

27 MARCH 2024 7:30

HEALING VENOUS LEG ULCERS:

A NEW ANIMATED WAY
TO LEARN

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LIVE Q&A

*SEND IN YOUR QUESTIONS BY
COMMENTING ON THE VIDEO*



WHAT IS MICROWORLD?

Microworld can connect and educate professionals from around the world.

Completing the module:

- Counts towards revalidation
- Opens other learning areas of the site.

Complex content delivered through fun, engaging interactive animations, videos, games and illustrations.



IN THE CLASSROOM SO FAR...





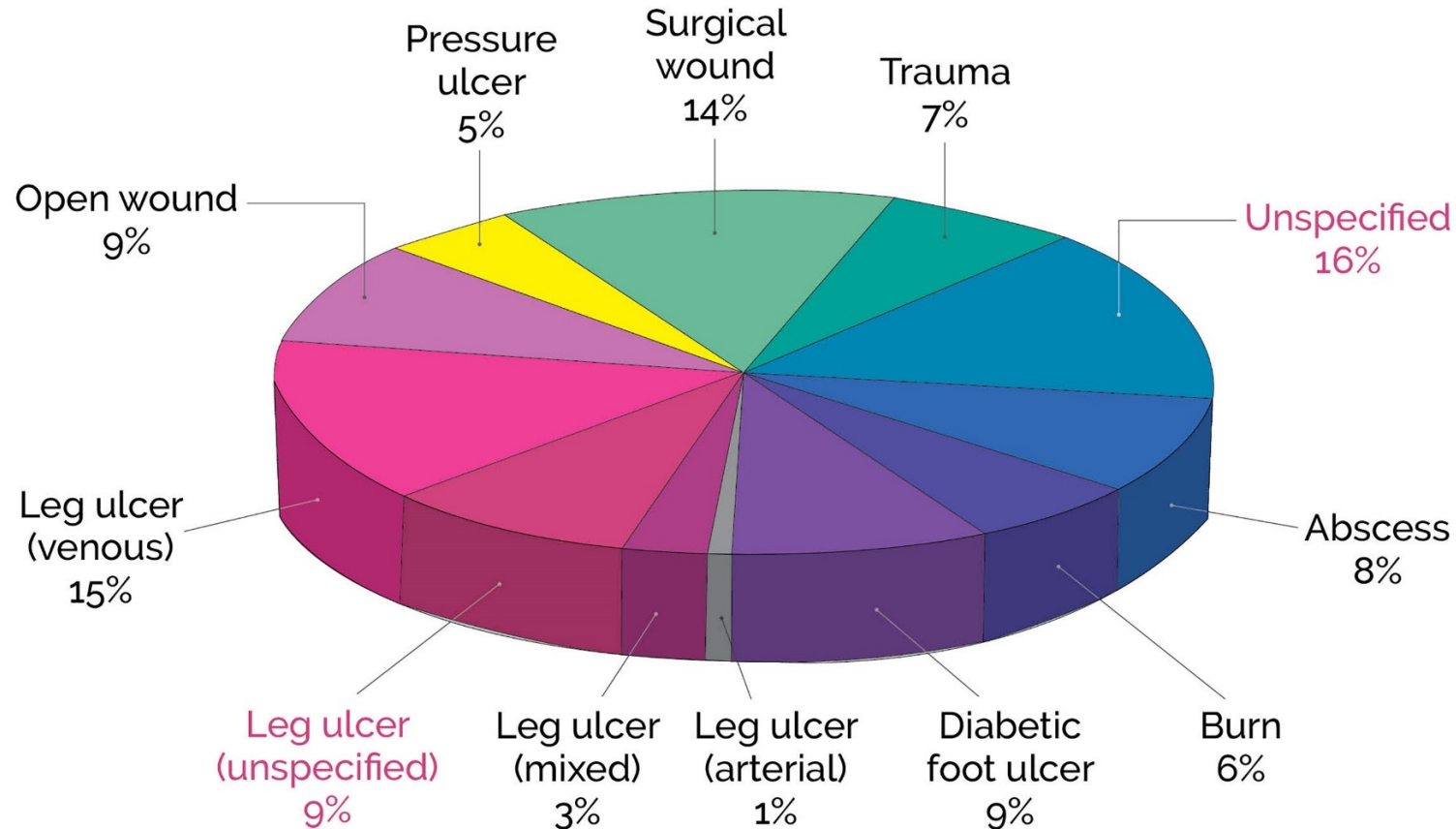
CLASS 8: VENOUS LEG ULCERS

LEARNING OBJECTIVES

At the end of this session, you will be able to:

- Understand how Microworld can offer an animated way to learn and enhanced learning experience
- Understand the causes of venous leg ulcers and risk factors for venous disease
- Understand the assessment and management of venous leg ulcers including wound management and compression therapy
- Understand the importance of involving patients in their own care and why patient education about their condition and treatment is vital
- Explore Microworld, register on the website

THE MOST COMMON CAUSE OF WOUNDS



- 1.1 million patients with leg ulceration
- 730,000 with a venous leg ulcer.

CAUSES OF LEG ULCERS IN GENERAL

- Arterial
- Venous
- Lymphatic
- Trauma
- Pressure
- Malignant
- Infection
- Autoimmune diseases
- Connective tissue disorders
- Medication.



VASCULAR SYSTEM

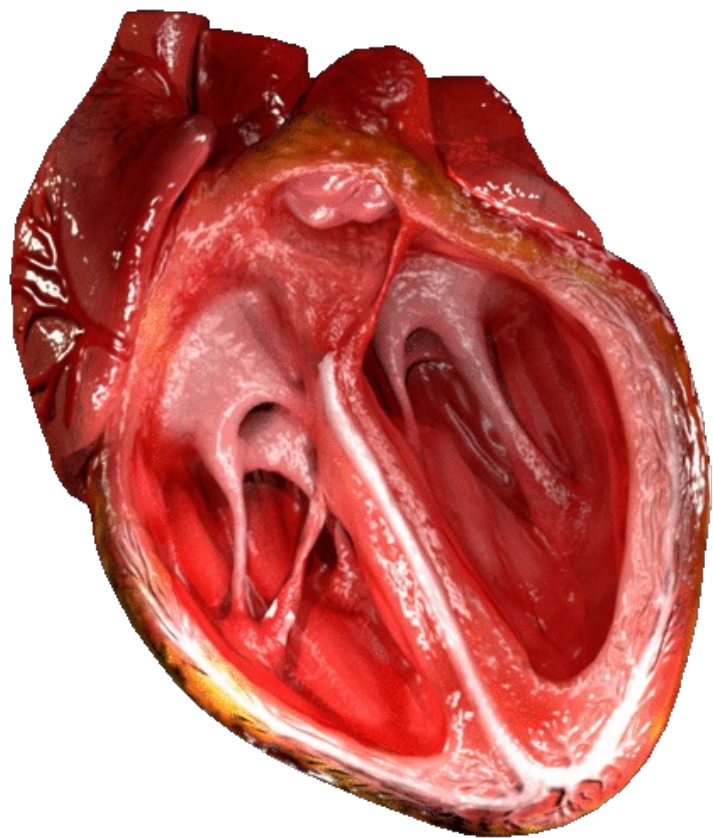
Circulatory system

- Veins
- Arteries
- Lymph.

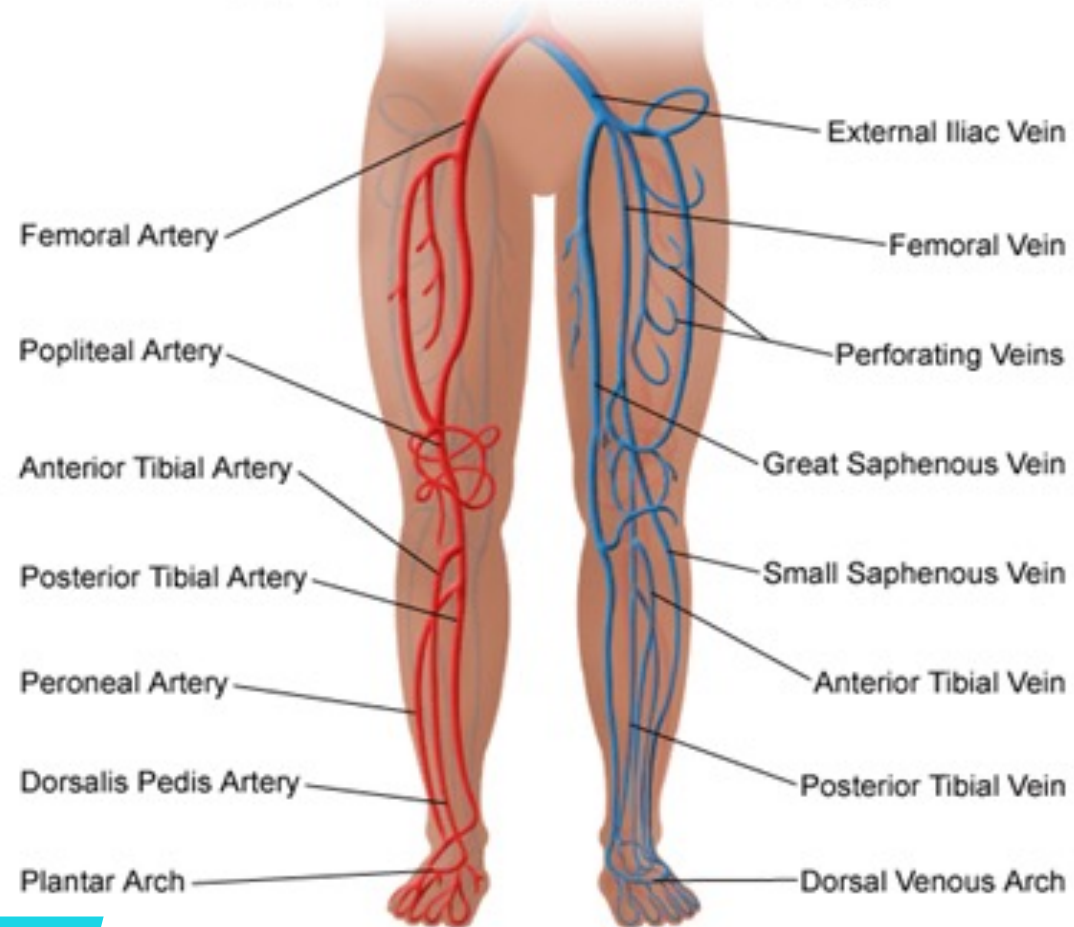
Main function is transportation of oxygen and nutrients, but also:

- Protection of infection
- Elimination of carbon dioxide
- Delivery of nutrients: glucose, vitamins, minerals (from gut to cell)
- Elimination of waste materials (from tissue to kidney to urine)
- Temperature control (movement of heat).

