

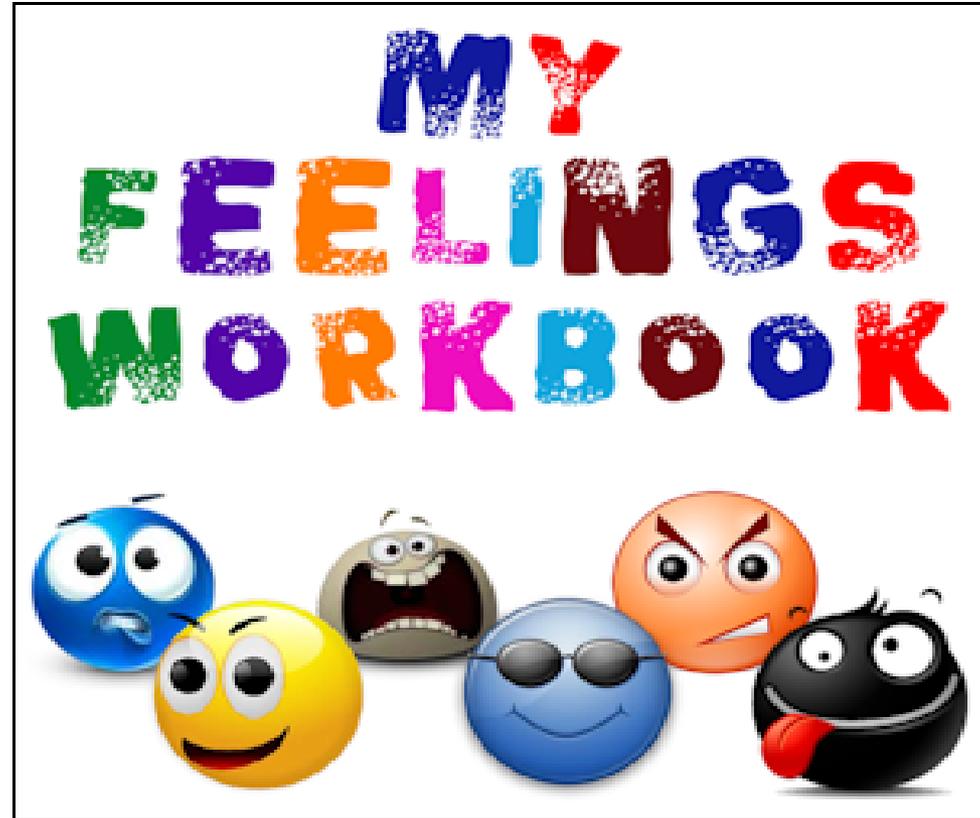
Assessment, diagnosis and management of leg ulcers

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What are the challenges of leg ulcer management?



How do **you** feel when a patient is referred with a leg ulcer?



How do you think your **patient** feels about their leg ulcer?



Aim of the session

To develop a better understanding of the factors that contribute to the development of leg ulceration and how the application of proven treatments can improve clinical outcomes



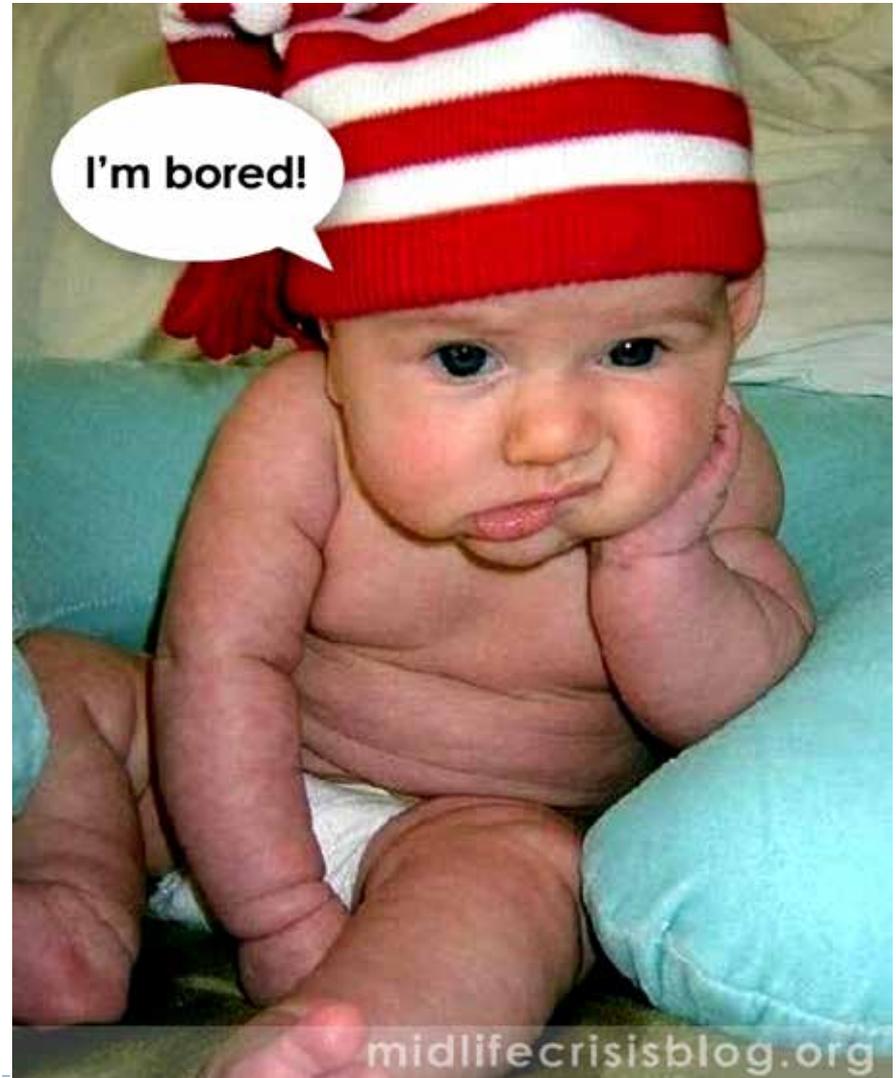
Objectives -

- } To gain a better understanding of the anatomy & Physiology of the vascular system
- } To understand the function of the veins and how venous incompetence can lead to skin breakdown
- } Be able to carry out a full holistic leg ulcer assessment in order to correctly diagnose the aetiology.
- } On diagnosis, be able to put an appropriate plan of care in place in order to support timely wound healing
- } Be able to differentiate between 'normal' and 'abnormal' ulceration and recognise when referral is necessary.



Leg ulcer training? Why bother?

- } Hopefully you are here because you want to be
- } We have variable healing rates
- } LU assessment not always 'holistic'
- } Bandaging 'challenges'
- } Wounds that are constantly colonised and inflammatory
- } Wounds that are not progressing aren't always referred on in a timely way
- } Pain is difficult to manage
- } Co morbidities are sometimes seen in isolation to the wound



Exposed tendon



Chronic ulceration ... what is effective leg ulcer management?



Arterial or venous???



Skin condition or leg ulceration?



Multiple wound types...



Stubborn ulcers over the malleoli...



Severe local infection... what do we do?



When does trauma
become leg
ulceration?



The tipping point....

Today you will
leave this training
session and you
will do things
differently!



**THE KEY TO SUCCESS
IS**



CONSISTENCY

DIYLOL.COM

Patient experience film



What is a leg ulcer?



Definition

A leg ulcer is a long-lasting (chronic) wound on your leg or foot that takes more than six weeks to heal.

NHS choices, 2012.

A **Venous** leg ulcer is an open lesion between the knee and the ankle that remains unhealed for 4 weeks and occurs in the presence of venous disease.

(SIGN, 2010)



Epidemiology of leg ulcers

} Point Prevalence

} 0.1%-0.2% per 1000

} 4.5% per 1000 in older people (over 80)

} Overall Prevalence

} 1%-2% (Oxford is 0.8%)

} Cost

} £300-£600 million a year (Simon et al 2004).



