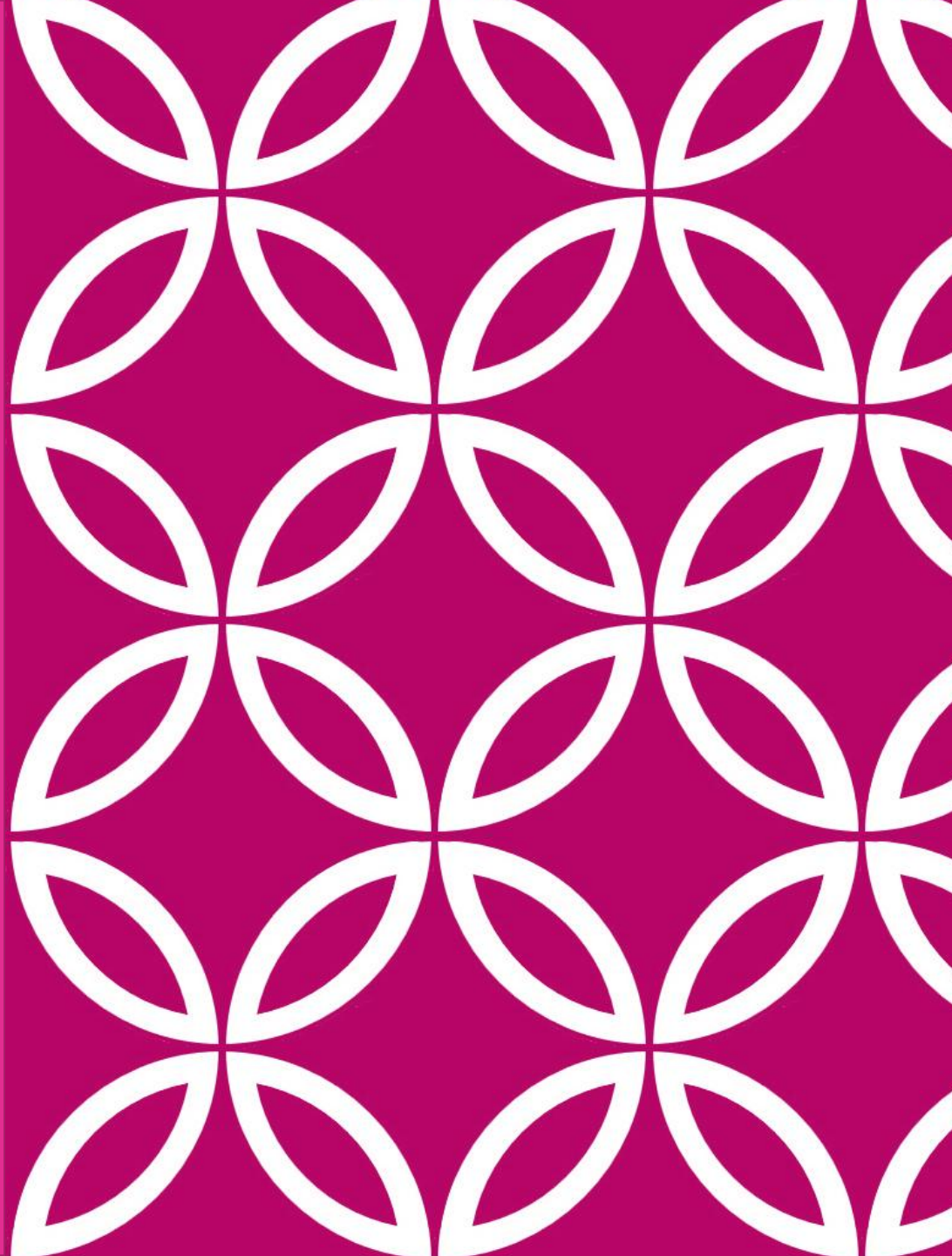


# **FUNDAMENTALS OF LOWER LIMB MANAGEMENT — DAY 2**

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**Martha Williams  
(Joint TV Lead)  
Fran Russell (Senior  
TVN)**



# LEARNING OBJECTIVES



Learn how to undertake a manual doppler assessment, identify pedal pulse types and calculate ankle brachial pressure index.



Understand the theory of graduated compression, La Place's Law and Pascal's Law



Exploration of the benefits of compression therapy and overcoming barriers to implementation



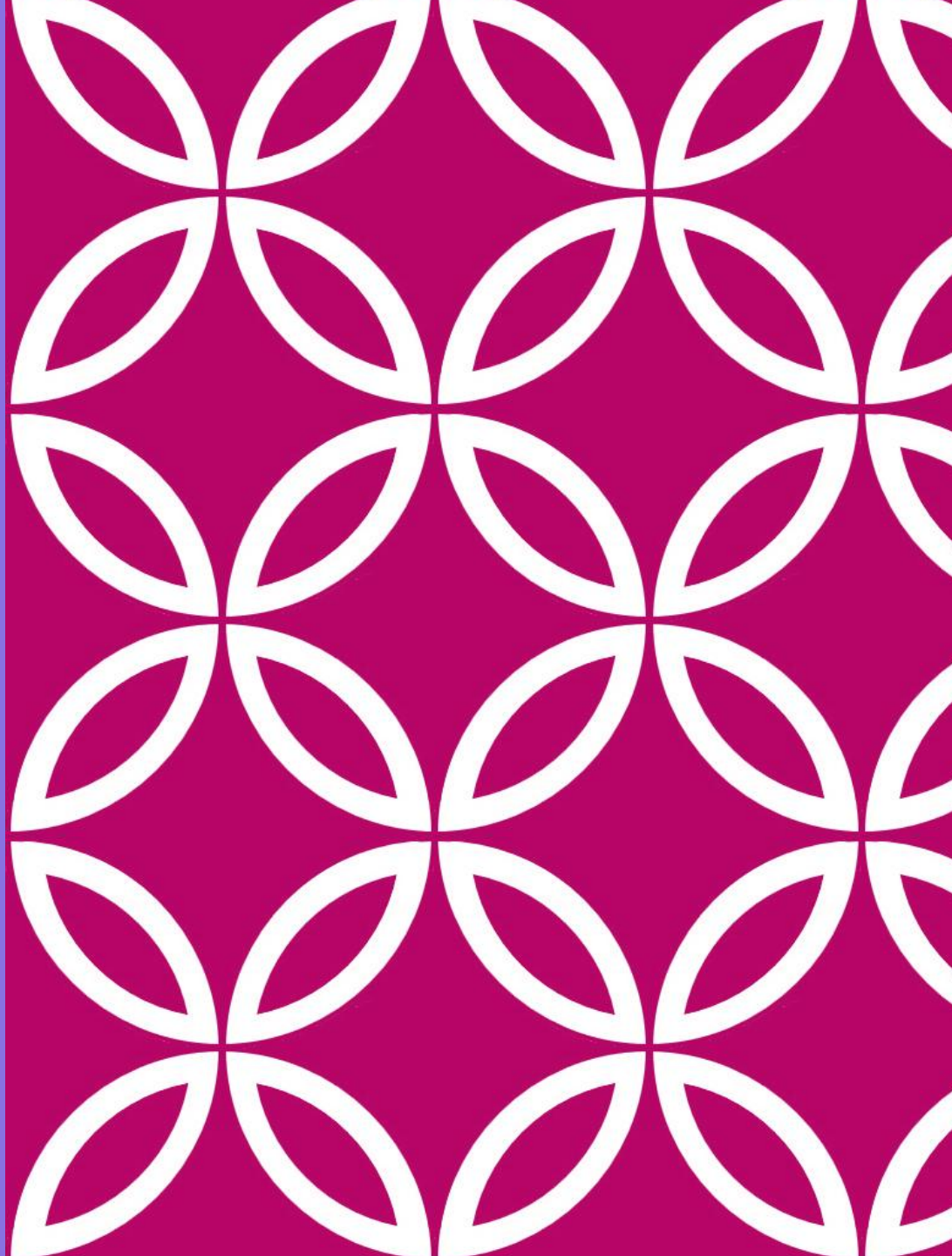
Introduction to effective application technique of Actico, K2 and Ko-Flex with an opportunity to practice under supervision



Practice effective application technique of below knee Actico, K-Two and Ko-Flex bandaging for venous leg ulceration and thigh high Actico bandaging for chronic, including stump bandaging to toes

DOPPLER

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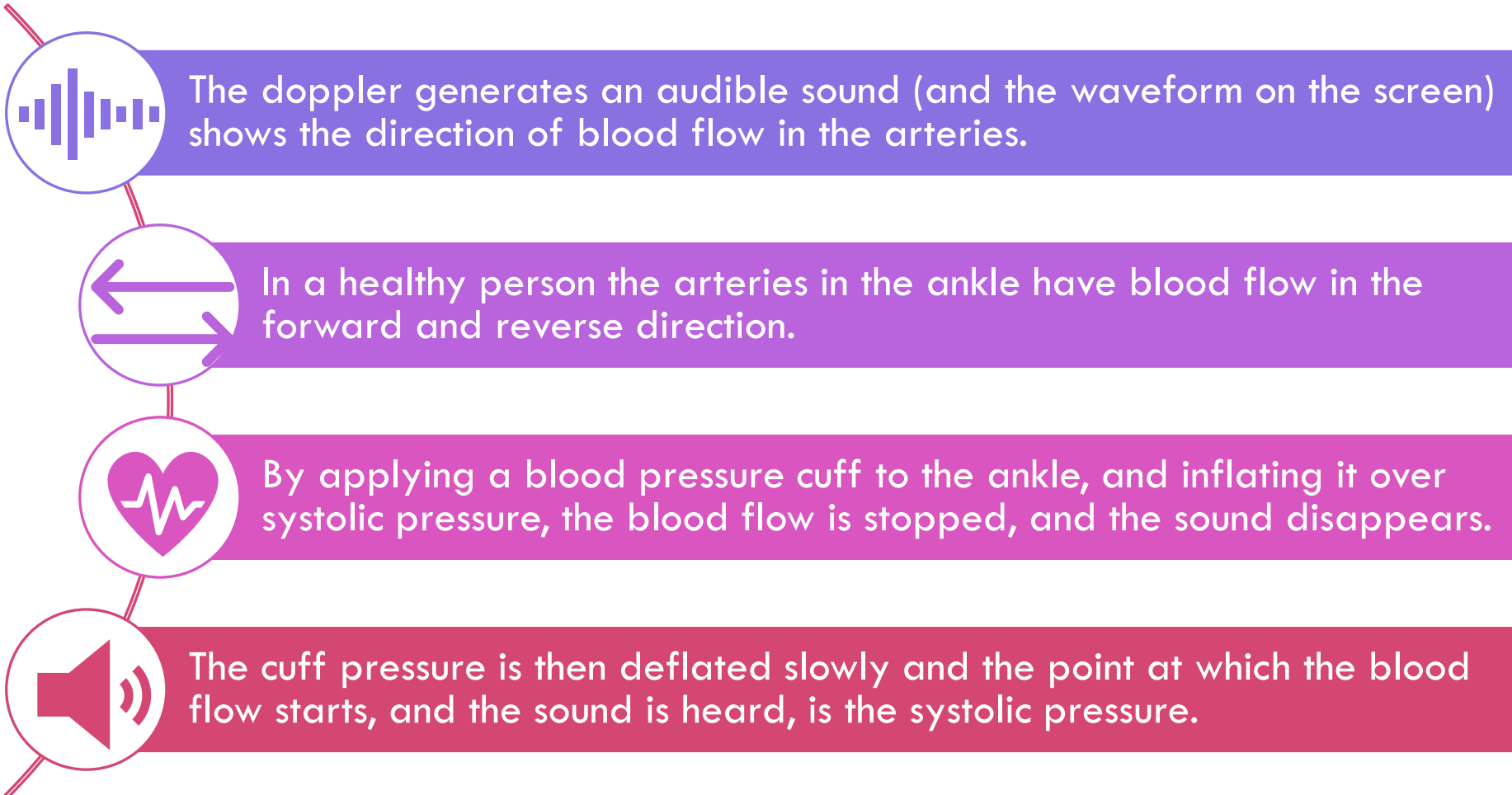
# WHAT ACTUALLY IS A DOPPLER?

---

A lower limb doppler is like a **specialised ultrasound for leg arteries**. It uses sound waves, like a tiny radar, to assess the blood flow in the lower legs and feet.



# THE PRINCIPLES OF DOPPLER ULTRASOUND



Let's  
improve this  
statistic!



40% OF PEOPLE  
WITH LEG ULCERS  
DO NOT RECEIVE  
AN ABPI  
ASSESSMENT  
(GUEST, 2019)





The rule of thumb is:

The **LOWER** the frequency

The **DEEPER** the penetration

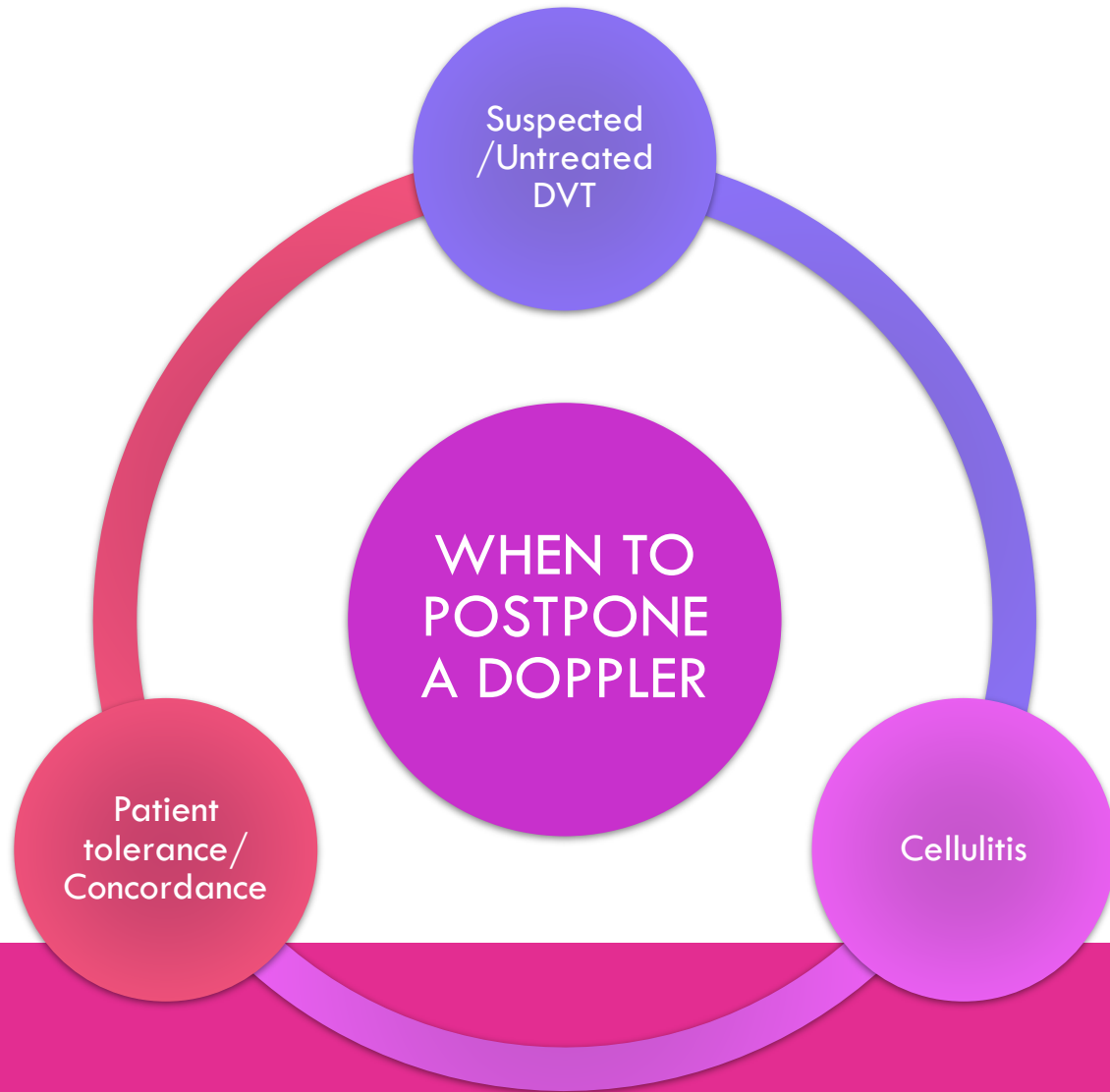
The **LARGER** the probe head

A 5MHz Doppler probe for oedematous limbs and deep lying vessels. (35mm range – suitable for when oedema is present)

An 8MHz Doppler probe for easier detection of peripheral vessels and calcified arteries (20mm range)

## DOPPLER PROBES & FREQUENCIES





# WHEN TO POSTPONE A DOPPLER



# PREPARATION OF THE PATIENT

Preparation  
prevents  
incorrect  
readings!



