Leg Ulcer Management

Leicestershire Partnership Trust  Tissue Viability Team 2016
in association with

URGO Medical and Activa Healthcare.

With special acknowledgement to the South Manchester Tissue viability team
Agenda

– Introduction /Housekeeping
– Anatomy and Physiology
– What is a Leg ulcer?
– Coffee
– Assessment / Doppler's
– Essential Skin Management
– Chronic oedema / Lymphavenous disease
– Lunch
– Management /Treatment of legs
– Bandaging Techniques (practical session)
– Hosiery / Patient Education
Anatomy and Physiology
Name That Vein  Game
Anatomy: Venous leg ulcer
Anatomy of the normal venous system in the lower leg

- The venous system in the lower limbs is made up of a number of complex anatomical structures including:
  - The **deep venous system**
  - The **superficial venous system**
  - **Perforating veins**, which link the deep and superficial veins.
  - **The veins of the foot**, which form a complex network creating a genuine blood reservoir.

Veins have a tubular structure with a thinner, more supple muscle layer than the arteries. They are equipped with flaps to prevent reverse blood flow, called venous valves.
The Deep Venous System

- The deep venous system located in the central section of the leg, follows the arteries and is surrounded by the muscles and flat tendons.

- The veins have the same names as the arteries that they run alongside: iliac, femoral, popliteal, fibular, tibial veins etc.
The Superficial Venous System

- The superficial venous system is located primarily in the subcutaneous adipose layer, between the wall of the skin and the aponeurosis encasing the muscles.
- The main two components of the superficial venous system are:
  - The long Saphenous vein
  - The short Saphenous vein
The Perforating Veins

- Communicating Veins

- Perforators
  Relatively large in size, act as the main drainage pathways between the deep and superficial venous system
Venous Valves

- The venous valves are mobile structures with a tiered arrangement, made of fibrous elastic tissue.
- The veins are dilated at the valves creating a sinus space.
- The valves are arranged every 4-5cm, to ensure that the blood supply flows in one direction.
Anatomy of the normal venous system in the lower limbs

- **Femoral vein** (deep vein)
- **Great saphenous vein** (superficial vein)
- **Muscle**
- **Popliteal segment of femoral vein**
- **Dorsal venous arch**
- **Small saphenous vein** (superficial vein)
- **Muscle**
- **Perforating vein**
- **Superficial plantar venous plexus or Lejars plexus**
- **Perforating vein**
- **阀**
Normal venous return in the lower limbs

- Venous return works against gravity.

Walking provides the energy required to return venous blood to the heart in conjunction with the calf pump.

When walking:

Compression of the venous plexus on the sole of the foot enables the blood to flow into the saphenous veins. From here the muscle pump is activated.

The muscle compresses against the venous wall and pushes blood upwards. Competent valves stop reflux and backtracking.
What is a leg Ulcer?

• **Definition**

A leg ulcer is an open wound between the knee and the ankle joint that remains unhealed for at least 4 weeks and occurs in the presence of venous disease (WUWHS 2008)

Causes:

• Chronic venous hypertension >70%
• Poor arterial blood supply 10%
• Mixed arterial and venous origin 10-15%
Venous Hypertension

- Venous hypertension can result from:
  - Perforator vein incompetence
  - Superficial venous incompetence
  - Deep vein incompetence

Each of which can occur separately or can co-exist simultaneously.

Damaged or incompetent valves in the venous system or restricted ankle movement causing venous stasis and oedema.
Venous Hypertension

- Too much pressure and fluid in the veins.
- Pushing the walls of the veins out.
- Incompetent valves
- More pressure and more fluid
Anatomical and physiological causes of venous leg ulcers

- Damaged valves
- Backflow into superficial veins
- Dilation of the veins
- Leakage into tissue and skin
- Staining and oedema
- Eczema and ulceration
End Product of Venous Hypertension
Oedema
Cellulitis
Visual Signs of Venous Ulcers