Causes/ aetiology

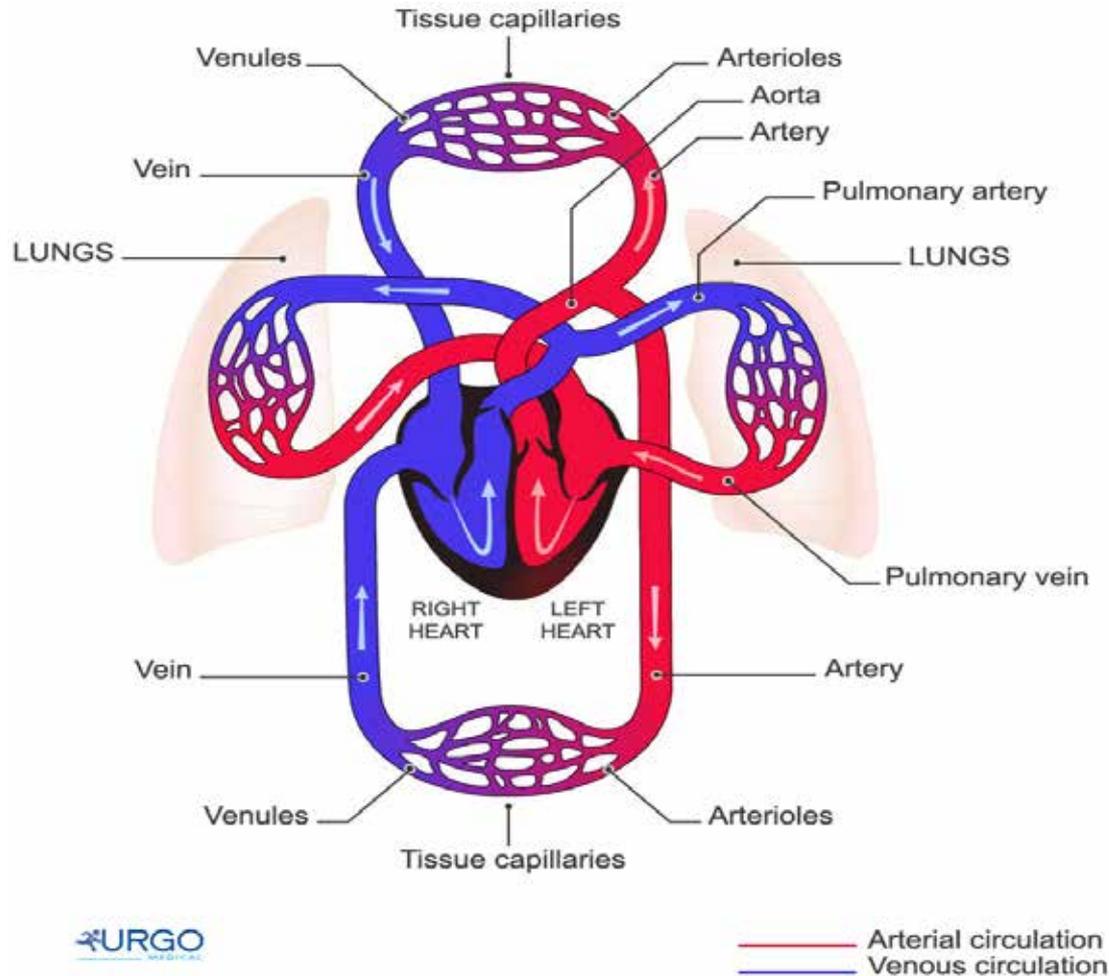
} Venous disease = 70%

} Arterial = 10- 15%

} Mixed arterial & venous disease = 10 - 15 %



The circulatory system



Arteries carry oxygenated blood to your legs and the veins carry de-oxygenated blood away from your legs.

The blood returns to the lungs to pick up more oxygen and returns to the heart to be pumped out again through the arteries.

Blood vessels

Arteries

Arteries take blood away from the heart and are the strongest blood vessels, as they have to withstand the pumping action of the heart. Arterial blood is charged with oxygen and nutrients for healthy tissues.

Artery walls consist of three layers, the walls are more muscular and the lumen smaller enabling blood to travel at high pressure.

Arteries branch into smaller vessels known as **arterioles**, which merge into **capillaries**.

Capillaries

Minute vessels, no wider than a hair, which connect arteries to veins. The exchange of gases (oxygen for carbon dioxide) occurs within the capillaries. A capillary wall is a semi permeable membrane and interstitial fluid moves continually between the blood capillary and the tissue. The rate of fluid leaking depends on several factors, including blood pressure in the blood capillaries and the concentration of plasma proteins in the tissue spaces.



Venules - When blood has left the tiny capillaries on its journey back to the heart, the vessels widen into **venules** and then into the larger vessels known as veins.

Veins – These take blood back to the heart. Their walls are weaker than arteries and take impure blood back to the heart as oxygen has now been exchanged for carbon dioxide in the capillaries. Veins can be classed as superficial or deep. 10% of blood travels through the superficial veins, which are situated just beneath the skin. The remaining 90% of blood travels through deep veins, which are found closer to the bones in the leg and are surrounded and protected by various muscles. These are the veins squeezed by the calf pump on contraction. Veins are also equipped with **valves** to assist the flow of blood back to the heart. The valves in the veins open in one direction, therefore helping to prevent backflow of blood. When valves are working as they should, healthy veins are divided into compartments and this helps to relieve strain on the vessel walls.

Perforator -So called because they perforate the deep fascia of muscles, to connect the superficial veins to the deep veins where they drain. Their role is to maintain correct blood drainage. They have valves which prevent blood flowing back (reflux), from deep to superficial veins in muscular systole.



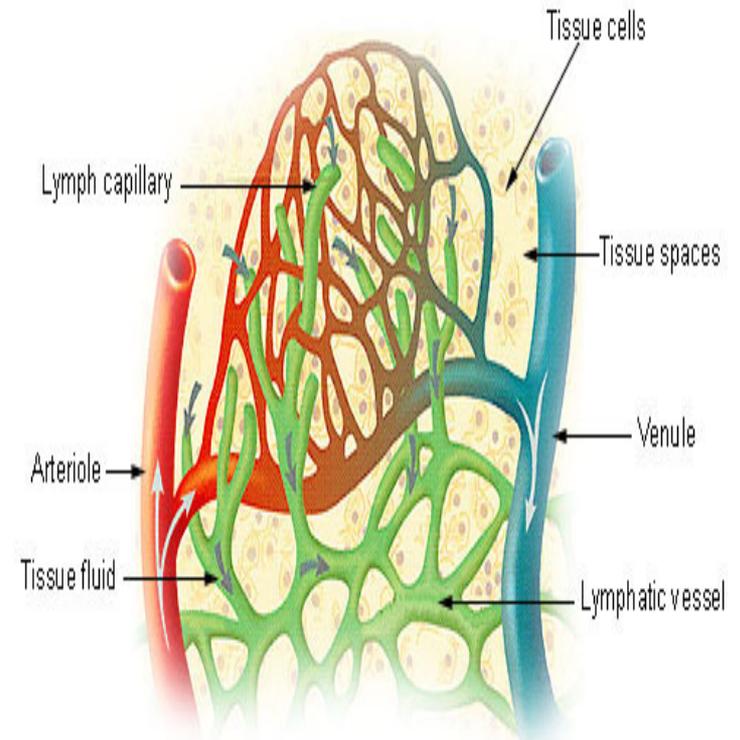
Lymphatic system

This is a one-way drainage system that returns fluid to the vascular circulation via a network of lymphatic vessels and lymph nodes. Some lie deep within the body, others close to the skin.

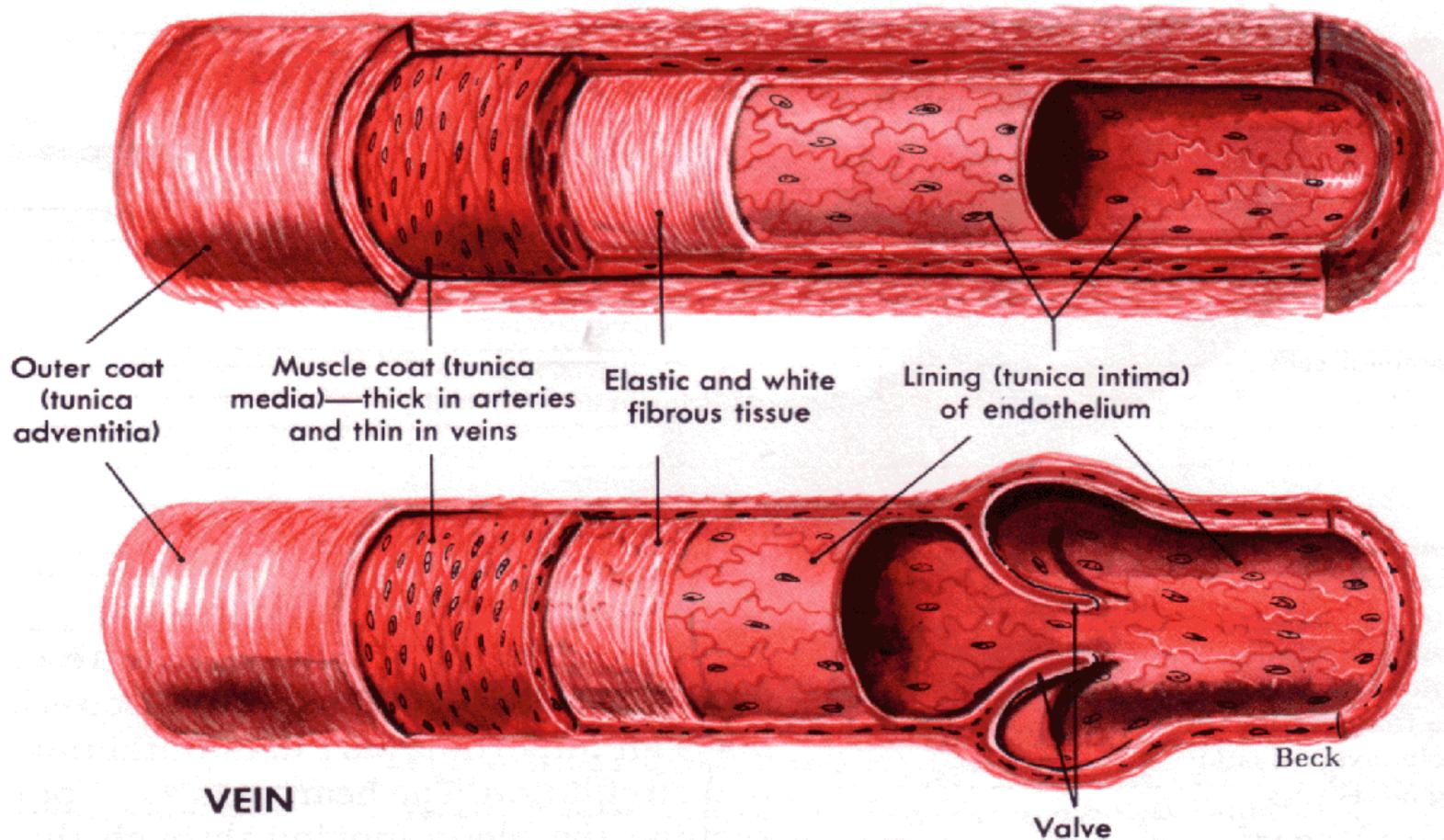
The lymphatic system has an important role to play in maintaining fluid balance, transporting fats and proteins and providing an immune response.

