Venous or hypostatic leg ulcers are common in older people. One in every 50 people will suffer a leg ulcer at some point in their lives. The prevalence of venous leg ulceration increases with age, and while the problem affects both sexes, they are more common in women than men.

WHAT CAUSES VENOUS ULCERATION?

Leg ulceration is strongly associated with arterial disease, a history of deep vein thrombosis (DVT), varicose veins, obesity and immobility. The ageing process, leading a sedentary lifestyle, occupations involving many hours of standing, previous DVT or varicose veins can all result in damage to the valves within the veins.

The venous system is made up of deep and superficial vessels. Unlike arteries, the walls of the veins are non-elastic and do not contain smooth muscle fibres. Together with contractions of the calf muscles, the valves function to ensure that blood flows from the superficial veins to the deep system, assisting the flow of blood from the lower extremities back to the heart and preventing backflow.

The most common cause of venous ulcers is venous hypertension. Damage to the valves results in pooling and reflux of blood, increasing blood flow from deep veins to the superficial ones. This leads to higher pressures in the smaller vessels (which is also a major cause of varicose veins). The raised pressure causes leakage of blood from the veins into the interstitial spaces, causing oedema. The leakage of blood cells and fibrin into the tissues causes hardening of the tissues (lipodermatosclerosis) and the characteristic brown discolouration often seen in the older patient with poor circulation. Varicose or gravitational eczema may result. Venous ulcers usually develop because these changes to tissues make them vulnerable to injury and impair healing once an injury has occurred. An ulcer is essentially a break in the skin, extending through all its layers, that fails to heal, and is often accompanied by inflammation (see image overleaf).

Factors that can cause or worsen a venous leg ulcer

- Vascular diseases
- Trauma – fracture or other injury, animal or insect bite
- Infection or cellulitis
- Inflammation of the veins (phlebitis)
- DVT
- Certain skin conditions
- History of previous ulcer which has further damaged the venous system
- Surgery
- Sedentary occupation, with prolonged periods of sitting or standing in one position
- Diabetes – people with diabetes are particularly at risk of developing foot ulcers
- Obesity
- Pregnancy - multiple pregnancies raise the risk.
Venous ulcers
Approximately 70% of all leg ulcers are venous ulcers. The skin surrounding a venous ulcer is usually dry and itchy, often with brownish discolouration and there may be evidence of varicose eczema. The ulcer is often shallow and may be red in colour, with a raw, weeping appearance. It is usually painless unless infected.

Venous ulcers are most commonly located just above the ankle, usually on the medial side of the leg, but they may also be found elsewhere on the lower limb and on the foot. Venous ulcer pain is often relieved by raising the legs.

Arterial ulcers
Approximately 20% of leg ulcers are caused by some form of arterial disease. Arterial ulcers are usually paler in colour than venous ulcers and often covered in necrotic tissue or slough. They are usually deeper than venous ulcers and tend to have a 'punched out' appearance. The legs and feet may feel colder than the surrounding temperature and the toes may be gangrenous. The skin around the ulcer is often shiny and hairless but is generally free of the staining associated with venous ulcers. Ischaemic ulcer pain is often made worse or relieved by raising the legs.

Diabetic ulcers
Diabetic ulcers are commonly found on the foot, especially over bony prominences. They may result initially from damage caused by knocks or poorly fitting shoes, particularly where there is impairment of sensory perception due to neuropathy. Diabetic ulcers often have a necrotic or sloughy appearance and may have venous and/or arterial components.

THE TREATMENT OF VENOUS ULCERS
Ulcers caused by arterial disease should be referred to a specialist vascular surgeon for assessment. Venous ulcers can often be managed conservatively, although surgery may be considered to correct the underlying physiological disorder. All diabetic patients with ulcers should be referred to a diabetic clinic or specialist in this field, especially if their diabetes is poorly controlled.

Dressings
An ulcer should be dressed in a similar way to any other wound. This will usually be carried out each week by a member of the nursing team. The wound should also be cleaned at this time, usually with warm tap water or saline. Studies have shown that no particular dressing is any more effective than others in healing venous leg ulcers, although some patients may develop allergies to certain products over time. An ulcer is unlikely to heal with use of dressings alone and additional measures should be used to improve the prognosis.

“How is a venous leg ulcer diagnosed?
It is critical to diagnose a venous ulcer correctly. Careful assessment is required to rule out arterial disease where the inappropriate application of compression treatments to an ischaemic limb could be disastrous.