- Usually occurs in medial or lateral gaiter area.
- Highly exuding
- Irregular in shape
- Shallow in depth
- Oedema
Skin Changes / Warning signs
Haemosiderin staining

- appears to be red/brown discoloration of the skin caused by leakage and breaks down of red blood cells from the capillaries. May be present in patches or extend over most of the gaiter area.
Varicose Eczema

- Varicose Eczema - Caused by the irritation from blood products that have leaked into the skin. Can be present as wet or dry eczema and can get infected especially as the patient may scratch the skin and introduce bacteria to the area.
Varicose Veins

A Normal vein
- Valve
- Normal blood flow

B Varicose vein
- Abnormal blood flow
- Dilated vein
- Deformed valve
- Skin bulging
- Thin wall of vein
Lipodermatosclerosis

• Hardening/ fibrosed subcutaneous fatty layer of the skin due to the leakage and laying down of fibrin from the capillary network, fat necrosis, chronic inflammation and scarring. It looks like a hard woody layer just under the surface of the skin. In acute phase it could be mistaken for cellulitis but its borders do not change and the patient is not unwell (Apyrexial).

• You may also get an inverted V shape on the upper part of the shin.
Atrophie Blanche – Venous Ulceration Blanche

- Scar tissue arising from injury when blood supply is poor (Chronic venous Hypertension)

- Star-shaped ivory-white depressed atrophic plaques

- Prominent red dots within the star due to enlarge capillary blood vessels.

- Surrounding pigmentation
Atrophie Blanche
Anatomy: Arterial Ulcers
Arterial Ulcers

• Cause
  – Insufficient arterial blood supply due to atherosclerosis resulting in tissue ischemia and necrosis.
Arterial Ulcers
Signs and symptoms of an arterial ulcer

- Shiny skin
- Hairless skin and thick toenails
- Localised oedema
- Develop quickly
- Mainly occur on the foot
- Have a punched out appearance
- Very Painful
Anatomical and physiological causes of arterial leg ulcers

- Arterial blockage
- Constriction of the arteries
- Ischaemic area
- Tissue damage
- Ulceration
<table>
<thead>
<tr>
<th></th>
<th>Arterial Ulcers</th>
<th>Venous Ulcers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cause</strong></td>
<td>Arterial disease</td>
<td>Chronic venous hypertension</td>
</tr>
<tr>
<td><strong>Wound bed appearance</strong></td>
<td>Deep ‘cliff edge’ margins</td>
<td>Shallow Irregular wound margins</td>
</tr>
<tr>
<td><strong>Evolution</strong></td>
<td>Rapid deterioration</td>
<td>Slow development</td>
</tr>
<tr>
<td><strong>Skin Aspect</strong></td>
<td>Shiny, Pale, Cold to touch, Hair loss</td>
<td>Pigmented, Warm to touch, Eczema, Ankle Flare</td>
</tr>
<tr>
<td><strong>Localisation</strong></td>
<td>At the extremity: foot, lateral and medial malleolus</td>
<td>Gaiter</td>
</tr>
<tr>
<td><strong>Oedema</strong></td>
<td>May have a localised oedema</td>
<td>Generalised oedema</td>
</tr>
<tr>
<td><strong>Pain</strong></td>
<td>Painful: ischaemic pain</td>
<td>Painful if infected</td>
</tr>
<tr>
<td><strong>Doppler readings</strong></td>
<td>&lt; 0.5 (mixed aetiology ulcers 0.6 – 0.7)</td>
<td>&gt; 0.8</td>
</tr>
</tbody>
</table>
Mixed Aetiology Ulcers
Mixed Aetiology Ulcers

Definition:
Venous insufficiency with underlying arterial disease
Other causes of leg ulceration

- Neuropathy e.g. associated with Diabetes/Leprosy.
- Vasculitis e.g. associated with Rheumatoid Arthritis.
- Malignancy e.g. Squamous cell carcinoma, Basel cell carcinoma, melanoma
- Blood disorders e.g. Sickle Cell disease, Thalassaemia.
- Skin Conditions e.g. Pyoderma Gangrenosum
- Lymphoedema
- Trauma e.g. Lacerations, Burns
- Self – Inflicted (factitious)
Lower Limb Hub & Spoke Model of Care