The main function of the lymphatics is to help the re-absorption of interstitial fluid into the blood circulation. Normal balance is reached when fluid and waste products are removed from the tissues as quickly as they are produced. Increased capillary leakage can overwhelm the capacity of the lymphatics to drain the excess fluid, which can result in oedema.

Lymph Capillaries in the Tissue Spaces



ARTERY

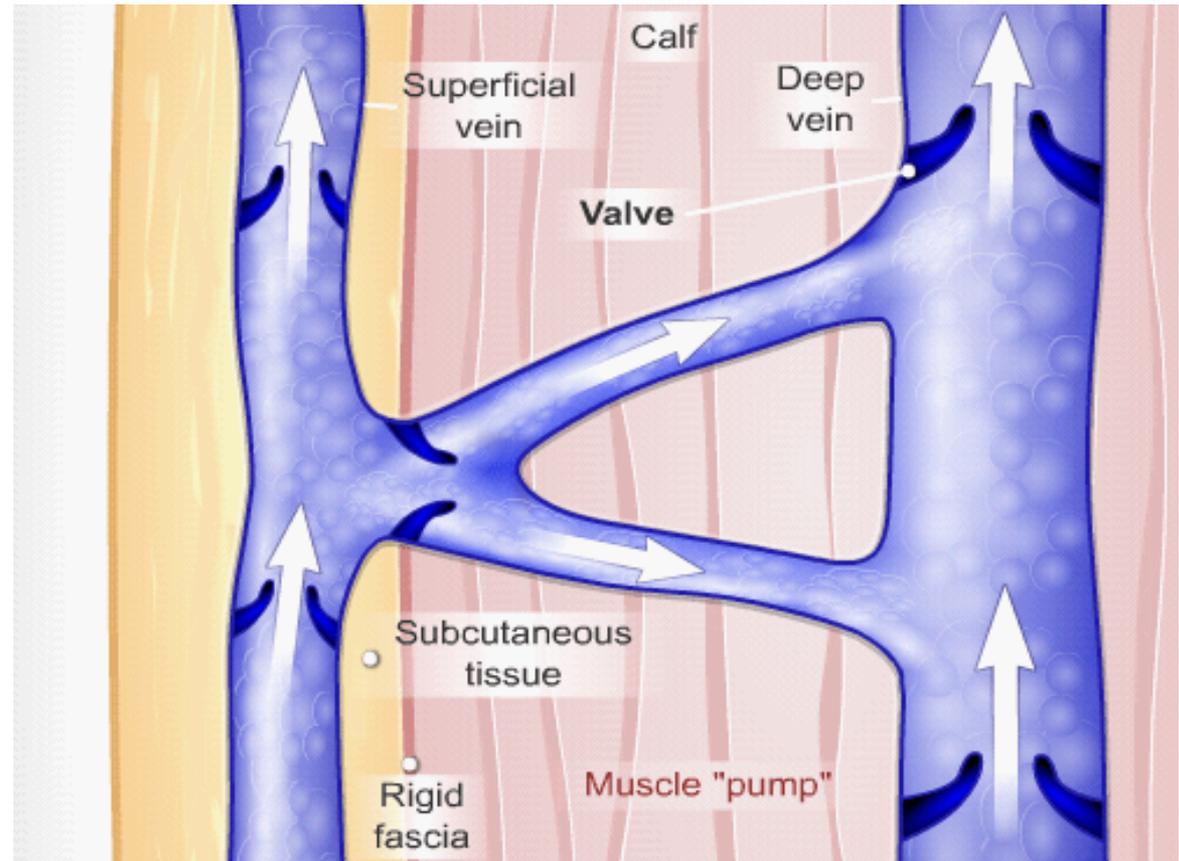


VEIN

Schematic drawings of an artery and vein showing comparative thicknesses of the three coats: outer coat (tunica adventitia), muscle coat (tunica media), and lining of endothelium (tunica intima). Note that the muscle and outer coats are much thinner in veins than in arteries and that veins have valves.

HEALTHY VENOUS FUNCTION

For blood to be effectively taken against gravity back to the heart the body needs valves in the veins to prevent the backflow of blood

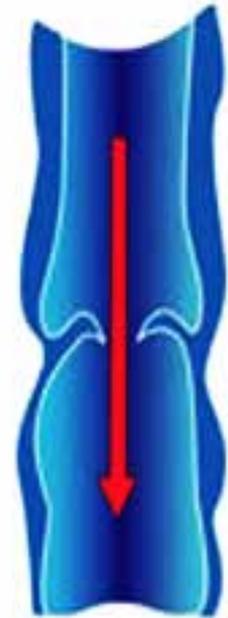


Faulty valves

} When the deep system has faulty valves (the valves do not close tightly allowing the blood to leak back down) changes can start to occur within the legs which can result in leg ulceration. This is known as venous insufficiency.



Blood flowing to heart

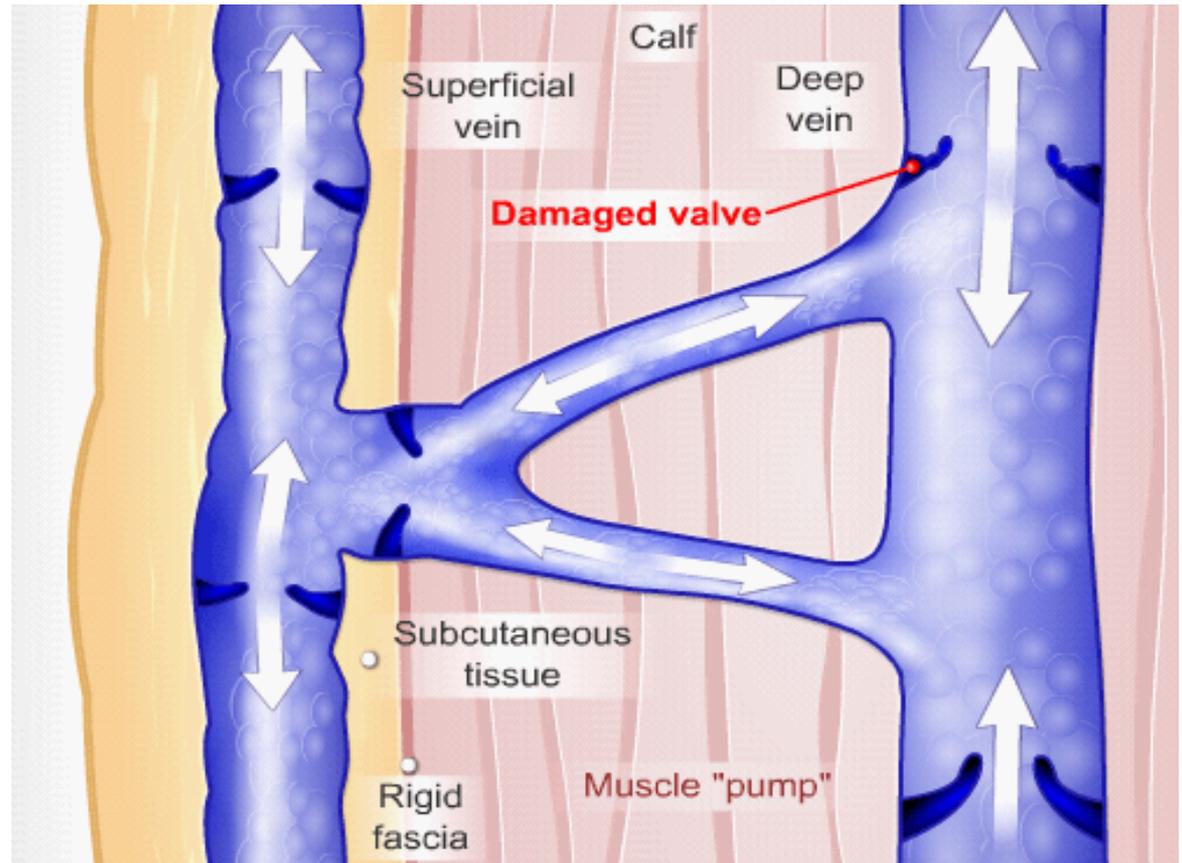


Reverse blood flow due to damaged valve



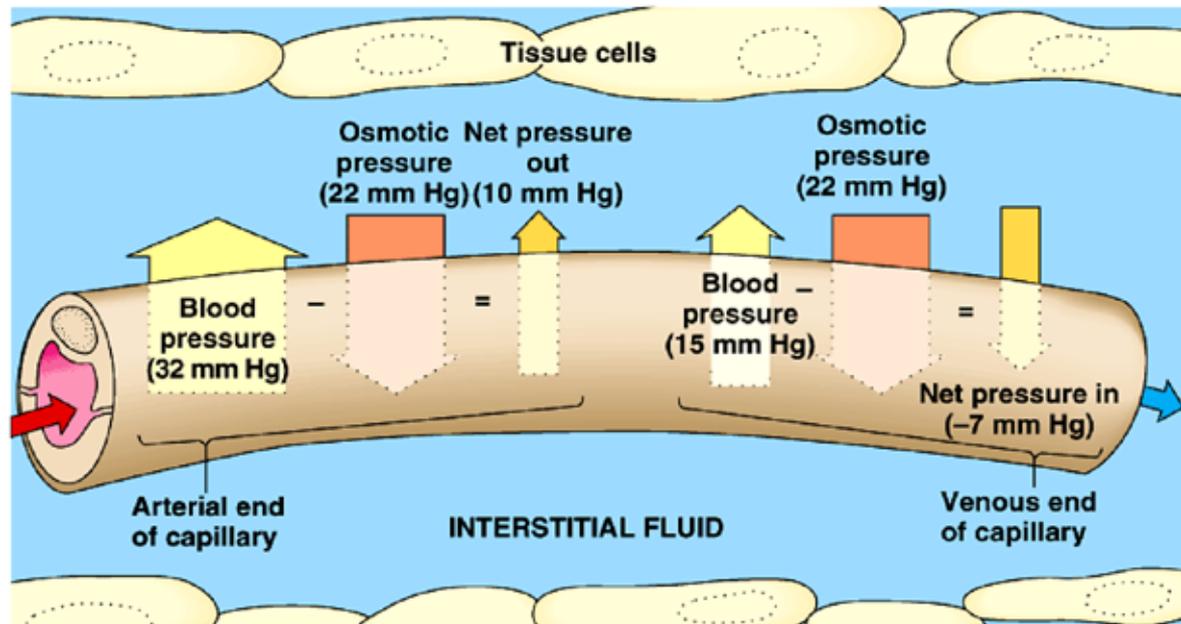
ABNORMAL VENOUS FUNCTION -

Damaged valves are a predisposing factor not a cause for developing a leg ulcer



Capillary exchange

Fluids flow out of a capillary at the upstream end near an arteriole and re- enters a capillary downstream near a venule. The direction of fluid movement across the capillary wall at any point depends on the difference between two opposing forces: blood pressure and osmotic pressure. When the pressure in the venous system is high it will affect the movement.



