – Level of achievement

<table>
<thead>
<tr>
<th>Level</th>
<th>Associated Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Cannot perform this activity satisfactorily to participate in the clinical environment</td>
</tr>
<tr>
<td>1</td>
<td>Can perform this activity BUT not without constant supervision and some assistance.</td>
</tr>
<tr>
<td>2</td>
<td>Can perform this activity satisfactorily but requires some supervision and / or assistance</td>
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<tr>
<td>3</td>
<td>Can perform this activity without supervision and/or assistance (knows how to access resources for support)</td>
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<tr>
<td>4</td>
<td>Can perform this activity satisfactorily without assistance and \ or supervision with more than acceptable speed and quality of work</td>
</tr>
<tr>
<td>5</td>
<td>Can perform this activity satisfactorily with more than acceptable speed and quality of work and with initiative and adaptability to special problem situations</td>
</tr>
<tr>
<td>6</td>
<td>Can perform this activity with more than acceptable speed and quality, with initiative and adaptability and can lead others in performing this activity</td>
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</tbody>
</table>

Competence is achieved at level 3

Advanced practitioners you would expect to see at the higher levels 4 and above
### Assessment of Clinical Practice

**Compression Hosiery**

Meets KSF – HWB6/7

Name of Candidate: __________________________ Name of Assessor: ________________________________

<table>
<thead>
<tr>
<th>Knowledge Base</th>
<th>Date Trained</th>
<th>Date first assessment</th>
<th>Date second assessment</th>
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</thead>
<tbody>
<tr>
<td>K1 Demonstrates knowledge of comprehensive assessment (I.C.P) and ABPI results</td>
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<tr>
<td>K2 Knowledge and awareness of hosiery selected should be appropriate to the presenting needs of the patient</td>
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<tr>
<td>K3 Selection of styles available</td>
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<tr>
<td>K4 Practitioners have the knowledge of hosiery available on FP10/GP10.</td>
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<tr>
<td>K5 Demonstrate an awareness of the difference between German RAL classification and the British Standard classification and understand when each should be used</td>
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<tr>
<td>K6 Demonstrates a knowledge of hosiery application</td>
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<tr>
<td>Performance</td>
<td>Date Trained</td>
<td>Date first assessment</td>
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<td>P1 Communicates with individuals and carers in a manner which encourages an open exchange of views and information whilst treating them with dignity and respect.</td>
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<tr>
<td>P2 Demonstrates the ability, knowledge and understanding to explain the principles of compression hosiery to the patient and obtains consent</td>
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<tr>
<td>P3 Appropriate management of skin</td>
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<tr>
<td>P4 Accurately measures for stock sizes of Hosiery</td>
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<tr>
<td>P5 Accurately measures for custom made hose using appropriate documentation</td>
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<tr>
<td>P6 Selects appropriate hosiery according to lower limb assessment size and shape</td>
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<tr>
<td>P7 Demonstrates fitting of stock hosiery</td>
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<tr>
<td>P8 Demonstrates fitting of Custom hosiery</td>
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<tr>
<td>P9 Able to teach patients and carers in the application of hosiery</td>
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<tr>
<td>P10 Patients and carers are aware of the wear time</td>
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<tr>
<td>P11 Correctly documents care planning re aftercare and follow up for re ordering and replacement.</td>
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<tr>
<td>Assessment Criteria</td>
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</table>

Two service user demonstrations with two different service users. One piece of written work (reflective account or case history).