- Lower Limb Referral Process.
- Each new referral needs to be linked to both Hub and all subsequent spoke activity.
- Currently 3 Care Pathways:
  - Simple
  - Complex
  - Mixed Aetiology
<table>
<thead>
<tr>
<th>Simple</th>
<th>Complex</th>
<th>Mixed Aetiology</th>
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</thead>
<tbody>
<tr>
<td>ABPI &gt; 0.8 &lt; 1.3</td>
<td>ABPI 0.81.3</td>
<td>ABPI &gt;0.6– 0.8</td>
</tr>
<tr>
<td>Wound Size &lt; 10cm²</td>
<td>Greater than 10cm in any direction</td>
<td></td>
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<tr>
<td>Ulcer present &lt; 12 months</td>
<td>Ulcer present &gt; 12 Months</td>
<td></td>
</tr>
<tr>
<td>Not Diabetic</td>
<td>Diabetic with venous disease</td>
<td>Diabetic requiring reduced compression (not foot ulceration)</td>
</tr>
<tr>
<td>No current or history of recurrent infection</td>
<td>Recurrent / Current Infection</td>
<td></td>
</tr>
<tr>
<td>No history of ulceration</td>
<td>Not following projected healing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chronic oedema present / Concordance issues</td>
<td></td>
</tr>
</tbody>
</table>
Warning signs and more unusual ulcers to look out for:
Leg Ulcers you might see

Drug – induced Vasculitis
Rheumatoid Ulceration

- Vasculitic (inflammation of the blood vessels)
leg Ulcers you might see

Trauma
Practitioners need to be alert to malignancies not just at initial assessment but all the way through the treatment things to look out for:

Ulcer not responding to treatment, ulcer getting bigger, overgranulation, bleeds easily, rolled edges.

Marjolin’s Ulcer
Marjolin's ulcer is a squamous cell carcinoma that develops in a pre-existing leg ulcer.
Things to look out for

Squamous Cell Carcinoma

Squamous Cell Carcinoma is the 2nd most common skin cancer and can metastasise if not treated, non healing lesion that may be crusty, scaly and indurated.
Things to look out for

Pyoderma Gangrenosum is a disease that causes tissue to become necrotic. Though the aetiology is not well understood, the disease is thought to be due to immune system dysfunction.

At least half of all pyoderma gangrenosum patients also suffer from illnesses that affect their systemic function. For instance, ulcerative colitis, Crohn's disease, rheumatoid arthritis.
Things to look out for

Bullous Pemphagoid

Bullous pemphigoid is a chronic and autoimmune disorder that is characterized by blisters on the skin.
Before applying Compression, What do you need to do?
Patient Assessment
Holistic / Leg ulcer Assessment

• **Patient:**
  - History, risk factors, associated disease, medication, nutritional status, social circumstances, psychological.

• **Skin:**
  - Colour, pigmentation, temperature, cellulitis, trauma, sensitivity, fragility,

• **Circulation:**
  - Pulses, ABPI, capillary refill, varicose veins

• **Limb:**
  - Oedema, shape, ankle mobility, patient mobility.

• **Ulcer:**
  - Site, size, surface, edge, duration, infection, exudate, pain
Why is a Doppler Assessment Necessary?

**All Patients** presenting with an ulcer or lower limb problems should be screened for arterial disease by Doppler measurement of APBI.

1. To enable effective treatment options to be established
2. To minimise the risk factors of compression therapy.
3. To support holistic assessment
Handheld Doppler
How does it work?

• A crystal in the probe is oscillated and transmits an ultrasound beam which is directed towards the blood vessel.

• The ultrasound is reflected back and detected by a second crystal.