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How does this result in venous disease/ ulceration?



Progression of damage

incompetent valves



venous stasis (pooling)



exacerbates high pressure



venous dilation



tissue flooding



intoxication and local Ischaemia



venous ulcer



CEAP Classification of chronic venous disease

} **Clinical classification**

C0: no visible or palpable signs of venous disease

C1: telangiectasies or reticular veins

C2: varicose veins

C3: oedema

C4a: pigmentation or eczema

C4b: lipodermatosclerosis or athrophie blanche

C5: healed venous ulcer

C6: active venous ulcer

S: symptomatic, including ache, pain, tightness, skin irritation, heaviness, and muscle cramps, and other complaints attributable to venous dysfunction

A: Asymptomatic



Risk factors for venous disease/ ulceration:

- } Hereditary
- } Age
- } Female sex
- } Obesity
- } Pregnancy
- } Prolonged standing
- } Greater height
- } Immobilisation
- } **PMH DVT**

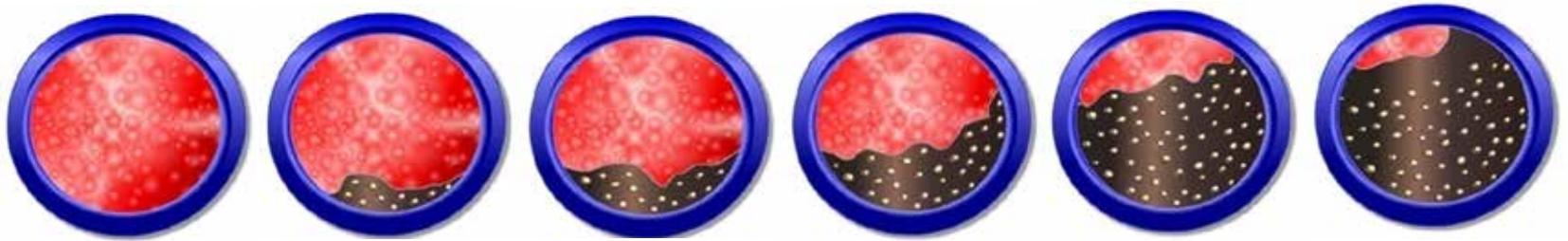


Arterial ulcers

} **Arterial insufficiency** refers to poor blood circulation to the lower leg and foot and is most often due to atherosclerosis. In atherosclerosis the arteries become narrowed from deposits of fatty substances in the arterial vessel walls, often due to high levels of circulating cholesterol and aggravated by smoking and high blood pressure (hypertension). The arteries fail to deliver oxygen and nutrients to the leg and foot resulting in tissue breakdown.



PATHOLOGY



Progressive occlusion



Increased oxygen demand



Risk factors for arterial disease

- } Smoking
- } Diabetes
- } Obesity
- } High BP
- } High cholesterol
- } Increasing age
- } Family history



Assessment

} For every 1 mistake
for not knowing, 10
are made for not
looking!!



Assessment

- } Obtaining a diagnosis can only be achieved with a robust leg ulcer assessment
- } A leg ulcer assessment, including a doppler and/ or lower limb assessment should be carried out within 1 - 2 weeks of the patient presenting
- } Doppler is only an 'aid' to diagnosis not the 'be all and end all'.... LOOK AT THE LIMB – WHAT DOES IT TELL YOU?



Assessing patients with leg ulceration

- } 1 – Patient assessment (Extrinsic factors)
- } 2 – Patient assessment (Intrinsic factors)
- } 3 – Lower limb assessment
- } 4 – Wound assessment



Patient assessment

- } What information do you need to obtain when you carry out a patient assessment?
 - } Why is this information important/relevant?
 - } From the case study you have in front of you, what information is relevant and why?
 - } Is this information assisting your diagnosis?
 - } Do you require more information at this point?
-



Feedback





PATIENT FACTORS (extrinsic & Intrinsic)

- } socio-economic factors
 - } cultural and religious beliefs
 - } hygiene / environment
 - } mobility; activity levels
 - } lifestyle choices – smoking / drugs / alcohol
 - } major life stressors
 - } Occupation/ previous occupation
 - } treatments (appropriateness)
 - } isolation
 - } health beliefs / belief in treatment
 - } relationship with nurse
 - } concordance levels
 - } medicines, drug therapies
 - } Full medical history
 - } **Anxiety & Depression score**
 - } Quality of Life assessment
 - } Bloods
 - } Medication
 - } MUST/ BMI
 - } BP
 - } Co-morbidities e.g. diabetes, rheumatoid arthritis – current status.
 - } **Pain assessment/ score**
-



Clinical history indicators of possible venous involvement

- } DVT
- } Thrombophlebitis
- } Leg, Pelvis or foot Fractures
- } Vein surgery or Sclerotherapy
- } Obesity
- } Multiple pregnancies
- } H/O Pulmonary embolism





Clinical history indicators of possible arterial involvement

- } Intermittent Claudication
 - } Ischemic rest pain
 - } CVA
 - } MI
 - } TIA
 - } Peripheral vascular disease
 - } Smoker
 - } Diabetes
 - } Heart disease or surgery
 - } Hypertension
 - } Renal Disease
-



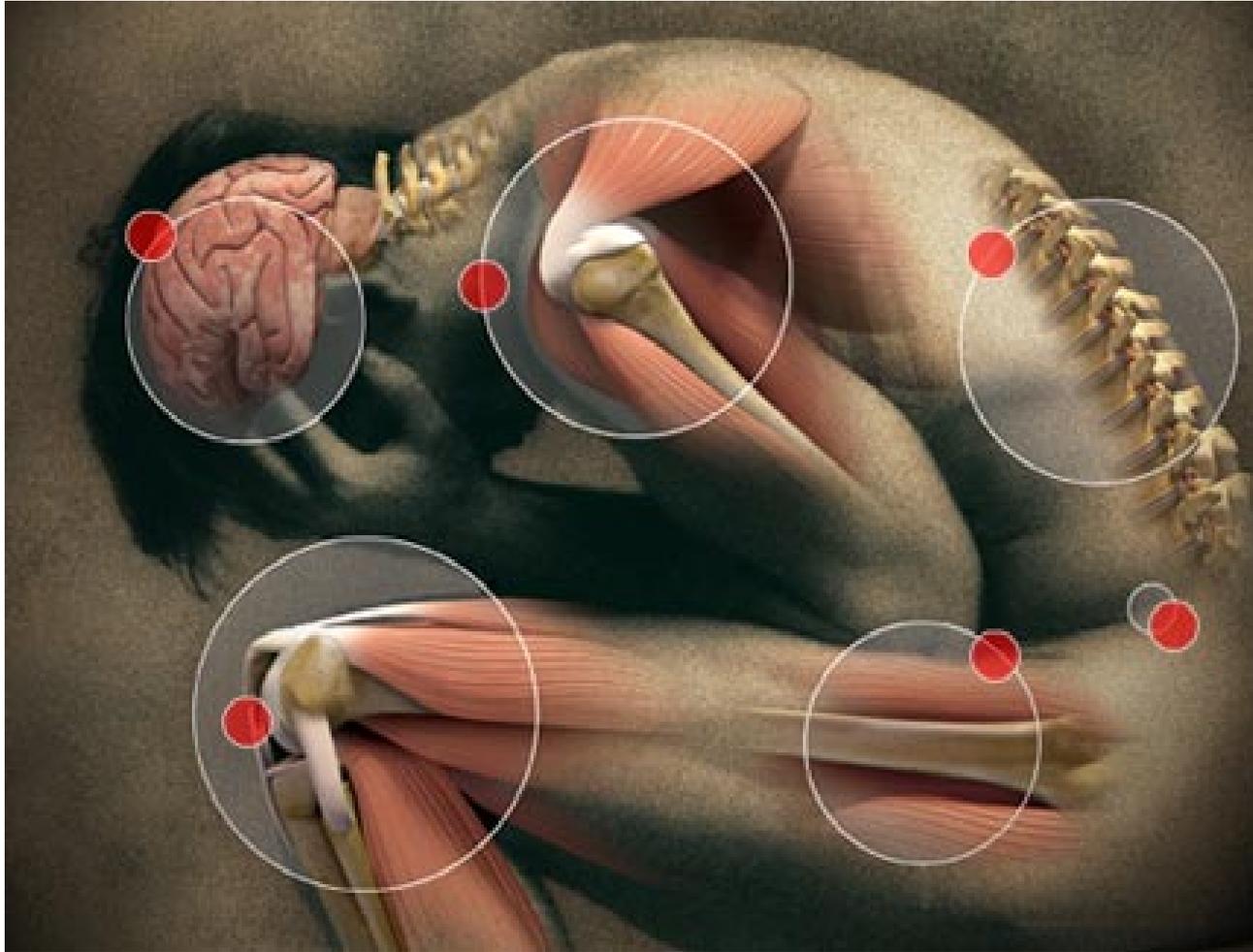
84 yr old diabetic, COPD, renal disease.



