HARTMANN Wound Care Training

Session 3
Wound Care in General Practice

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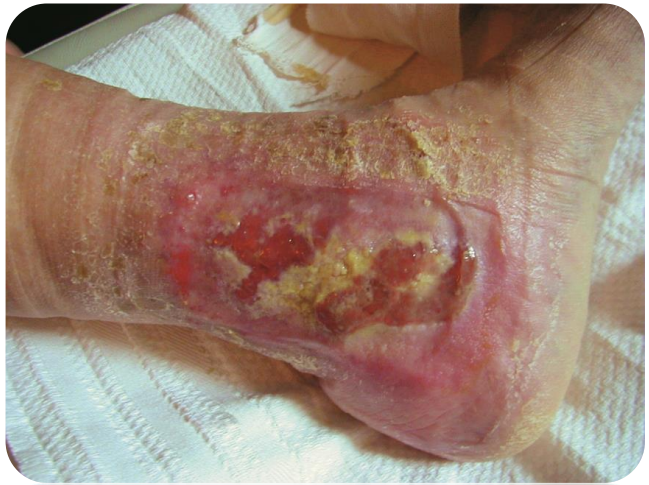
28th October 2020

Topics to be covered

- Provide a recap of the main causes of leg ulcers
- Provide an understanding of the importance of assessment and developing a plan
- Review treatment options for diabetic foot ulcers, arterial ulcers and venous ulcers
- Review compression therapy and why its so beneficial for venous leg ulcers.
- Summary, Kahoot quiz & questions

Definition of a Leg Ulcer

“A chronic leg ulcer is defined as a defect in the skin below the level of the knee persisting for more than 6 weeks and shows no tendency to heal after 3 or more months”



Source: Shubhangi Vinayak Agale:Chronic leg Ulcers: Epidemiology, Aetiopathogenesis and Management Hindawi Publishing Corporation Ulcers;Volume 2013 Article IC413604,9pages

Main Types of Leg Ulcers

- Arterial
- Diabetic: → Neuropathic

  → Neuro Ischaemic
- Mixed – combination of arterial & venous
- Venous

Other Causes of Leg Ulcers

- **Neuropathy** - loss of protective sensation
- **Vasculitis** – inflammation of the blood vessels
- **Malignancy** – needs to always be considered in an ulcer that won't heal
- **Infection** – either bacterial or fungal leading to a breakdown of the skin
- **Lymphoedema** - problems with lymphatic drainage leads to lymphoedema
- **Trauma** – lacerations, burns or even old injuries

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Prevalence of leg ulcers

Estimates of the prevalence of:

-venous leg ulcers (VLU's) range from 0.05% to 1% in the community setting

-diabetic foot ulcers estimates range from 1.2% to 20.4% in the hospital setting and 0.02% to 10% in the community setting

-arterial insufficiency ulcers estimate as few as 0.01% in the community setting.

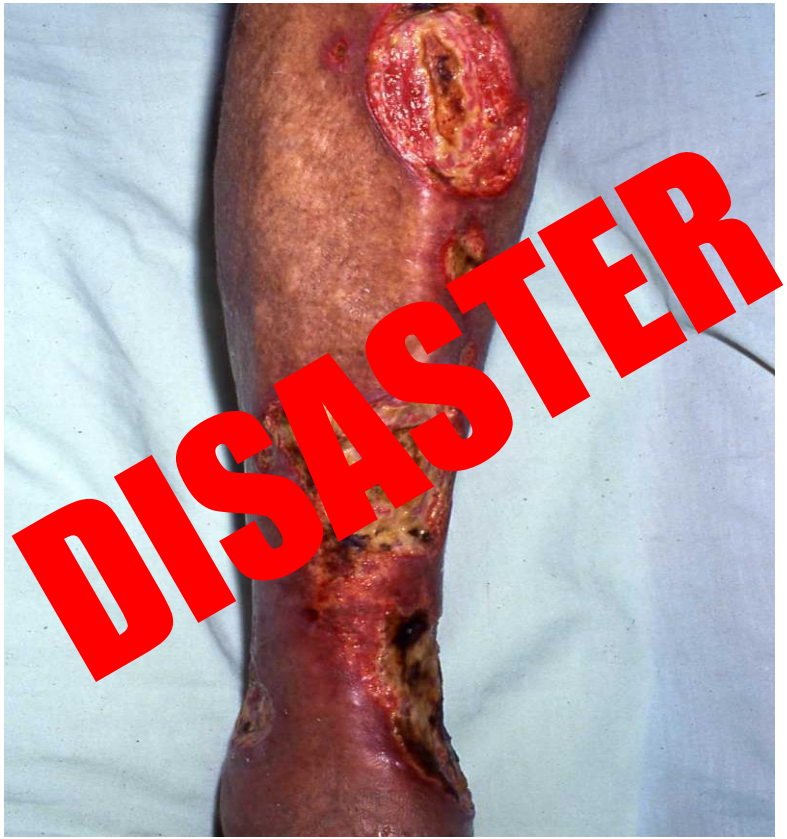
Graves,N.;Zheng,H.; The prevalence and incidence of chronic wounds: a literature review. Wound Practice and Research Vol 22.No.1 March 2014

Prevalence of leg ulcers

- 26–69% of VLU have a 12-month recurrence rate; recurrences have been reported up to 5 years after healing[1].
- Prevalence of VLU increases with age, affecting up to 2% of the population >80 years old[1]
- In western countries, about 1% of the healthcare budget is consumed by the management of leg ulceration[1]
- Somewhere in the world every 20 seconds a lower limb is amputated due to complications of diabetes[2].

1.Harding,K.et.al. Simplifying venous leg ulcer management .Consensus recommendations. Wounds International 2015 Available to download from www.woundsinternational.com.
2. Hinchcliffe,R.J.,Andros,G.,Apelqvist J,et al.(2012)A systematic review of the effectiveness of revascularisation of the ulcerated foot in patients with diabetes and peripheral arterial disease. Diabetes Metabolic Research Review,28 (Suppl 1), 179-217

The importance of assessment



Assessment of leg ulcers

- Clinical history to identify the underlying cause of the ulcer
- Clinical examination & palpation of pedal pulses
- Hand held doppler ultrasound to measure the ankle brachial pressure index (ABPI)
- Toe brachial pressure index for patients with incompressible arteries due to calcification common in patients with diabetes or renal disease
- Photoplethysmography (PPG) to measure venous refilling time
- Duplex Ultrasound is a non invasive test to understand the anatomy and blood supply of the lower leg

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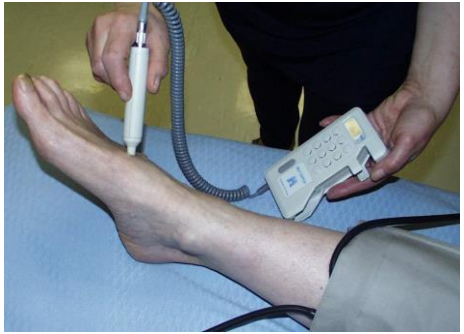
Doppler Ankle Brachial Assessment



Ankle Brachial Pressure Index

Normally the ankle systolic pressure is equal to or greater than the brachial systolic pressure

$$ABPI = \frac{\text{Ankle Systolic Pressure}}{\text{Brachial Systolic Pressure}}$$

Any reading where the ankle pressure is less than the brachial pressure is an indicator that there is a blockage in the arterial system to the leg.

WORLD'S FASTEST, 1 MINUTE, NON-INVASIVE ANKLE BRACHIAL INDEX

MESI ABPI MD

Type of Ulcer ABPI Results Identify

0.5 & less	Severe arterial disease
0.5 – 0.8	Mixed arterial venous ulcer
0.8-1.2	Venous ulcer
1.2 & above	Possible Calcification of the artery