• If the ultrasound hits something moving then a frequency shift occurs. It is this shift in frequency which is amplified and fed through the speaker.
Doppler Probes

- The probe will not work properly in air and needs to work in ultrasound gel. (this is important)
- The probe will work most effectively at 45 degrees
- Two sizes of probe are used for investigating arterial and venous flow. 5 mhz & 8 mhz
- The larger (5 mhz) probe head being used to assess oedematous limbs
Preparation of the patient

• Explain the procedure and reassure the patient

• Ensure the ambient temperature of the room is comfortable.

• Remove any tight clothing from both arms and legs, enabling easy access to all the limbs.

• Rest the patient for 15-20 min in a lying (supine) position
Procedure for obtaining an APBI

- **Brachial systolic pressure**
  - Place an appropriately sized cuff around the upper arm.
  - Ensure the equipment and arm are at the heart level, with the patient rested and supine.
  - Locate the brachial pulse and apply ultrasound gel.
  - Angle the probe at a 45 degree angle and move it to obtain the best signal.
  - Inflate the cuff until the signal has gone completely, deflate the cuff slowly and record the pressure at which the signal returns, being careful not to move the probe from the line of the artery.
  - Repeat the procedure on the other arm.
  - Take the highest reading from the two brachial readings.
Brachial Systolic Pressure
Procedure for obtaining an ABPI

• **Ankle Systolic Pressure**

  – Place an appropriately sized cuff around the ankle immediately above the malleoli, having first protected any ulcer or fragile skin that may be present.
  
  – Examine the foot, locating the anterior tibial pulse or the dorsalis pedis pulse and apply contact gel.
  
  – Continue as for the brachial pressure, recording the pressure in the same way with the equipment at heart level.
  
  – Repeat the procedure locating the posterior tibial pulse
  
  – Repeat the procedure on the other leg recording at least two readings, the dorsalis pedis/ anterior tibial and the posterior tibial
Ankle Systolic Pressure
Foot pulses
Doppler ultrasound signals:

In addition to recording the ABPI, the nurse should also be listening to the signals of the Doppler probe as these can impart useful information and are equally as valuable as the ABPI measurement.

Triphasic signal
This is represented by three sounds heard very quickly together (duh...duh...dum), as the blood runs through a healthy non-diseased artery.

Biphasic signal
This can be recognised as two sounds heard together (duh, dum ... duh, dum), this may be because the Doppler probe is not at the optimum angle. Again, it indicates a healthy artery.

Monophasic signal
A single, almost 'banging' sound (...dum! ...) indicates that the Doppler signal is unable to penetrate a diseased artery.
False readings

- Pain and anxiety
  » Increases the heart rate/blood pressure
- Diabetes
  » High risk of peripheral vascular disease
  » Calcification
- Renal Disease
  » Inappropriate investigations due to fluctuations in blood pressure
- Rheumatoid Arthritis
  » Vasculitic pain and calcification
- Arteriosclerosis
  » Hardening of the arteries causing falsely elevated readings
- Cardiac Arythmias
  » More difficult to assess sounds
Factors affecting potential accuracy

• Incorrect size of cuff
  – Incorrect pressure measurement
• Inappropriate selection of probe
  – Ultrasound cannot penetrate the depth of the vessel
• Incorrect positioning of the patient
  – Falsely elevated ankle readings
• Rest
  – Only 68% of patients are rested properly
• Knowledge of the nurse
  – Variety of errors noted including only using one arm, only taking one reading etc.
• Meaning of ABPI not understood
Factors affecting potential accuracy

- Over inflation of the cuff
  - Repeatedly inflating or inflating the cuff for long periods of time can give inaccurate readings and send the artery into spasm

- Rapid deflation
  - The true systolic pressure of the limb may be missed

- Low ambient room temperature
  - Coldness causes vaso constriction

- Site of the cuff
  - Pressure measurement relates to cuff position
Calculation of ABPI

Leicestershire Partnership NHS Trust

ABPI calculations:
- Highest ankle systolic pressure (for each leg)
- Highest brachial systolic pressure