8 weeks after commencing insulin



Pain assessment & management



Pain Scale

(Taken from the Wong-Baker Faces Scale)



Abbey Pain scale

- } For measurement of pain in people with dementia who cannot verbalise.
- } Focusses on: vocalisation (whimpering, groaning, crying)
- } Facial expression
- } Changes in body language
- } Behavioural change
- } Physiological change (Temp, pulse or BP)
- } Physical changes (Skin tears, pressure areas, contractures)





What type of pain-

Neuropathic Pain

- } shooting
- } burning
- } tingling
- } stabbing
- } piercing
- } raw
- } pricking
- } throbbing
- } Pins and needles
- } dagger like

Use descriptors

Nociceptive Pain

- } dull
- } aching
- } tender
- } cramping
- } sore
- } twinge
- } hurt
- } uncomfortable
- } spasm
- } nagging
- } sickly



Hyperalgesia and allodynia

- } Patients can get Hyperalgesia (Excruciating pain in the wound bed)
- } Allodynia (Pain in the surrounding skin)
- } Pain can follow a 'non-painful' event such as wound exposure
- } Usual forms of analgesia are often not effective



Lower limb assessment

} Signs and symptoms of leg ulceration



Assessment of the limb

} VASCULAR STATUS – Doppler and/ or lower limb assessment

- } Limb shape & size
 - } Haemosiderin staining
 - } Atrophie blanche
 - } Ankle flare
 - } Eczema (& cause – varicose, contact, irritant)
 - } Hyperkeratosis
 - } Lipodermatosclerosis
 - } Oedema
 - } Varicose veins
 - } Skin colour – pale/ red/ normal
 - } Skin colour changes on elevation & dependence
 - } Temperature
 - } Capillary refill < 3 seconds
 - } Site of ulceration
-



	ARTERIAL ULCERS	VENOUS ULCERS
Cause	Arterial disease	Chronic venous hypertension
Wound bed appearance	Deep 'Cliff edge' margins	Shallow Irregular wound margins
Evolution	Rapid deterioration	Slow evolution
Skin aspect	Shiny Pale Cold to touch Hair loss	Pigmented Eczema Warm to touch Ankle flare
Localization	At the extremity: foot and lower limb	Lateral or medial malleolus
Oedema	May have a localised oedema	Generalized oedema
Pain	Painful: Ischaemic pain	Painful if infected
Doppler	< 0.6	> 0.8

Lymphovenous disease

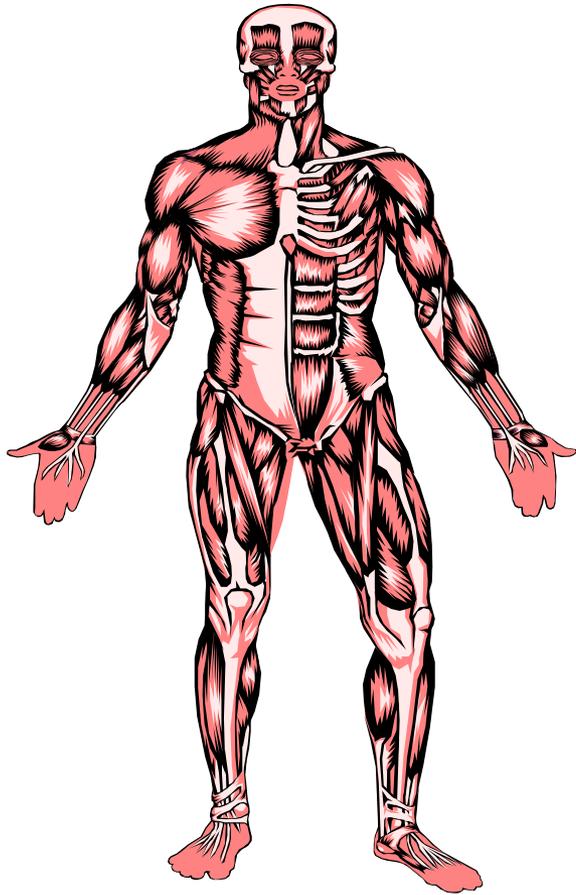
- } Venous and lymphovenous disease is progressive
 - } Symptoms manifest as skin changes
 - } These deteriorate as the disease progresses
 - } Following the mid term disease stage (atrophie blanche, haemosiderin staining etc) legs progress to the advanced stage.
 - } This includes enhanced skin folds, papillomatosis (superficial lymphatic vessels protruding through the skin), lymphorrhoea (wet legs), cellulitis.
 - } On reaching this stage your management plan would differ to that of a standard venous leg ulcer patient.
-



Vascular assessment



Why is Doppler Assessment Necessary?



- } All patients presenting with an ulcer or lower limb problems should be screened for arterial disease by Doppler measurement of ABPI.
- } To enable effective treatment options to be established.
- } To **minimise the risk factors** of compression therapy.
- } To support holistic assessment.



USING A DOPPLER ULTRASOUND



- ✓ **ABPI 1 – 1.3**
= Normal range
- ✓ **ABPI 0.8 – 1.3**
= Venous disease
- ✓ **ABPI = 0.6 - 0.8**
= Mixed aetiology
- ✓ **ABPI < 0.6**
= Severe arterial disease
- ✓ **ABPI > 1.3**
= Medial wall calcification

Wound assessment



- } Look at your case study and the wound
- } What are you looking at?
- } What information is required?
- } What does this mean/ is it important?
- } How is this information recorded?



Feedback



Wound assessment

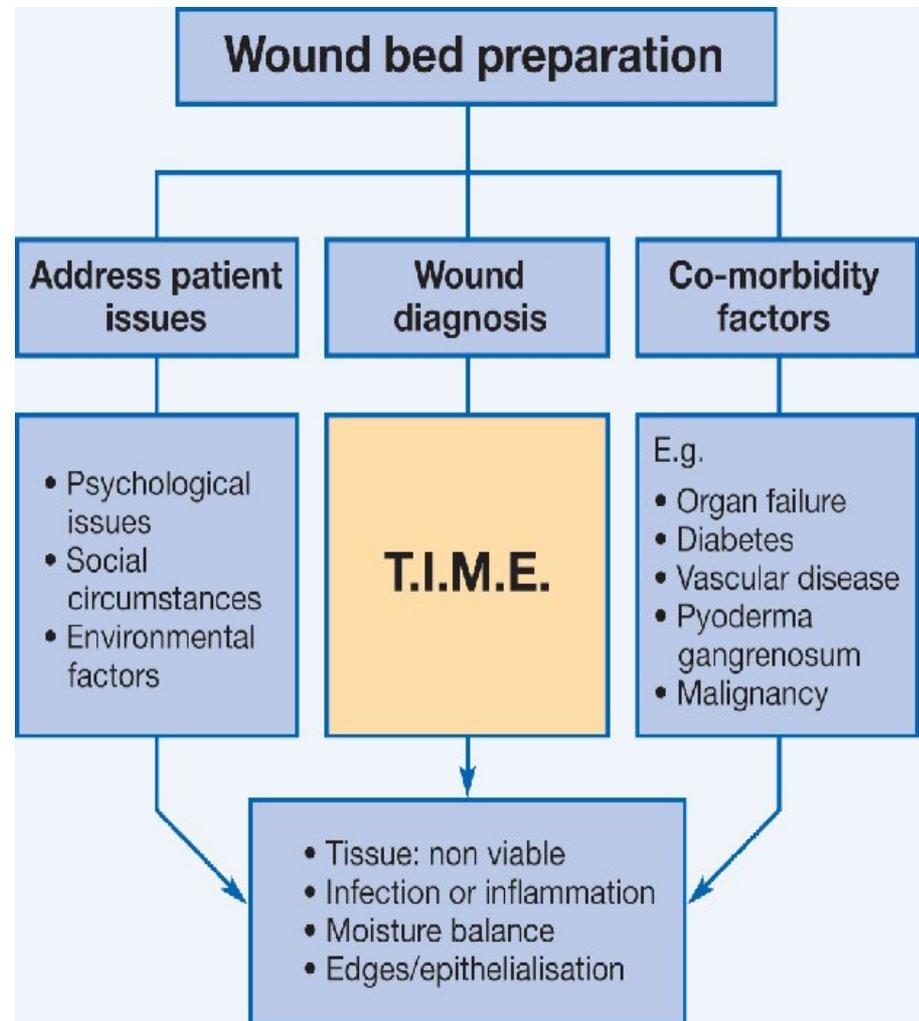
} Cause

- } Is it a reoccurrence?
 - } Duration
 - } Wound area in cm² as a baseline (Is it bigger/ smaller and in what timescale)
 - } Tissue type (including hypergranulation)
 - } Infection/ biofilm presence
 - } Wound edges
 - } Odour
 - } Type and level of exudate
 - } Peri wound skin status
 - } Photograph
 - } Previous management regimes
 - } History of healing rates
-



TIME slide

- } **T** = Tissue
- } **I** = Infection
- } **M** = Moisture
- } **E** = Edge



T = Tissue

- } What does it look like?
- } What type of tissue in the in wound bed?
- } Granulating
- } Epithelialising
- } Sloughy
- } Necrotic
- } Work out %'s and document



Epithelialising



Granulating



Sloughy



Necrotic



I = Identifying wound bed infection

- } Wound bed contamination
- } Wound bed colonisation
- } Local wound bed infection
- } Systemic infection
- } Use the AMBL tool

Management Pathway.pdf - Adobe Reader

The Assessment and Management of Bacterial Loading in Wounds Tool (AMBL) Oxford Health NHS