The first step is to take a thorough medical history, including social history, wound history, details of any medication and pain assessment. Factors that may suggest venous pathology include a family history of venous leg ulcers, prior history of DVT, phlebitis in the affected leg, chest pain, haemoptysis or history of pulmonary embolism, sclerotherapy or venous surgery. In contrast, arterial pathology may be suggested by family history of non-venous aetiology, ischaemic heart disease (IHD), transient ischaemic attack (TIA), peripheral vascular disease, claudication, smoking or ischaemic pain at rest. Patients with both venous and arterial ulcers may present with various combinations of the factors listed.

The affected leg and wound should be examined carefully to identify any oedema or varicosity, to assess the colour and condition of the skin and the temperature of the leg and foot, and to look for signs of infection. Clinical examination should include measurement of blood pressure in both arms, and palpation of foot pulses, Doppler measurement of ankle: brachial pressure index (ABPI) to exclude arterial insufficiency and screening of blood or urine for diabetes. Doppler studies should also be used if there is a sudden increase in pain and where foot pulses are not palpable, and should be repeated at least every three months while compression therapy is being used.

“The most common cause of venous ulcers is venous hypertension. Damage to the valves results in pooling and reflux of blood, increasing blood flow from deep veins to the superficial ones”
Debridement
Necrotic and sloughy tissue can be removed from the ulcer bed using mechanical, autolytic, chemical or enzymatic debridement. Biological debriding with maggots has recently seen a comeback in the UK. However, there is no hard evidence to confirm that debridement hastens wound healing time and chemical debridement may be harmful to tissues.

Compression therapy
Compression bandaging aims to counteract the raised pressure in the legs and so facilitate healing. Bandaging with padding capable of sustaining compression for at least a week is the first-line treatment for uncomplicated venous leg ulcers. If the wound is large or heavily exuding, more frequent dressings will be required.

The type of bandaging used for venous ulcers does appear to be important. Studies have shown that three-layer bandaging is more effective in achieving healing at three months than single-layer low compression using elastocrepe. Four-layer high compression is more effective at healing ulcers by 24 weeks than single-layer adhesive compression bandage. Follow-up at three and six months has shown improved ulcer healing with intermittent pneumatic compression used in addition to compression stockings. Other studies have found that care delivered in specialist ulcer clinics by trained nurses using four-layer bandaging resulted in faster median healing times than found in patients receiving usual treatments from their district nurse without four-layer bandaging, with no difference in mean total NHS costs.

Elevation and physical activity
To reduce swelling and decrease the pressure in the leg veins it is important to keep the affected leg raised as often as possible, ideally for 30 minutes three or four times per day. Ideally, the leg needs to be raised higher than the hip. If the patient finds this position comfortable, both legs can be raised at night to facilitate healing.

It is important that a patient with a leg ulcer keeps as active as possible, exercising the calf muscles to improve venous return. Regular walking is ideal, but patients should avoid periods of prolonged standing. While sitting, patients should try to flex and extend and circle their ankles to aid venous return.

Other interventions
Studies have found that oral pentoxifylline increases the proportion of ulcers healed in 6–12 months compared to placebo. Adding oral flavonoids to compression has been shown to increase the number of ulcers healed over 2–6 months compared to compression alone. Oral sulodexide plus compression increased the number of ulcers healed after 2–3 months compared with compression alone. One trial found that systemic mesoglycan plus compression increased the number of ulcers healed over 24 weeks compared with compression alone.

Short-term antibiotics may be required if infection occurs in or around the ulcer and painkillers may be necessary if the ulcer is painful. Topical creams may be prescribed to reduce inflammation or itching. Dietary advice may be required and iron tablets prescribed if the patient is anaemic. Surgery may be needed for varicose veins or other vein problems contributing to the ulcer. Skin grafts may be the last resort for large ulcers or those that fail to heal despite rigorous treatment.

Tips for patients on preventing the development or recurrence of venous leg ulcers
- Keep as physically active as possible, using the calf muscles to improve venous return
- When you are resting, raise the legs to above the level of the hip
- Achieve or maintain an ideal body weight
- Eat a healthy diet low in saturated fat and rich in fruit, vegetables and wholegrains
- Stop smoking
- If your occupation involves lots of standing, try varying your stance as often as possible, raise yourself onto tip-toes and down several times throughout the day, try to walk around as much as you can
- When sitting for prolonged periods, try to flex and extend and circle your ankles as often as possible and get up and walk around as much as you can
- Avoid sitting with your legs crossed or tucked up beneath you
- Inspect your legs and feet daily to look for sores and any changes in size or colour of existing sores
- Your doctor may be able to recommend creams to reduce itching or improve the quality of the skin
- If you are unable to look after your feet yourself, ensure you visit a chiropodist regularly
- Wear low heeled, comfortable footwear
- Wear compression hosiery as advised.