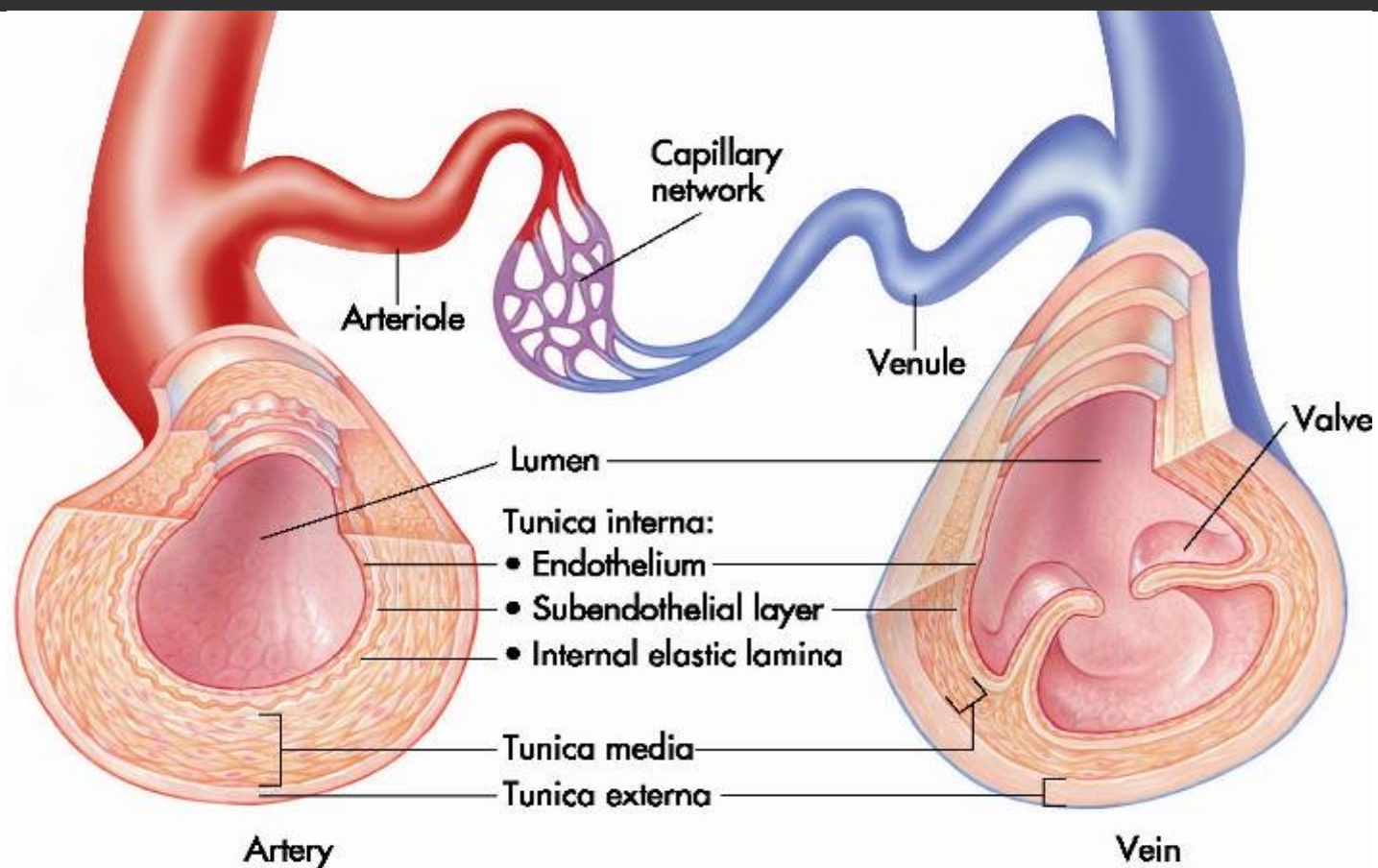
VASCULAR SYSTEM



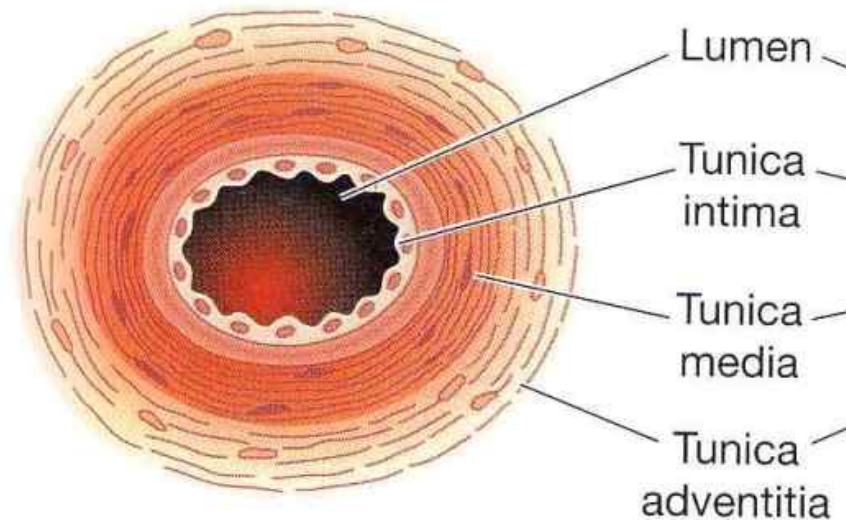
LOWER LIMB ARTERIES AND VEINS



ARTERIOLE – VENULE CONNECTION



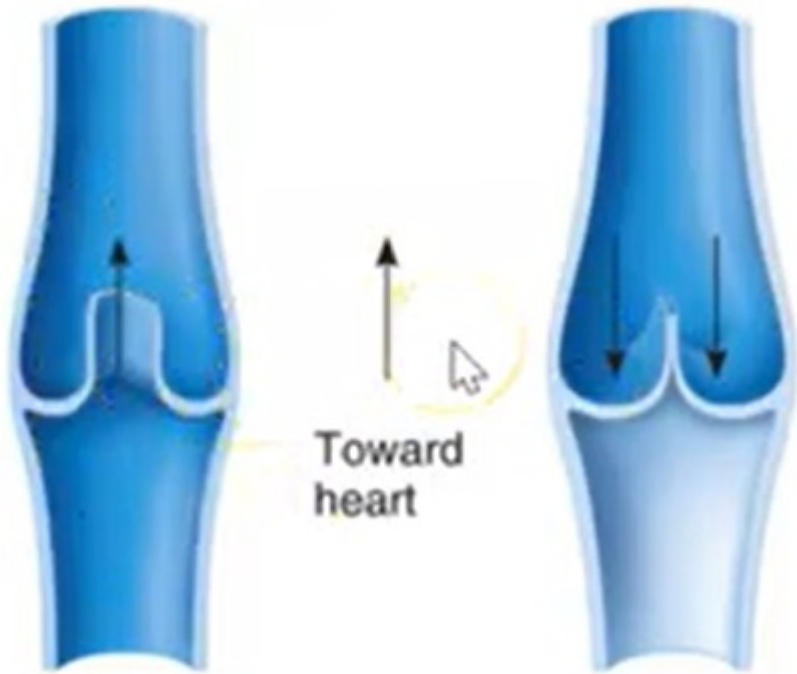
ARTERIES



Artery

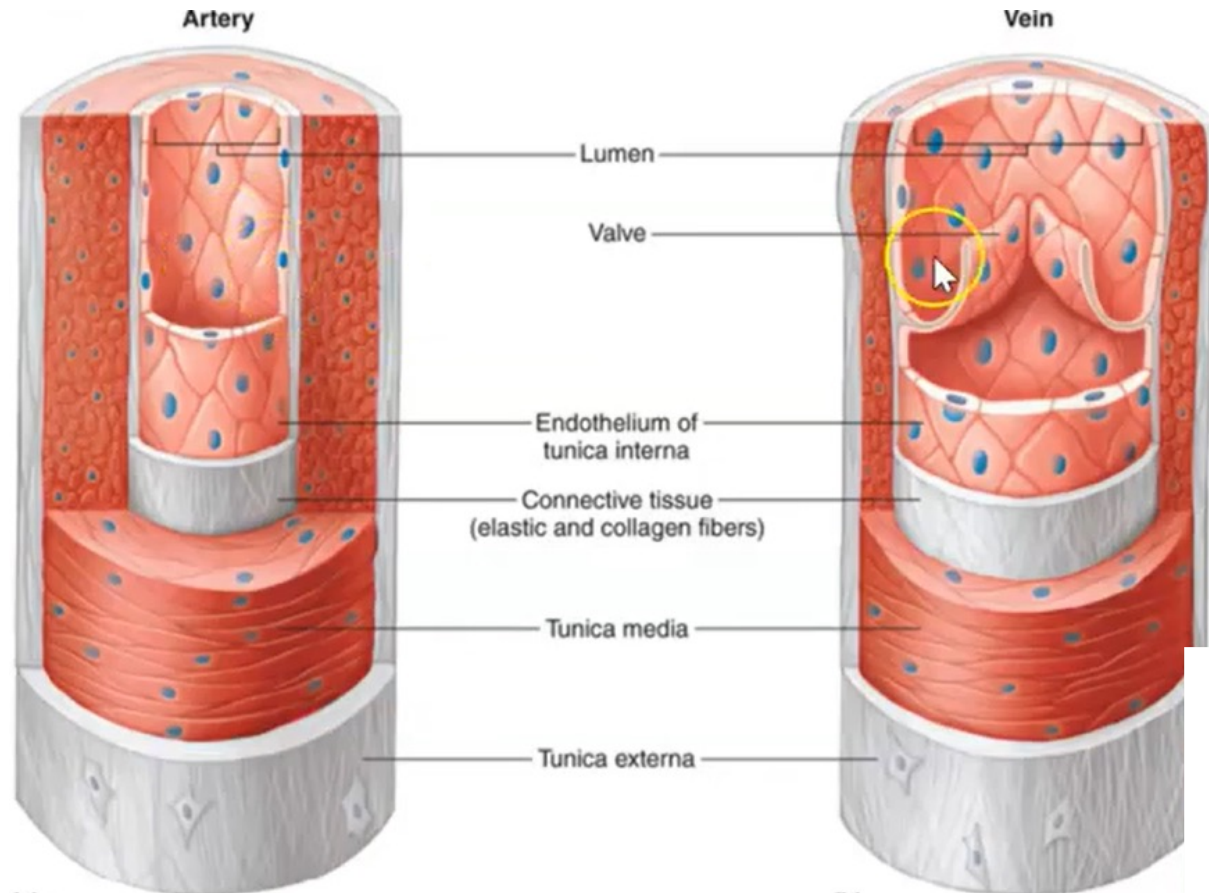
- Thick-walled vessels
- Elastic, strong
- Transport oxygenated blood
- Three layers:
 - **Intima** – inner layer - endothelium cells
 - **Media** – middle layer – connective tissue, smooth muscle and elastic fibres (enables vasoconstriction)
 - **Adventitia** – outer layer – connective tissue.