Candidates Signature: ___________________________ Assessors Signature: __________________________ Date __________

P12 Implements an appropriate management strategy for the patient and healthcare teams
Managing Leg Ulcers in Patients’ Homes

Safe System of Work

- At initial assessment risk assess the procedure, and make sure that any necessary equipment is available, for all staff members who may have to undertake the task (e.g. stool/kneeler).
- Carry equipment, including kneeler if required, into the house (Refer to your SSOW for carrying equipment).
- Explain procedure and obtain verbal consent.
- Choose the best available working environment in which to perform the procedure. Consider the distance from the sink, the nearer the better, as well as the amount of clutter which may limit your ability to work comfortably.
- Decontaminate hands.
- Collect bowl (this should be a bowl or bucket only used for the soaking of the legs during these treatments) line and fill from the sink nearest to the procedure area.
- Only fill the bucket to the minimum level required to complete the task.
- Consider the use of a jug to fill the bucket rather than lifting into high sinks.
- Carry the bucket to the procedure room, using appropriate manual handling technique for carrying loads safely.
- Risk assess and consider your working position (try to avoid the need to twist), use a kneeler/stool as required and use any equipment that the patient has that might help (having got permission from the patient first).
- Ask the patient to get in the best position for you to work in. If you need to help the patients refer to safe handling techniques.

- Gather equipment on a clean, clear surface (consider the use of a clean blue tray if there is no suitable surface). Do not put open dressing packs on the floor

- Decontaminate hands.

- Open dressing pack to access bag and apron without touching inside of pack.

- Put on apron and non-sterile gloves.

- Remove dirty bandages and dispose in bag.

- Decontaminate hands.

- Ask patient to put leg in bucket (If patient needs help, risk assess and use safe manual handling techniques).

- Put on a pair of non-sterile gloves.

- Prepare emollient for washing and applying to clean leg.

- Remove emollient from tub with disposable spatula and close lid of tub

- Wash leg with gauze and emollient

- Ask patient to remove leg from bucket (If patient needs help, risk assess and use manual handling techniques).
• Dry skin using towel from pack.

• Using safe load handling techniques, carry the bucket to the nearest toilet and throw contents away. Use eye protection if splash is anticipated (risk assess).

• Clean the bucket and handle with a detergent or universal wipe, and dry with a paper towel.

• Remove gloves and decontaminate hands.

• Go back to procedure room.

• Don sterile gloves from pack, debride scales if required and apply dressings using a NTT i.e. Protect key parts, touch only outer surfaces which will not touch key sites i.e. the wound (See ANTT wound care guideline for further details).

• Dispose of waste and decontaminate hands.

• Clean kneeler and tray using wipes.
References

1. Activa Compression hosiery training module [http://www.activahealthcare.co.uk/content/home/homepage.html]


6. BSN medical [http://www.bsnmedical.co.uk]


15. Dealey C (1999) Wound Care: Cleaning rites and wrongs. Nursing times 95,43, 71-75


40. Medi formulary guide July 2012 [www.mediuk.co.uk/compression/lower-limb]


Bibliography


Other Useful Sources

Books


• Moffatt C (2007) *Compression Therapy in Practice*. Wounds Uk


• Websites

  • [www.worldwidewounds.com](http://www.worldwidewounds.com)
  
  • [http://www.britishpainsociety.org](http://www.britishpainsociety.org)
  
  • [www.wounds-uk.com](http://www.wounds-uk.com)

Organisations

• NICE Guidelines – [www.nice.org.uk](http://www.nice.org.uk)

• NHS Centre for Reviews and Dissemination - [www.york.ac.uk/](http://www.york.ac.uk/)


• Crest guidelines for the Assessment and Management of Leg Ulceration - www.crestni.org.uk/publications/leg_ulceration.pdf

• Crest guidelines on the management of cellulitis in adults www.gain-ni.org/index.php./crest-cellulitis-guidelines

• Wound care alliance www.wcauk.org

• The Leg Ulcer Forum - www.legulcerforum.org/

• World Health Organisation - http://www.who.int/en/

**Journals**

• Wounds UK - www.wounds-uk.com

• The Lancet - www.thelancet.com

• Journal of Wound Care – www.journalofwoundcare.com

• Evidence Based Nursing - http://ebn.bmj.com/

• Diabetes Care - http://care.diabetesjournals.org/

• Journal of Vascular Nursing – www.sciencedirect.com/science
Section 2
Care Pathway