Incompressible arteries

More common in diabetics

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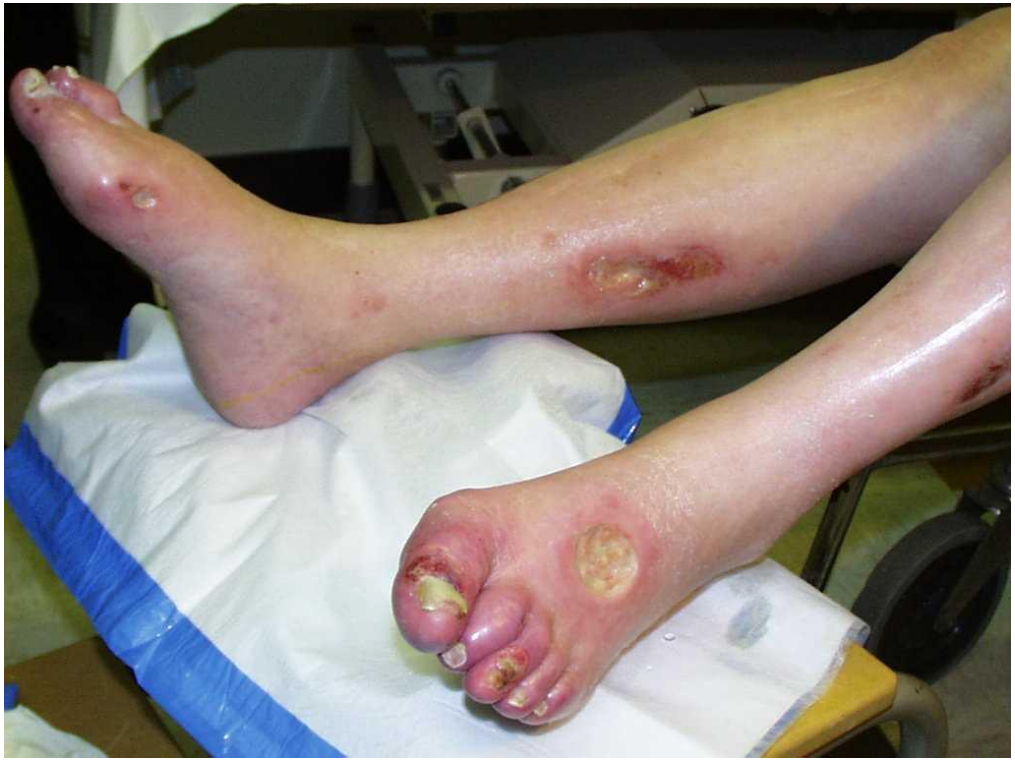
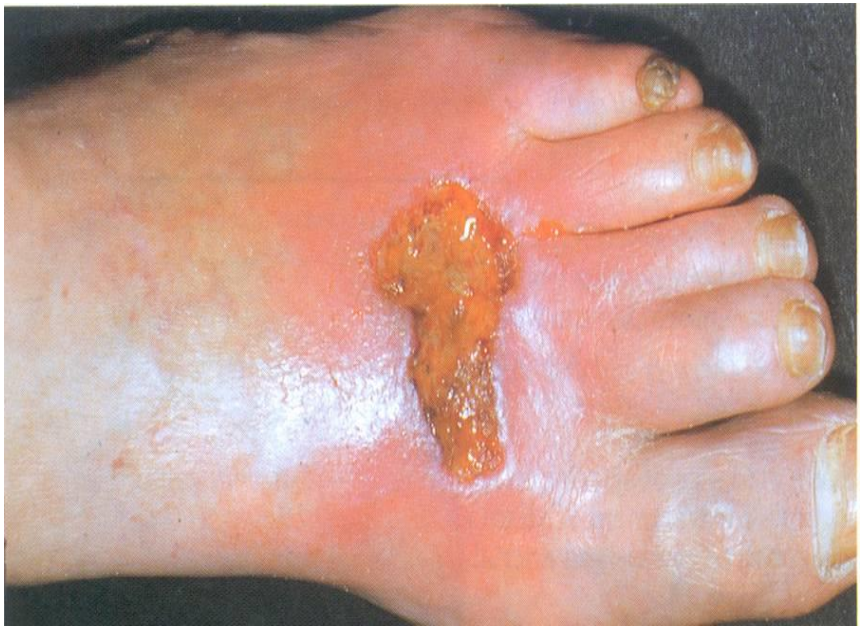
Arterial Ulcers



Arterial Ulcers

Predisposing factors

- Advanced age
- Arteriosclerosis
- Diabetes
- Hypertension
- Smoking



A vascular consultation must be initiated early so investigations can clarify the extent of the disease

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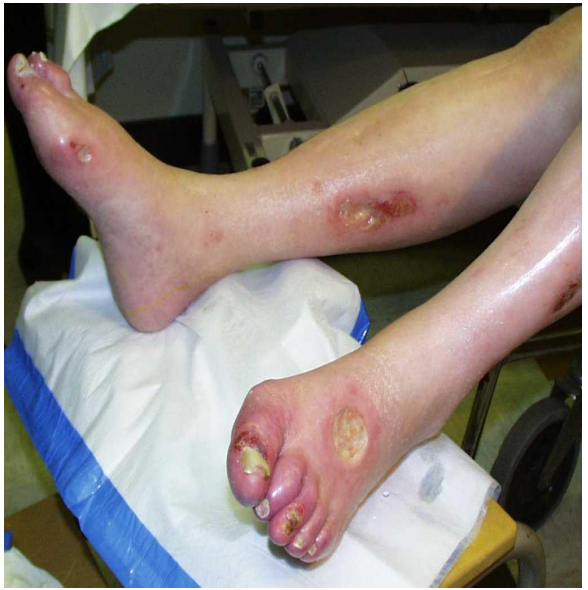
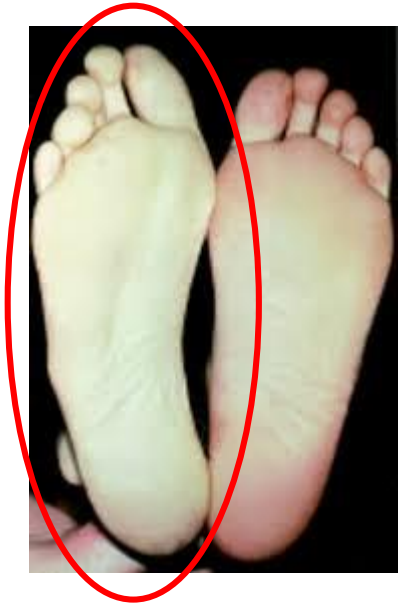
Clinical Presentation of Arterial Limb



- Shiny fragile skin surface
- Hard woody toenails
- Hairless limb
- Pale or blue appearance of skin
- Toes can appear an unhealthy red/blue
- Dry skin that is cool to touch
- Exceedingly painful
- Pain at rest or pain on exertion (intermittent claudication)
- Pallor on elevation – ghostly white on elevation (Buergers test)

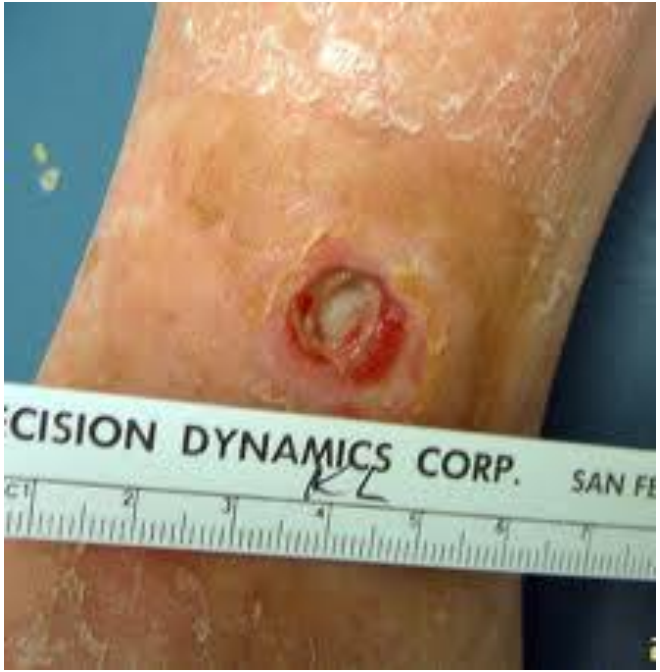
Buerger’s test



Positive Buerger’s Test

Appearance of the Ulcer

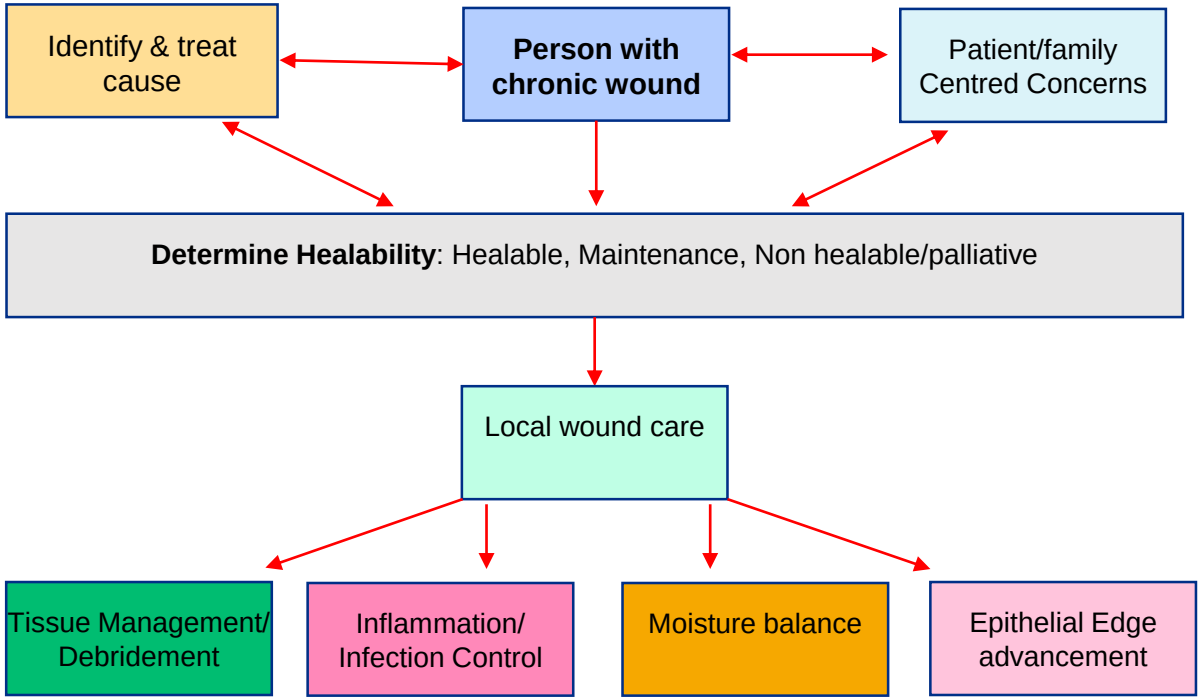
- Usually located on the foot or toes
- Punched out in appearance
- Presence of nonviable tissue
- Low to nil exudate
- Evidence of necrotic tissue
- Granulation tissue is pale and irregular