Explain and reassure patient of the procedure



Ask the patient to refrain from smoking for 10 mins prior



Ensure ambient temperature of the room is comfortable



Remove any tight clothing from both arms and legs



Cover any open lesions with a sterile field from a dressing pack



Rest the patient in the supine position for at least 20 minutes (manual doppler)

## Rest the patient in a supine position

The patient should be at rest ideally for 10 minutes in a supine position, relaxed, head and heels supported.



Tight clothing should be removed from both arms and both legs to allow correct placement of the blood pressure cuff and prevent the tourniquet effect.



What if the patient can't lay flat?

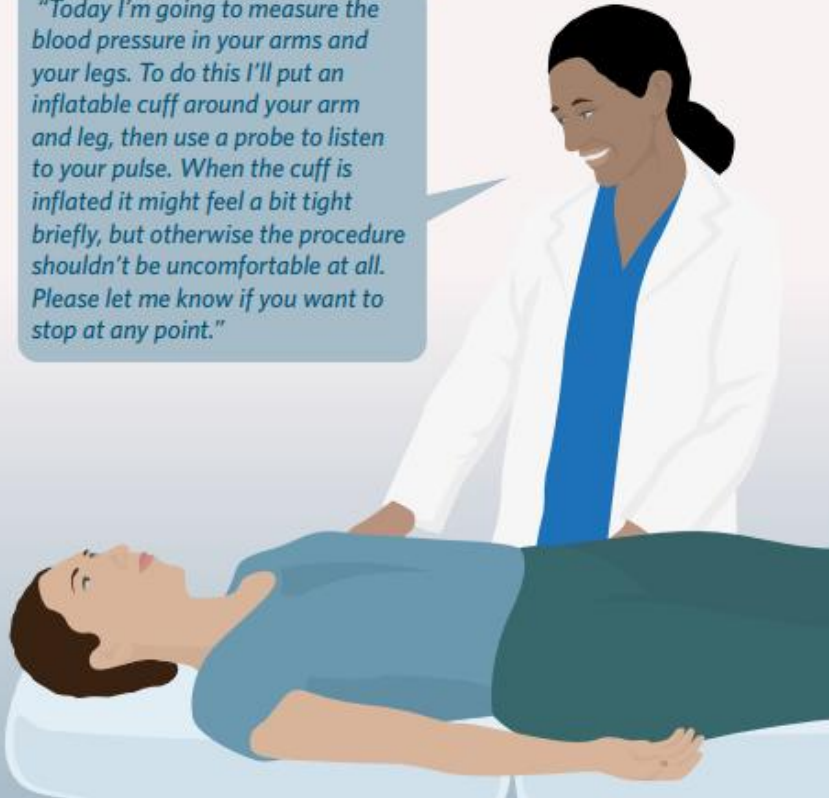
If patient is unable to lay flat, have the feet raised in line with the cuff if placed on the upper arm.



# PREPARE THE PATIENT

## Explain the procedure to the patient

*"Today I'm going to measure the blood pressure in your arms and your legs. To do this I'll put an inflatable cuff around your arm and leg, then use a probe to listen to your pulse. When the cuff is inflated it might feel a bit tight briefly, but otherwise the procedure shouldn't be uncomfortable at all. Please let me know if you want to stop at any point."*



## Temperature

Ideally the room in which the examination is in is not too cold. If the patient is cold the peripheral circulation can be affected and recording signals may become difficult.

The room temperature should be ideally greater than 24 degrees, this allows the vessels to dilate and make signal recording much easier.

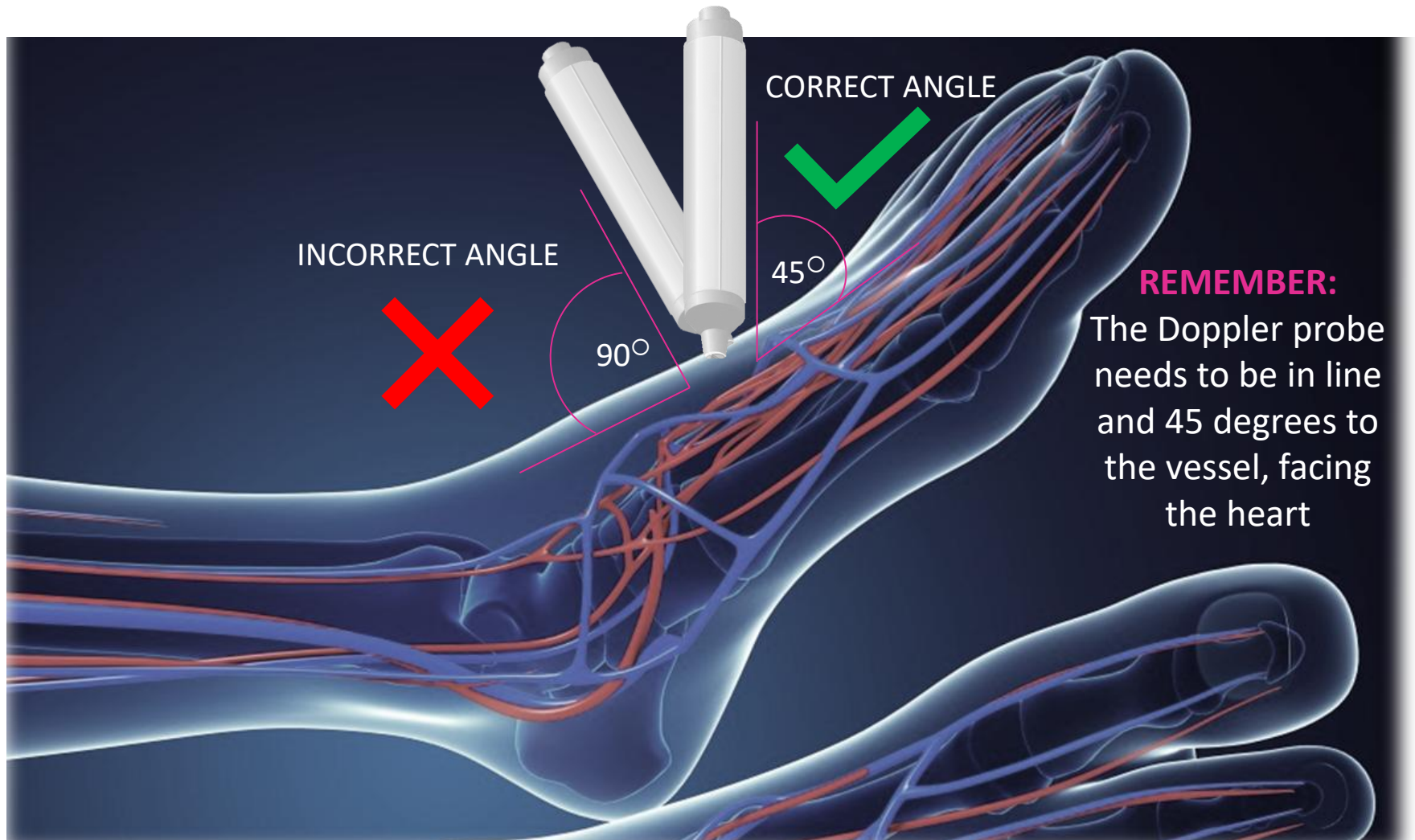


A comfortable temperature would be  
**>24°C / >75.2°**



# PREPARE THE PATIENT

# PROBE POSITIONING



### Step 1 - Apply the Cuff

Apply the cuff to the upper arm, just above the elbow.



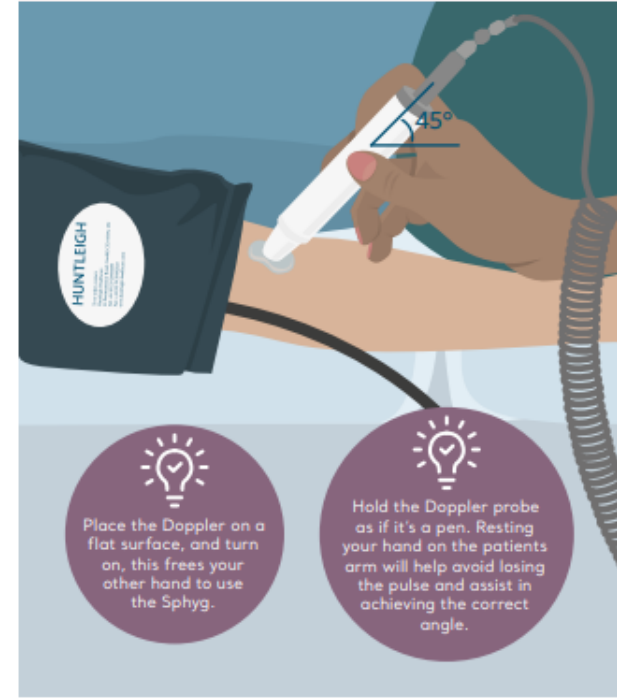
### Step 2 - Locate the Pulse

The brachial pulse can normally be found with manual palpation.



### Step 3 - Apply Gel and Probe

Apply a suitable amount of gel to the skin over the brachial artery. Apply the Doppler probe to the surface of the skin with the probe at a 45° angle to the artery, with the tip of the probe pointing towards the heart. Adjust the position of the probe to find the best signal.



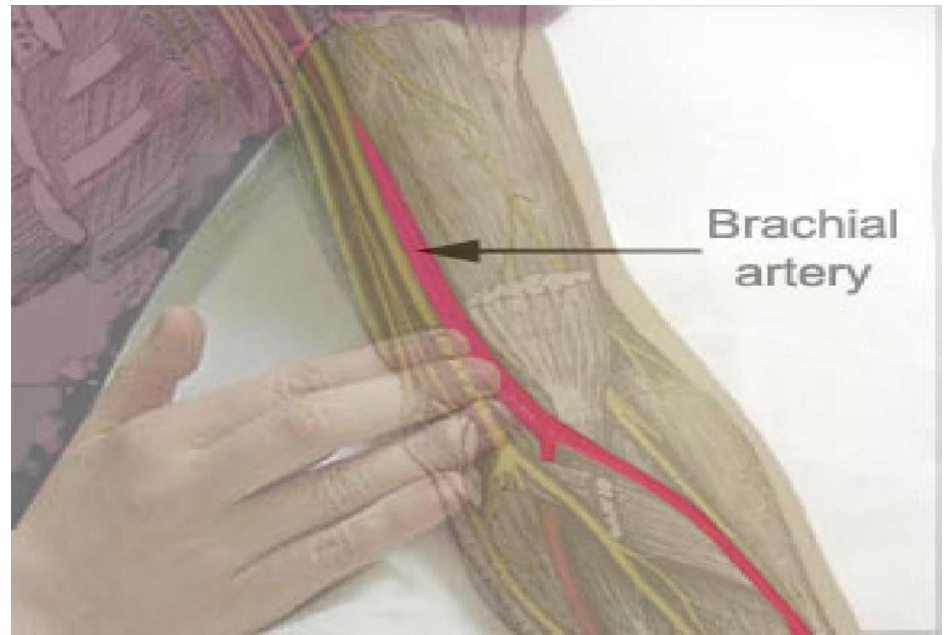
# RECORDING THE BRACHIAL SYSTOLIC PRESSURE



**WHERE IS THE BRACHIAL  
ARTERY?** |

1. Place two or three fingers or the doppler probe on the inner side of the person's upper arm, next to the bicep. (Do not use your thumb, as it has its own pulse).

2. Locate the brachial artery in the antecubital fossa (the crease of the elbow), along the inside of the arm between the biceps and triceps muscles, approximately 1-2 inches above the elbow crease.



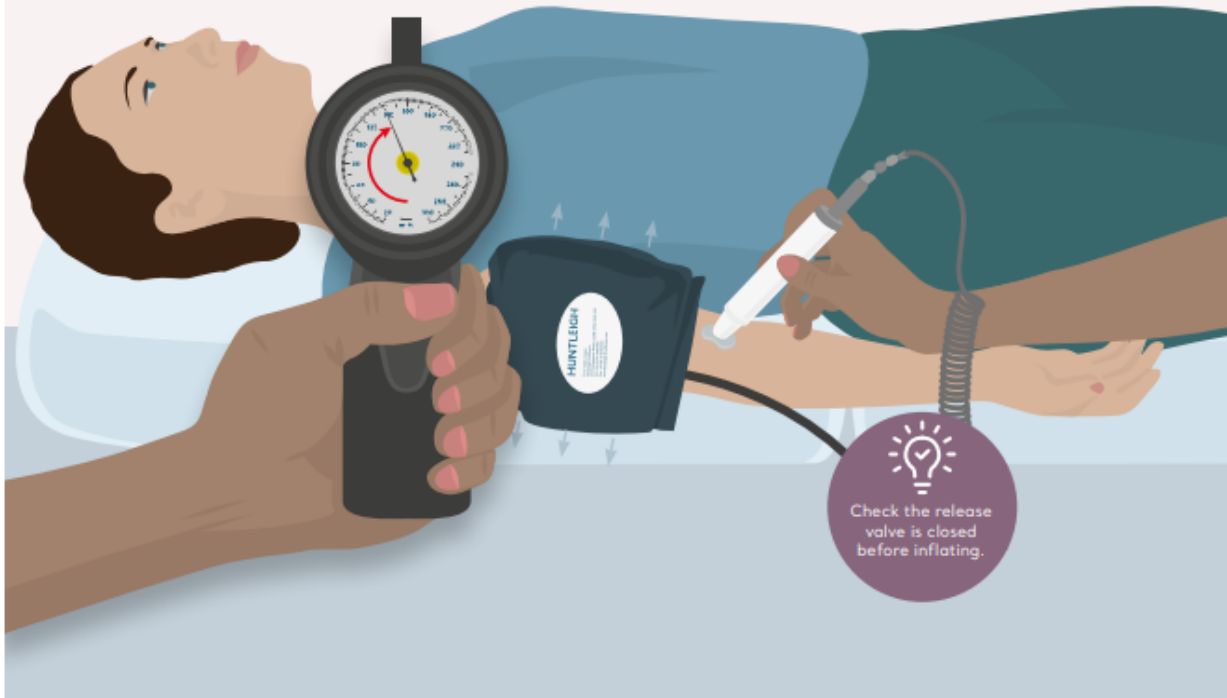
# LOCATING THE BRACHIAL ARTERY



#### Step 4 - Inflate the Cuff & Read the Pressure

Watching the pressure gauge, inflate the cuff until you stop detecting a pulse with the Doppler. Keep inflating to a pressure that is 20 mmHg higher than the pressure was at the time when you heard the last pulse.

Slowly release the pressure from the cuff whilst maintaining the probe position. Record the pressure when the pulse returns, this is the brachial systolic pressure.