VEINS

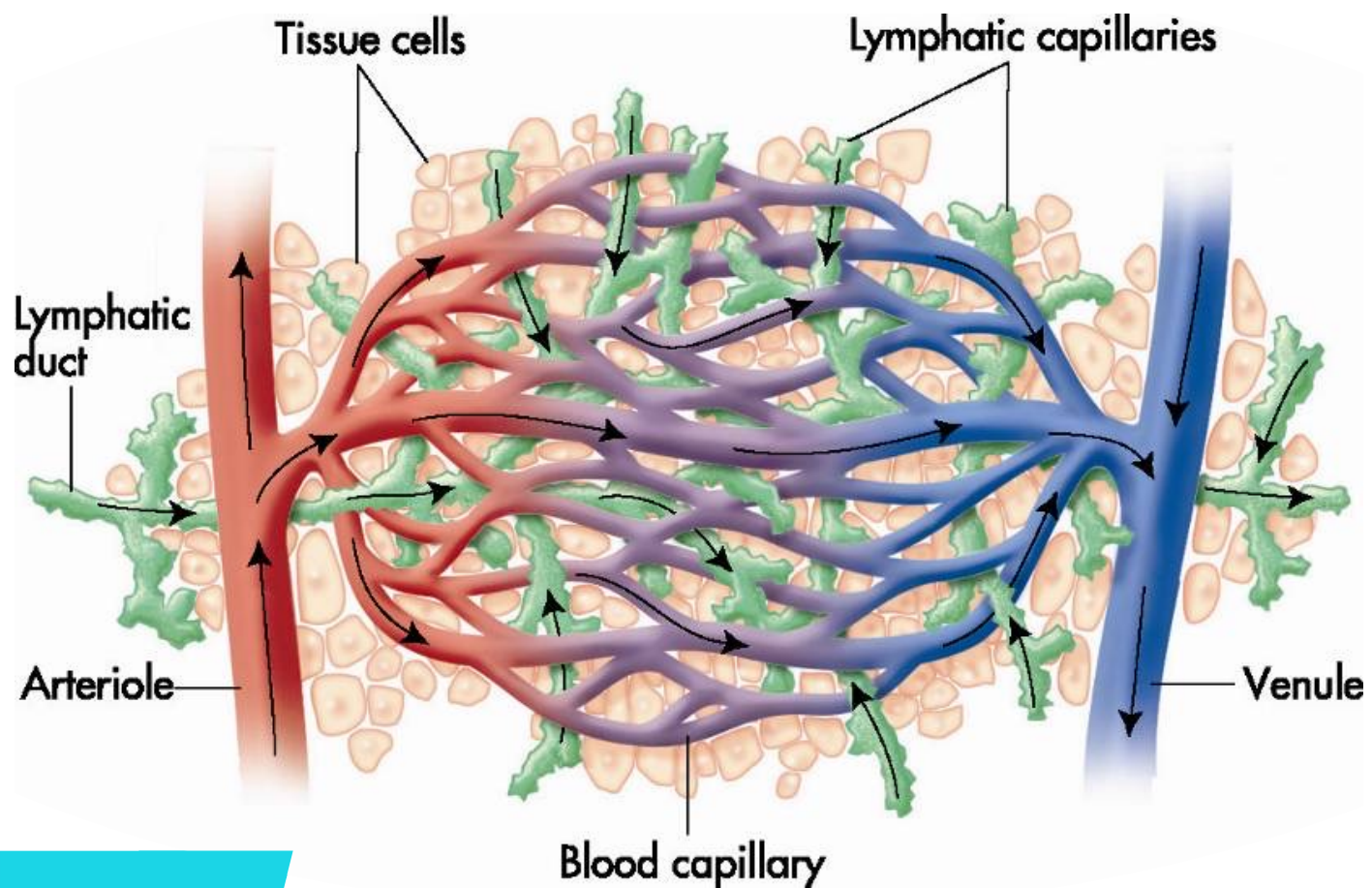


- Similar to arteries
- Reservoir for blood
- Three layers
- Larger lumen
- Vein wall less muscular/weak
- Do not contain elastic fibres
- Unidirectional bicuspid valves.

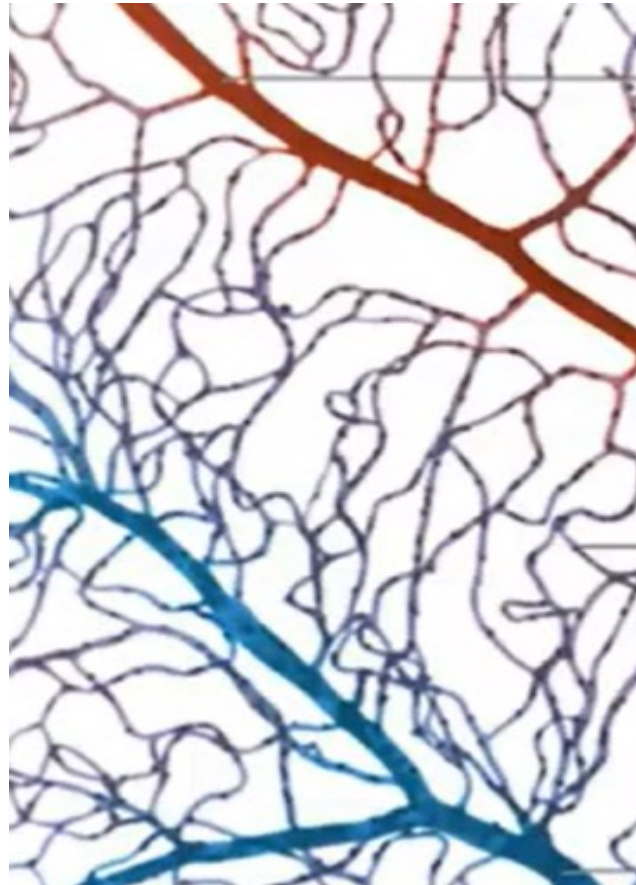
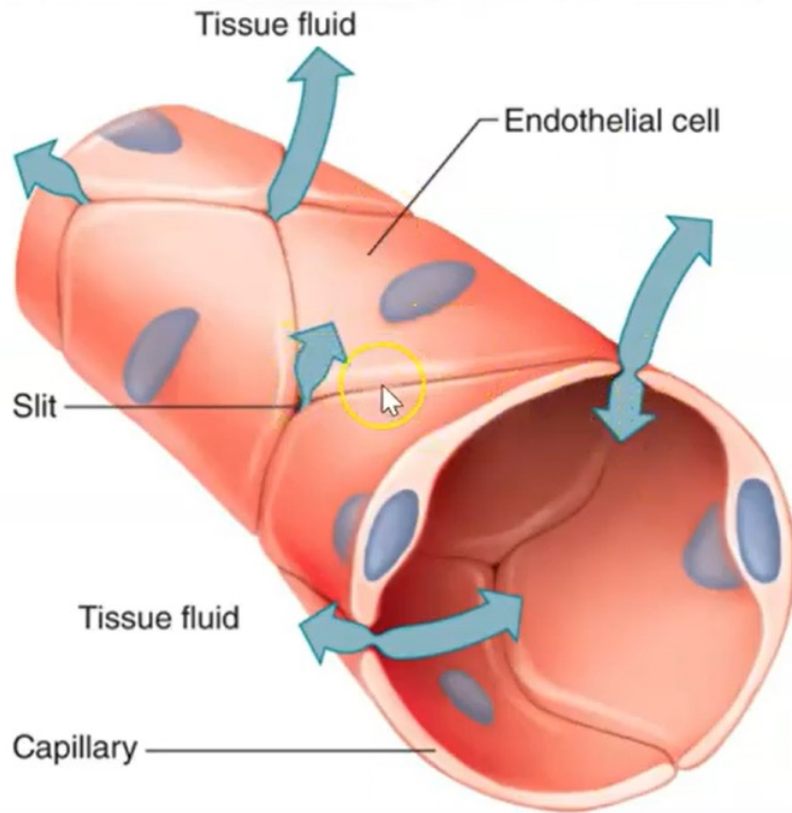
ARTERY VERSUS VEIN



