



What is a Diabetic Foot Ulcer?

A diabetic foot ulcer is an open sore or wound that most commonly occurs on the bottom of the foot in approximately 15 percent of patients with diabetes. Of those who develop a foot ulcer, six percent will be hospitalized due to infection or other ulcer-related complication.

Diabetes is the leading cause of nontraumatic lower extremity amputations in the United States, and approximately 14 to 24 percent of patients with diabetes who develop a foot ulcer have an amputation. Research, however, has shown that the development of a foot ulcer is preventable.

Who Can Get a Diabetic Foot Ulcer?

Anyone who has diabetes can develop a foot ulcer. Native Americans, African Americans, Hispanics and older men are more likely to develop ulcers. People who use insulin are at a higher risk of developing a foot ulcer, as are patients with diabetes-related kidney, eye, and heart disease. Being overweight and using alcohol and tobacco also play a role in the development of foot ulcers.

How do Diabetic Foot Ulcers Form?

Ulcers form due to a combination of factors, such as lack of feeling in the foot, poor circulation, foot deformities, irritation (such as friction or pressure), and trauma, as well as duration of diabetes. Patients who have diabetes for many years can develop neuropathy, a reduced or complete lack of feeling in the feet due to nerve damage caused by elevated blood glucose levels over time. The nerve damage often can occur without pain and one may not even be aware of the problem. Your podiatric physician can test feet for neuropathy with a simple and painless tool called a monofilament.

Vascular disease can complicate a foot ulcer, reducing the body's ability to heal and increasing the risk for an infection. Elevations in blood glucose can reduce the body's ability to fight off a potential infection and also retard healing.

What is the Value of Treating a Diabetic Foot Ulcer?

Once an ulcer is noticed, seek podiatric medical care immediately. Foot ulcers in patients with diabetes should be treated for several reasons such as, reducing the risk of infection and amputation, improving function and quality of life, and reducing health care costs.

How Should a Diabetic Foot Ulcer be Treated?

The primary goal in the treatment of foot ulcers is to obtain healing as soon as possible. The faster the healing, the less chance for an infection.

There are several key factors in the appropriate treatment of a diabetic foot ulcer:

- Prevention of infection.

- Taking the pressure off the area, called "off-loading."

- Removing dead skin and tissue, called "debridement."

- Applying medication or dressings to the ulcer.

- Managing blood glucose and other health problems.

Not all ulcers are infected; however if your podiatric physician diagnoses an infection, a treatment program of antibiotics, wound care, and possibly hospitalization will be necessary.

There are several important factors to keep an ulcer from becoming infected:

- Keep blood glucose levels under tight control.

- Keep the ulcer clean and bandaged.

- Cleanse the wound daily, using a wound dressing or bandage.

- Do not walk barefoot.

For optimum healing, ulcers, especially those on the bottom of the foot, must be "off-loaded." Patients may be asked to wear special footwear, or a brace, specialized castings, or use a wheelchair or crutches. These devices will reduce the pressure and irritation to the ulcer area and help to speed the healing process.

The science of wound care has advanced significantly over the past ten years. The old thought of “let the air get at it” is now known to be harmful to healing. We know that wounds and ulcers heal faster, with a lower risk of infection, if they are kept covered and moist. The use of full strength betadine, peroxide, whirlpools and soaking are not recommended, as this could lead to further complications.

Appropriate wound management includes the use of dressings and topically-applied medications. These range from normal saline to advanced products, such as growth factors, ulcer dressings, and skin substitutes that have been shown to be highly effective in healing foot ulcers.

For a wound to heal there must be adequate circulation to the ulcerated area. Your podiatrist can determine circulation levels with noninvasive tests.

Controlling Blood Glucose

Tightly controlling blood glucose is of the utmost importance during the treatment of a diabetic foot ulcer. Working closely with a medical doctor or endocrinologist to accomplish this will enhance healing and reduce the risk of complications.

Surgical Options

A majority of noninfected foot ulcers are treated without surgery; however, when this fails, surgical management may be appropriate. Examples of surgical care to remove pressure on the affected area include shaving or excision of bone(s) and the correction of various deformities, such as hammertoes, bunions, or bony “bumps.”

Healing Factors

Healing time depends on a variety of factors, such as wound size and location, pressure on the wound from walking or standing, swelling, circulation, blood glucose levels, wound care, and what is being applied to the wound. Healing may occur within weeks or require several months.

How Can a Foot Ulcer be Prevented?