Clinical Management

- Take History
- Clinical examination
- Investigations
- Refer for vascular consult
- Vascular Assessment
  - If possible, surgery to re vascularise the limb
  - Otherwise maintenance & comfort
  - Amputation often required in severe cases

Wound Bed Preparation



Sibbald RG. Optimizing The Moisture Management Tightrope with Wound Bed Preparation 2015. Advances in Skin & Wound Care 2015;Oct 2015 Vol 28;466-475

The importance of good wound hygiene

Be sure in four

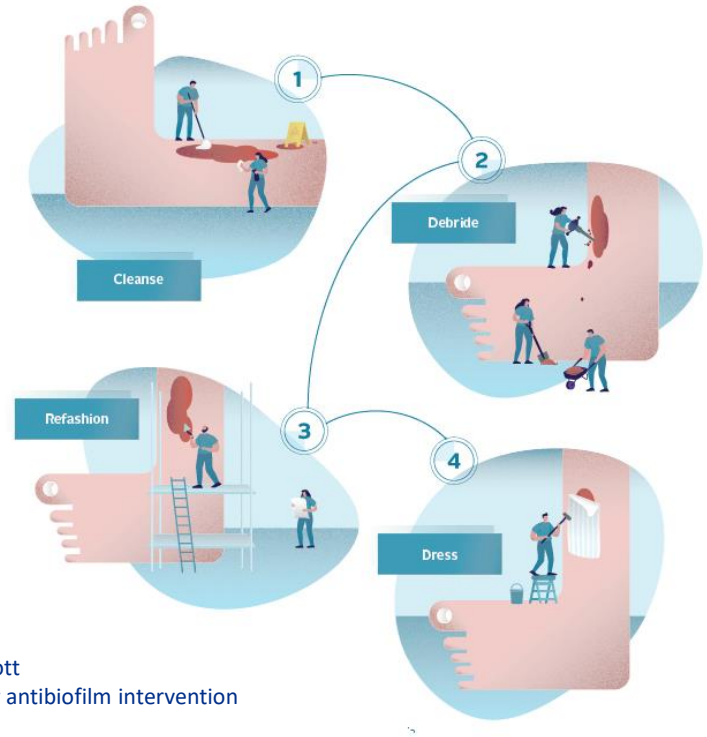
You can give every wound the best chance of healing with four simple steps.

Step 1 Skin & wound cleansing

Step 2 Debridement

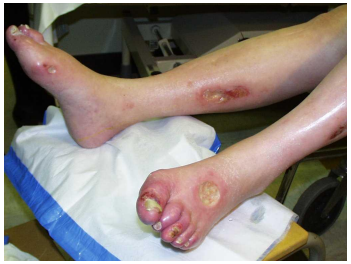
Step 3 Refashioning of wound edges

Step 4 Dressing the wound



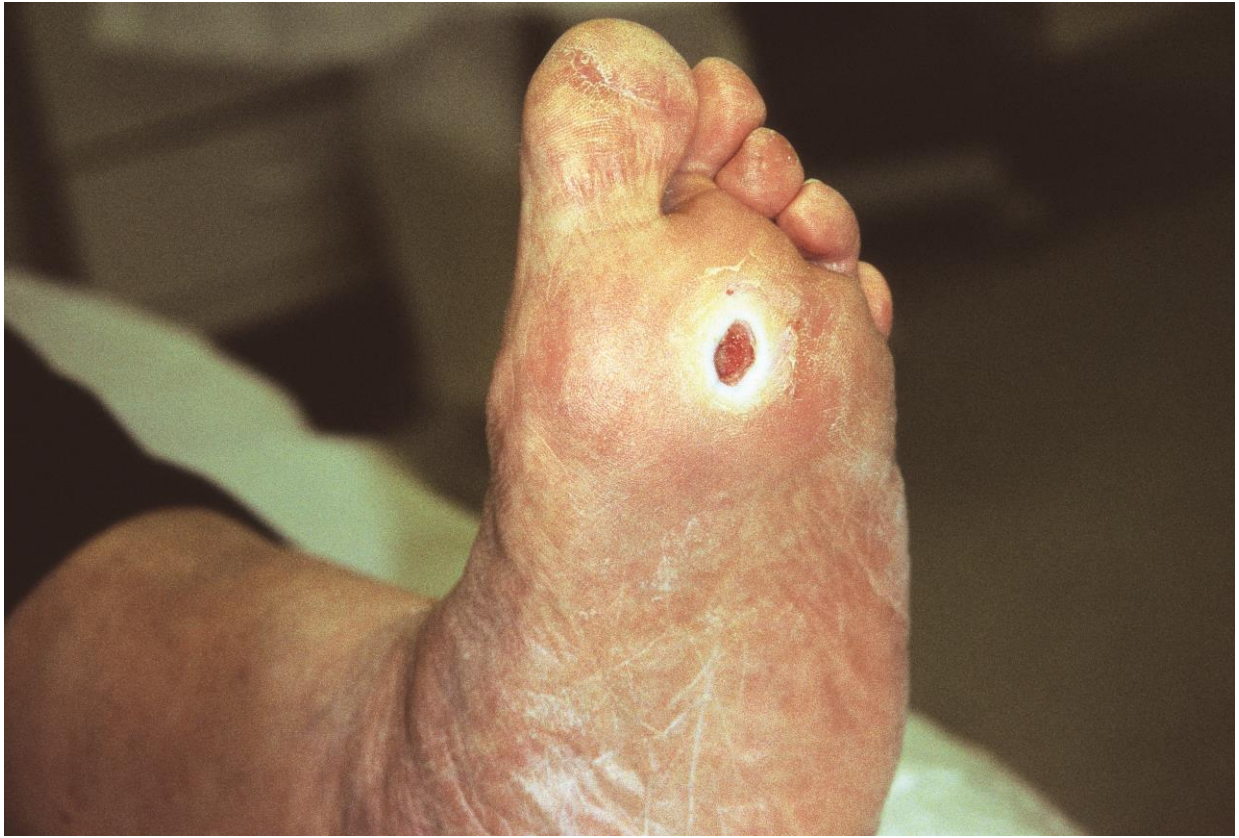
Murphy C, Atkin L, Swanson T, Tachi M, Tan YK, Vega de Ceniga M, Weir D, Wolcott R. International consensus document. Defying hard-to-heal wounds with an early antibiofilm intervention strategy: wound hygiene. J Wound Care 2020; 29(Suppl 3b):S1–28.