Right ABPI:
- Brachial: 145
- Posterior Tibial: 85
  \[
  \frac{85}{150} = 0.56
  \]

Left ABPI:
- Brachial: 150
- Posterior Tibial: 120
  \[
  \frac{120}{150} = 0.80
  \]
Interpretation of ABPI

• Need to be confident with the results obtained

• 0.6 > -0.8 = degree of arterial disease / mixed aetiology (vascular referral to exclude significant arterial disease)

• <0.6 = significant arterial disease (vascular referral, urgent if ulcer deteriorating or signs of claudication)

• 0.9 > - 1.3 = venous impairment (suitable for compression)

• 1.4 > = calcified vessels (vascular referral)

Always combine ABPI result with doppler sounds and document
When not to perform a Doppler

- A Doppler ABPI should not be undertaken if the patient is unable to tolerate the pressure cuff or:
  - Suspected DVT (within 6 weeks)
  - Has active cellulitis / Vasculitis (needs antibiotics)
  - Ischaemia is noted (requires urgent referral to vascular surgeons)
  - Patient is non compliant
To compress or not to compress that is the question

Do not apply compression if;

- Active cellulitis (can be applied after 48hrs antibiotic treatment if pt can tolerate it)
- Critical limb ischaemia or ischaemic pain
- Within 3 months of a DVT (agreed standard with vascular)
- Monophasic/absent pulses (refer to vascular)
- Unstable heart failure

if in heart failure compression can be applied if the CCF is stable (consult pts heart failure nurse/GP), apply to one limb only and follow up within 24 hours to ensure comfort and safety. Discuss further with GP after 1 weeks application prior to continuing with one or both legs.
Essential skin management

Varicose eczema / dry skin / mature skin / allergy / irritancy / maintenance of skin integrity / exudate management.

- Skin cleansing ---------------- emollient therapy
- Skin Hydration ---------------- emollient therapy
- Protection / Avoidance
- Active treatment
- Maintenance

*Consider referral to dermatology if after 4 weeks of following prescribed skin regime, dermatitis or contact allergy fails to improve*
Skin Cleansing - Aims

- To remove cellular debris and exudate from the wound bed – *may assist in reducing bacterial burden*.
- To remove dead / (dry flaky) skin. To remove / minimise excess exudate from the skin surface.
- Remove previous topical therapies & dressing materials.
- Increase skin hydration.
- Patient comfort.
Skin Cleansing

**NOT JUST WATER**

- Lined bucket
- Tap water (warm not hot)
- Bath emollient
- Soak – max 10 min’s
- Wash limb using soap substitute to remove all emollients.
- Pat skin dry – do not rub

Before skin cleansing

Following debridement with Debrisoft
Emollients

Definition --- *Moisturiser which stays on the skin reducing scaling and water loss.* (Davis R, 2001)

- Apply directly to the skin
- Apply frequently or when gaining access to the limb
- Avoid vigorous rubbing
- Apply after any bathing/cleansing (apply within 3-5 min’s)
- Do not stop once condition is controlled – emollient therapy will help to prevent future exacerbations
- Always apply in the direction of hair growth
Chronic Oedema occurs irrespective of age, gender and culture - as such it is a national and international issue.

Knowledge Transfer Partnership, to develop and implement the UK’s first community care pathway for Chronic Oedema

Stakeholders include; Leicestershire & Rutland Hospice (LOROS), The Leicestershire Partnership, Leicester City Clinical Commissioning Group

Professor Christine Moffatt is joint Chair and Director of the International Lymphoedema Framework.

Trial the pathway within Leicester City in Spring 2016
Chronic Oedema

‘is characterised by an accumulation of fluid, proteins and other macromolecules leading to tissue swelling, skin changes and fibrosclerosis’

Adapted from Linnit 2005
Chronic oedema

- Oedema evident for more than 3 months.
- Not relieved by elevation or diuretics.
- Umbrella term for lymphovenous oedema, dependency oedema & Lymphoedema

Associated with:
- Skin changes
- Tissues thickened
- Increased risk of cellulitis
Chronic Oedema

What is Visible?