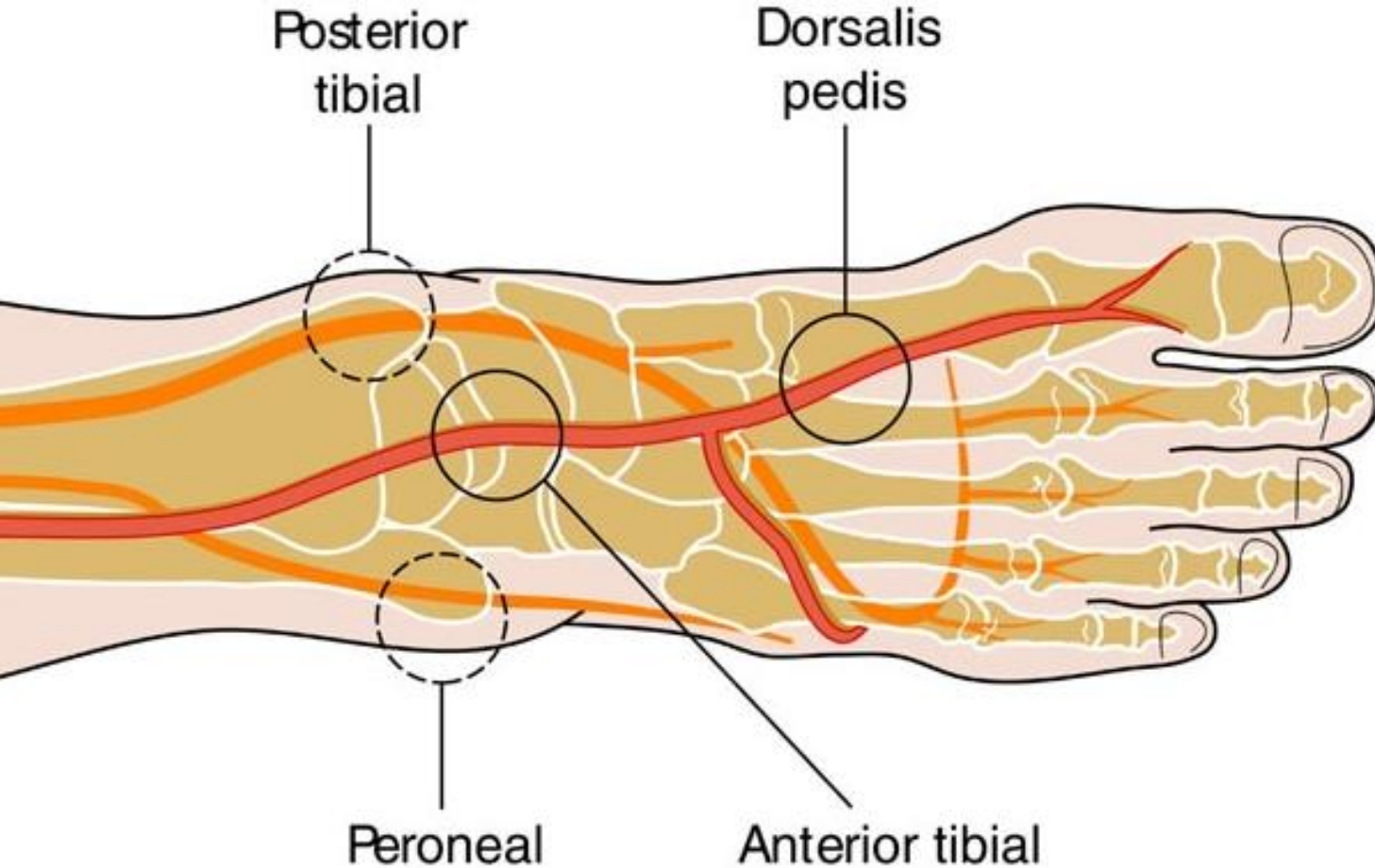


#### Step 5 - Repeat

Repeat these steps to obtain and write down the brachial pressure of the other arm. The highest brachial pressure (from the left or right arm) is the denominator for the ABPI ratio equation.



# RECORDING THE BRACHIAL PRESSURE



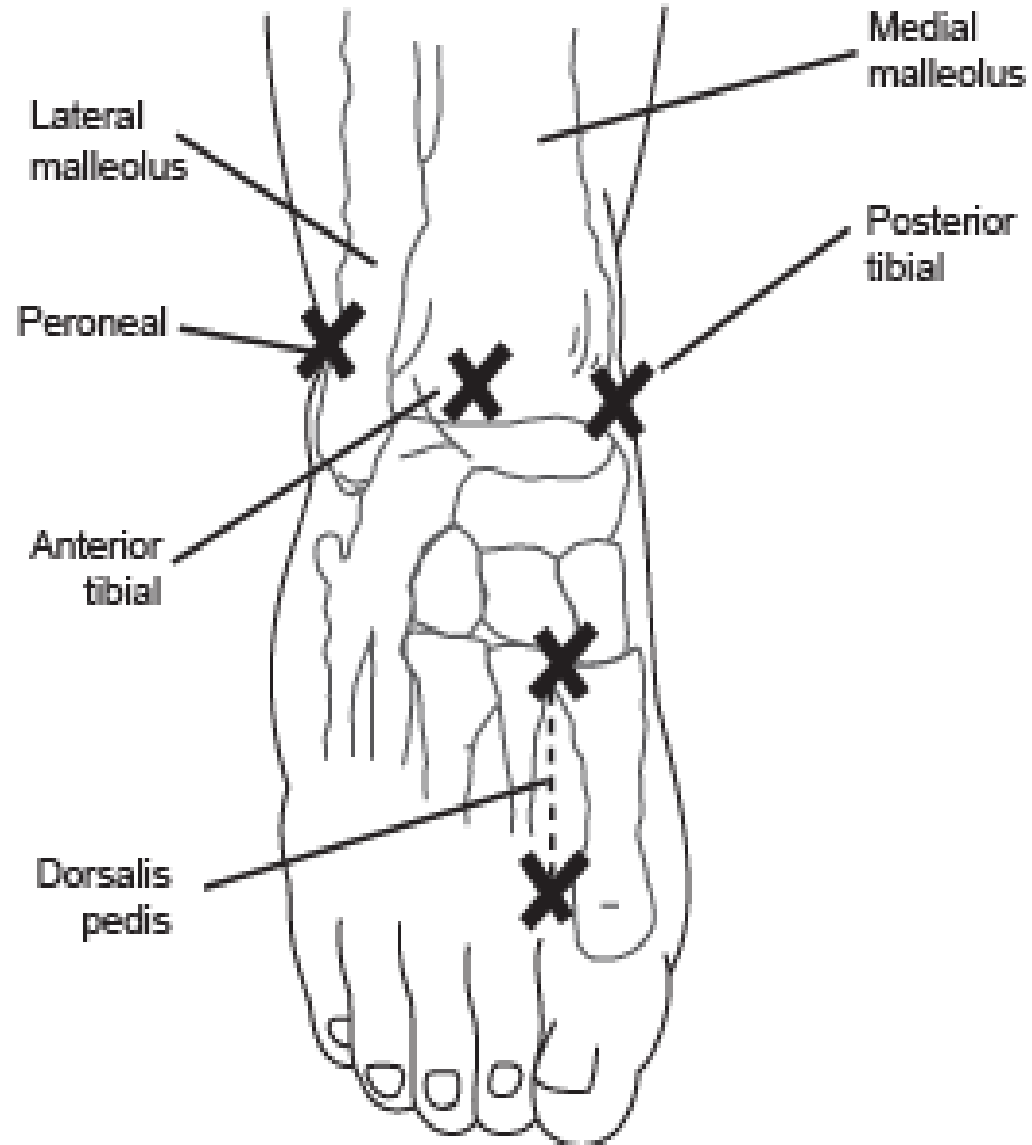
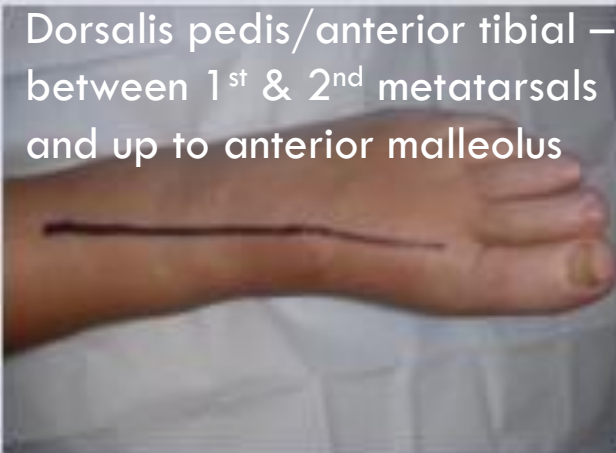
**All guidelines concur that at least 2 pulses should be assessed for each foot.**

Please note the peroneal artery can be the most challenging to find.

10% of the population do NOT have a dorsalis pedis pulse

# ARTERIES OF THE FOOT

# POSITIONS OF THE PEDAL PULSES



### Step 1 - Apply the Cuff

Apply the cuff to the ankle just above the malleolus.



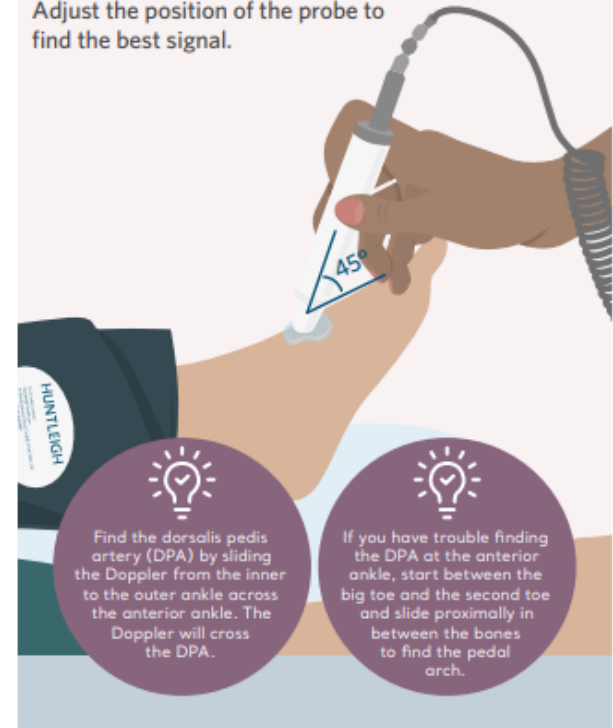
### Step 2 - Locate the Pulse

The Pedal pulses can sometimes be found with manual palpation



### Step 3 - Apply Gel and Probe

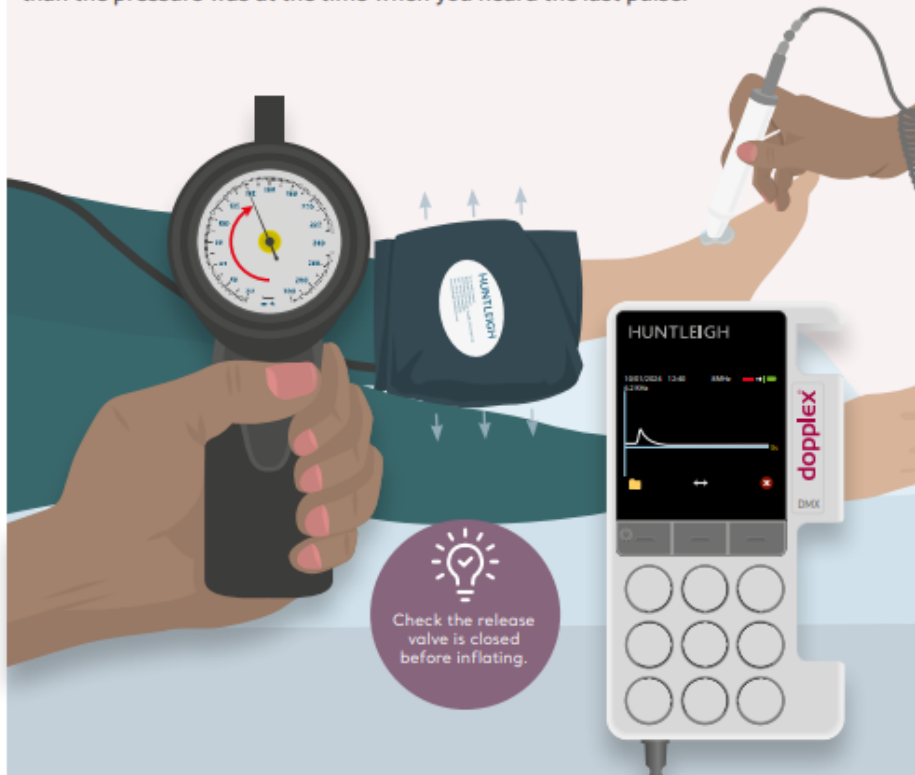
Apply a suitable amount of gel to the skin over the Dorsalis Pedis. Apply the Doppler probe to the surface of the skin with the probe at a 45° angle to the artery, with the tip of the probe pointing towards the heart. Adjust the position of the probe to find the best signal.



# RECORDING THE DORSALIS PEDIS ARTERY PRESSURE

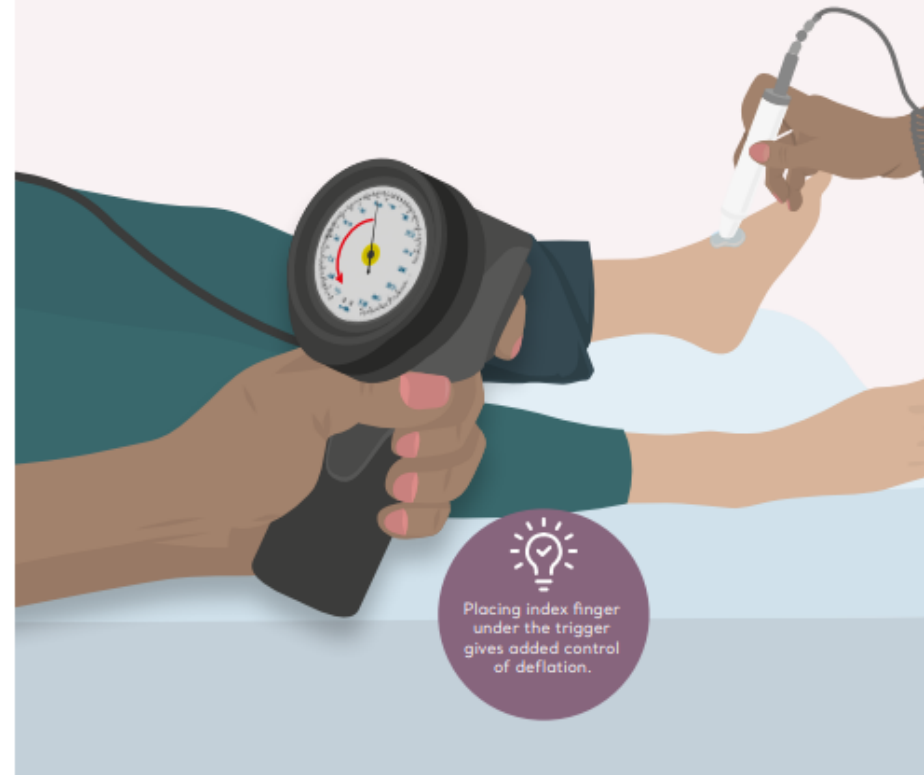
#### Step 4 - Inflate the Cuff

Inflate the cuff, watch the pressure gauge, and listen for the point at which you stop hearing a pulse from the Doppler. Keep inflating to a pressure that is 20 mmHg higher than the pressure was at the time when you heard the last pulse.



#### Step 5 - Read the Pressure

Slowly release the pressure from the cuff while maintaining the probe position and record the pressure. When the pulse returns, this is the Dorsalis Pedis systolic pressure.