Arterial Leg Ulcer
Treatment product options



- If vascular supply is adequate debride the dead tissue using a debriding agent such as **HydroClean plus**
- If not able to debride, cover with a foam dressing such as **HydroTac** to protect the wound bed and very lightly bandage in place. **DO NOT** apply any compression. Change as required.
- Treatment is to re vascularise the limb, but many patients are unable to have this surgery, so management becomes palliative

Diabetic Ulcers



Types of Diabetic Ulcers

Diabetic patients present with either :

Neuropathic foot with loss of protective sensation but with adequate foot pulses

or

Neuro ischaemic foot with loss of protective sensation and ischaemia

(Carville 1998)

Diabetic Foot Ulcers

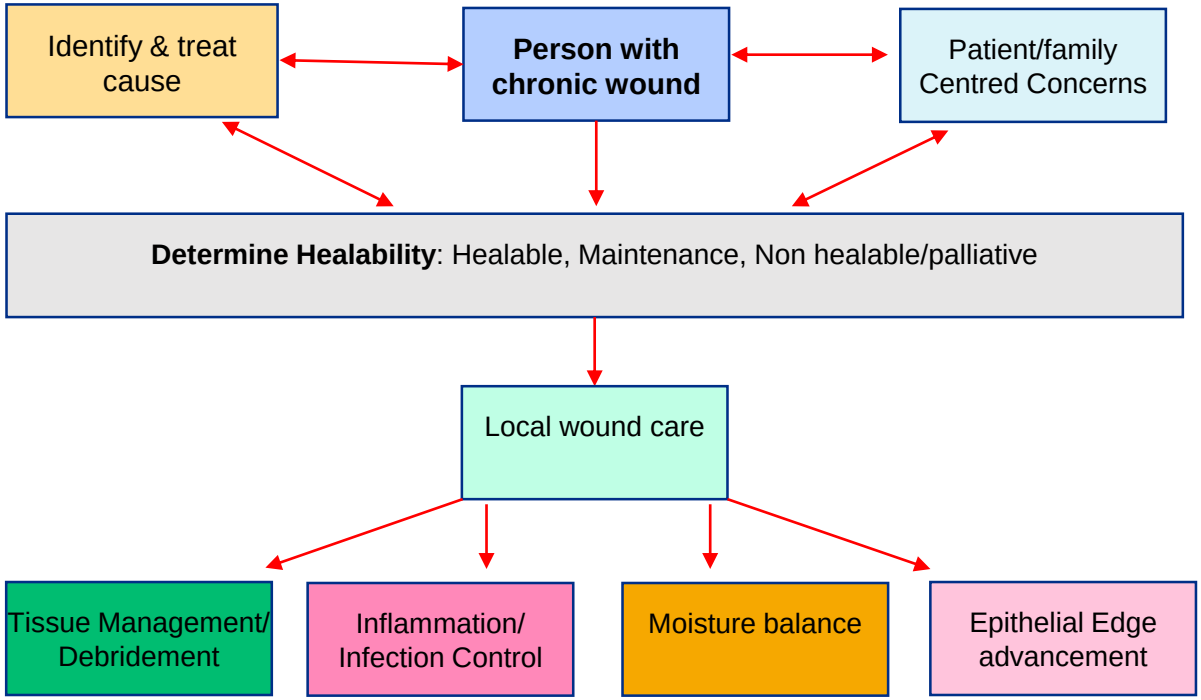
The causes of these can be broken into three main groups:

1. Arterial disease - slightly different due to disease process

2. Infection
   - a predisposition to infection
   - increased risk of osteomyelitis

3. Neuropathy
   - Autonomic neuropathy
   - Peripheral neuropathy
     - ✓ Sensory
     - ✓ Motor

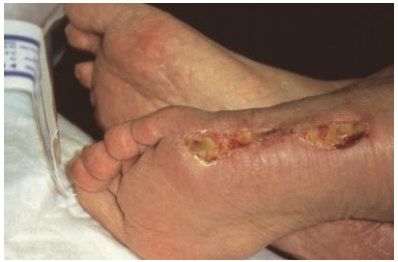
Wound Bed Preparation



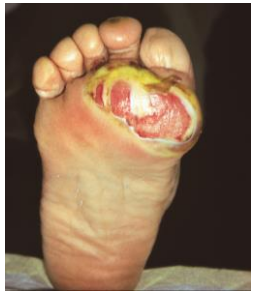
Sibbald RG. Optimizing The Moisture Management Tightrope with Wound Bed Preparation 2015. Advances in Skin & Wound Care 2015;Oct 2015 Vol 28;466-475

Address the needs of the wound

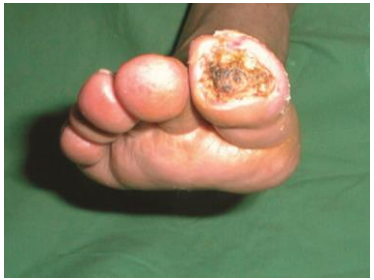
- What is your clinical aim?



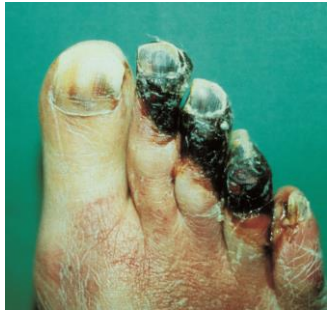
Clean
Debris and bacteria from wound surface



Absorb
exudate bacteria & debris from the wound



Hydrate
dry wound bed to promote new growth



Protect
while wound is healing

Principles of Prevention

- Manage underlying disease
- Identify ischaemic changes or any loss of sensation
- Regular skin & foot inspections
- Test for any signs of muscle weakness
- Identify gait or foot deformity
- Regular podiatry appointments
- Wearing well fitted shoes
- Offloading to correct gait abnormalities
- Optimal wound management
- Education of the patient and their family or carer

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Other Resources

These are just a few of the many resources available.

These two websites have a large variety of guidelines and consensus document all available to download free of charge:
www.ewma.org
www.woundsinternational.com

Venous Leg Ulcer Guidelines

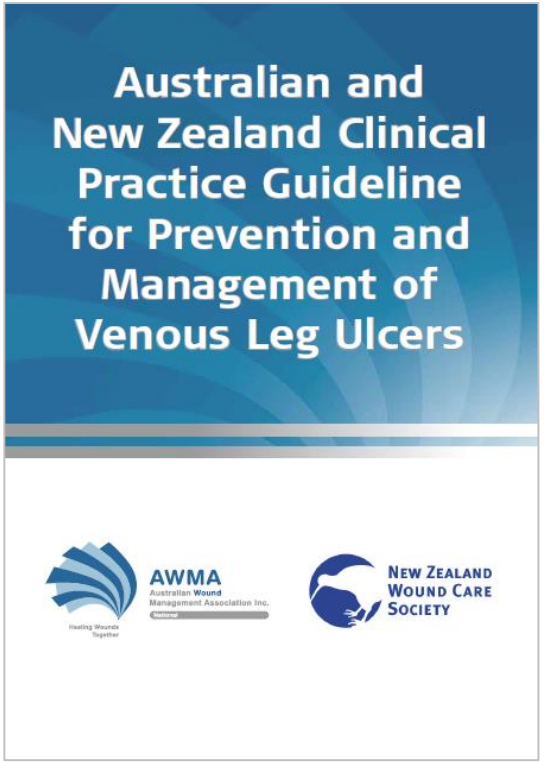
These guidelines were developed in 2011.

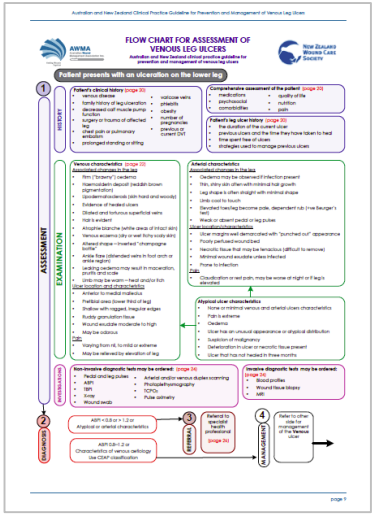
They are currently being updated and should be available soon.

Provide a comprehensive review of assessment, diagnosis, management and prevention of Venous Leg Ulcers.

They are evidence based and provide information within the Australian and NZ healthcare context.

They are available from the below website:



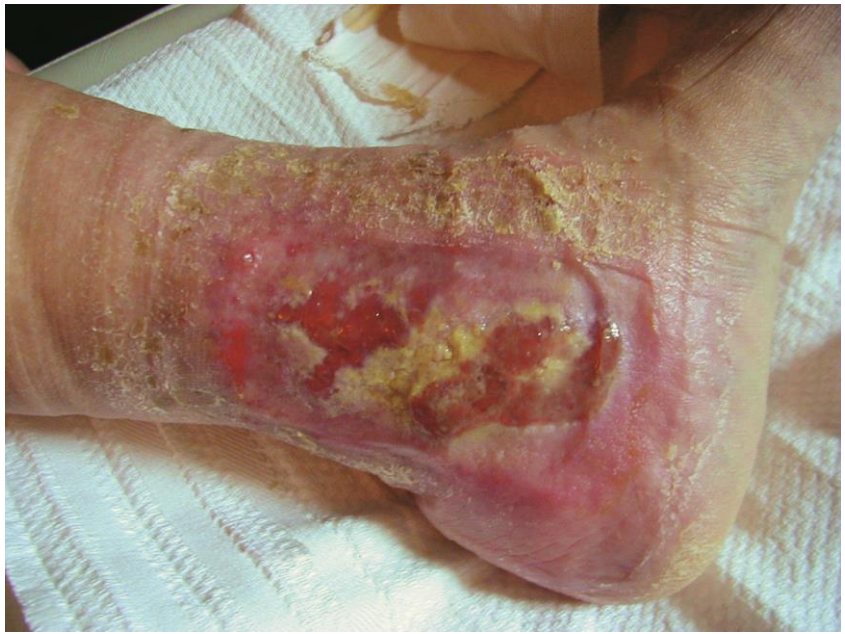


Flow chart designed to assist with treatment pathways.