• Wound / evidence of previous wound
• Distribution “drop trousers/ lift skirt”
• Is it pitting?
• Shape of limb
• Any deep skin folds
• Dryness of skin
• Fragile skin
Oedema Assessment

- When did it start?
- Where did it start?
- Where does it extend to?
- Does it go down overnight?
- What makes it worse/better?
- Are there any skin changes?
- Is there any lymphorrhoea (leaking) present?
- Is the limb painful?
- Are there any obvious contributory factors? E.g. surgery, trauma
Chronic Oedema

- At risk groups ....
  - Obesity
  - Venous incompetence
  - Reduced Mobility
  - Infection
  - Orthopaedic surgery

- Trauma
- Lymph node dissection
- Recurrent disease/ palliative
- Primary lymphoedema
Why early intervention?......

Venous hypertension → Lymphovenous oedema
Lymphovenous disease/Dependency Oedema

- Affects lower limbs
- History of DVT/venous disease
- Varicose eczema
- History of leg ulceration
- Legs may be dependent
- Sleeps in a chair
- Immobility
Lymphoedema

• Swelling of one or more limbs
• May include the corresponding quadrant of the trunk.
• History of recurring cellulitis / infection
• Primary Lymphoedema – Symptoms at any time from birth to middle age
• Secondary Lymphoedema - Cancer surgery, Radiotherapy, Injury / trauma
Lymphoedema
Lymphoedema

- Positive Stemmers sign
- Limb distortion
- Deep skin folds
- Aching and heaviness
Stemmer's sign describes the inability to pick up a fold of skin at the base of the second toe and is usually positive in lymphoedema of the legs when it has been present for some time.
Aims of management

• Reduce the oedema
• Improve skin condition
• Improve mobility
• Reduce pain
• Reduce the episodes of cellulitis
• Prevent or stop lymphorrhoea

Aims of management in the palliative stage will differ. Focus may be on comfort and support rather than volume reduction.
The Management of legs
The management of leg problems

• Priorities
  » Correct the underlying cause
  » Create optimum wound environment
  » Improve wider factors that may delay healing
  » Prevent avoidable complications
  » Promote or maintain healed tissue
Treatment : Bandage options
Leg ulcer treatment
Arterial Ulcers

- Arterial ulcers should be referred by the GP to the vascular department for further investigation and potential surgical intervention.
- Wounds should be dressed conservatively in accordance with the wound care formulary.
- Tissue Viability referral is recommended for palliative management.
Available Treatments

- Calcified vessels (APBI 1.4 & above) = no Compression (referral to Vascular)
- Venous leg ulcer (APBI 0.8 – 1.3 mmHg) = Compression therapy
- Mixed Aetiology (APBI 0.6–0.8 mmHg) = joint care with TV team or vascular
- Arterial Aetiology (APBI 0.5 & below) = no Compression (referral to Vascular)
Compression therapy

• How does it work?
  – Reduces hypertension and distention of the superficial veins
  – Reduces oedema
  – Improves venous return
Graduated compression

• Compression therapy aims to improve venous return and reduce venous hypertension.

• Graduated compression bandages are recommended as ‘gold standard’ treatment for the management of venous leg ulcers.

• The effectiveness of the compression relies upon exerting pressures of approximately 40 mmHg at the ankle, reducing to 17 mmHg below the knee.
Sub- Bandage Pressure

- Determined by 3 principal factors:
  - The tension in the fabric of the bandages during application.
  - The circumference of the limb.
  - The number of bandage layers applied.
Unnatural leg shapes

A natural shape leg is essential for correct compression bandaging
Shaping the limb

- Inverted champagne bottle leg - gradient too steep
- Calf muscle wastage
- Inverted champagne bottle leg - gradient too steep
- Calf muscle wastage
- Fibrosis of the ankle - inverted gradient
- Fibrosis of the ankle - inverted gradient
Four layer Compression