		Wound Bed Contamination Patient's wound shows a continuous stream of soft debris Being pain or unpleasant	Wound Bed Colonisation Mild odour, debris for the hole to be seen and wound debris Being compressible	Local Wound Bed Infection Pain, redness, warmth Wound bed colour change
LOCAL SIGNS & SYMPTOMS	Wound bed	Wound debris visible in hole by 40% of hole. Fresh granulation epithelialisation	Being too close to wound for ongoing wound. No granulation to be seen	Being too close to wound for ongoing wound
	Exudate Colour	Normal colour for patient wound type	Increased exudate (quantity and colour)	Increased, yellow, green, odorous
	Pain	No change	Increased discomfort	More severe pain
	Odour	Odourless or mild odour ¹	Odourless or mild odour ¹	Local Wound Bed Infection: odour Systemic Infection: odour Foul, 20% of 20 with a strong odour
SYSTEMIC SIGNS & SYMPTOMS		None	None	Systemic Infection Fever Tachycardia Hypotension Leucocytosis Leucopenia Renal/Liver/LFT Abnormalities
MANAGEMENTS	Current wound bed condition: Soft bed patient ²	No	No	No
	Wound bed type AL, C, G, I	No ³	No ³	No ³
	Systemic infection diagnosis	Standard bandaging	Low Dressing appropriate banding High Dressing banding	Low Dressing appropriate banding High Dressing banding
	Other signs	Debride deeply to remove tissue Treat systemic co-existing condition Assess wound for infection: wound bed infection at every dressing change	Consider infection in Tissue Viability The infection is not being resolved Assess wound for infection at every dressing change Debride deep to remove tissue	Refer to Microbiology for swab result that returns a positive result

¹ Low odour of odour or 1-2 days off set may have an unpleasant odour due to the inflammatory process of wound healing, the odourless band should be a low
² Wound bed type is not defined where current wound dressing is required to see current infection and soft tissue infection such as Cellulitis
³ Do not change to debride low bed wound and consider biopsy has been explored in line with a patient's patient assessment. A low bed assessment (Pain, Pain, Pain, redness, yellow, the assessment plus a 2 degree when appropriate should be clearly documented.
⁴ For the high bed patient including those with diabetes or compromised immunity, secondary sources may not display the signs & symptoms of infection as infection described in the low bed patient with more subtle signs.

M = Moisture. Exudate pathway

- } Follow the pathway to identify causes of exudate levels
- } Is wound too wet or too dry?
- } What does exudate look like?
- } How much is there? How do you measure it?



E = Wound **edges** and peri wound skin assessment

- } Rolled edges may indicate malignancy
- } Cliff edges/ punched out often indicative of arterial disease
- } Epithelialising edges will be fragile and vulnerable and must be protected.
- } Moisture balance is essential – not too wet and not too dry!
- } Consider skin barriers



Wound measurement

Working out surface
area in cm^2



Identifying abnormal or difficult to treat leg ulcers



Diabetic foot ulcer – not a leg ulcer!

- } Caused by the combination of arterial blockage and nerve damage. Although diabetic ulcers may occur on other parts of the body they are more common on the foot.



Squamous cell carcinoma

Squamous-cell carcinoma (SCC or SqCC) is a cancer of a kind of epithelial cell, the squamous cell. These cells are the main part of the epidermis of the skin, and this cancer is one of the major forms of skin cancer.



Pyoderma gangrenosum

Though the aetiology is not well understood, the disease is thought to be due to immune system dysfunction, and particularly improper functioning of neutrophils. At least half of all pyoderma gangrenosum patients also suffer from illnesses that affect their systemic function. For instance, ulcerative colitis and rheumatoid arthritis.



Vasculitis

Vasculitis is a group of disorders that destroy blood vessels by inflammation. Both arteries and veins are affected.



Marjolin's ulcer

Refers to an aggressive ulcerating squamous cell carcinoma presenting in an area of previously traumatised, chronically inflamed, or scarred skin. They are commonly present in the context of chronic wounds including burn injuries, venous ulcers, ulcers from osteomyelitis, and post radiotherapy scars.



Bowens disease

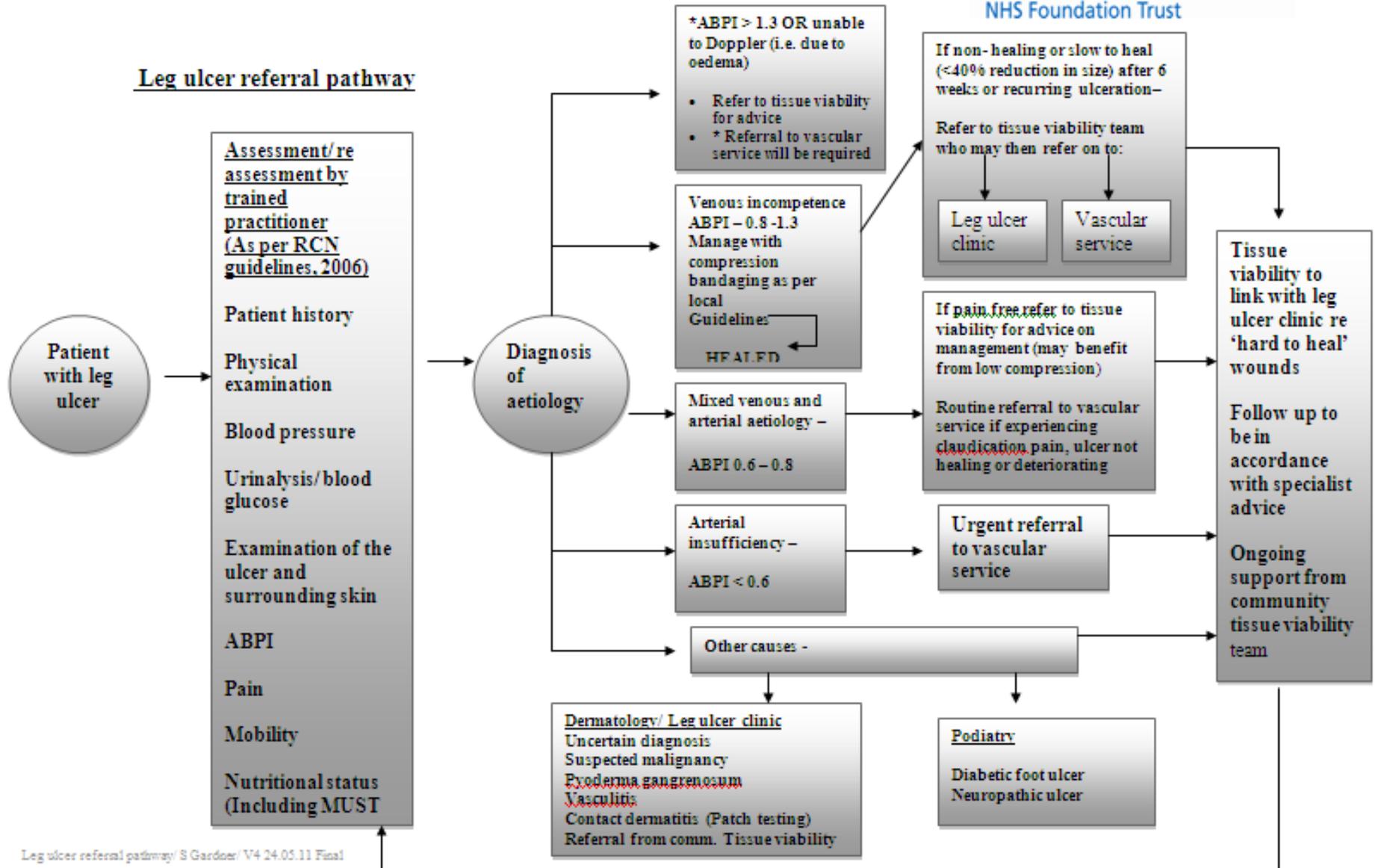
Bowen's disease is a very early form of squamous cell skin cancer, which is easily curable. The main sign is a red, scaly patch on the skin.



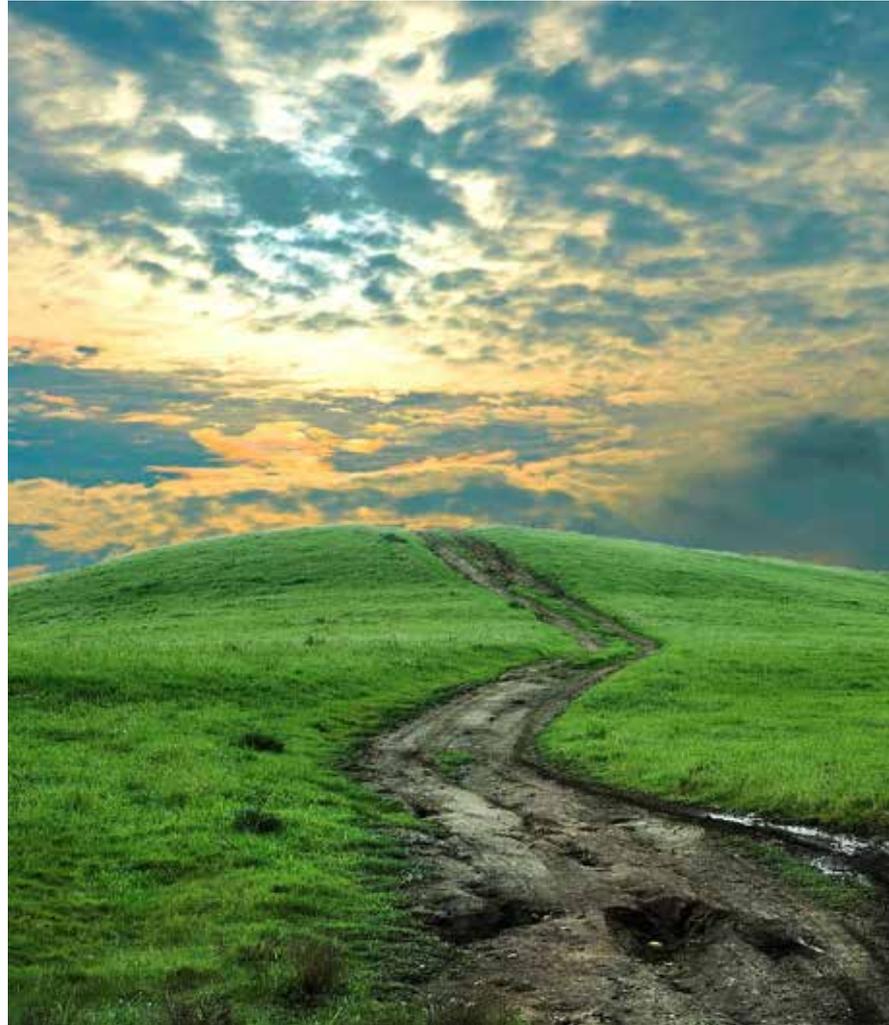
Leg ulcer management



Leg ulcer referral pathway



Venous leg ulcer management – using the VLU pathway.