Also available on Wounds Australia website

www.woundsaustralia.com.au/publications

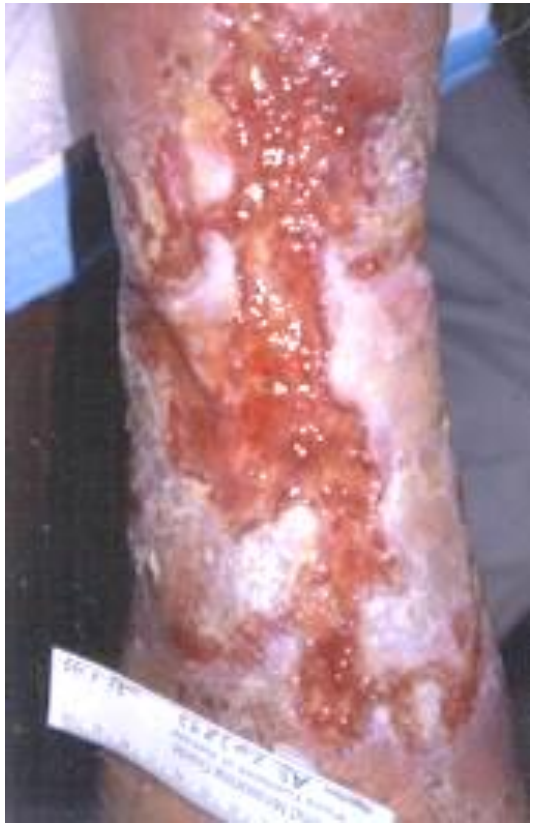
Venous Leg Ulcers



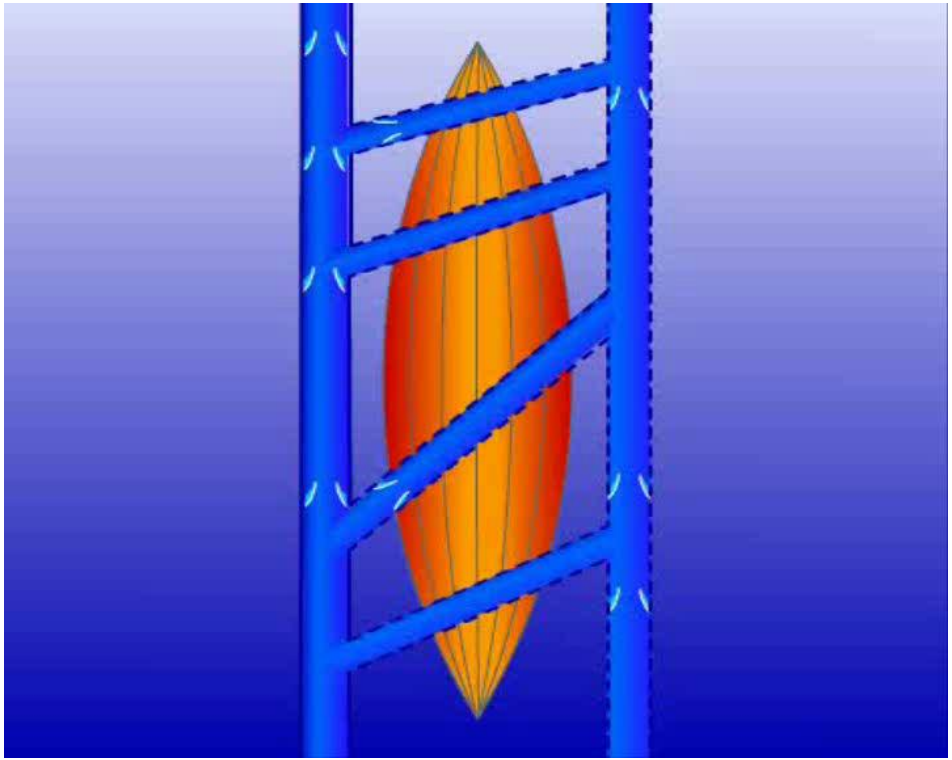
Venous Ulcers

Risk Factors for Venous Ulcers

- Previous DVT
- Leg or foot fracture in the past
- Varicosities & varicose veins
- Family history of venous disease
- Multiple Pregnancy
- Obesity

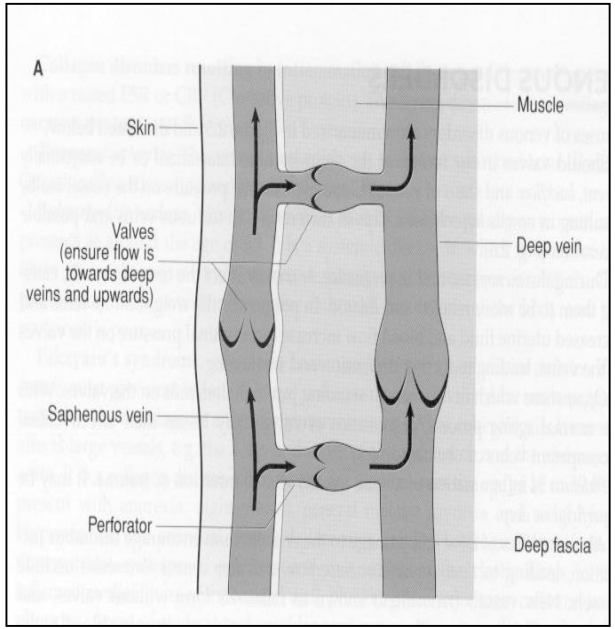


Calf muscle pump

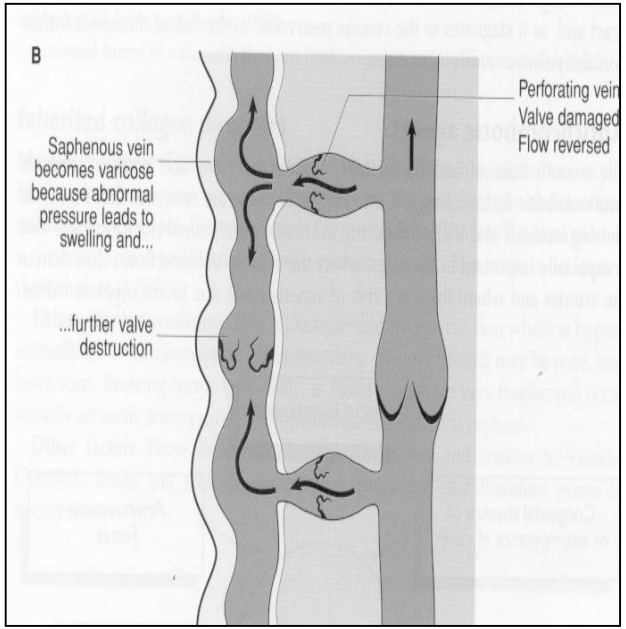


Venous circulation

Normal



Abnormal



Venous Insufficiency - pathology

Failed Valves, Deep Vein Thrombosis, Pregnancy, Obesity

Venous hypertension

Leakage of plasma via engorged capillaries

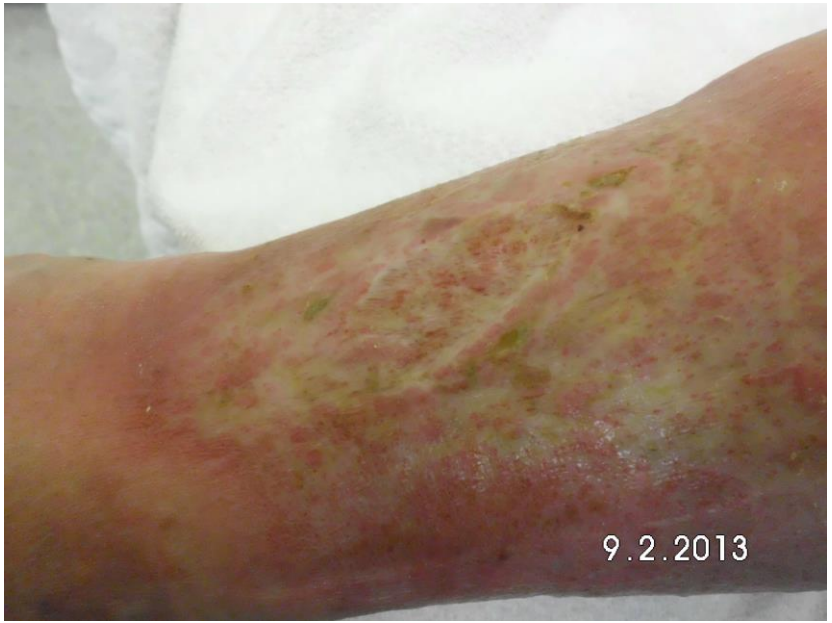
Oedema - fibrin cuff around capillaries – trapped WBC