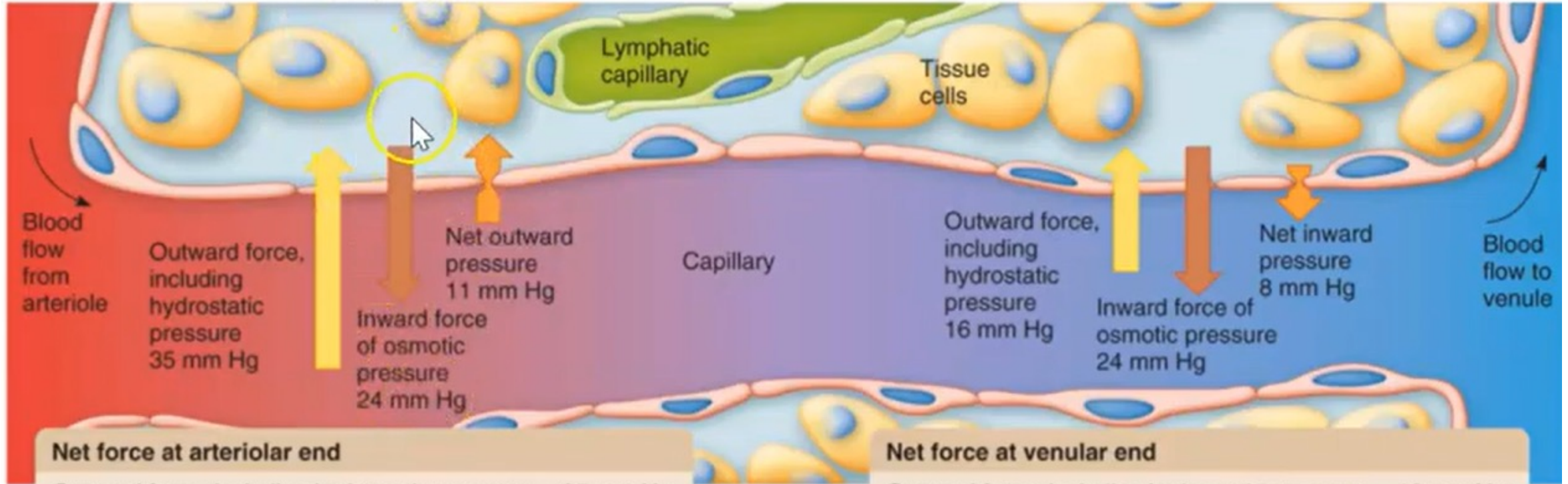
CAPILLARY BED



CAPILLARY FUNCTION



- Blood flow
- Hydrostatic force
- Diffusion
- Osmosis.



Net force at arteriolar end

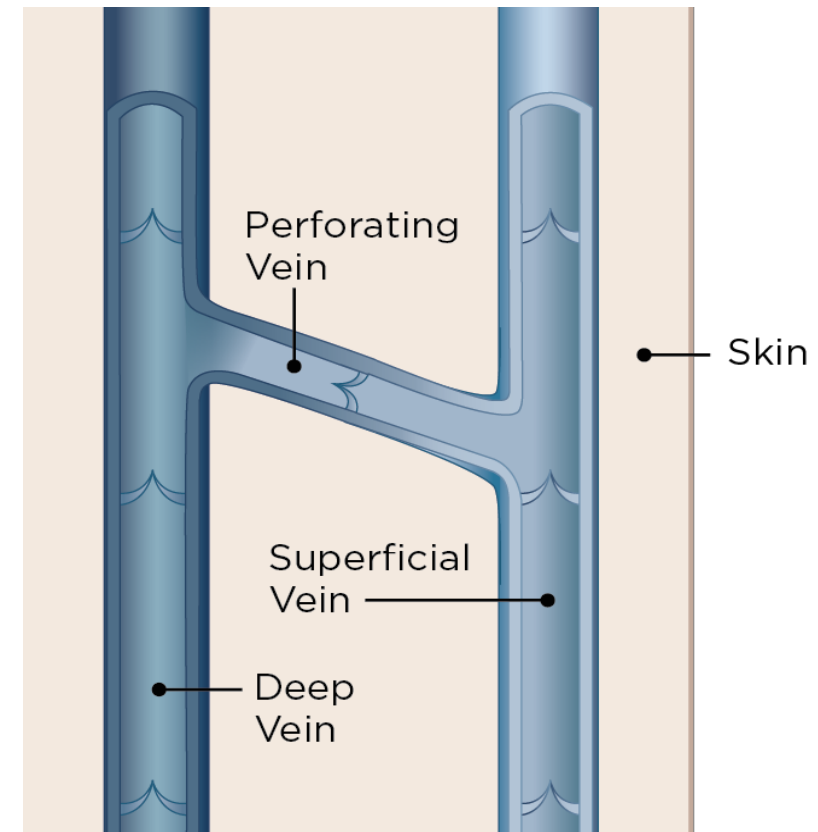
Outward force, including hydrostatic pressure	= 35 mm Hg
Inward force of osmotic pressure	= 24 mm Hg
Net outward pressure	= 11 mm Hg

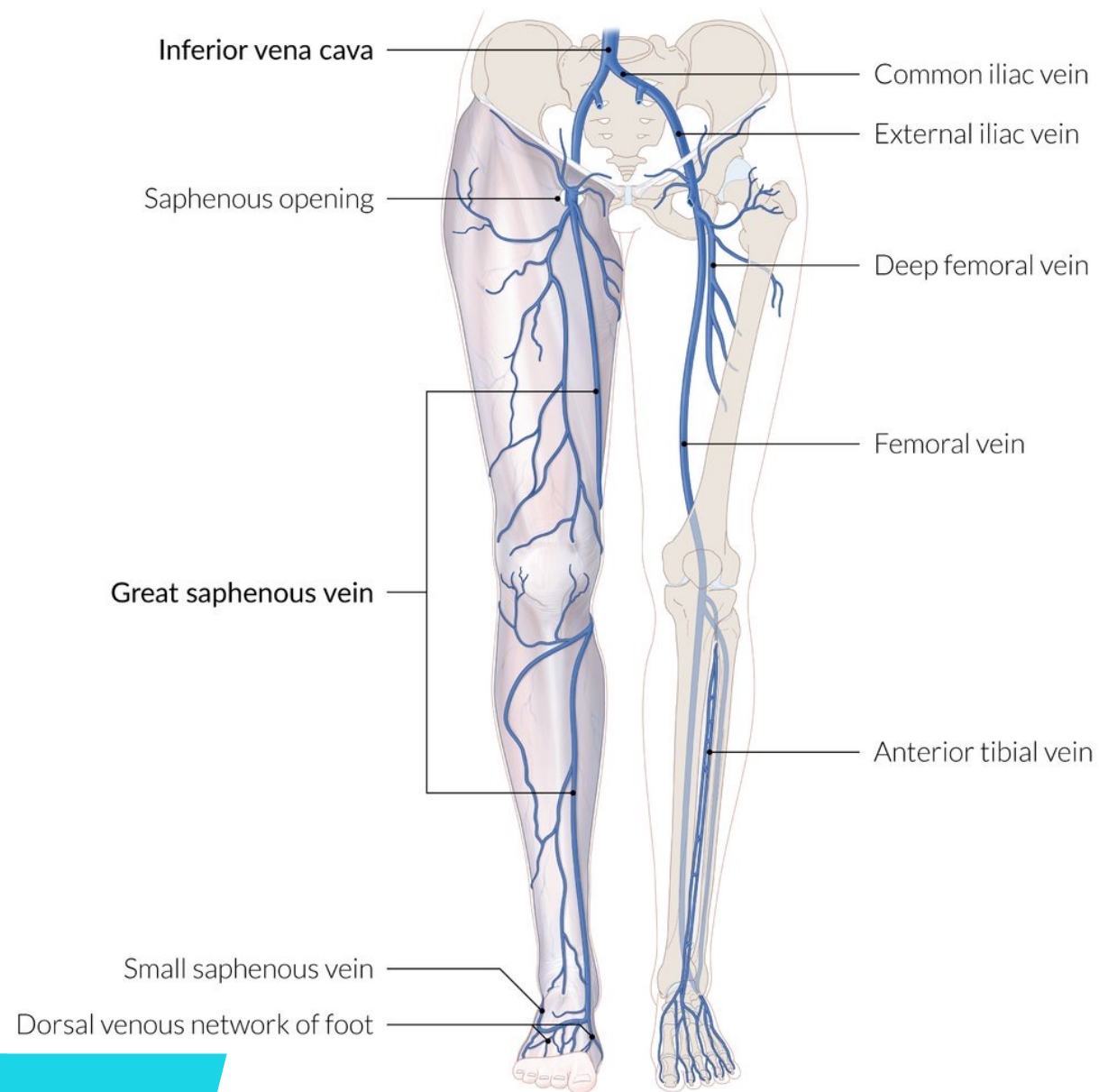
Net force at venular end

Outward force, including hydrostatic pressure	= 16 mm Hg
Inward force of osmotic pressure	= 24 mm Hg
Net inward pressure	= 8 mm Hg

VENOUS SYSTEM

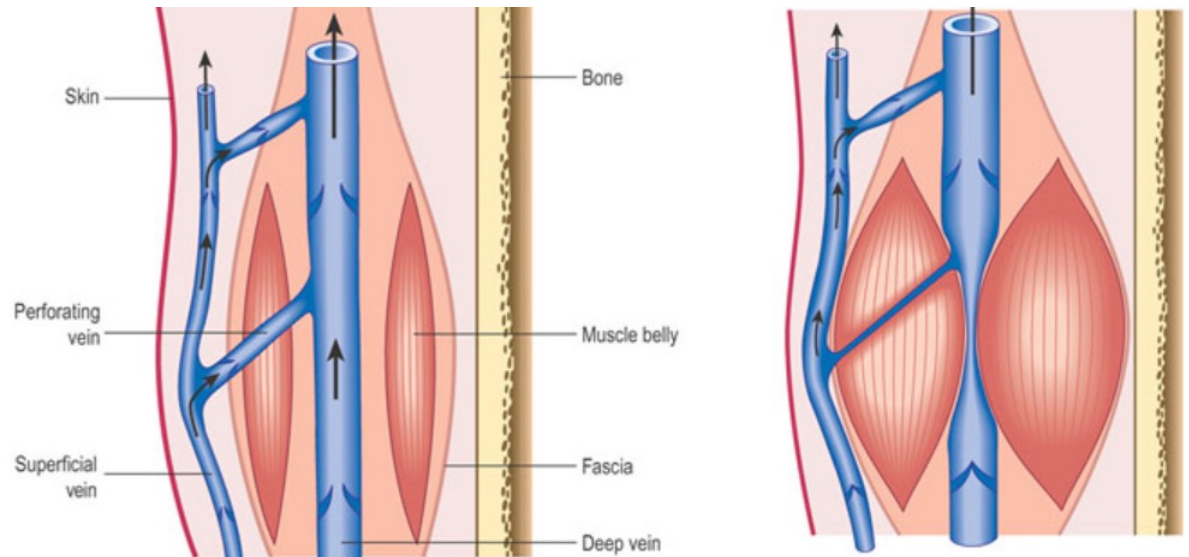
- Drainage system
- Two parallel connecting systems
- Deep venous system
- Superficial venous system
- Which is connected by perforators.



