

Lower extremity ulcers

What are ulcers?

Ulcers are wounds or open sores that will not heal or keep returning.

What are the symptoms of ulcers?

Ulcers may or may not be painful. The patient generally has a swollen leg and may feel burning or itching. There may also be a rash, redness, brown discoloration or dry, scaly skin.

What are the types of leg and foot ulcers?

The three most common types of leg and foot ulcers include:

- Venous stasis ulcers
- Arterial (ischemic ulcers)
- Neurotrophic (diabetic ulcers)

Ulcers are typically defined by the appearance of the ulcer, the ulcer location, and the way the borders and surrounding skin of the ulcer look.

1. Venous stasis ulcers

Venous ulcers are located below the knee and are primarily found on the inner part of the leg, just above the ankle.

The base of a venous ulcer is usually red. It may also be covered with yellow fibrous tissue or there may be a green or yellow discharge if the ulcer is infected. Fluid drainage can be significant with this type of ulcer.

The borders of a venous ulcer are usually irregularly shaped and the surrounding skin is often discoloured and swollen. It may even feel warm or hot. The skin may appear shiny and tight, depending on the amount of oedema (swelling). The skin may also have brown or purple discoloration about the lower leg, known as "stasis skin changes."

Venous stasis ulcers are common in patients who have a history of leg swelling, long standing varicose veins, or a history of blood clots in either the superficial or the deep veins of the legs. Ulcers may affect one or both legs.

Venous ulcers affect 500,000 to 600,000 people in the United States every year and account for 80 to 90% of all leg ulcers.

2. Arterial (ischemic)

Arterial ulcers are usually located on the feet and often occur on the heels, tips of toes, between the toes where the toes rub against one another or anywhere the bones may protrude and rub against bed sheets, socks or shoes. Arterial ulcers also occur commonly in the nail

bed if the toenail cuts into the skin or if the patient has had recent aggressive toe nail trimming or an ingrown toenail removed.

The base of an arterial or ischemic ulcer usually does not bleed. It has a yellow, brown, gray, or blackened colour. The borders and surrounding skin usually appear as though they have been punched out. If irritation or infection are present, there may or may not be swelling and redness around the ulcer base. There may also be redness on the entire foot when the leg is dangled; this redness often turns to a pale white/yellow colour when the leg is elevated.

Arterial ulcers are typically very painful, especially at night. The patient may instinctively dangle his/her foot over the side of the bed to get pain relief. The patient usually has prior knowledge of poor circulation in their legs and may have an accompanying disorder.

Neurotrophic (diabetic)

Neurotrophic ulcers are usually located at increased pressure points on the bottom of the foot. However, neurotrophic ulcers related to trauma can occur anywhere on the foot. They occur primarily in people with diabetes although they can affect anyone who has an impaired sensation of the feet.

The base of the ulcer is variable, depending on the patient's circulation. It may appear pink/red or brown/black. The borders of the ulcer are punched out, while the surrounding skin is often calloused.

Neuropathy and peripheral artery disease often occur together in people who have diabetes. Nerve damage (neuropathy) in the feet can result in a loss of foot sensation and changes in the sweat-producing glands. As a result, a person may not feel the development of foot calluses or cracks, increasing the risk of injury or infection. Symptoms of neuropathy include tingling, numbness, burning or pain.

It is easy to understand why people with diabetes are more prone to foot ulcers than other patients. This is why people with diabetes need to inspect their feet and their shoes daily and wear appropriate footwear. People with diabetes should never walk barefoot.

What causes leg ulcers?

Leg ulcers may be caused by medical conditions such as:

- Poor circulation, often caused by arteriosclerosis
- Venous insufficiency (a failure of the valves in the veins of the leg that causes congestion and slowing of blood circulation in the veins)
- Other disorders of clotting and circulation that may or may not be related to atherosclerosis



Diabetic neurotrophic ulcer

- Diabetes
- Renal (kidney) failure
- Hypertension (treated or untreated)
- Lymphedema (a build-up of fluid that causes swelling in the legs or feet)
- Inflammatory diseases including vasculitis, lupus, scleroderma or other rheumatological conditions
- Other medical conditions such as high cholesterol, heart disease, high blood pressure, sickle cell anaemia, bowel disorders
- History of smoking (either current or past)
- Pressure caused by lying in one position for too long
- Genetics (they may be hereditary)
- A malignancy (tumour or cancerous mass)
- Infections
- Certain medications

How are leg ulcers diagnosed?