Poor cellular respiration and metabolic waste removal

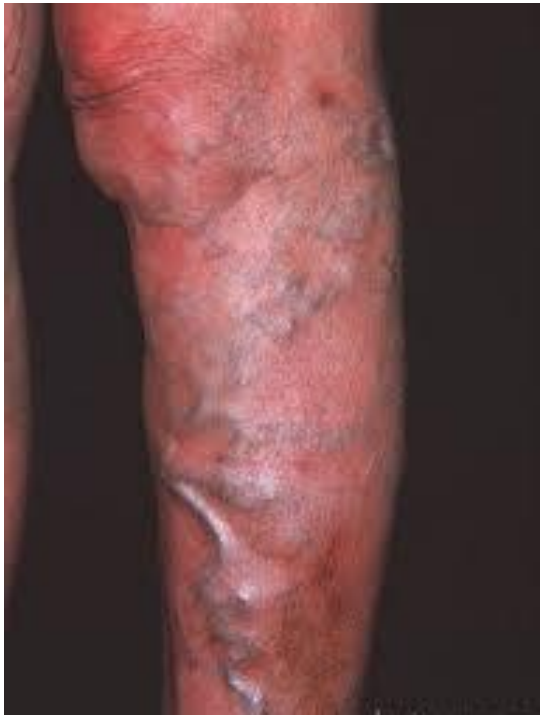
Tissue damage = prolonged inflammatory phase - necrosis - delayed healing – cellular imbalance (elevated MMP's)

Atrophie Blanche

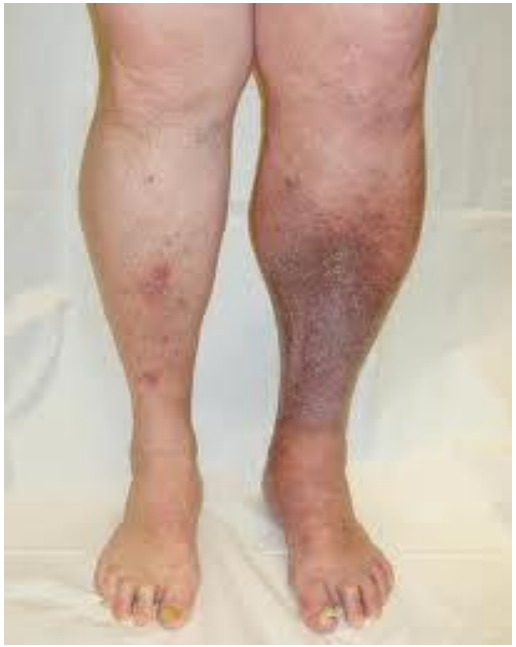
Small, smooth, ivory white scars associated with poor circulation. Can be painful.