Set out your milestones



Milestones

- } Assessment
 - } Diagnosis
 - } Consider – Do I need to refer at this stage?
 - } If no....
 - } Management
 - } Leg ulcer pathway allocation (If venous)
 - } Re-assessment (every 6 weeks)
 - } Progressing? If no then refer to tissue viability.
 - } Healed?
 - } If yes.... Prevention of recurrence care plan
-



Venous LU Pathways: Standard or complex?

Standard criteria

- } First ulcer
- } Ulcer < 6 months old
- } Size < 100cm²
- } < 3 episodes of local infection

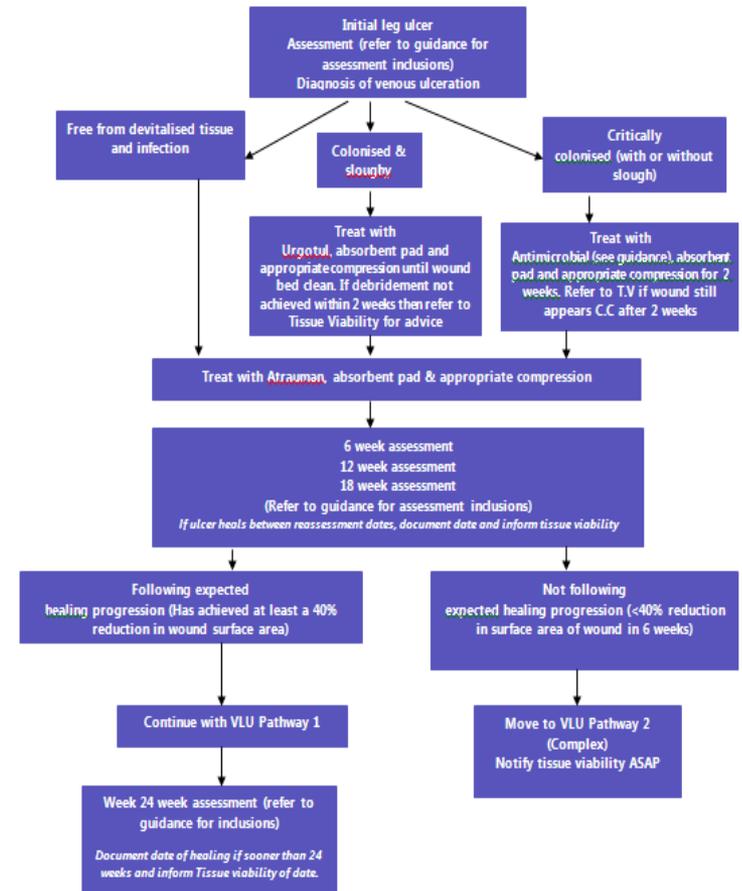
Complex criteria

- Ulcer > 6 months old
- Recurrent ulcer
(automatically allocated to complex pathway)
- Size > 100cm²
- > 3 episodes of local infection



Venous leg ulcer pathway

Provides an evidence based approach to LU management with an aim to heal by 24 weeks.



Treatment pathways focus on:

- } Wound bed preparation
- } Eradication of infection
- } Pain management
- } Correct bandage selection and application
- } % Progression at 6 week intervals
- } Early referral to tissue viability



Patient Status at a Glance board

- } All DN teams should now be displaying a board
- } Mandatory requirement for OH staff now
- } All new patients with a leg wound greater than 4 weeks need adding and will remain on if assessed as venous.
- } All new patients and those removed in the past month get reported
- } Information gets passed to CCG re healing rates
- } 70% healing at 24 weeks is expected.



First - Washing and skin care

- } Legs should be washed at each dressing change
- } Emollient should be added to water
- } NO aqueous
- } Remove debris/ hyperkeratotic plaques
- } Use a cloth/ flannel for large areas of hyperkeratosis (get pt to wash it properly in between use)
- } **Emollient therapy**



- } What is available to use?
- } How do you choose an emollient for your patient?
- } How do you apply the emollient



Feedback



Wound bed preparation – Debridement required?



Primary dressing – If healthy

Based on pathway allocated

- } Atrauman if wound bed healthy
- } Absorbent pad based on exudate level.
- } Urgostart contact if complex



If debridement needed...

- } Standard – Urgoclean
- } Complex – Topical antimicrobial



Locally Infected? Use Antimicrobial formulary to guide your clinical decision

Honey = 1st line

Cadexomer iodine = 2nd
line

NOT INADINE

NOT SILVER

2 weeks



Managing the exudate

- } How do you make a decision re amount?
- } How do you choose absorbent pad?
- } How do you choose how often to change the dressings?
- } How does the padding affect the compression?
- } Use exudate pathway



Compression

- } Based on level of mobility
- } K Two if immobile or limited mobility
(Restricted to the house/
getting to loo or kitchen)
- } Actico (short stretch) if more mobile and getting out of house walking
- } This applies to venous ulceration NOT chronic oedema/ lymphoedema



Treatment requirements included

Treatment objective	Standard	Complex
Maintaining healthy wound bed	Atrauman + Absorbent pad	Urgostart contact + absorbent pad
Debridement	Urgoclean	Honey or iodine (2 weeks)
Management of local WB infection	Honey or iodine (2 weeks)	Honey or iodine (2 weeks)
Ongoing WB maintenance	Atrauman + absorbent pad	Urgostart contact (for max of 12 weeks) then Atrauman + absorbent pad
Failure to progress at 6 weeks	Transfer to complex pathway	Refer to tissue viability
Exudate management	Based on level: Zetuvit E, Zetuvit plus or Sorbion	Based on level: Zetuvit E, Zetuvit plus or Sorbion
Compression	Based on level of mobility: Actico or K Two	Based on level of mobility: Actico or K Two

Progression at 6 weeks

If the wound is progressing in a normal way then there should be a 40% reduction in wound size at 6 weeks. If this is not achieved RE ASSESS, consider possible reasons and refer to tissue viability for advice.



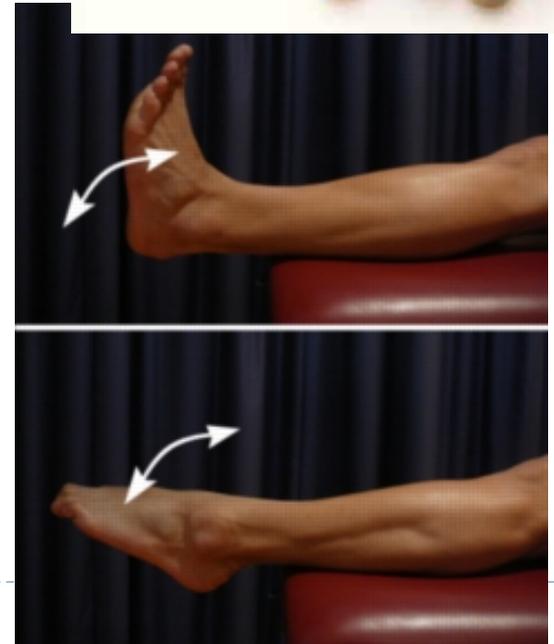
Wound size progression

- ∅ 30 – 40 % = Continue on pathway
- ∅ 20 – 30% = Consider:
 - Is the wound sloughy or infected?
 - Is the wound inflamed?
 - Is the compression on properly?
 - Has there been a change in Pts health?
- ∅ 0 – 20% = Refer to Tissue Viability for advice



Management plan should also include:

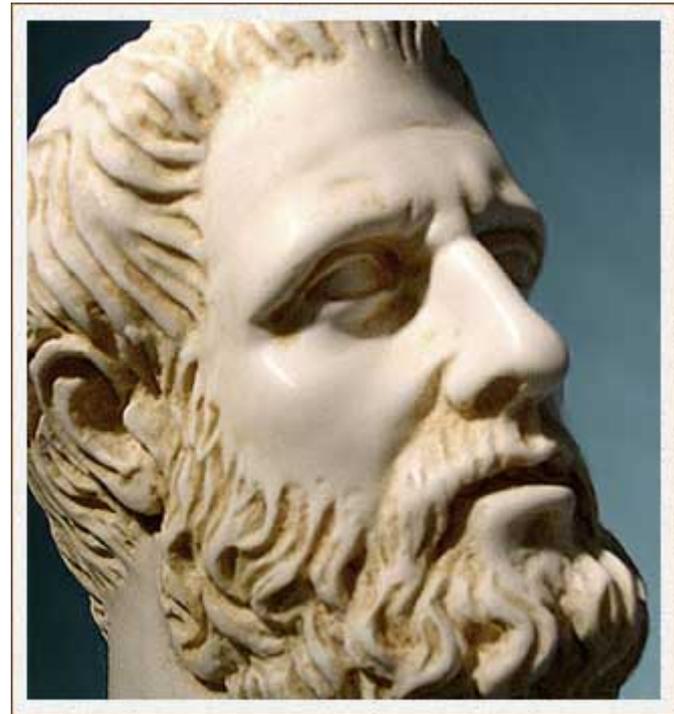
- } Care plan for pain management
- } Mobility/ exercises
- } Lifestyle/ QoL



Exercise/ leg elevation

} “ In the case of an ulcer, it is not expedient to stand, especially if the ulcer be situated on the leg”

(Hippocrates, 400 yrs BC)



Topical steroids in wound care...The evidence???