## Gravity & Perfusion

- If you cannot hear pulses, ask the patient to sit upright with legs hanging over the edge of the bed – gravity may assist perfusion

## Find Pulses Sitting Up

- Find pedal pulses when the patient is sitting up, mark them with a pen and then try again when the patient is laying flat

# DOPPLER TROUBLESHOOTING







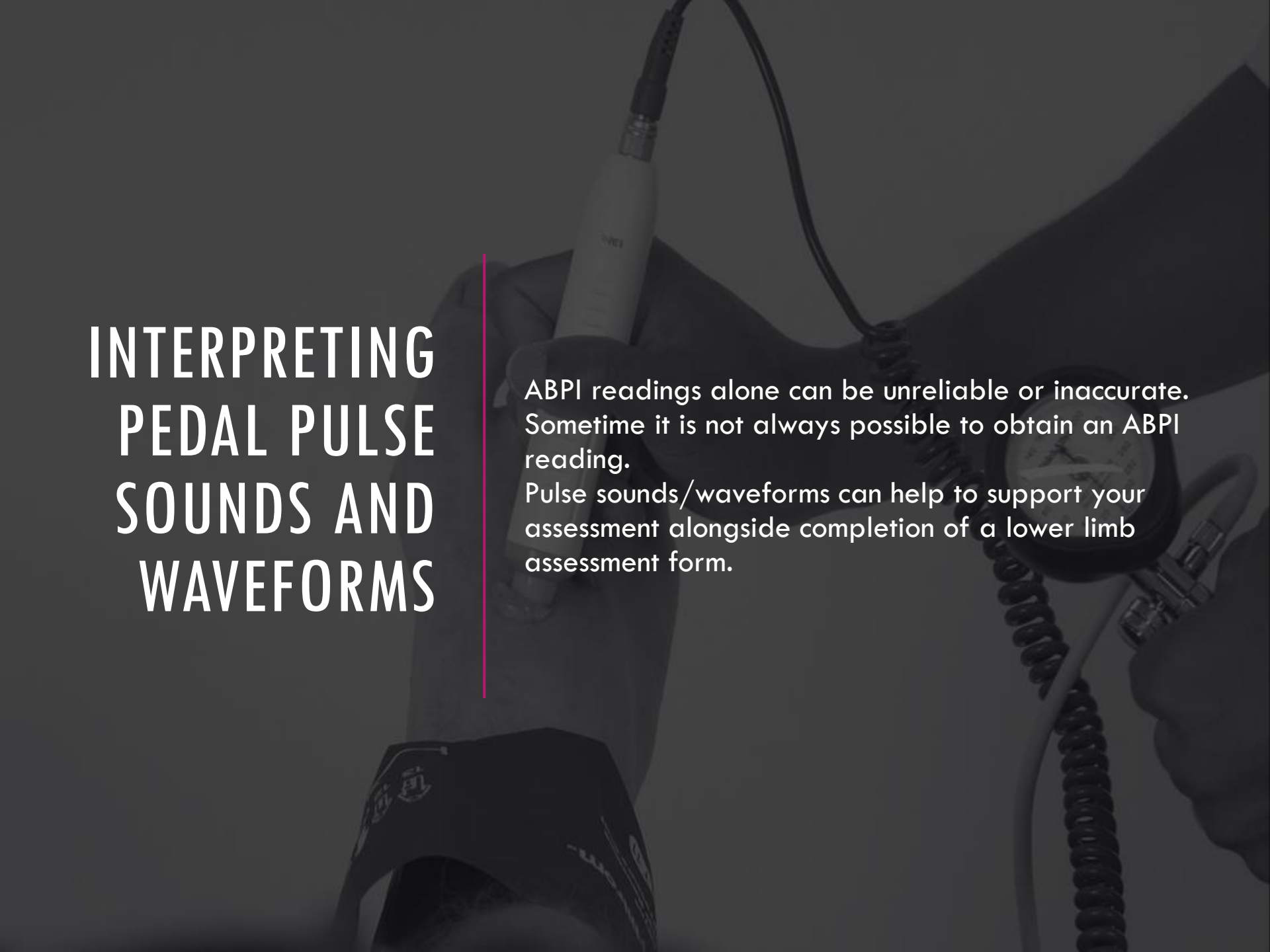
Sounds of normal artery



Sounds of normal vein

# NORMAL ARTERY VS NORMAL VEIN SOUNDS

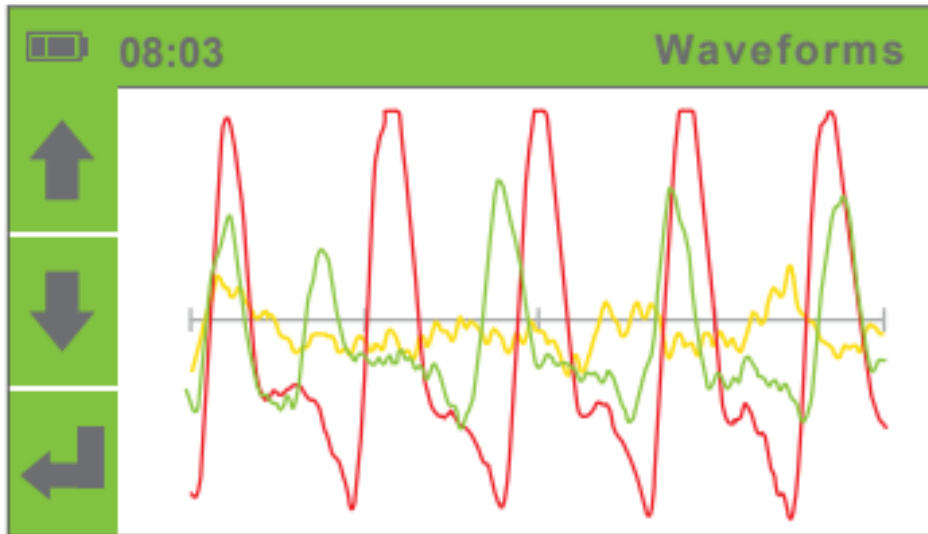




# INTERPRETING PEDAL PULSE SOUNDS AND WAVEFORMS

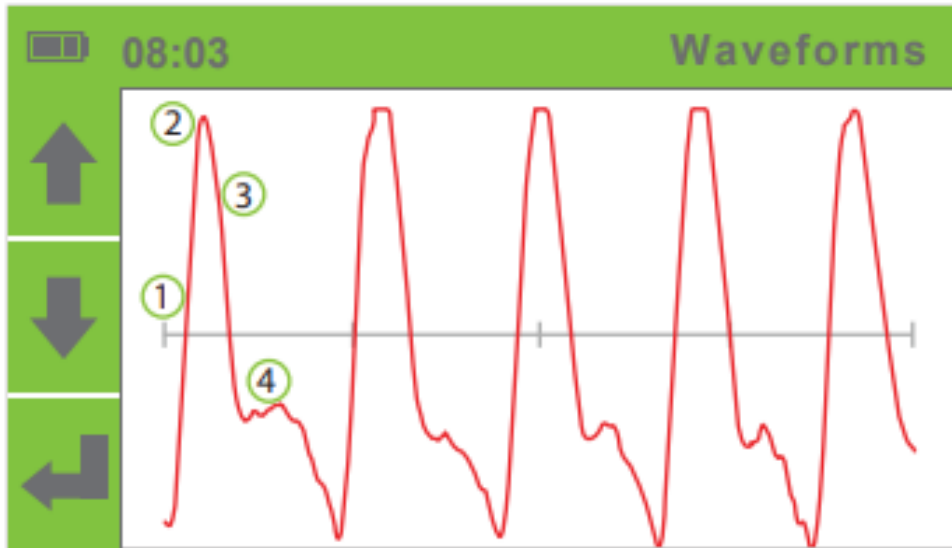
ABPI readings alone can be unreliable or inaccurate. Sometime it is not always possible to obtain an ABPI reading.

Pulse sounds/waveforms can help to support your assessment alongside completion of a lower limb assessment form.



Pulse Volume Recording is an essential addition to ABI measurement. The waveforms are interpreted by pattern recognition and determine the severity of Peripheral Arterial Disease.

# PVR WAVEFORMS



Normal PVR will display:

- ① A rapid rise in the upstroke during systole
- ② A very sharp peak
- ③ A gradual downstroke
- ④ A presence of dichrotic notch

NORMAL PULSE VOLUME READING  
WAVEFORM & SOUNDS —  
TRIPHASIC - 3 PHASES





An absence of the dichrotic notch, a smaller amplitude, decreased slope and rounding of the systolic peak are the initial signs of a possible abnormality - measured ABI value is lower than the one with normal PVR.

**LOW PULSE VOLUME READING WAVEFORM  
AND SOUNDS — BIPHASIC - 2 PHASES**





A flattened PVR waveform or a PVR without the typical shape is an indicator of severe PAD. The absence of the pulsations caused by occlusions in the artery makes it impossible to calculate the ankle pressures. Instead of ABI value, the device will display a "PAD" result, indicating severe disease. The result is confirmed with non-typical, flattened PVR waveform, similar to the picture on the left.

SEVERE PULSE VOLUME READING  
WAVEFORM AND SOUNDS —  
MONOPHASIC - 1 PHASE



# BEFORE USING AN AUTOMATED ABPI MEASUREMENT DEVICE

*There is not enough evidence to recommend routine adoption of the automated ankle brachial pressure index (ABPI) measurement devices to detect peripheral arterial disease in people with leg ulcers (NICE, 2023).*

However, NICE (2023) agreed that the automated devices already purchased by the NHS and implemented within a care pathway can continue to be used, so long as bases using automated measures educate the users on the NICE (2023) recommendations and collect data to show their impact on people with leg ulcers.

*National Institute for Health and Care Excellence (2023). Diagnostic guidance (DG52): Automated ankle brachial pressure index measurement devices to detect peripheral arterial disease in people with leg ulcers.*



NOW IT'S YOUR  
TURN — DOPPLER  
PRACTICE!

---





WHAT ARE WE  
CALCULATING?



ABPI stands for Ankle  
Brachial Pressure Index

A ratio of the systolic  
blood pressure at the  
ankle to the systolic  
blood pressure in the  
arm

# HOW TO CALCULATE ANKLE BRACHIAL PRESSURE INDEX (ABPI)

To calculate the ABPI, you need to measure the ankle systolic pressure and the brachial systolic pressure in millimetres of mercury (mmHg).

The ABPI should be calculated per limb, by dividing the highest systolic pressure at the ankle by the higher of the two brachial systolic pressures, giving an ABPI per lower limb.

ABPI =

Highest ankle systolic pressure (for each leg)

Highest brachial systolic pressure

# ABPI CALCULATION EXAMPLE

	Brachial	Dorsalis Pedis	Posterior Tibial	Peroneal	ABPI
Right:	145mmHg	85mmHg	80mmHg	80mmHg	?
Left:	150mmHg	115mmHg	120mmHg	117mmHg	?

**Left ABPI** = (highest ankle systolic pressure of the **left** lower limb) ÷ (highest brachial pressure).

**Right ABPI** = (highest ankle systolic pressure of the **right** lower limb) ÷ (highest brachial pressure).

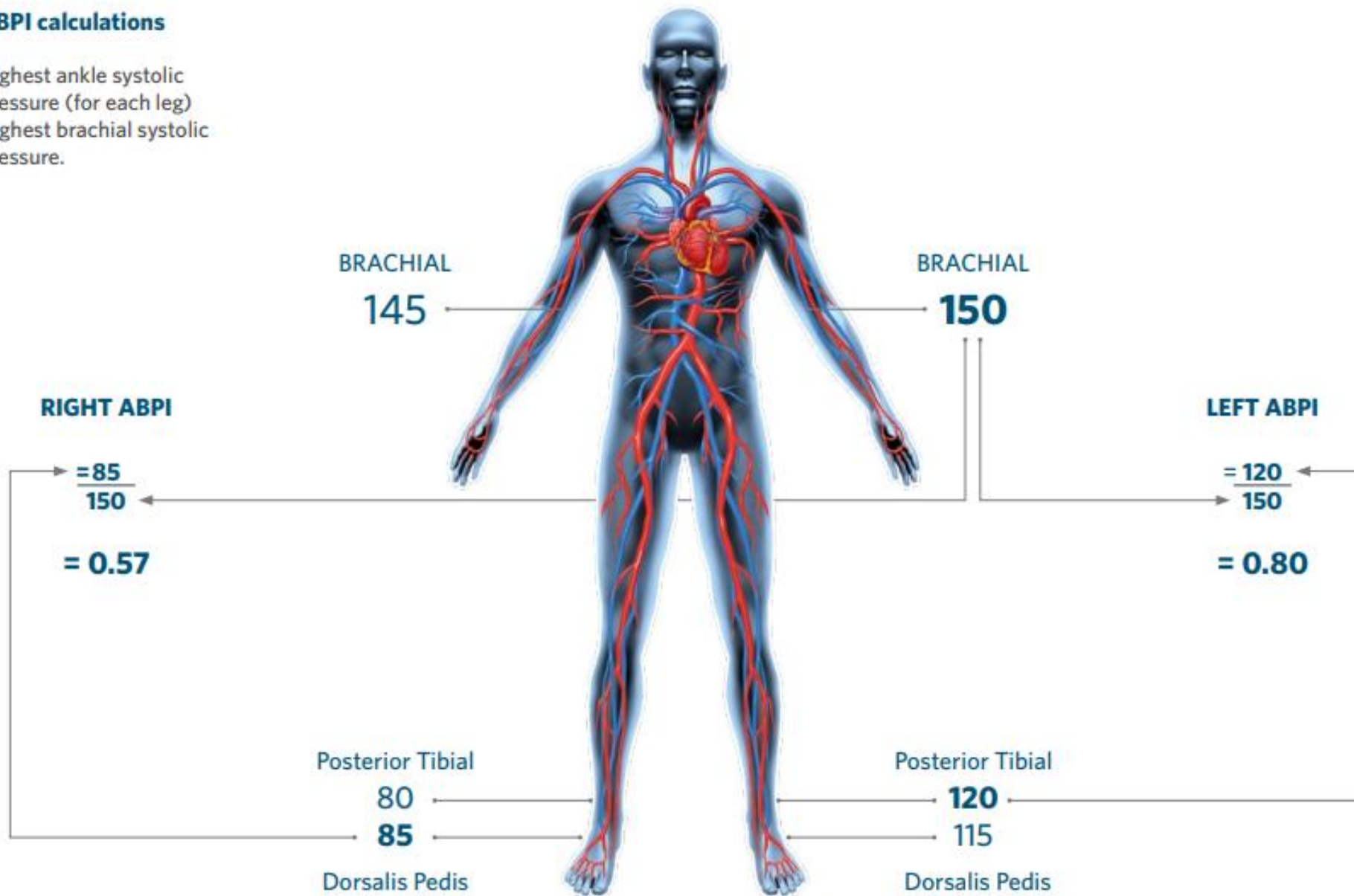
Remember 'leg over arm'



# ABPI CALCULATION EXAMPLE

## ABPI calculations

Highest ankle systolic pressure (for each leg)  
Highest brachial systolic pressure.



<0.6

- Severe peripheral arterial disease
- Do **NOT** apply compression therapy
- Urgent referral to Vascular for arterial duplex scans and possible intervention
- Re-doppler every 3 months

0.6 – 0.8

- Suspected mixed disease
- Apply mild 20mmHg compression
- Routine referral to Vascular & TV
- Re-doppler every 3 months (sooner if ischaemic symptoms develop)

0.81 – ≤ 1.3

- Suspected venous disease
- If no red flags present, apply high 40mmHg compression
- Routine Vascular referral
- Re-doppler every 12 months (sooner if ischaemic symptoms develop)

>1.3

- Consider arterial wall calcification
- Assess pulses/ waveforms
- Apply mild 20mmHg compression
- Routine referral to Vascular & TV
- Re-doppler every 3 months

# INTERPRETATION OF ABPI

# FAQS

How many pedal pulses do you measure

A minimum of two arteries on each foot

e.g. dorsalis pedis or anterior tibial and posterior tibial or peroneal

Which probes should you use to take ABPI measurements?