Consists of:

1. Softban – wool layer
2. K-lite – light support bandage. To aid absorbency and provide a base for the compression layers
3. K-plus – type 3a support bandage gives compression pressure of 20 mmHg at ankle
4. Ko – flex – compression bandage. Gives additional compression and helps maintain the position of the other layers
**K-two**

- Designed to provide 40 mmHg in a 2 layer system safely and effectively

- Printed with performance indicators to aid safe, accurate compression

- Indications
  - As an alternative to four layer compression bandaging for Venous Leg Ulcers
  - Ideal for patients who cannot tolerate 4 layer
  - Available in two sizes for ankles from 18cm to 25cm & 25cm-32cm in circumference
  - For patients with active lifestyles
  - Two layer system
Actico Short Stretch Bandage

- An alternative to four layer compression bandaging for Venous Leg Ulcers
- Safe-Loc™ technology gives safe therapeutic compression levels, cannot overcompress.
- Ideal for patients who cannot tolerate 4 layer as gives low resting pressures (reduces night discomfort)
- Control/reduction of chronic oedema and lymphoedema (ILS guidelines recommendation for SSB)
AFTERCARE - COMPRESSION HOSIERY
Aftercare /Prevention

• Compression hosiery should be routinely recommended for patients without signs of arterial insufficiency (ABPI 0.8 =1.3).
• Hosiery should be used as a pre-requisite for prevention of venous ulceration, recurrence and as prophylactic treatment for prevention of Deep Vein Thrombosis (DVT).

All patients recommended to continue with compression hosiery following healing should be referred back to their GP for ongoing lower limb management.
Rationale for the use of compression hosiery

- Increase / support venous return.
- Counteract venous hypertension
- **Prevention** and or control of lower limb oedema.
## European Standard Hosiery

<table>
<thead>
<tr>
<th>Class</th>
<th>Indicator</th>
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<tbody>
<tr>
<td>Class 3 – strength: 34 to 46mmHg</td>
<td>Gross varices, lymphoedema, (Hosiery kit Class 2 European Hosiery plus liner (38mmHg) to treat venous ulcers with oedema.) Skin folds and distorted limb shape would benefit from MTM hosiery</td>
</tr>
<tr>
<td>Class 2 – strength: 23 to 32 mmHg <strong>Preferred option for prevention</strong></td>
<td>Moderate varices, mild / moderate oedema, healed venous ulcer, prevention of venous ulcers.</td>
</tr>
<tr>
<td>Class 1</td>
<td>Prevention or early treatment of lymphoedema and venous disease.</td>
</tr>
</tbody>
</table>
### British Standard Hosiery

<table>
<thead>
<tr>
<th>Class</th>
<th>Indication</th>
</tr>
</thead>
</table>
| Class 3 – strength: 25 to 35 mmHg | Gross varices, healed venous ulcers, prevention of venous leg ulcers, post DVT to prevent thrombo-phlebitis.  
(Hosiery kit Class 3 British Standard hosiery plus liner (40mmHg) to treat venous ulcers) |
| Class 2 – strength: 18 to 24 mmHg | Moderate varices, treatment and prevention of mixed aetiology leg ulcers, dependant on ABPI, post DVT to prevent thrombo-phlebitis |

*For prevention if higher compression cannot be tolerated*

| Class 1 – strength: 14 to 17 mmHg | Superficial or early varices, prevention of DVT while travelling. |
Aftercare for hosiery

• 1 pair of compression hosiery will last 3 months or 100 washes – usually 2 pairs would be prescribed, enabling a new set to be prescribed every 6 months

• A new assessment and measurements need to be taken prior to new set of hosiery each time

• Hosiery should be washed cool and dried flat away from high heat
Patient Education

• Importance of wearing hosiery.
• Advice on application and removal.
• Importance of skin care.
• Use of appropriate advice leaflets.
• Contact details in the event that any problems should occur.
• Explanation of the review process.
Bandaging & Hosiery Practical Session