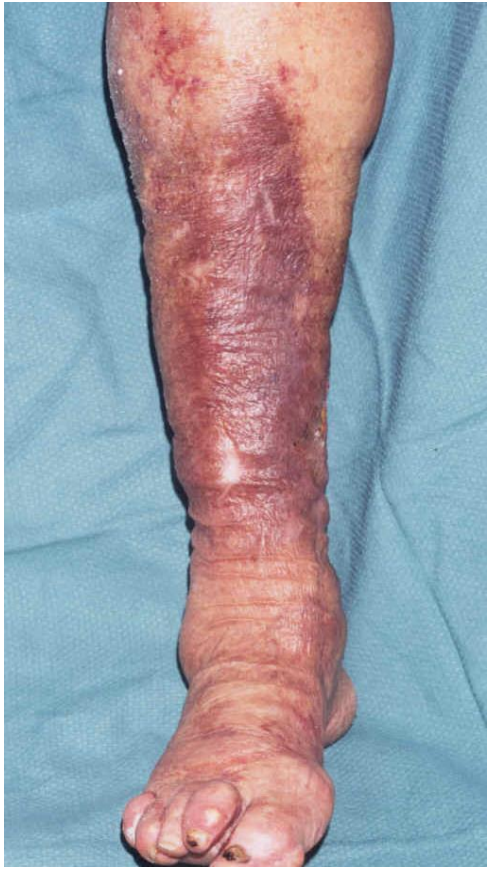
Venous Hypertension



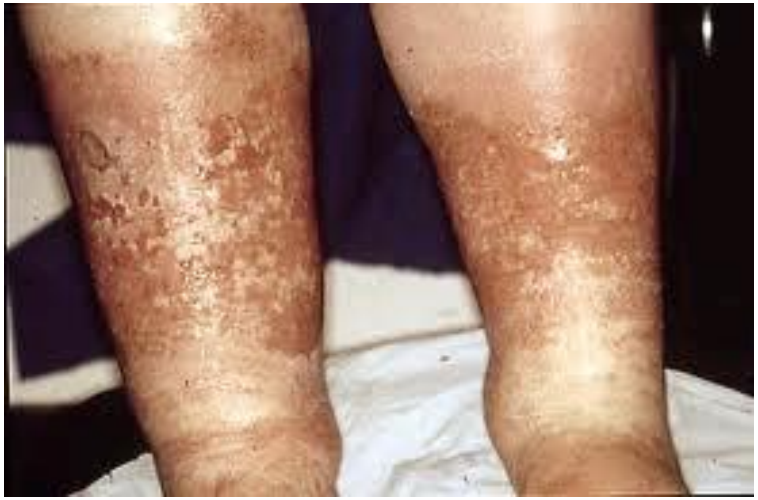
Lipodermatosclerosis

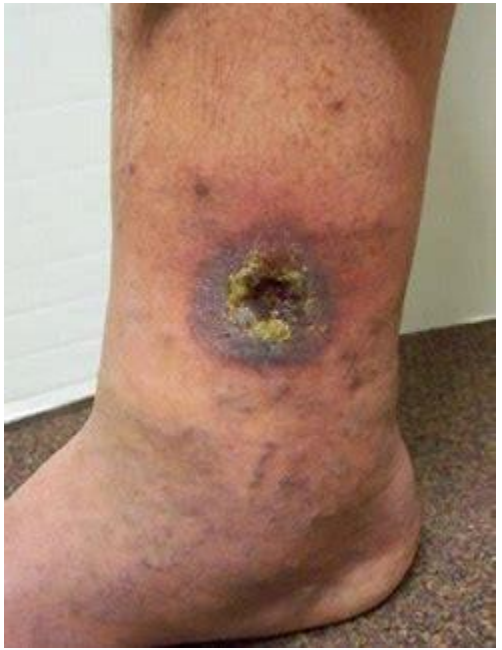


Haemosiderin Staining

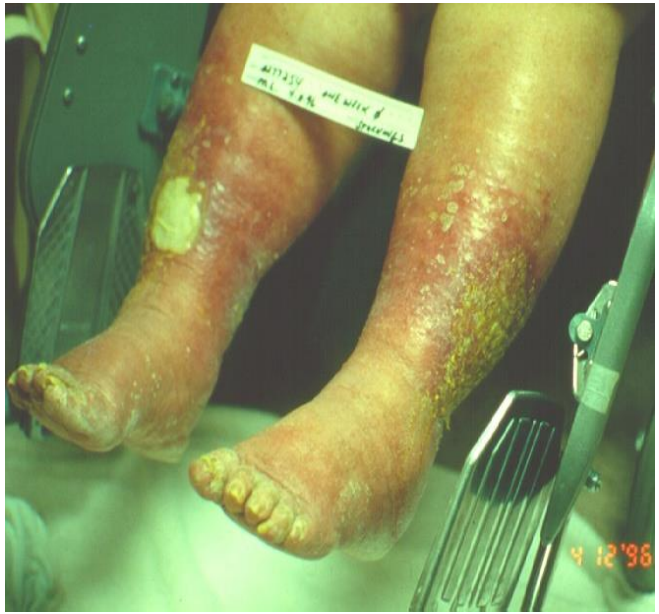


Oedema

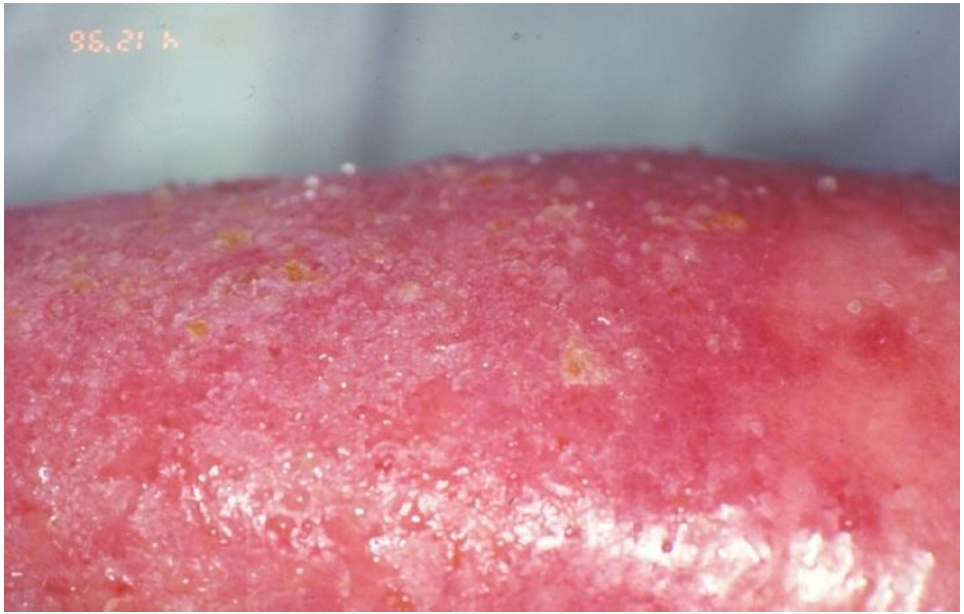




Venous Eczema

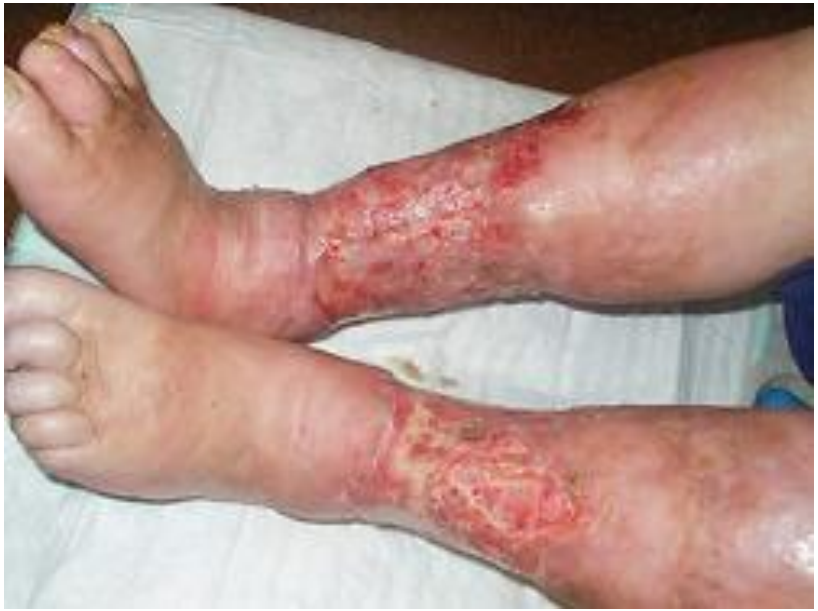


Cellulitis



Clinical Appearance of Venous Ulcers

- Located usually in the gaiter region of the leg
- Irregular shallow edges
- Widespread superficial tissue loss
- Mainly viable tissue with the possibility of slough
- Moderate to high level of exudate
- Oedema usually present
- Palpable pulses



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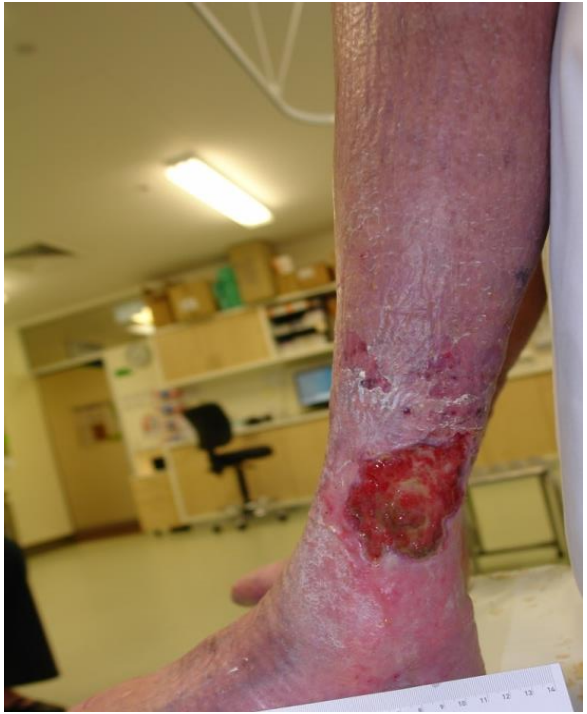
Preparation of the leg & the wound

- Clean the leg & foot well with a pH neutral wash
- Clean the ulcer with suitable antimicrobial wash or normal saline.
- Dry well especially between the toes.
- Carefully lift off any hyperkeratosis (dry skin) from the leg.
- Cover the skin in a pH neutral moisturiser to protect the skin from drying out.
- Measure and photograph the ulcer
- Dress the wound with a suitable dressing
- Document results of assessment.

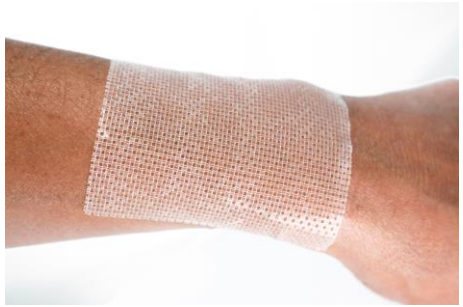


Dressing the ulcer

- Cover the ulcer with a protective dressing that will allow for the free passage of exudate and prevent the bandages from adhering to the wound bed.
- In the early stages it may be necessary to use an absorbent dressing under the compression to absorb the exudate and change the bandages more often than weekly.

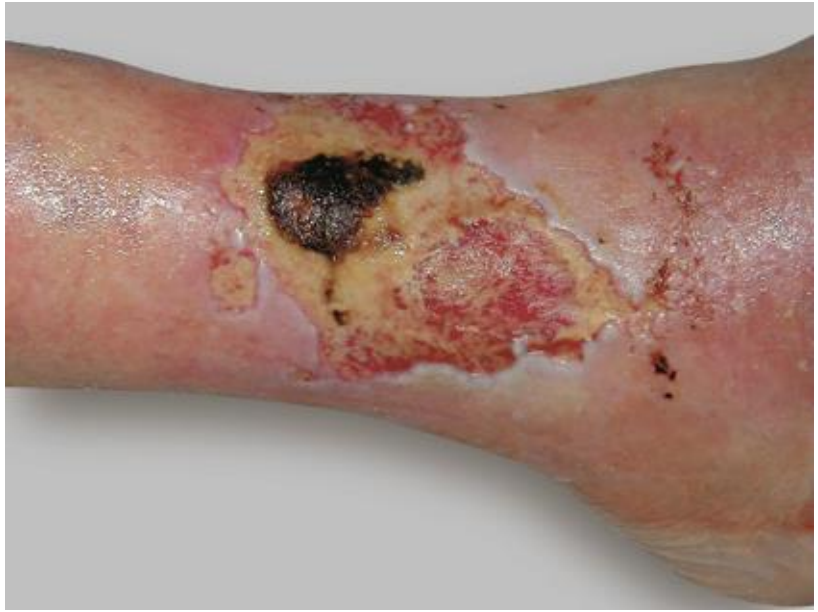
Here are a couple of suggestions from HARTMANN:

Atrauman Silicone



Zetuvit Plus or Zetuvit Plus Silicone

Mixed Ulcers

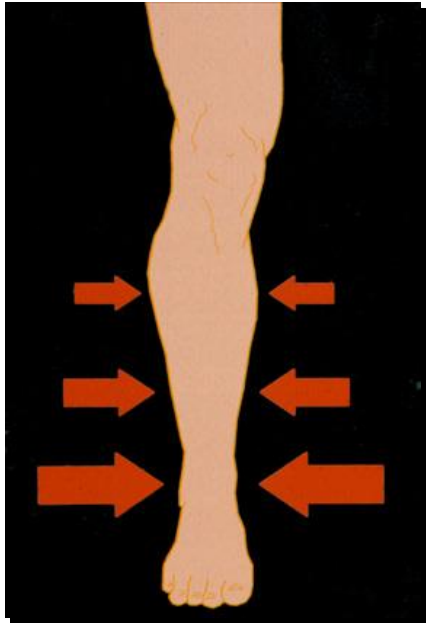


Clinical Factors of Mixed Ulcers

- Combined poor venous & arterial circulation
- Both characteristics of venous and arterial problems are present
- Need to be investigated to understand the extent of the disease process
- The challenge is managing oedema without compromising the arterial circulation
- Light compression often used effectively