8MHz for general use

5MHz for obese patients and oedematous limbs

Why measure pressure in both arms and take the highest reading?

This ensure that the systolic pressure is closest to the systemic pressure, especially if arterial disease is present

Why do you use the higher of the two measurements in the foot?

This will determine whether there is adequate blood flow to the foot from one of the arteries



Focus on clinical assessment, rather than relying on an ABPI alone.

Ignoring the symptoms or delaying treatment while awaiting an ABPI may lead to a deterioration of the condition.

Provided vascular status has been thoroughly assessed ABPI measurements for patients who present with lymphoedema are not necessarily required.

If there are concerns in terms of reduced arterial flow, complete a referral for further vascular assessment through both the TV team and vascular.

**HELP! I CAN'T GET A  
DOPPLER!**





# WHY SHOULD I CARRY OUT DOPPLER?

---

To establish if arterial disease is present, the severity and monitor deterioration over time (objective method of assessing arterial blood supply to the legs)

---

To assess suitability for compression therapy to prevent arterial occlusion and ischaemia

---

To gain information on healing protentional

---

95% of leg ulcers develop due circulation issues - to understand what is going on with the vascular system

---

To help diagnose aetiology

---

Palpation of foot pulses is not sufficient

---

To address underlying issues and identify correct treatment

---

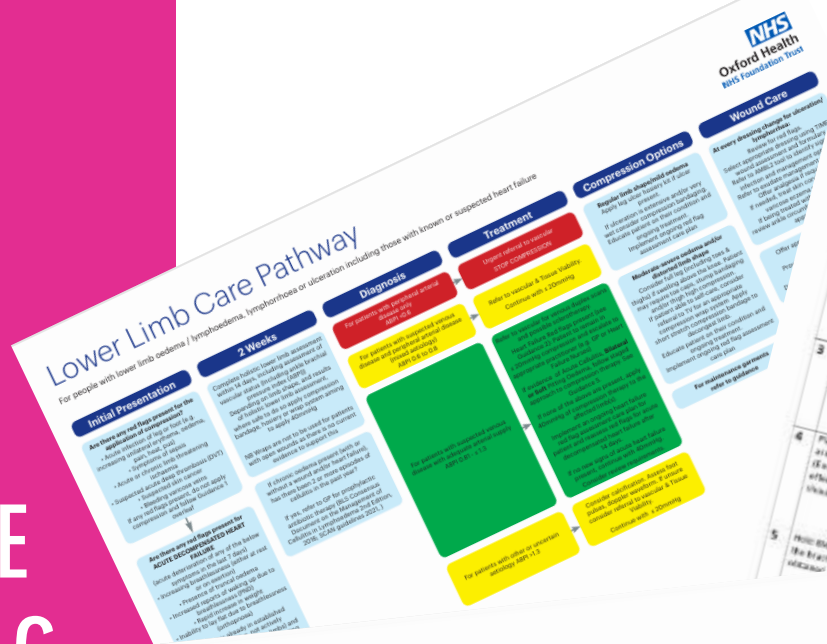
To establish if there is a good blood supply before undertaking debridement

---

Best practice – supported by NICE guidelines, NWCSP and written in local policy

---

**“WHAT’S THE  
WORST THING  
THAT COULD  
HAPPEN...”**

[illegible]

### Lower Limb Assessment Form

This should be completed in the following circumstances:

- Presentation of any wound between the knee and ankle (within 2 weeks)
- Presence of a wound or pressure damage to the foot or heel
- If there is oedema in the leg, either full leg or below knee
- To validate the result of an ABPI following doppler assessment. An ABPI is potential inaccuracies
- None of the above but to confirm a patient's arterial status e.g., diabetic

- None of the above but to confirm a patient's arterial status

This is in line with NICE guidelines (CG179, Pressure Ulcers: Prevention & Management and CG1 Management), which states clinicians should be undertaking a lower limb assessment to determine the patient's pressure damage prevention management plan or 2. The patient's ability to heal.

The patient's pressure damage prevention management plan or 2. The patient's ability to heal.

The following table sets out the complications of venous disease, and chronic oedema.

### Assessment for signs & symp

Review the patient's past medical history for atherosclerosis, peripheral arterial disease, and current/previous smoker.

### Instructions

**Instructions**  
Assess for intermittent claudication  
Muscle pain or cramping  
on mild exertion, e.g. walking  
relieved by a short period of rest  
Lower limb assessment form/1

Treat Topically (See Overview)		Treat Topically + Systemically (See Overview)		STAY ALERT for Wound Biologics
<b>Local Wound Bed Infection</b> Microorganisms present and multiplying. Patient immune response compromised with delayed healing		<b>+ Spreading Infection (Cellulitis)</b>	<b>+ Systemic Patient Infection</b>	
	<b>Primary (Covert) Symptoms</b>	<b>Progressive (Overt) Symptoms</b>		
Tissue	<ul style="list-style-type: none"> <li>Friable Hyper/granulation tissue</li> <li>Pocketing in granulation</li> <li>Wound Stasis (&lt;40% reduction in 6 weeks)</li> </ul>	<ul style="list-style-type: none"> <li>Necrosis/slough may be present</li> <li>Wound deterioration</li> </ul>	<ul style="list-style-type: none"> <li>Wound breakdown/ulceration</li> </ul>	<ul style="list-style-type: none"> <li>Wound not responding as expected with two or more cycles of the AMBL2 treatment plan (Overview)</li> </ul>
Moisture	<ul style="list-style-type: none"> <li>Increasing exudate</li> </ul>	<ul style="list-style-type: none"> <li>Purulent exudate</li> <li>Increasing malodour</li> </ul>	<ul style="list-style-type: none"> <li>Moisture for 48hrs</li> <li>Malodour</li> <li>General deterioration</li> <li>Loss of appetite</li> <li>Fatigue/Fatness</li> </ul>	<ul style="list-style-type: none"> <li>Progress to Biofilm Wound Management Pathway.</li> </ul>
Peri-wound edges	<ul style="list-style-type: none"> <li>Erythema associated with inflammation may or may not be present</li> </ul>	<ul style="list-style-type: none"> <li>Erythema &lt;2cm around wound margin</li> <li>Swelling</li> <li>Warmth</li> </ul>	<ul style="list-style-type: none"> <li>Tenderness, or stiffness &lt;2cm peri wound margins</li> </ul>	
Pain/Systemic Factors	<ul style="list-style-type: none"> <li>New or increasing Pain</li> </ul>	<ul style="list-style-type: none"> <li>New or increasing Pain</li> </ul>	<ul style="list-style-type: none"> <li>Swollen lymph glands</li> <li>New laboured breathing</li> <li>Delirious</li> </ul>	

1. Consider varying clinical presentations in individuals of different skin tones i.e., skin discoloration, skin temperature

2. Note high risk patients (including those with Diabetes or compromised immune system) for progressive infection described and state concerns

2. Consider varying clinical presentations in individuals of different skin tones (i.e., skin discoloration; skin temperature; tenderness or hardening of the skin).

3. Note high risk patients (including those with Diabetes, or compromised immune/circulatory systems) may not display symptoms of local wound bed and/or progressive infection described and may present with more subtle signs.

Diabetes

Breakdowns

Thrive Vitality/SAFE/2 Version 1/2020/2022

Oxfordshire  
Management

GUIDANCE 2024

ember 2024

Refer to the Tissue Viability Website for the latest version.  
[health.nhs.uk/tissue-viability](http://health.nhs.uk/tissue-viability)

# QUICK QUIZ!

Question  
1

How often should you repeat a doppler assessment if an ABPI is 0.7?

Question  
2

What does an ABPI of 0.85 indicate?

Question  
3

Who should you send a referral to if an ABPI is  $<0.6$ ?

Question  
4

Is compression therapy advocated in patients with an ABPI of  $>1.3$  as an interim measure?

Question  
5

What ABPI range suggests mixed disease?

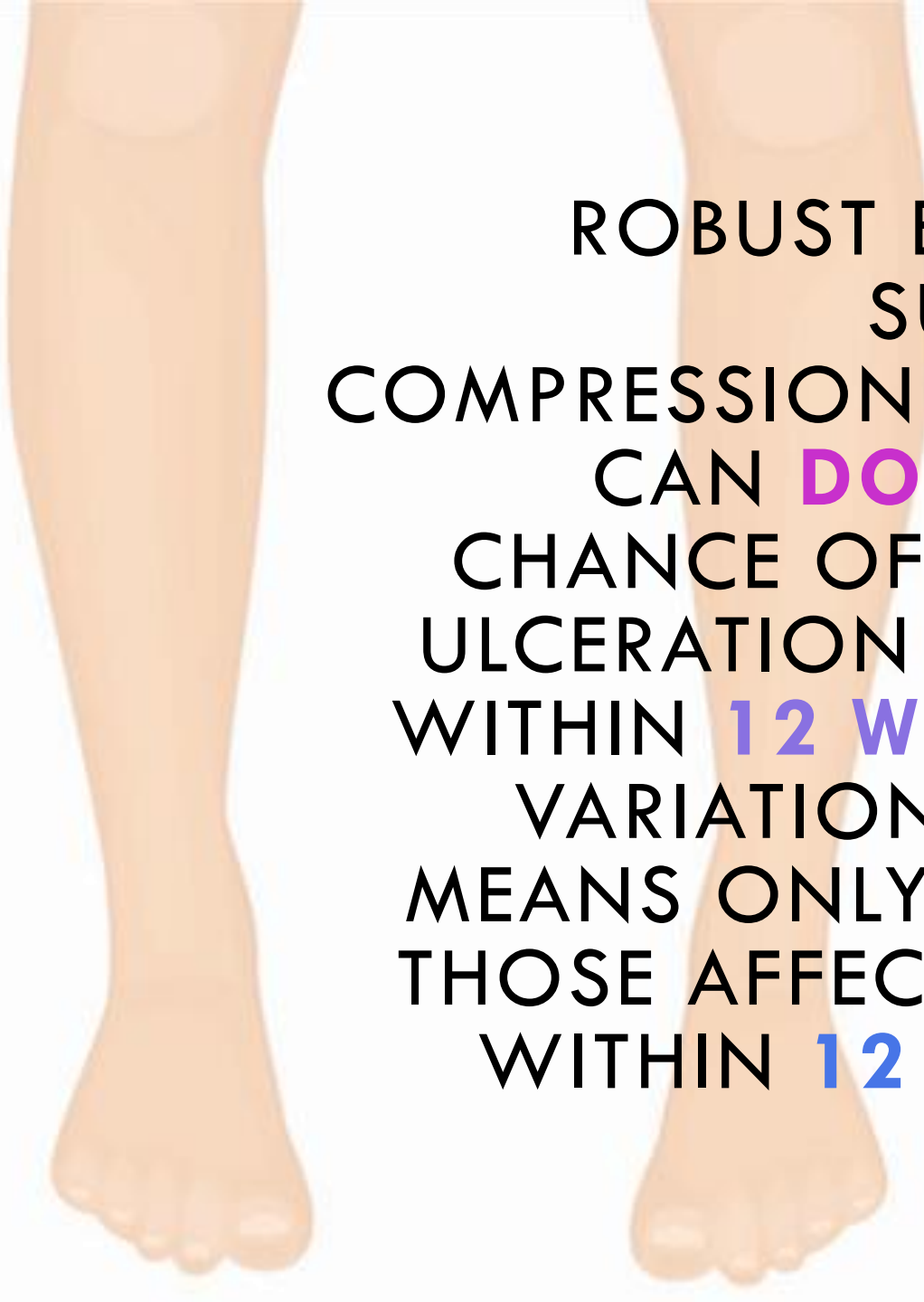
Question  
6

How many mmHg can be applied if an ABPI is 1.2?

**GUESS WHAT?**



**IT'S TIME FOR LUNCH**

An illustration of two human legs from the mid-thigh down to the feet, positioned side-by-side. The skin is a light, natural tone. The legs are slightly bent at the knees, with the feet pointing downwards. The background is a solid, light cream color.

ROBUST EVIDENCE  
SUGGESTS  
COMPRESSION THERAPY  
CAN **DOUBLE** THE  
CHANCE OF VENOUS  
ULCERATION HEALING  
WITHIN **12 WEEKS** BUT  
VARIATION IN CARE  
MEANS ONLY **47%** OF  
THOSE AFFECTED HEAL  
WITHIN **12 MONTHS**

# IMPACT OF COMPRESSION THERAPY

## Lymphatic system

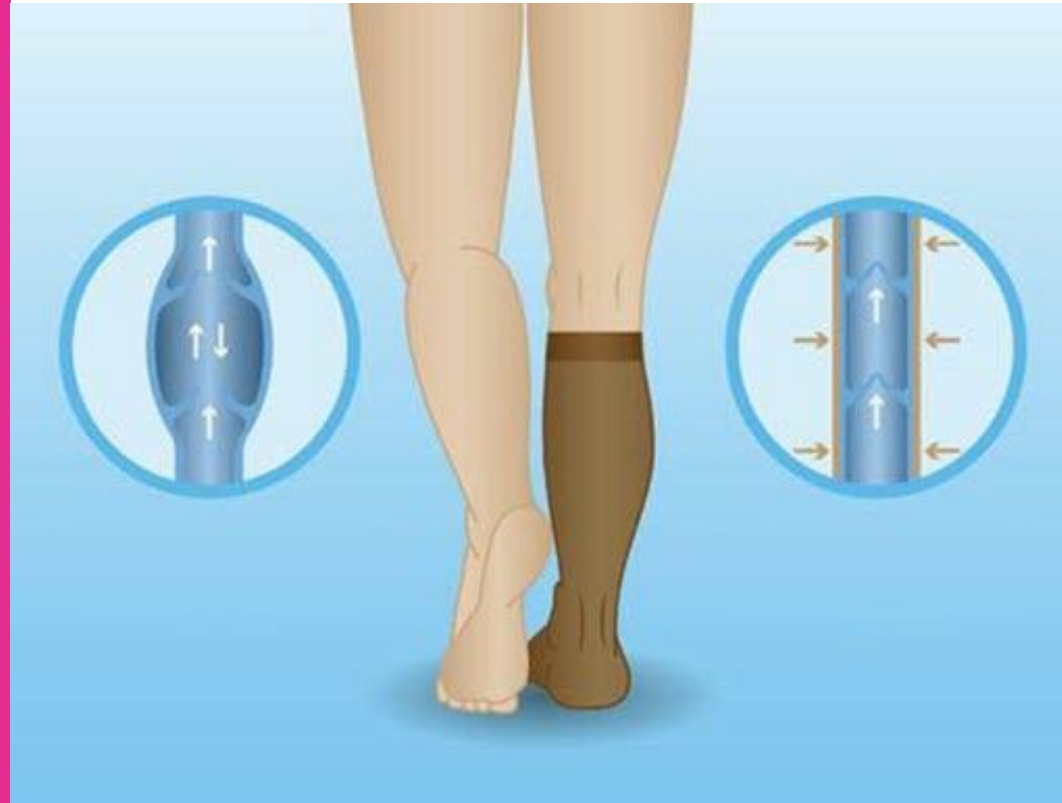
- Breakdown of fibrosis
- Decreased fluid filtration from capillaries into tissue
- Decreased formation of excess interstitial fluid
- Decreased lymphatic load
- Enhanced muscle pump
- Increased frequency and amplitude of lymph-collector contractions
- Shifting of fluid into areas with better lymphatic function

## Venous system

- Improved venous return
- Maximised calf muscle pump
- Reduced matrix metalloproteinase (MMPs) levels
- Reduced venous reflux
- Reduces venous hypertension
- Improve symptoms of lipodermatosclerosis and papillomatosis
- Restores valve function

# COMPRESSION THERAPY

- The key to healing a venous leg ulcer and preventing recurrence is the use of strong compression therapy.
- This is essential to restore normal return of venous blood flow back to the heart and is achieved by applying an external force or support to the limb.
- This support allows damaged valves in the leg veins to close and reduces pooling in the veins by directing venous blood in the right direction back towards the heart.