- } Is known to work but why?
- } Not licensed to be used directly on wound beds so where do you stand re accountability?
- } How much should be used and for how long?
- } Full of allergens – particularly the ones with antibiotics.
- } Possibly mask underlying problems
- } Can have similar long term effects as systemic steroids.
- } Should not routinely be used unless discussed with tissue viability first. **NEW PROTOCOL AVAILABLE**
- } **Trimovate now YELLOW listed (For continuation following specialist recommendation only) and should be time specific.**



Gallop through compression



Bandaging - Compression therapy, the gold standard treatment for **venous** leg ulcers



Factors to be considered before applying compression

- } **Skin condition** – delicate friable skin can be damaged by high levels of pressure
 - } **Shape of the limb** – the sub-bandage pressure and the pressure gradient will be altered by the limb shape in accordance with Laplace's Law. Skin overlying exposed bony prominences may be subject to pressure damage
 - } **Presence of neuropathy** – the absence of a protective response increases the risk of sub-bandage pressure damage
 - } **Presence of cardiac failure** – rapid fluid shifts can be dangerous as it increases the preload of the heart
-



How does compression work?



Feedback



FUNCTIONS OF COMPRESSION THERAPY

- } Reduces distension of the veins
- } Increases the function of the calf muscle pump
- } Restores valve function
- } Increases the velocity of venous blood flow
- } Reverses venous hypertension
- } Reduces oedema
- } Improves the microcirculation blood flow
- } Reduces inflammation
- } Improves symptoms of lipodermatosclerosis



Why compression? The evidence

2 Systematic reviews of RCTs concluded that more people heal their ulcers under compression than without compression (Cullum et al, 2001)

Taken from the RCN guidelines, 2006



LAPLACE'S LAW



$$P = \frac{T N c (4630)}{CW}$$

P = sub bandage pressure

T = bandage tension

N = number of layers applied

c = constant

C = circumference of the limb

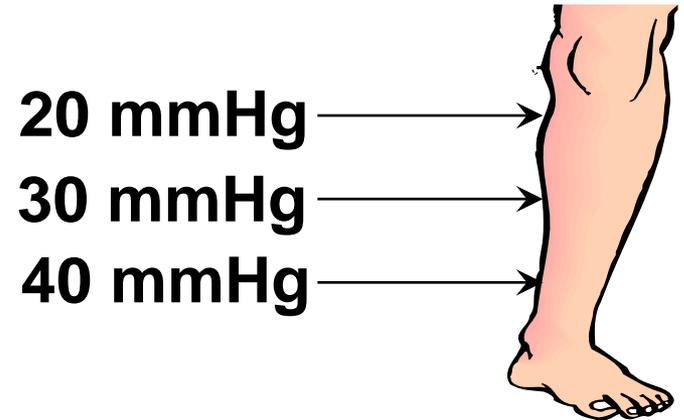
W = bandage width

Clinical studies have focused on 40mmHg pressure at the ankle because this is the figure calculated to reverse venous hypertension

(Blair et al, 1988)

GRADUATED COMPRESSION

- ⊕ Graduated compression is when the bandages are applied at the correct compression up the leg
- ⊕ The pressures fall as the circumference of the leg increases



Providing the bandage is applied according to manufacturer instruction



Bandages



Wool

} How should it be applied?



Compression bandages

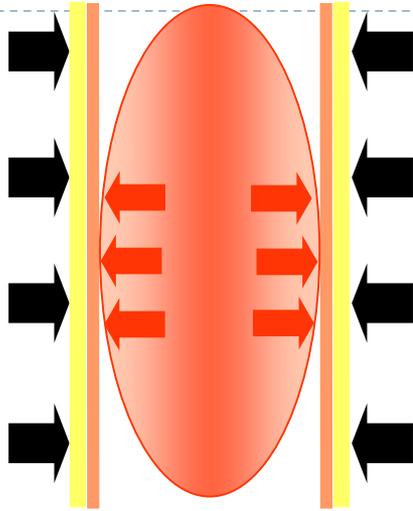
- } Short stretch
- } Elastic
- } Multi layered
- } 2 layer
- } 4 Layer
- } Reduced compression



What is the difference between
long (elastic) and **short** stretch
(inelastic) bandages?

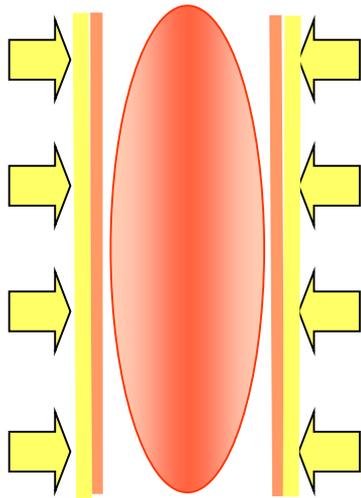


Working and resting pressures



Working Pressure

- When the muscle pump is active and expands it presses against the bandage
- The resistance of the bandage 'presses back' against the muscle
- This creates a **working pressure**
- An **inelastic** bandage with no 'give' donates a **high** working pressure



Resting Pressure

- When the muscle pump relaxes it is not pressing against the bandages
- No resistance from the bandages
- This creates a **low resting pressure**
- Elastic bandages **maintain** a constant pressure by 'squeezing' the muscle



Compression bandage choices for Oxfordshire

- } Ko Flex (Low compression) – 20mmHg
- } K Two (Multilayer) – Will give a constant 40mmHg. Will be more effective in patients who have limited or no mobility.
- } Actico (Short stretch) – Will deliver high working pressure and low resting pressure. Possibly more suitable for mobile patients.

ALL available on ONPOS



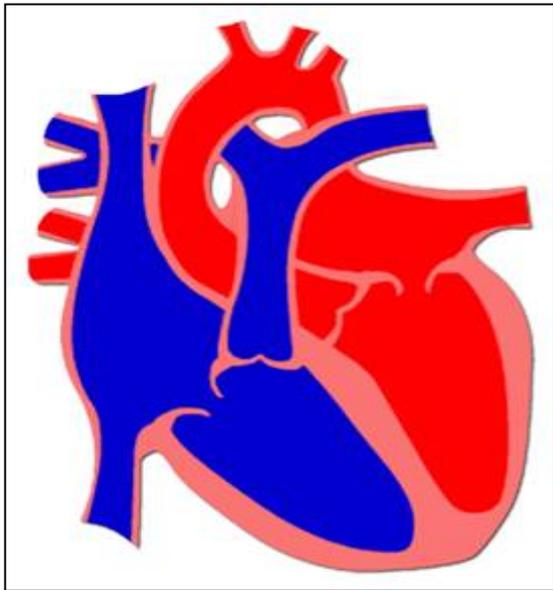
Applying compression

- } Establish ABPI (Full compression needs an ABPI of 0.8 – 1.3)
 - } Gain consent & supply verbal/ written information.
 - } Assess shape of limb first (Photograph as baseline)
 - } Measure ankle circumference and document
 - } Apply dressings then shape limb to create a graduated shape.
 - } Re - measure ankle circumference and choose bandage size/ number based on type.
 - } Consider H&S issues – risk assess
 - } Offer advise post application – things to look out for.
-



CAUTIONS WITH FULL COMPRESSION

Heart failure



Arterial ulcers



Discontinue compression if patient has a systemic infection (Cellulitis) until pain is less acute.



Concordance

- } Assess why patient is not concordancing
 - } Is pain managed effectively
 - } Is patient anxious or depressed? (HADS score)
 - } Do they need to be referred?
 - } Consider your skills/ your approach to the care
 - } Have you taken time to explain why they have leg ulceration and how compression works?
 - } Have you issued a patient information leaflet?
-



Managing non
healing, complex
ulcers/ wounds

When is a wound
'palliative'?



Managing complex ulcers

- } Failure to progress
 - } Exudate management
 - } Pain
 - } Odour
 - } Infection
 - } Dealing with pts anxiety re the problem
 - } Feeling helpless – never ending!
 - } When to refer
 - } When do we 'give up'?
 - } Palliative wounds
-



Mixed aetiology

- } Correct diagnosis
- } Establish degree of arterial disease
- } Consider reduced compression (Ko flex)
- } Debride and treat local infection
- } Skin care
- } Monitor progress every 6 weeks (Unlikely to achieve 40%)
- } Reassess ABPI
- } Refer to TV if uncertain of plan



Arterial disease- may become palliative

- } Refer to vascular for an opinion
- } Reassess following intervention re healing potential
- } Careplan should be focussed on symptom management (Pain, infection, exudate, skin care etc)
- } Evaluate effectiveness of actions
- } Refer to TV for advice/ support



Dressings for mixed and arterial ulcers

– treat the symptom/ problem

- } Layering dressings will not necessarily improve the outcome
- } Most advanced dressings are effective on their own
- } Use the step up step down approach
- } Consider your rationale for choice
- } Measure whether its working
- } Give the dressing time to work
- } Is it a formulary dressing?



And now....

Case studies...

As a group. Put together a plan of care for your patient



Thank you...

} *You have
been...*