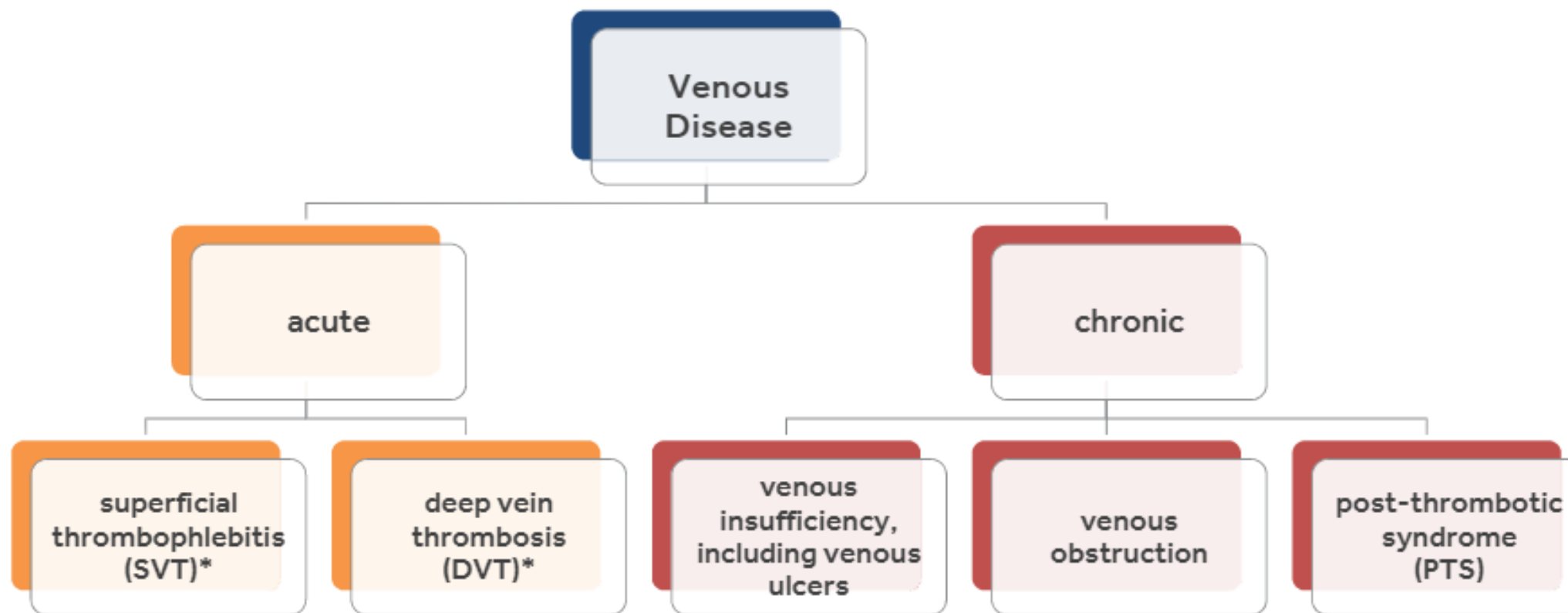


VENOUS RETURN

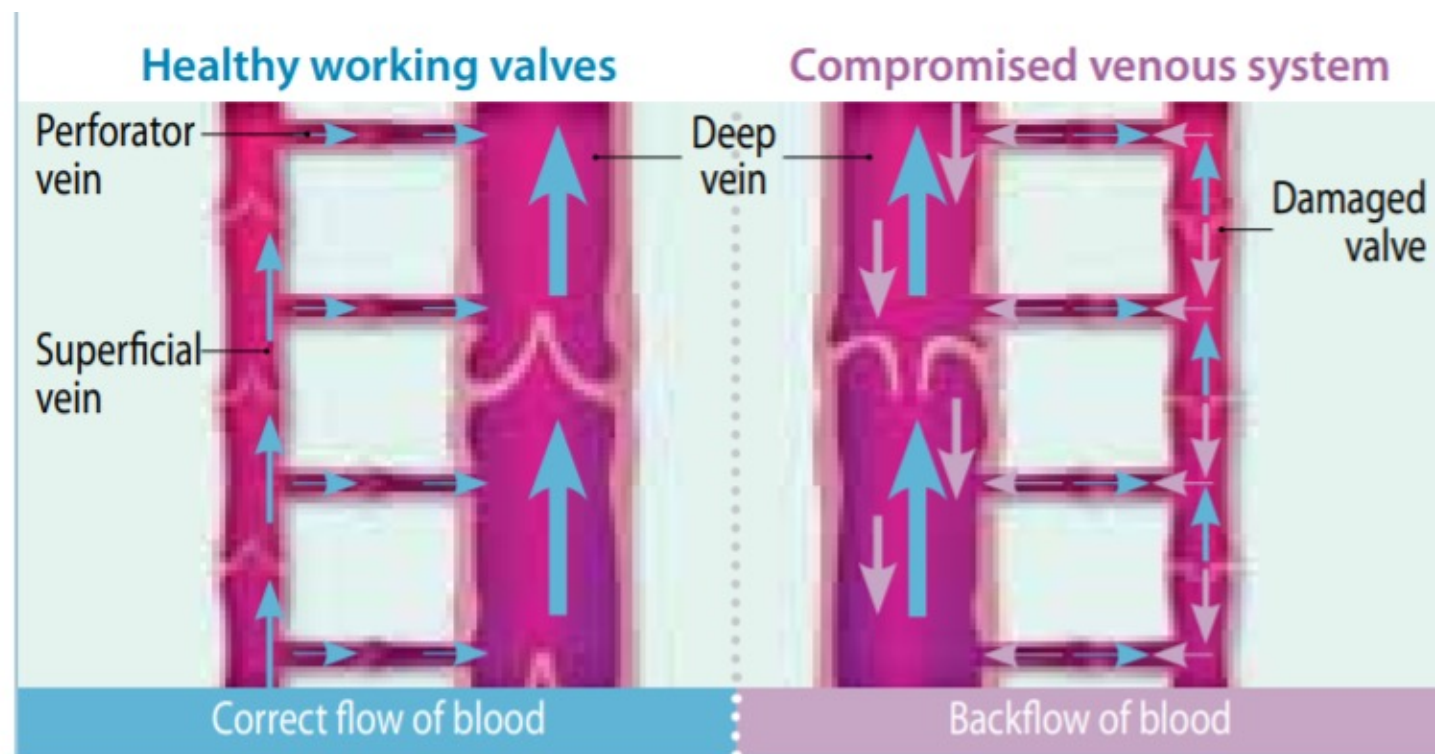
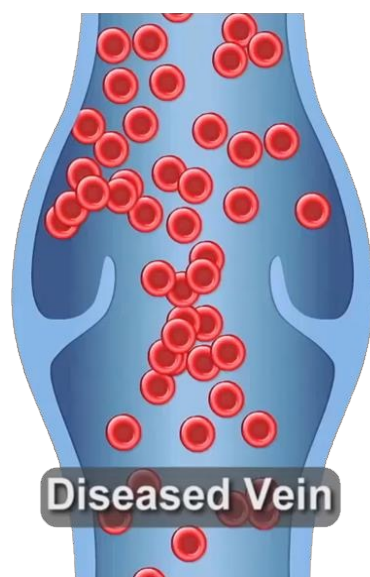
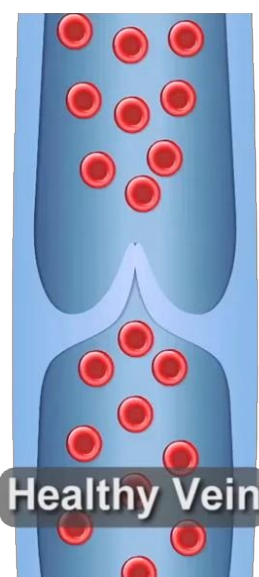
- Against gravity
- Low flow low pressure system
- Valves prevent retrograde flow
- Facilitated by calf muscle pump, muscular compression of the veins, negative intrathoracic pressure.



TYPES OF VENOUS DISEASE



VENOUS INSUFFICIENCY



VENOUS HYPERTENSION SYMPTOMS

- Aching
- Burning sensation
- Itching
- Heaviness
- Pain
- Swelling
- Skin changes
- Ulceration.



RISK FACTORS FOR VENOUS HYPERTENSION

- Advanced age
- High body mass index (BMI)
- Immobility
- Previous deep vein thrombosis (DVT)
- History of intravenous drug (IV) use
- Varicose veins
- Family history of venous disease
- Female
- Pregnancy
- Chronic oedema
- Previous lower limb cellulitis/ulceration.