# THE LAWS OF COMPRESSION

## La Place's Law

This law frequently used to calculate sub-bandage pressures of compression systems and is summarized as:  $\text{pressure (mmHg)} = \frac{\text{tension (Kgf)} \times \text{number of layers} \times 4620}{\text{circumference (cm)} \times \text{bandage width (cm)}}$

## Pascal's Law

“Pressure at a point has infinite direction, and thus a pressure change at any point in a confined incompressible fluid is transmitted throughout the fluid such that the same change occurs everywhere.”

# LA PLACE'S LAW

The pressures exerted by a compression bandage are influenced by four factors:

1

## Tension

↑ tension = ↑ pressure

↓ tension = ↓ pressure

2

## Number of layers

↑ layers = ↑ pressure

↓ layers = ↓ pressure

3

## Limb circumference

↑ limb = ↓ pressure

↓ limb = ↑ pressure

4

## Bandage width

↑ width = ↓ pressure

↓ width = ↑ pressure

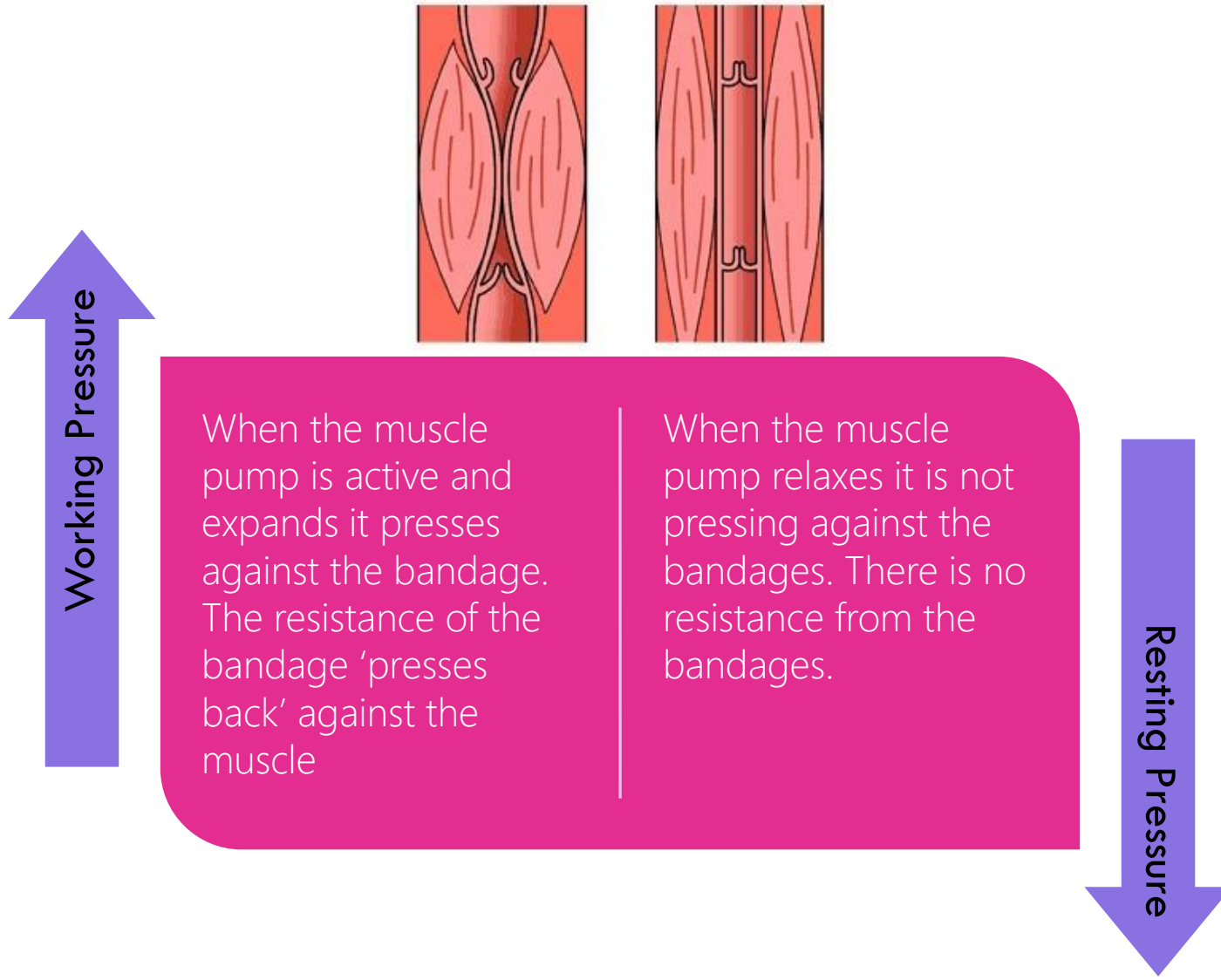


# GRADUATED COMPRESSION

- Graduated compression is when the bandages are applied at the correct compression up the leg.
- The pressure falls as the circumference of the leg increases (Le Place's Law).
- Maximum compression is at the ankle as it is furthest away from the heart.
- There should be an 8-10cm increase in calf circumference compared to the ankle circumference to ensure efficient venous return (La Place's Law).
- This is why correct limb shaping/padding is SO important!



# WORKING & RESTING PRESSURES



# SHORT STRETCH VS LONG STRETCH BANDAGING

Inelastic  
(short  
stretch)  
bandage

- High working pressure (100% stretch when mobilising)
- Low resting pressure
- Suitable for mobile patients with good calf muscle pump

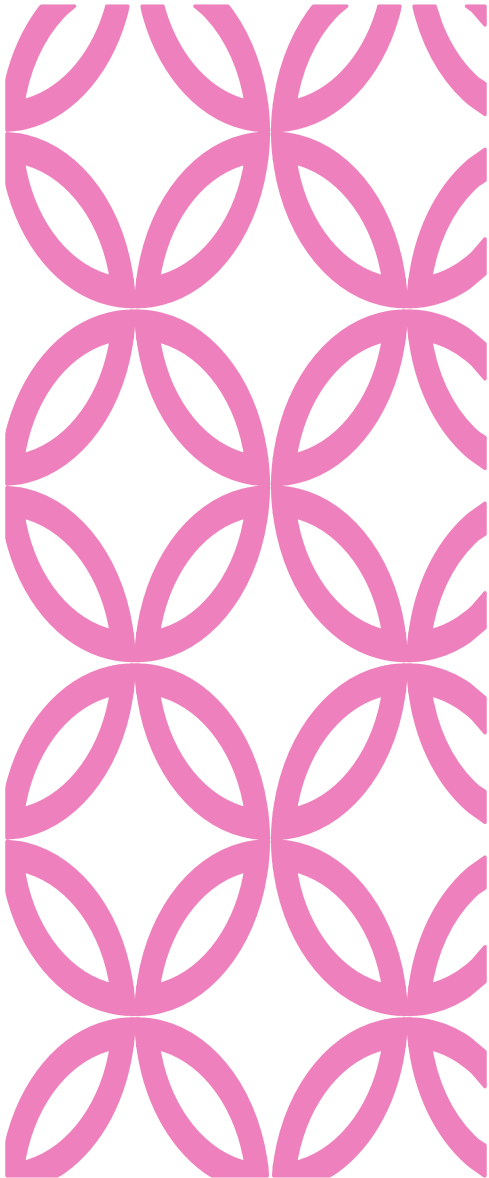
Elastic  
(long  
stretch)  
bandage

- Maintains a constant pressure all of the time by 'squeezing' the muscle, even when resting
- Suitable for less mobile patients with no calf muscle pump

# OXFORD HEALTH COMPRESSION BANDAGING



	Clinistretch	K-Two	K-Two Reduced
<b>Elastic or inelastic?</b>	Inelastic	Elastic	Elastic
<b>Short or long-stretch?</b>	Short-stretch	Short and long-stretch elements	Short and long-stretch elements
<b>Working pressure</b>	High	Constant	Constant
<b>Resting pressure</b>	Low	Constant	Constant
<b>mmHg</b>	40mmHg (20mmHg for ankle circumference >25cm)	40mmHg	Mild 20mmHg
<b>Single or multi-layer?</b>	Single or double layer can be	Multi-layer	Multi-layer



Compression pressure is the dosage of our treatment and should be adjusted to individual needs. The ideal compression device should provide a tolerable resting pressure and a pressure high enough to counteract gravity in an upright position

(Partsch and Mortimer, 2015)

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## COMPRESSION PRESSURE



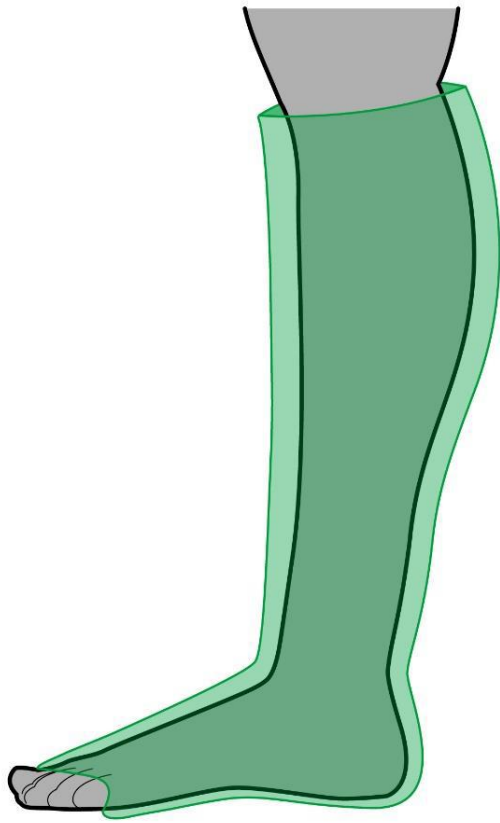
# SUB-BANDAGE PADDING

'Toes to nose' – flex foot to prevent pressure damage to anterior ankle

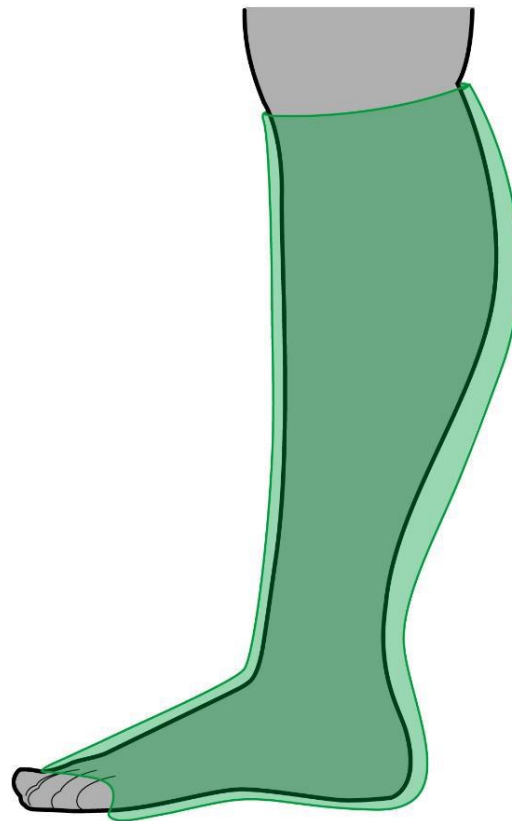
'Cuff of fluff' to inner and outer malleolus



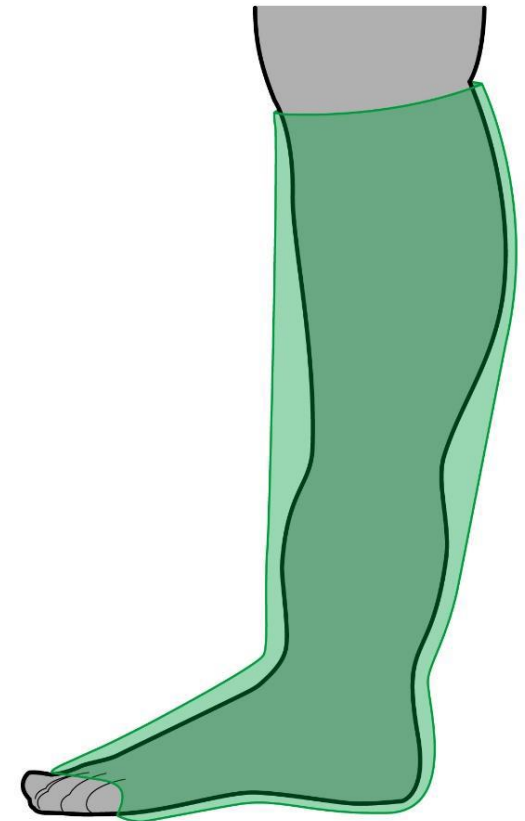
# SUITABLE PADDING FOR DIFFERENT LIMB SHAPES AND SIZE



**'NORMAL'  
LEG**



**PRONOUNCED  
CALF MUSCLE**

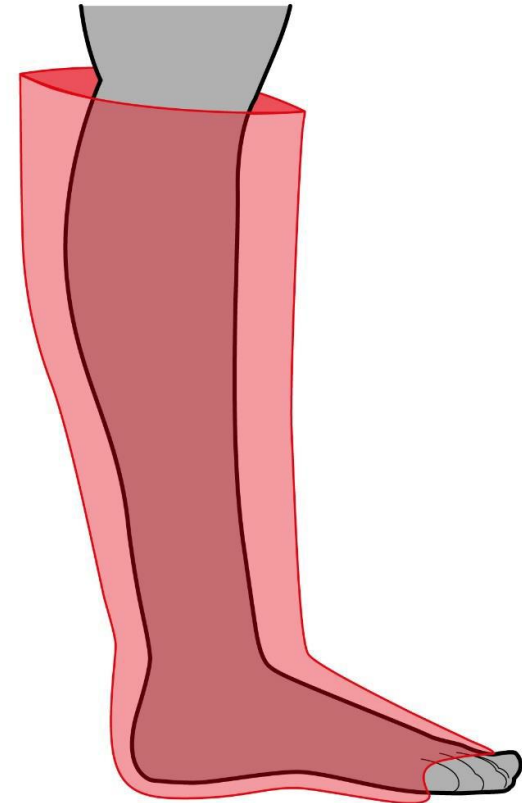
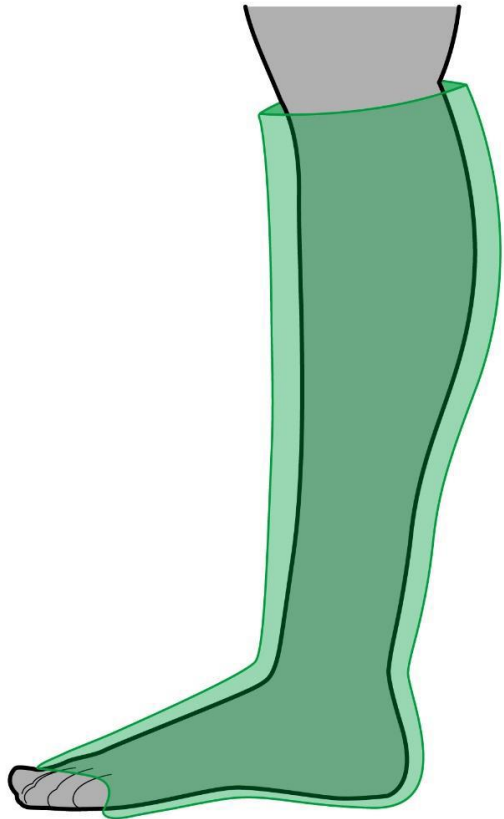