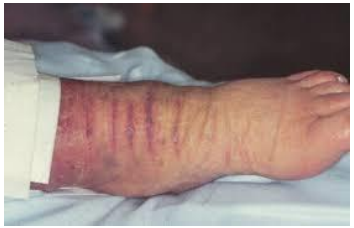
Compression Therapy

Graduated compression



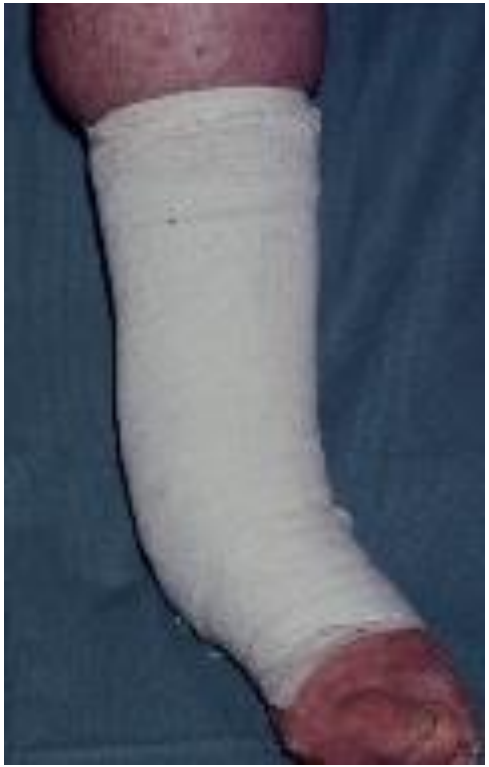
A bandage applied with constant tension will automatically provide graduated compression on a leg of normal dimensions with the highest pressure applied at the ankle reducing to half this at the calf

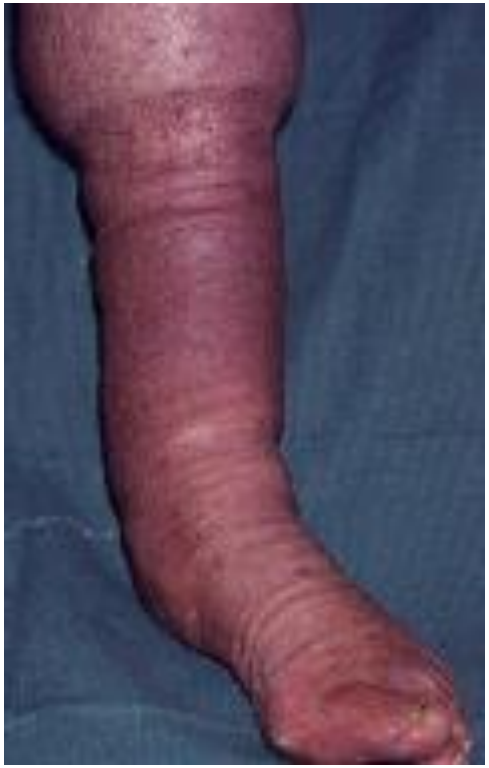
Safe Bandaging



- Ensure that all investigations have been done to ensure good vascular supply as well as cardiac output before applying compression
- Clinician applying bandage must be proficient in bandaging
- Bandage must be a compression bandage and not a retention bandage
- Bony prominences must be well padded
- Leg must be smaller at the ankle than at the calf to achieve graduated compression

Poor Bandaging





After application of compression bandages

Observe patient for:

- Discolouration of the toes
- Excessive pins and needles
- Loss of sensation
- Increased levels of pain in the calf or foot

Listen to the patient who has pain!!

Types of compression therapy

Full compression (providing 30-50mmHg compression at the ankle)

- **Inelastic** – Short stretch or high stiffness bandages only compresses when calf muscle pump working
- **Elastic** – Long stretch or low stiffness bandages apply continual compression
- **System** – 2 layer system made up of two bandages working together

Pütterbinde = Inelastic or Short Stretch Bandage

- High working pressure & light resting pressure
- Skin coloured
- Can be washed up to 20 times
- 100% cotton
- Needs to be reapplied daily
- Apply undercast padding first to protect bony prominences

Lastodur Strong = Long Stretch Bandages

Higher stretch fabric for people who are less mobile

Also known as:

- High Stretch
- Low Stiffness Index
- Elastic

Constant pressure predominantly to the superficial tissues from the outside

PütterPro 2

Benefits of Pütter Pro 2

- Both bandages are cohesive to avoid slippage
- Wearable for up to 7 days.
- High patient comfort.
- Latex free.

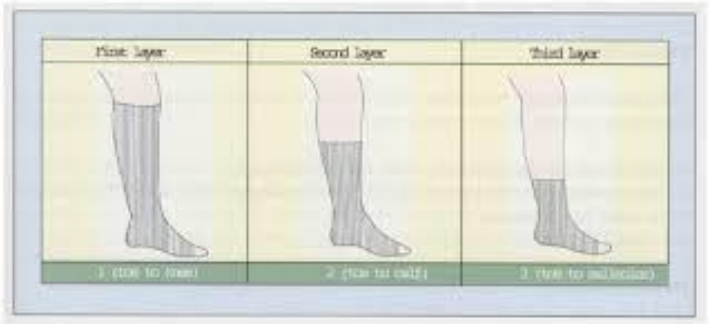
Light Compression

- Some patients will not tolerate high compression and therefore need to be gradually built up to it.
- Lastodur Light can be used effectively for these patients
- Its better to have some compression than none at all
- Anti embolic stockings will only give 15mmHg at the ankle compression. This is not effective compression therapy against venous hypertension

Types of Light Compression Therapy

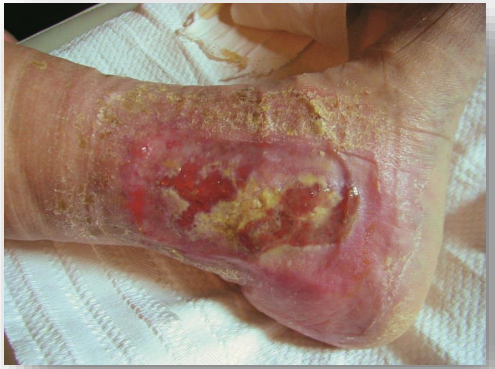
Modified compression (for ulcers with mixed aetiology or for easing someone into compression). It provides only 18-20mmHg at the ankle

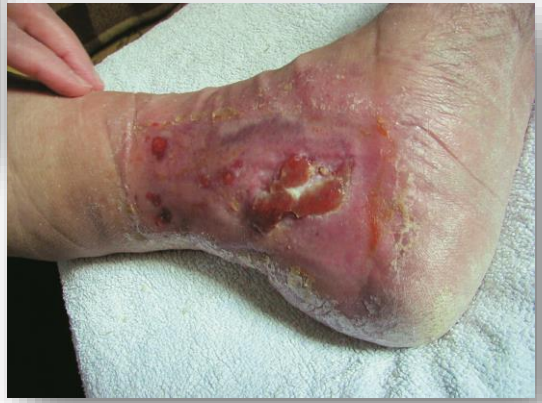
- **Light Elastic** for greater compliance but gives continuous compression when both standing and sitting
- Tubular support bandage – can be effective

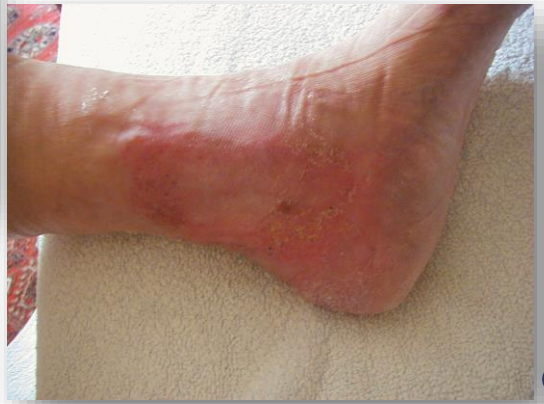


Weller,Carolina D. et al., Randomized clinical trial of three-layer tubular bandaging system for venous leg ulcers. Wound Repair and Regeneration 2012 20 822-829

Venous leg ulcers can be healed!!







In summary

- Leg ulcers can be slow to heal and compliance can be a challenge.
- The key to success is good assessment to understand the underlying cause & educate the patient and their family. Good education is key to getting compliance.
- Diabetic foot ulcers and arterial ulcers need to have the underlying issues addressed before you can get healing and even then this may not be possible.
- If venous, apply suitable compression that will be acceptable & tolerable for the patient.
- Constant monitoring of the patient and their ulcer to ensure the wound is progressing in the right direction.
- Know your bandages and how to apply them correctly.

If you would like a Primary Care Sample Pack please email...

primarycare.enquiries@hartmann.info

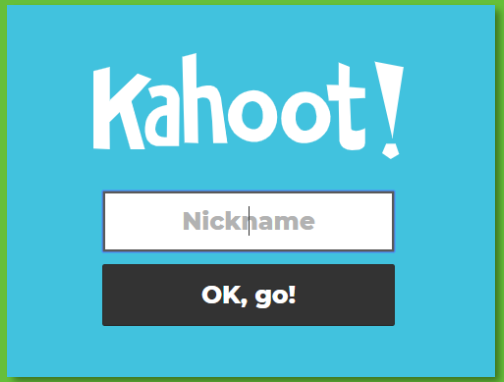

Kahoot!

How to play Kahoot!

STEP 1

STEP 2

STEP 3



Are there any questions?

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