VENOUS HYPERTENSION

C1

C2

C3

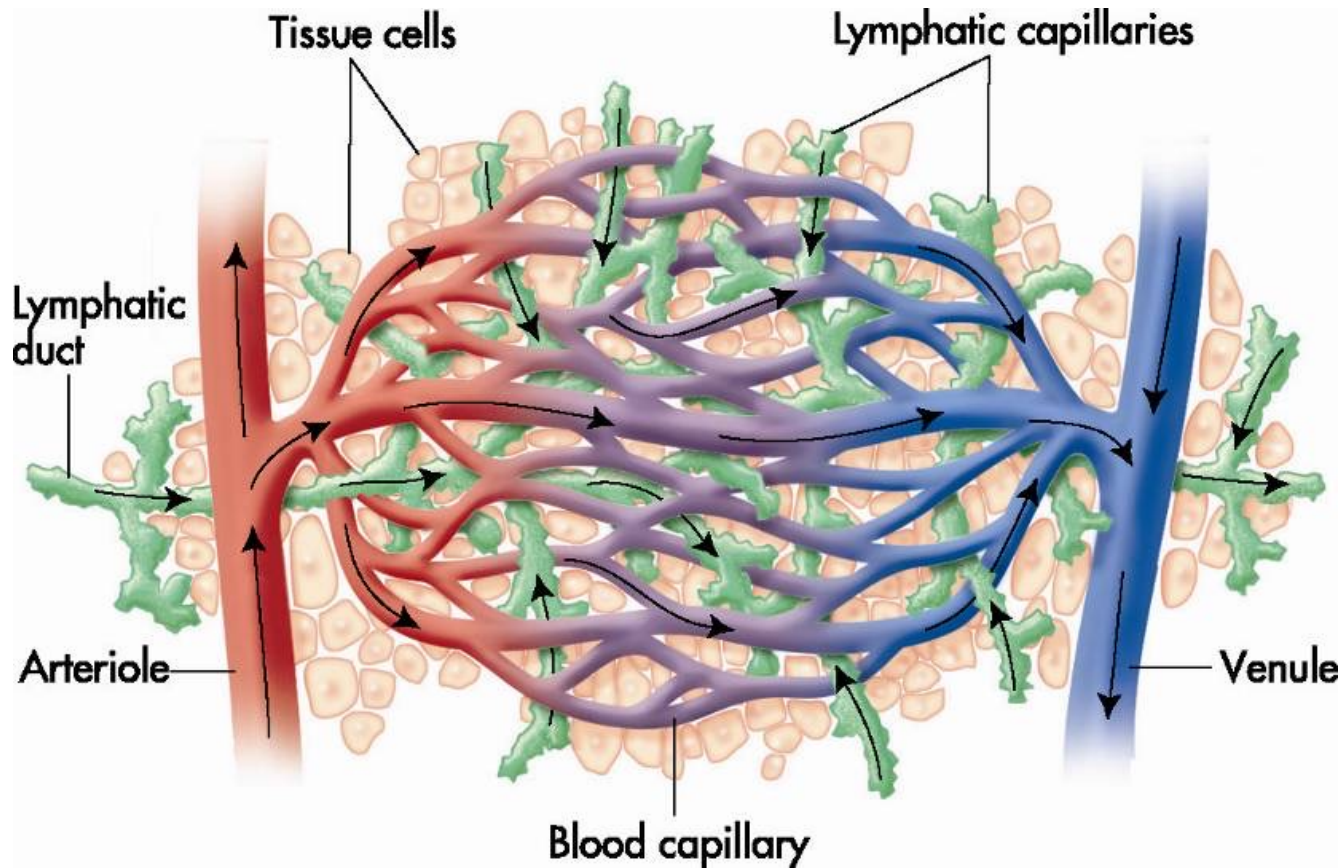
C4

C5

C6



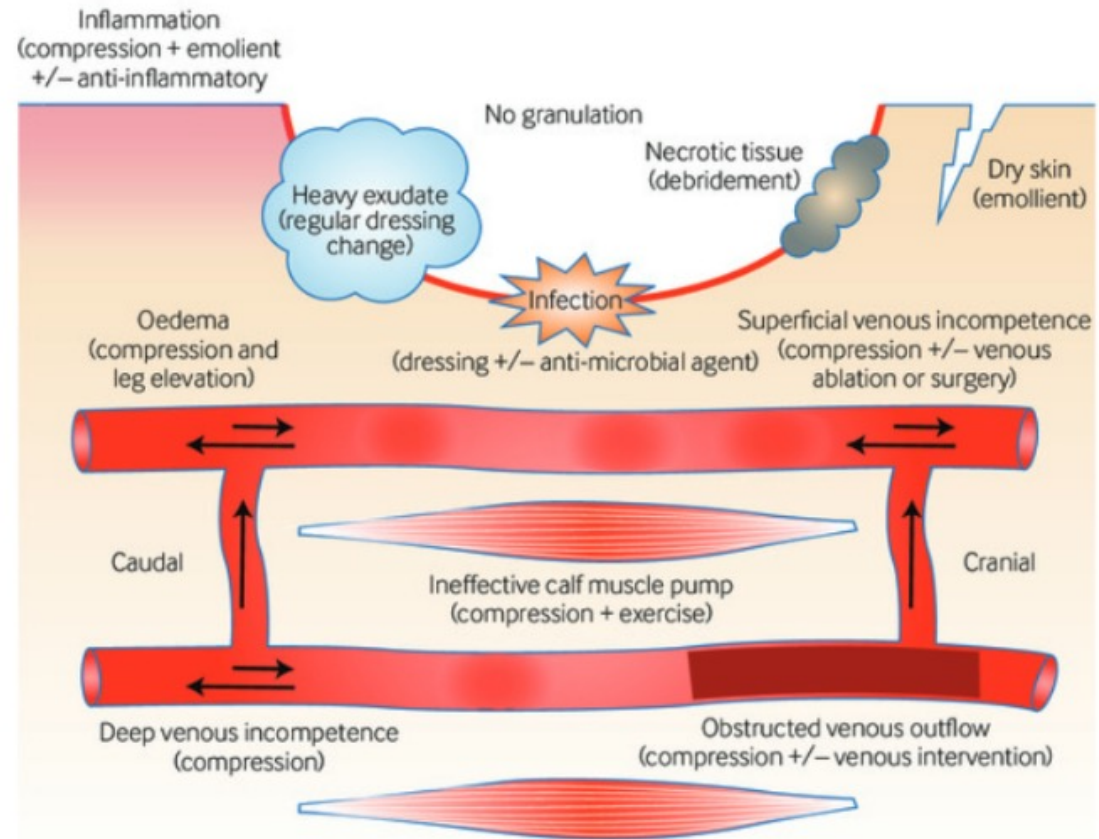
BUT HOW DOES TOO MUCH BLOOD CAUSE LEG ULCERS?



VENOUS HYPERTENSION



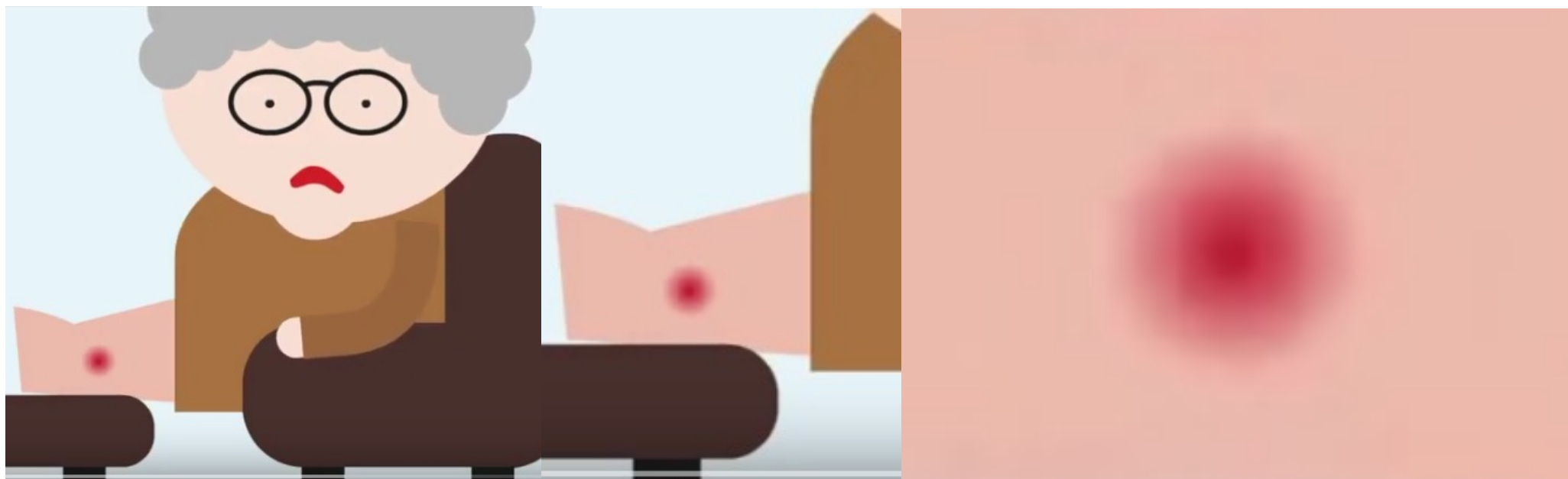
LEG ULCER – A ‘WEED’



MOST IMPORTANT ASPECT OF MANAGEMENT



HOLISTIC ASSESSMENT

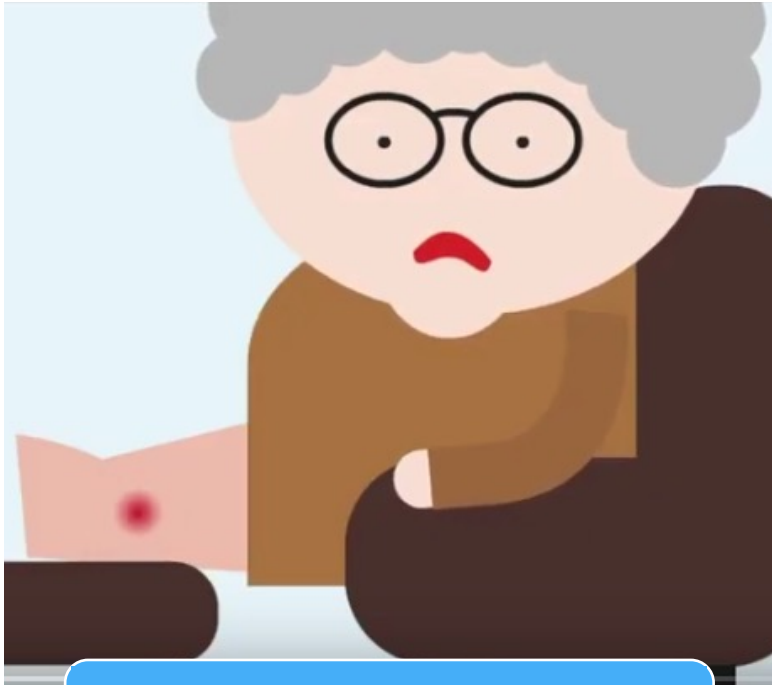


Patient

Limb

Wound

THE PATIENT



Patient

General assessment:

- Medical history
- Medication history
- Family history
- Lifestyle and living situation
- Nutrition
- Psychosocial
- Pain.