**FIBROSIS OF  
THE ANKLE**



PRESSURE DAMAGE CAUSED BY  
INSUFFICIENT PADDING

# DO NOT OVER-PAD WITH WADDING







**INCORRECT PADDING  
APPLICATION**

YOUR TURN!  
COMPRESSION  
BANDAGE  
DEMONSTRATION  
AND PRACTICE FOR  
VENOUS  
ULCERATION

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## Patient factors

- Activity level
- Ankle circumference
- Dexterity
- Disease pathology
- Lifestyle
- Mobility
- Skin texture (hard/soft)
- Wound size, duration and complexity

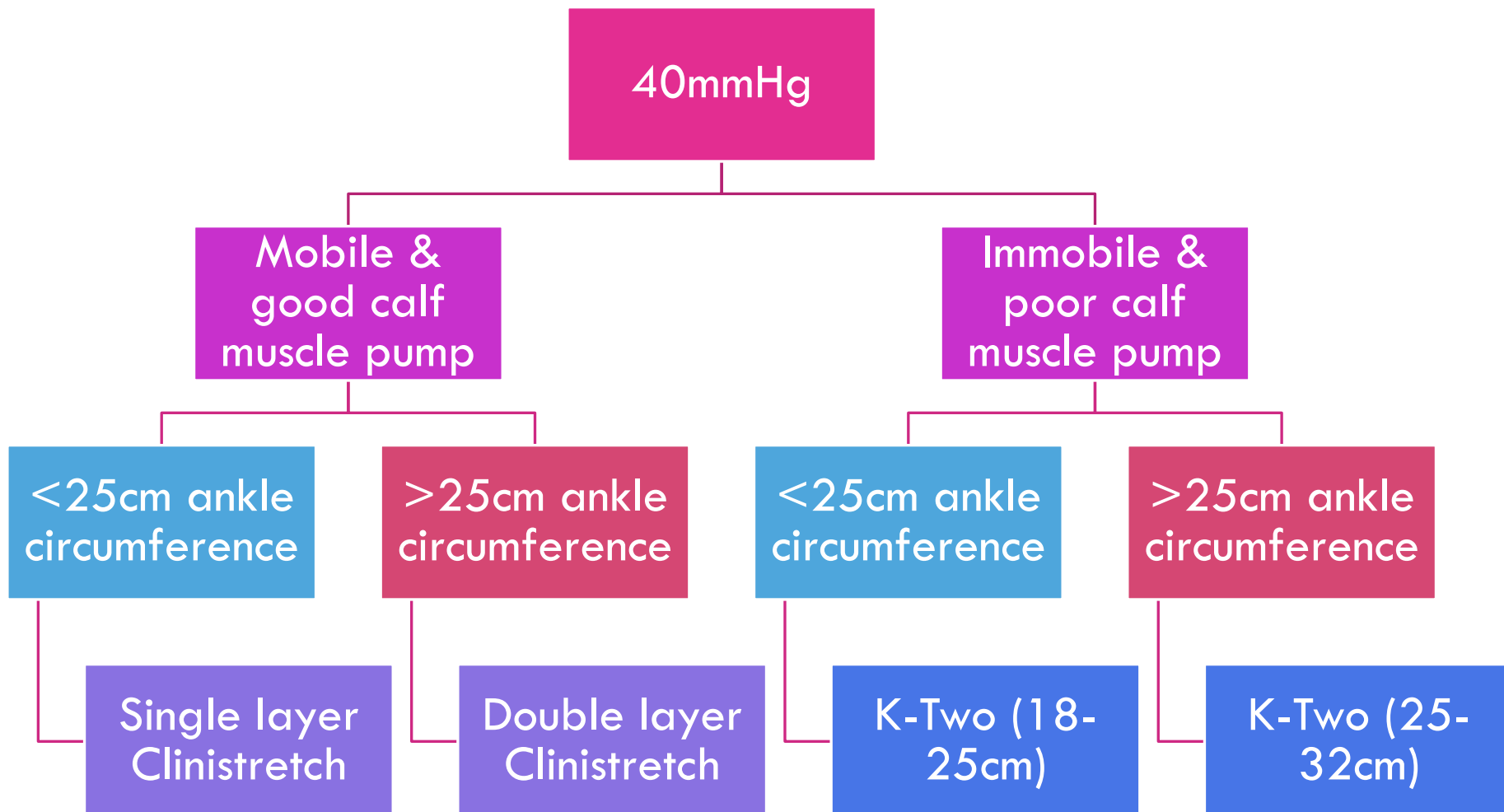
## Compression factors

- Compression strength
- Consistency of pressure over time
- Durability
- Dynamic profile (elasticity or stiffness)
- Ease of application
- Slippage
- System type

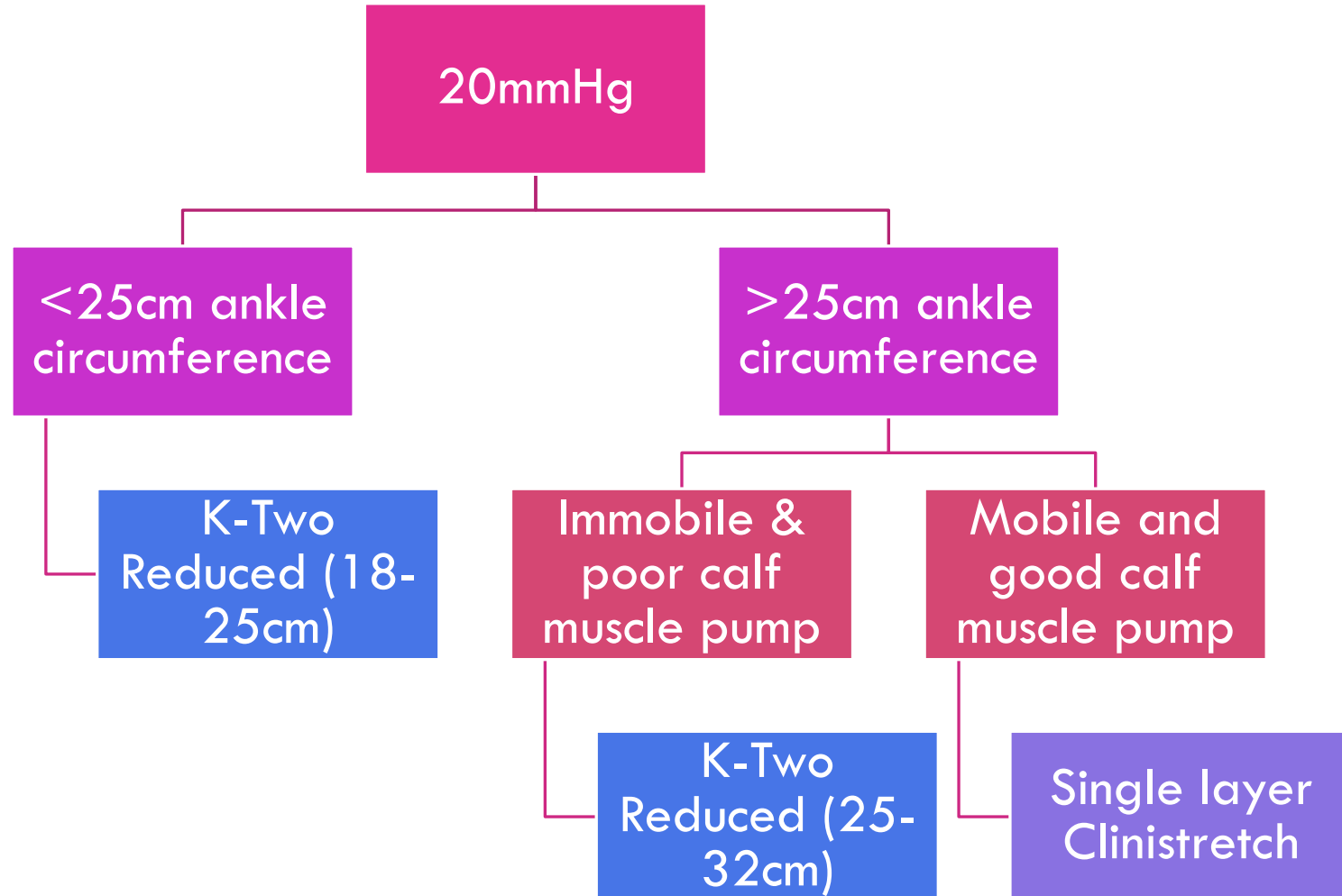
HOW DO I DECIDE WHICH COMPRESSION BANDAGING TO USE?



# WHICH COMPRESSION BANDAGING SHOULD I CHOOSE FOR... LEG ULCERATION



# WHICH COMPRESSION BANDAGING SHOULD I CHOOSE FOR... LEG ULCERATION



# Ever seen a giraffe with oedema?

Always opt for a SHORT-STRETCH compression bandaging system to manage chronic oedema



STATIC STIFFNESS INDEX (SSI)



## ASSESSING THE SEVERITY OF OEDEMA HELPS TO DETERMINE OUR TREATMENT

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Where is the oedema? (toes, ankles, calves, knees, thighs, hips)

---

What does the oedema feel like? (Soft, pitting, firm, fibrotic)

---

Skin changes? (hyperkeratosis, ulceration, papillomatosis, lymphorrhoea – refer to the CHROSS checker tool)

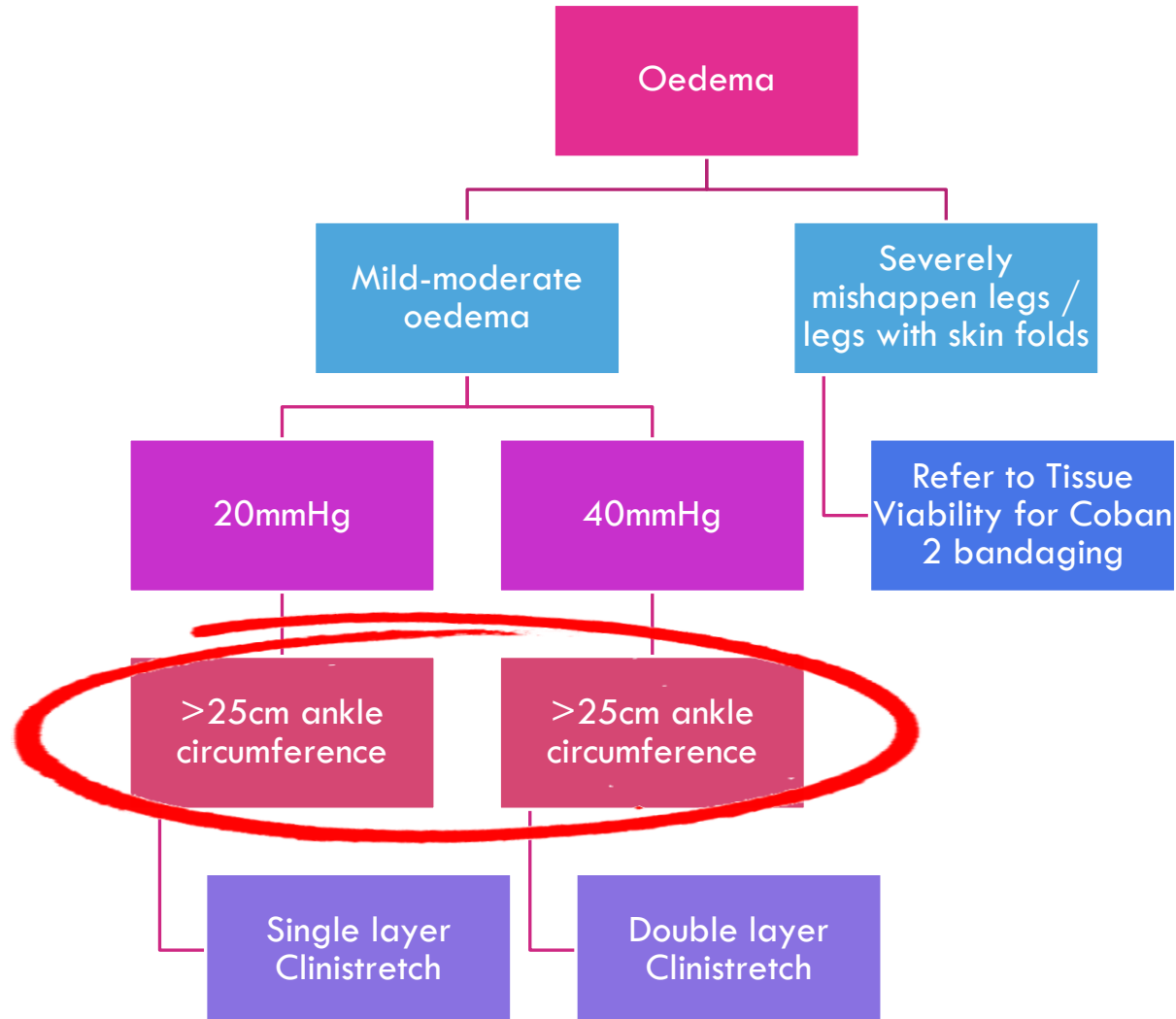
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Positive Stemmer sign?

---

Skin folds? (minor, moderate, severe)

# WHICH COMPRESSION BANDAGING SHOULD I CHOOSE FOR...CHRONIC OEDEMA?



# SEVERE OEDEMA, MISSHAPEN LIMBS AND SKIN FOLDS

Refer to Tissue Viability for  
Coban bandaging.

Lauren Frost (3M rep) to  
support with Coban  
application

Coban compression  
bandaging is ordered via  
Tissue Viability







IS THE COMPRESSION  
THERAPY EFFICACIOUS?



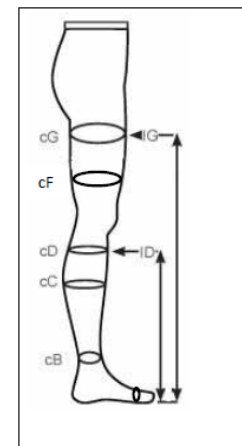
# BASELINE LIMB MEASUREMENTS

Misshapen legs with skin folds -  
Take photograph of leg and  
mark on photograph where to  
measure

Patient label

Please measure the limb before each application of compression bandaging - **LEFT / RIGHT LEG** (delete as appropriate)

DATE									
cG									
cF									
cD									
cC									
cB									
Circumference around base of toes									



# QUICK COMPRESSION QUIZ!

## Question 1

Sandy is 42 years old, fit, visits the GP practice for wound care, has an ABPI of 1.1 and an ankle circumference of 24cm. Which compression bandaging would you choose?

## Question 2

Fred has an ankle circumference of 30cm. Your colleague applies a single layer of Actico. How many mmHg is being applied to Fred's leg?

## Question 3

Dorothy has an ankle circumference of 22cm and Adam has an ankle circumference of 29cm. They are both wearing single layer Actico. Who has a higher amount of compression on their leg?

## Question 4

Bev is 94 years old, has to be hoisted in and out of bed, has an ankle circumference of 27cm and is suitable for high 40mmHg compression. Which compression bandaging would you choose?

## Question 5

Arthur has an ABPI of 0.97 and an ankle circumference of 31cm. Should you apply 1 or 2 layers of Actico?