First, the patient's medical history is evaluated. A wound specialist will examine the wound thoroughly and may perform tests such as X-rays, MRIs, CT scans and noninvasive vascular studies to help develop a treatment plan.

How are leg ulcers treated?

The goals of treatment are to relieve pain, speed recovery and heal the wound. Each patient's treatment plan is individualized, based on the patient's health, medical condition and ability to care for the wound. Treatment options for all ulcers may include:

- Antibiotics, if an infection is present
- Anti-platelet or anti-clotting medications to prevent a blood clot
- Topical wound care therapies
- Compression garments
- Prosthetics or orthotics, available to restore or enhance normal lifestyle function

Venous ulcers are treated with compression of the leg to minimize oedema or swelling. Compression treatments include wearing compression stockings, multilayer compression wraps, or wrapping an ACE bandage or dressing from the toes or foot to the area below the knee. The type of compression treatment prescribed is determined by the physician based on the characteristics of the ulcer base and amount of drainage from the ulcer.

The type of dressing prescribed for ulcers is determined by the type of ulcer and the appearance at the base of the ulcer. Types of dressings include:

1. Moist to moist dressings
2. Hydrogels/hydrocolloids
3. Alginate dressings
4. Collagen wound dressings
5. Debriding agents
6. Antimicrobial dressings
7. Composite dressings
8. Synthetic skin substitutes

Arterial ulcer treatments vary, depending on the severity of the arterial disease. Non-invasive vascular tests provide the physician with the diagnostic tools to assess the potential for wound healing. Depending on the patient's condition, the physician may recommend invasive testing, endovascular therapy or bypass surgery to restore circulation to the affected leg. The goals for arterial ulcer treatment include:

- Providing adequate protection of the surface of the skin
- Preventing new ulcers
- Removing contact irritation to the existing ulcer
- Monitoring for signs and symptoms of infection that may involve the soft tissues or bone.

Treatment for **neurotrophic ulcers** includes avoiding pressure and weight-bearing on the affected leg until the ulcer has started to heal. Regular debridement (the removal of infected tissue) is usually necessary before a neurotrophic ulcer can heal. Frequently, special shoes or orthotic devices must be worn.

Wound Care at Home

Patients are given instructions to care for their wounds at home. These instructions include:

- Keeping the wound clean
- Changing the dressing as directed
- Taking prescribed medications as directed
- Drinking plenty of fluids
- Following a healthy diet, as recommended, including plenty of fruits and vegetables
- Exercising regularly, as directed by a physician
- Wearing appropriate shoes
- Wearing compression wraps, if appropriate, as directed

The treatment of all ulcers begins with careful skin and foot care.

Foot and skin care guidelines:

Inspecting your feet and skin is very important, especially for people with diabetes. Detecting and treating foot and skin sores early can help you prevent infection and prevent the sore from getting worse. Here are some guidelines:

1. Gently wash the affected area on your leg and your feet every day with mild soap (Ivory Snow or Dreft) and lukewarm water. Washing helps loosen and remove dead skin and other debris or drainage from the ulcer. Gently and thoroughly dry your skin and feet, including between the toes. Do not rub your skin or area between the toes.
2. Every day, examine your legs as well as the tops and bottoms of your feet and the areas between your toes. Look for any blisters, cuts, cracks, scratches or other sores. Also check for redness, increased warmth, ingrown toenails, corns and calluses. Use a mirror to view the leg or foot if necessary, or have a family member look at the area for you.
3. Once or twice a day, apply a lanolin-based cream to your legs and soles and top of your feet to prevent dry skin and cracking. **Do not** apply lotion between your toes or

on areas where there is an open sore or cut. If the skin is extremely dry, use the moisturizing cream more often.

4. Care for your toenails regularly. Cut your toenails after bathing, when they are soft. Cut toenails straight across and smooth with an emery board.
5. Do not self-treat corns, calluses or other foot problems. Go to a podiatrist to treat these conditions.
6. Don't wait to treat a minor foot or skin problem. Follow your doctor's guidelines.

How can ulcers be prevented?

Controlling risk factors can help you prevent ulcers from developing or getting worse. Here are some ways to reduce your risk factors:

- Quit smoking
- Manage your blood pressure
- Control your blood cholesterol and triglyceride levels by making dietary changes and taking medications as prescribed
- Limit your intake of sodium (salt)
- Manage your diabetes and other health conditions, if applicable
- Exercise – start a walking program after speaking with your doctor
- Lose weight if you are overweight
- Ask your doctor about aspirin therapy to prevent blood clots

For More Information - speak to your doctor or nurse.