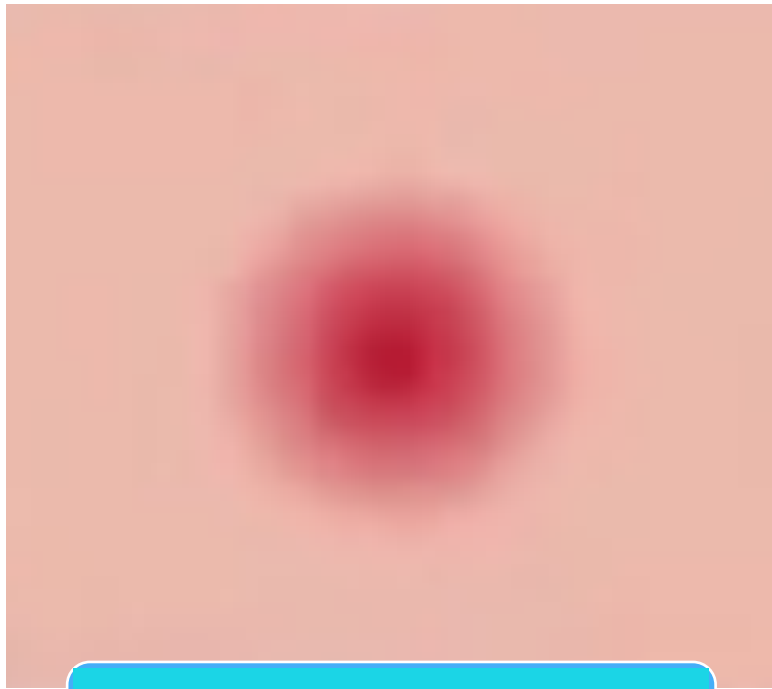
THE LIMB



Limb

- Shape
- Oedema location
- Tissue condition
- Skin condition
- Colour (staining, erythema)
- Temperature
- Condition of nails.

THE WOUND



Wound

- Location
- Tissue type
- Size/depth
- Wound edge
- Exudate volume
- TIME (**T**issue – **I**nfection – **M**oisture – **E**dge)
- MOIST (**M**oisture – **O**xygen – **I**nfection – **S**upport – **T**issue).

CORNERSTONE OF VENOUS LEG ULCER MANAGEMENT

Psychological support

Pain
management

Nutrition

Wound and skin
care

Movement and
exercise

Venous ablation

Compression

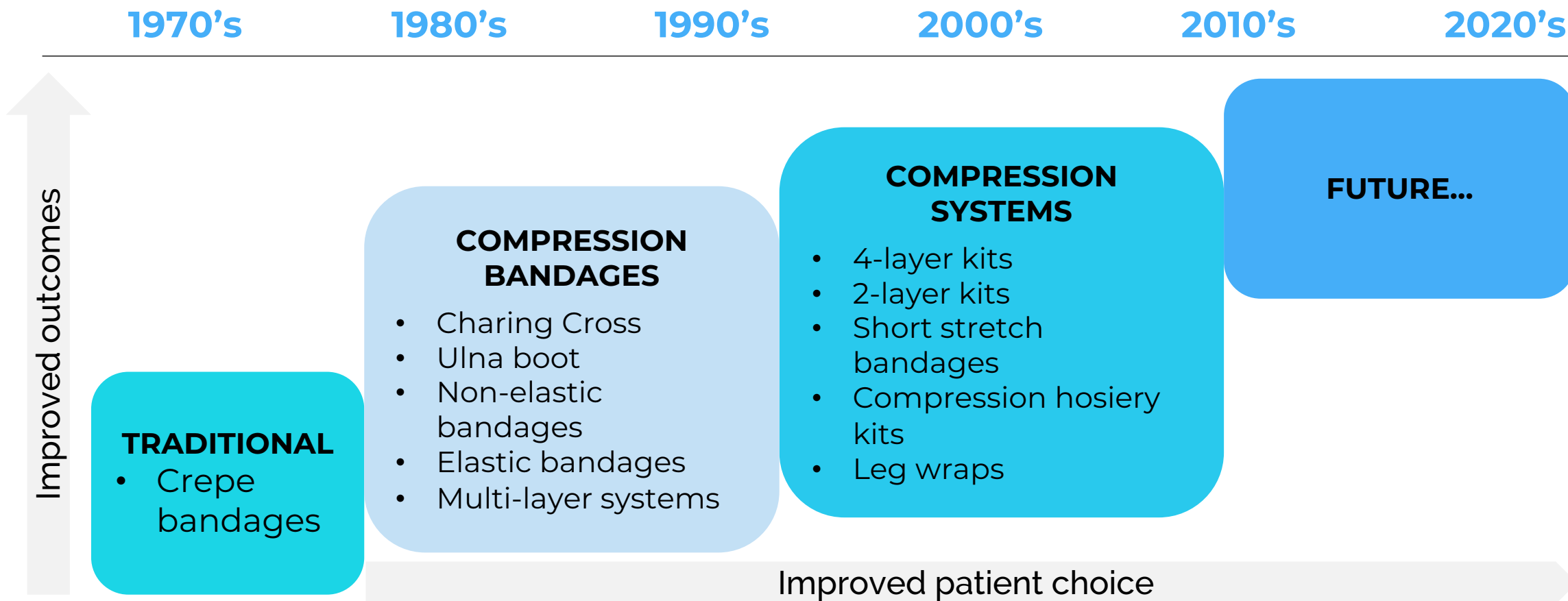
COMPRESSION THERAPY

COMPRESSION THERAPY

- High level evidence
- Potent anti-inflammatory therapy
- Breaks the cycle of oedema/inflammation
- Wide variety of options
- Many aids to help application
- Proven to improve patient's symptoms and quality of life (Reich-Schupke et al, 2009; Demczyszak et al, 2017).



EVOLUTION OF COMPRESSION THERAPIES



VENUS IV

VenUS IV (Venous Leg Ulcer Study IV): a randomised controlled trial of compression hosiery versus compression bandaging in the treatment of venous leg ulcers:

- 34 centres (UK), 457 patients
- Maximum follow-up time of 12 months
- Cost
- Healing
- Quality of life
- Patient concordance (Ashby et al, 2014).



THE VENUS IV RESULTS

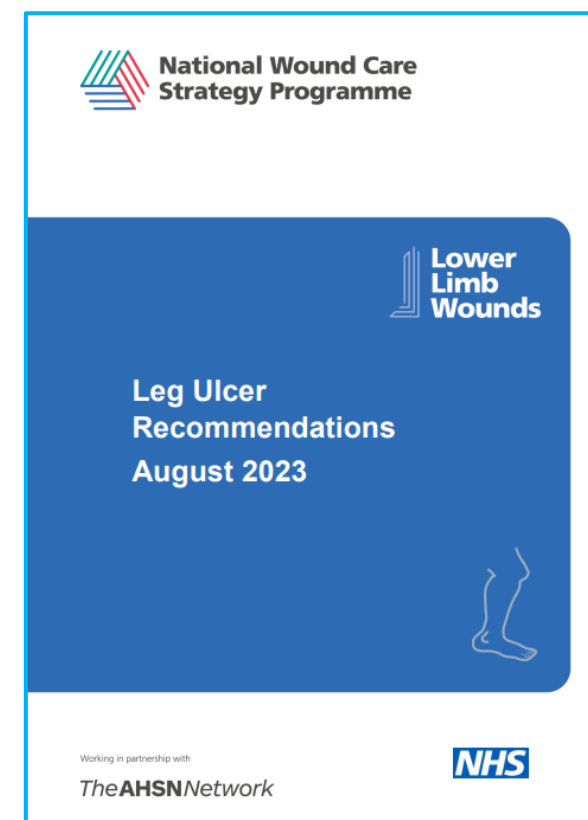
	4-LAYER BANDAGE	2-LAYER HOSIERY KIT
Median time to healing	98 days	99 days
Ulcer healing	70.4%	70.9%
Ulcers recurring	23%	14%
Mean annual cost	£1,795	£1,494

‘Increased use is likely to result in a substantial saving for the NHS with improved quality of life for people with venous ulcers.’

(Ashby et al, 2014)

NATIONAL WOUND CARE STRATEGY PROGRAMME

- Strong compression hosiery should be considered as first-line compression therapy choice where possible
- Strong multi-component compression bandaging (in preference to compression hosiery), should be offered to those with:
 - Chronic ankle/leg oedema not reduced by elevation, or
 - Abnormal limb shape, or
 - Copious exudate, or
 - Very fragile skin (NWCSP, 2023).