- Decongestion of limb
- Aid healing of ulcers
- Help mobility
- Reduce discomfort/pain
- Actico bandaging ( using chronic oedema technique)



# BANDAGING FOR CHRONIC OEDEMA

# OEDEMA DECONGESTION SUCCESS!

## JANUARY 2014 (BEFORE)



# OEDEMA DECONGESTION SUCCESS! FEBRUARY 2015 (AFTER)



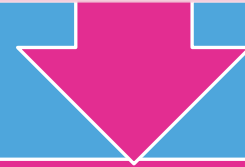




# DON'T FORGET THE TOES!

## 1. Stump bandaging

For weeping or very deformed toes

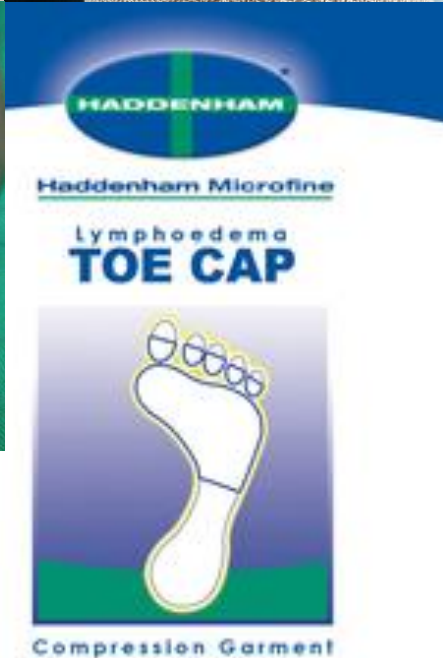


## 2. Toe garments – Haddenham microfine toe caps

Off the peg –  
measure  
circumference at  
ball of foot

Use under  
bandages

Trim to fit –  
seams on  
outside



## CHALLENGES!

- Washing and drying
- Fungal infections!
- Toe sandwiches
- Toe creases



# TECHNIQUE — DEMONSTRATION & THEN YOUR TURN!

You will need:

Wadding bandage

Clinistretch (8cm x 6m) - foot

Clinistretch (10cm x 6m) – lower leg

Clinistretch (12cm x 6m) – thigh

Scissors



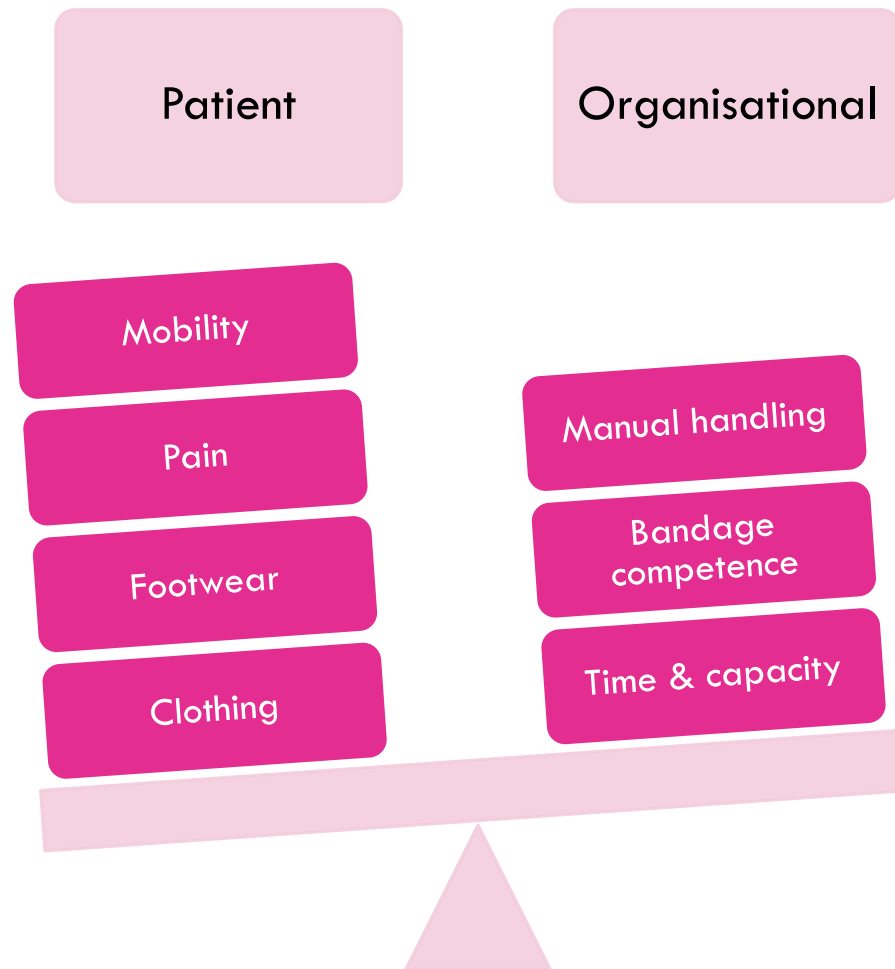
## **DISCUSSION:**

WHAT ARE THE BARRIERS TO  
COMPRESSION THERAPY  
AND HOW CAN WE RESOLVE  
THEM?

---



# CHALLENGES WITH APPLYING BANDAGING



# CHALLENGES WITH APPLYING THIGH-HIGH BANDAGING

## Patient

Clothing & Footwear - check appropriate clothing and footwear prior to commencing bandaging

Pain - Explore reasons for pain and consider use of analgesia

Mobility – consider use of alternative compression therapies

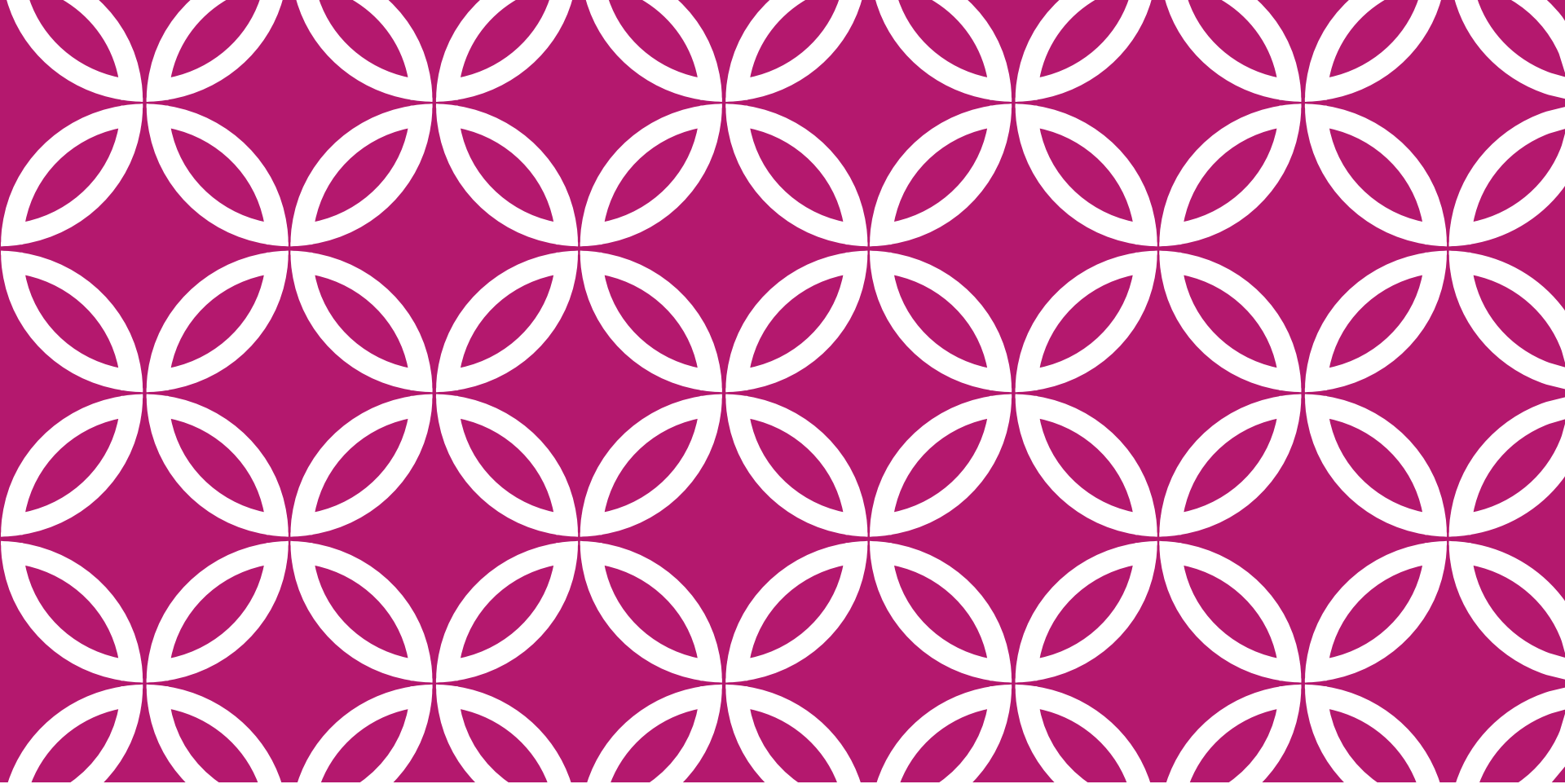
Continence – consider continence assessment and management, consider alternative compression therapies

## Organisational

Time/Staffing capacity - Plan to start decongestion bandaging when there is enough staff capacity to see it through until the end

Competency - Where possible consider joint visits to get staff who are not used to using Actico get an opportunity to do this skill under supervision

Manual Handling - Consider patient's environment, allow plenty of space, consider double-up visits for very large limbs to reduce twisting/stretching.



**MAINTENANCE**

# STANDARDS?

The two main standards of compression hosiery used in the UK are:

British Standard	European Standard
<p>British standard compression garments are made from fine, light fabrics and are circular knit. In limbs with a graduated shape, British standard compression garments provide effective compression to prevent ulceration, heal venous leg ulcers and prevent recurrence. However, they are only suitable for patients without oedema.</p>	<p>If oedema is present, European standard compression hosiery can be used. European standard hosiery is also circular knit but delivers a greater level of compression (mmHg) and is made from a stiffer fabric than British Standard circular knit hosiery. It can be used to prevent ulceration, heal venous leg ulcers and prevent recurrence in a limb with oedema. It can also be used to manage chronic oedema in a limb that has previously been decongested with multi-layer bandaging.</p>

# CLASS?

Class	British Standard	European Standard	Class
1	14–17 mmHg	18–21 mmHg	1
2	18–24 mmHg	23–32 mmHg	2
3	25–35 mmHg	34–46 mmHg	3

# BUT IT'S NOT ALL ABOUT THE CLASS!

## Circular knit garments

- (E.g. Activa, Actilymph)
- Circular knit garment has a horizontal stretch
- Suitable for patients with very mild chronic oedema
- NOT suitable for patients with moderate-severe chronic oedema
- No seam
- Off-the-peg sizes
- Stretched horizontally so rings of fabric can cause a tourniquet effect

## Flat knit garments

- (E.g. Actilymph MTM, Jobst Elvarex)
- Flat knit garments offer a 'stiffness' which circular knit garments don't have – this helps to 'hold the oedema'
- Suitable for patient's with moderate-severe chronic oedema
- Has a seam up the back where garment has been stitched together
- Made to measure – contour to your patients so no uncomfortable digging in/rolling down/tourniquets



# CHROSS CHECKER TOOL



Prevention	Spider veins	<input type="checkbox"/>	NO <input type="checkbox"/>	Activa® British Standard hosiery <sup>†</sup> Mild: Class 1 (14–17mmHg)	<input type="checkbox"/>
	Ankle flare	<input type="checkbox"/>		Moderate: Class 2 (18–24mmHg)	<input type="checkbox"/>
	Mild/moderate hyperkeratosis	<input type="checkbox"/>			
	Mild/moderate varicose veins	<input type="checkbox"/>	YES <input type="checkbox"/>	ActiLymph® European Class hosiery <sup>††</sup> Mild: Class 1 (18–21mmHg)	<input type="checkbox"/>
	Hyperpigmentation	<input type="checkbox"/>		Moderate: Class 2 (23–32mmHg)	<input type="checkbox"/>
	Venous dermatitis	<input type="checkbox"/>			
Early/medium intervention	Varicose eczema	<input type="checkbox"/>		Activa® British Standard hosiery <sup>†</sup>	
	Atrophie blanche	<input type="checkbox"/>		Moderate: Class 2 (18–24mmHg)	<input type="checkbox"/>
	Induration	<input type="checkbox"/>	NO <input type="checkbox"/>	Severe: Class 3 (25–35mmHg)	<input type="checkbox"/>
	Moderate/severe varicose veins	<input type="checkbox"/>		Activa® Leg Ulcer Hosiery Kit	<input type="checkbox"/>
	Moderate/severe hyperkeratosis	<input type="checkbox"/>			
	Healed ulcer <sup>*/**</sup>	<input type="checkbox"/>		ActiLymph® European Class hosiery <sup>††</sup>	
	Recurring ulcer/open ulcer <sup>*/**</sup>	<input type="checkbox"/>	YES <input type="checkbox"/>	Moderate: Class 2 (23–32mmHg)	<input type="checkbox"/>
	Cellulitis <sup>***</sup>	<input type="checkbox"/>		Severe: Class 3 (34–46mmHg)	<input type="checkbox"/>
Intensive management				ActiLymph® Hosiery Kit	<input type="checkbox"/>
	Lipodermatosclerosis (acute or chronic)	<input type="checkbox"/>	NO <input type="checkbox"/>	Activa® British Standard hosiery <sup>†</sup> Severe: Class 3 (25–35mmHg)	<input type="checkbox"/>
	Chronic oedema/lymphoedema	<input type="checkbox"/>		ActiLymph® European Class hosiery <sup>††</sup>	
	Severe hyperkeratosis	<input type="checkbox"/>		Moderate: Class 2 (23–32mmHg)	<input type="checkbox"/>
	Skin folds	<input type="checkbox"/>		Severe: Class 3 (34–46mmHg)	<input type="checkbox"/>
	Papillomatosis	<input type="checkbox"/>	YES <input type="checkbox"/>	ActiLymph® Hosiery Kit	<input type="checkbox"/>
	Lymphangiomata	<input type="checkbox"/>		ActiLymph® MTM Ease or MTM Dura	
	Lymphorrhoea (wet legs)	<input type="checkbox"/>		Moderate: Class 2 (23–32mmHg) Severe: Class 3 (34–46mmHg)	<input type="checkbox"/> <input type="checkbox"/>



# Compression Hosiery & Wraps

## Treatment

**First Line:**  
**Leg ulcer**  
**hosiery kit**

**Second Line:**  
**Bandaging**



## Maintenance

**First line:**  
**Hosiery**

**Second Line:**  
**Wraps**



# MEASURING TIPS FOR MTM HOSIERY

- Include all the oedema in your garment (E.g. if knee is oedematous opt for a thigh-high garment)
- Measurement charts differ between brands and types of hosiery so always check you are using the right one!
- Take measurements early in the day where possible
- Measure both legs
- Check positioning
- Measuring tapes – accuracy is important!
- Open toe or closed toe?
- Garments should be replaced every 6 months – prescribers are responsible for reassessing and remeasuring





## Choosing shoes

**2.** Sturdy heel counter



**1.** Fastening (lace or Velcro)

**3.** Rocker sole that bends where your foot bends

### Top tips

- ☑ Choose a shoe with a removable insole for extra room
- ☑ Leave a thumb width gap at the end of the shoe to allow your toes to move
- ☑ Shoes with a wide opening allow for easier access for your feet

# APPLICATION BY FORMAL CARERS





# LIFESTYLE CHANGES - HELP WITH FOOTWEAR



Personal independence  
payment

Adult disability payment

VAT relief on certain goods if  
you have a disability

Shoe Aid

Talk to patient about lower  
cost shoes

# ACHIEVING COMPETENCE



PRACTICE



FURTHER TRAINING



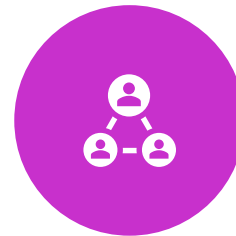
CONTACT L+R AND  
URGO REPS



ACHIEVE  
COMPETENCY  
SIGN-OFF



SELF-EVALUATE



MONITOR  
COLLEAGUES





**National Wound Care  
Strategy Programme**



## **Wound Care Workforce Framework**

Working in partnership with

*The***AHSN***Network*



# **NWCSP CORE CAPABILITIES FRAMEWORK**

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ESCAPE  
ROOM





QUESTIONS?

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YOUR FEEDBACK  
IS IMPORTANT TO  
US!

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PLEASE SCAN THE  
QR CODE AND  
COMPLETE THE  
EVALUATION