STRONG COMPRESSION

- Graduate elasticated pressure
- Of at least 40 mmHg
- Greater than 40 mmHg may be needed
- Do you know what pressure you are providing?
- Using 'proven' systems will help ensure correct pressure
- BUT application is key.



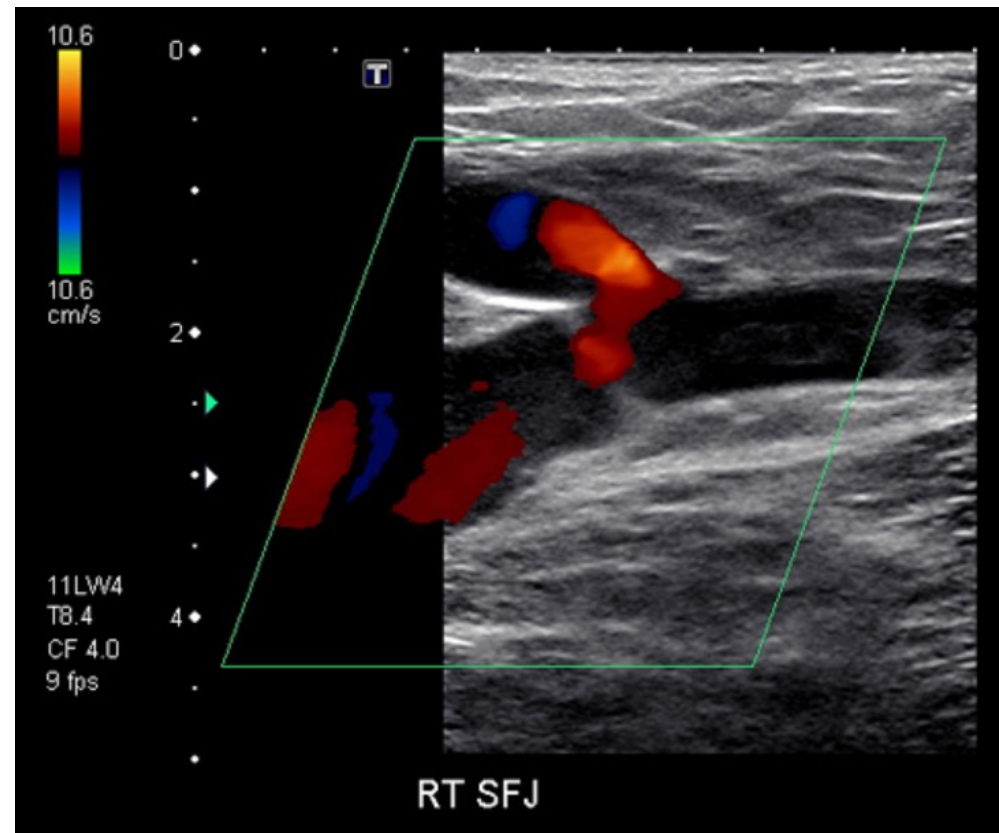
COMPRESSION OPTIONS



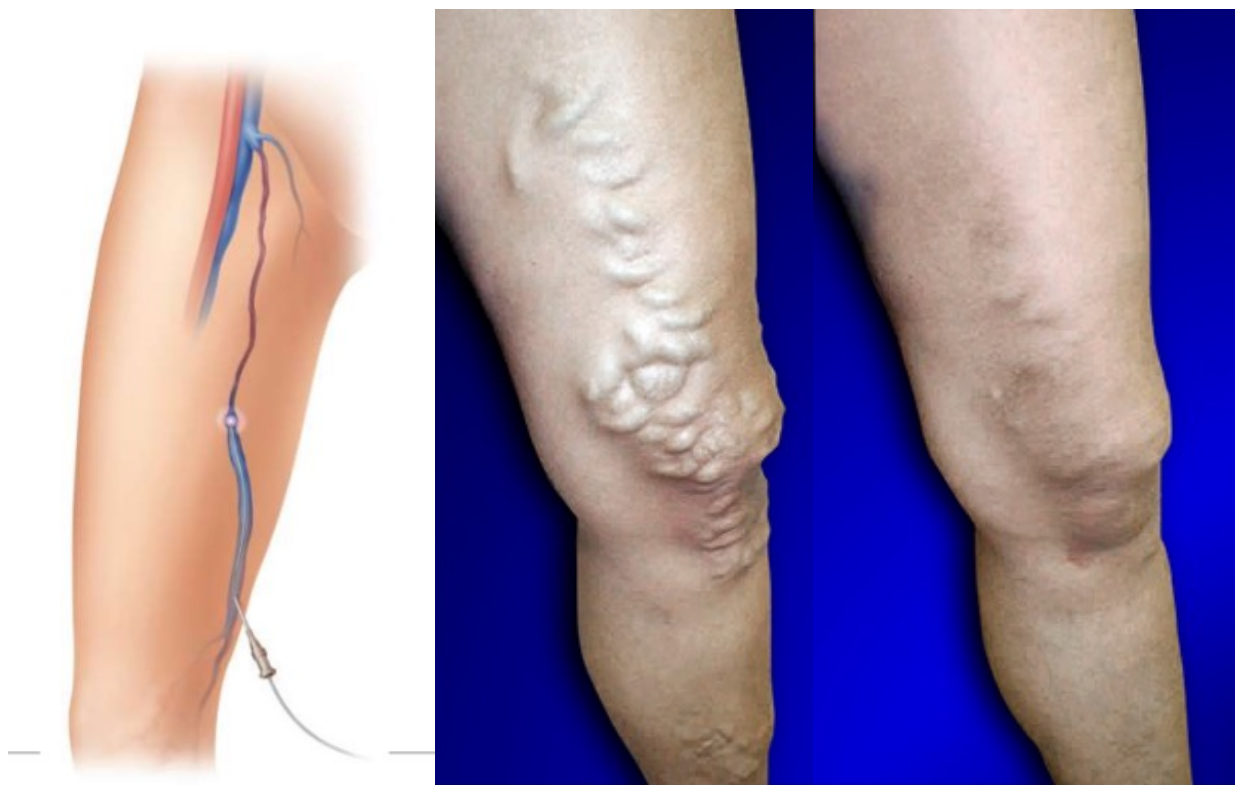
LEG ULCER – A ‘WEED’



VENOUS DUPLEX ASSESSMENT



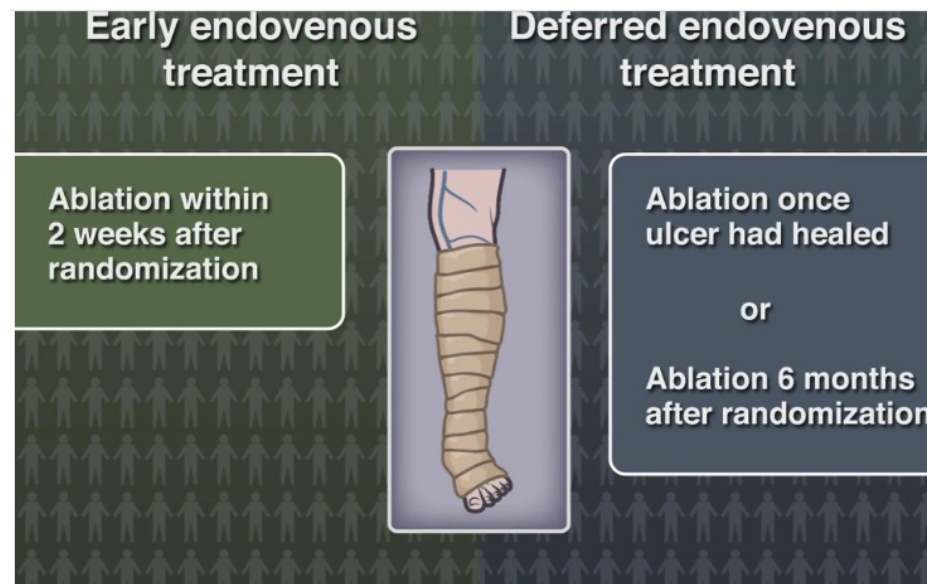
TREATMENT: VENOUS INTERVENTION



Minimally invasive, walk in walk out, one incision, local only, less pain, less bruising, immediate return to work.

EARLY VENOUS REFLUX ABLATION ULCER TRIAL

- Early venous intervention aids healing
- Healing times reduced from 82 days in control group (compression) to 56 days (compression and venous intervention) (P=0.001)
- Rate of healing at 24 weeks was 85.6% (Gohel et al, 2018).



E  RA

INVOLVING PATIENTS IN THEIR OWN CARE



PATIENT ENGAGEMENT



Putting **patients**
at the **HEART**
of everything we do

SUMMARY

- Know your **anatomy** and **physiology**
- First step to good care is **timely diagnosis**
- Know your **signs of venous hypertension**
- Use **evidence-based** treatment
- **Good strong compression** is key to healing patients with venous leg ulcers
- Every patient should be considered for **venous intervention**
- **Escalate** where needed!



AT THE END OF THE MODULE

- Repeat and recap on information
- Undertake a test to assess learning
- Monitor progress on the dashboard.



LEARNING CAN BE ALL FUN AND GAMES...



CALL FOR ACTION

- Explore Microworld for free
- Sign up online to start exploring
- Register at Microworld www.mymicroworld.online/ to undertake the modules.



REFERENCES

- Ashby RL, Gabe R, Ali S, et al (2014) Clinical and cost-effectiveness of compression hosiery versus compression bandages in treatment of venous leg ulcers (Venous leg Ulcer Study IV, VenUS IV): a randomised controlled trial. *Lancet* **383**(9920): 871-879
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- National Wound Care Strategy Programme (NWCSP) (2023) Leg ulcer recommendations. Available online: <https://www.nationalwoundcarestrategy.net/wp-content/uploads/2024/02/NWCSP-Leg-Ulcer-Recommendations-v2-1.8.2023.pdf>
- Reich-Schupke S, Murmann F, Altmeyer P, Stücker M (2009) Quality of life and patients' view of compression therapy. *Int Angiol* **28**(5): 385-393