The best way to treat a diabetic foot ulcer is to prevent its development in the first place. Recommended guidelines include seeing a podiatrist on a regular basis. He or she can determine if you are at high risk for developing a foot ulcer and implement strategies for prevention.

You are at high risk if you:

have neuropathy,
have poor circulation,
have a foot deformity (i.e. bunion, hammer toe),
wear inappropriate shoes,
have uncontrolled blood sugar.

Reducing additional risk factors, such as smoking, drinking alcohol, high cholesterol, and elevated blood glucose are important in the prevention and treatment of a diabetic foot ulcer. Wearing the appropriate shoes and socks will go a long way in reducing risks. Your podiatric physician can provide guidance in selecting the proper shoes.

Learning how to check your feet is crucial in noticing a potential problem as early as possible. Inspect your feet every day—especially between the toes and the sole—for cuts, bruises, cracks, blisters, redness, ulcers, and any sign of abnormality. Each time you visit a health care provider, remove your shoes and socks so your feet can be examined. Any problems that are discovered should be reported to your podiatrist as soon as possible, no matter how “simple” it may seem to you.

The key to successful wound healing is regular podiatric medical care to ensure the following “gold standard” of care:

- lowering blood sugar
- appropriate debridement of wounds
- treating any infection
- reducing friction and pressure
- restoring adequate blood flow

The old saying, “an ounce of prevention is worth a pound of cure” was never as true as it is when preventing a diabetic foot ulcer.

Diabetes Tips From The APMA

If You Have Diabetes Already . . . DO:

Wash feet daily. Using mild soap and lukewarm water, wash your feet in the mornings or before bed each evening. Dry carefully with a soft towel, especially between the toes, and dust your feet with talcum powder to wick away moisture. If the skin is dry, use a good moisturizing cream daily, but avoid getting it between the toes.

Inspect feet and toes daily. Check your feet every day for cuts, bruises, sores or changes to the toenails, such as thickening or discoloration. If age or other factors hamper self-inspection, ask someone to help you, or use a mirror.

Lose weight. People with diabetes are commonly overweight, which nearly doubles the risk of complications.

Wear thick, soft socks. Socks made of an acrylic blend are well suited, but avoid mended socks or those with seams, which could rub to cause blisters or other skin injuries.

Stop smoking. Tobacco can contribute to circulatory problems, which can be especially troublesome in patients with diabetes.

Cut toenails straight across. Never cut into the corners, or taper, which could trigger an ingrown toenail. Use an emery board to gently file away sharp corners or snags. If your nails are hard to trim, ask your podiatrist for assistance.

Exercise. As a means to keep weight down and improve circulation, walking is one of the best all-around exercises for the diabetic patient. Walking is also an excellent conditioner for your feet. Be sure to wear appropriate athletic shoes when exercising. Ask your podiatric physician what's best for you.

See your podiatric physician. Regular checkups by your podiatric physician—at least annually—are the best way to ensure that your feet remain healthy.

Be properly measured and fitted every time you buy new shoes. Shoes are of supreme importance to diabetes sufferers because poorly fitted shoes are involved in as many as half of the problems that lead to amputations. Because foot size and shape may change over time, everyone should have their feet measured by an experienced shoe fitter whenever they buy a new pair of shoes.

New shoes should be comfortable at the time they're purchased and should not require a "break-in" period, though it's a good idea to wear them for short periods of time at first. Shoes should have leather or canvas uppers, fit both the length and width of the foot, leave room for toes to wiggle freely, and be cushioned and sturdy.

Don't go barefoot. Not even in your own home. Barefoot walking outside is particularly dangerous because of the possibility of cuts, falls, and infection. When at home, wear slippers. Never go barefoot.

Don't wear high heels, sandals, and shoes with pointed toes. These types of footwear can put undue pressure on parts of the foot and contribute to bone and joint disorders, as well as diabetic ulcers. In addition, open toed shoes and sandals with straps between the first two toes should also be avoided.

Don't drink in excess. Alcohol can contribute to neuropathy (nerve damage) which is one of the consequences of diabetes. Drinking can speed up the damage associated with the disease, deaden more nerves, and increase the possibility of overlooking a seemingly minor cut or injury.

Don't wear anything that is too tight around the legs. Panty hose, panty girdles, thigh-highs or knee-highs can constrict circulation to your legs and feet. So can men's dress socks if the elastic is too tight.

Never try to remove calluses, corns or warts by yourself. Commercial, over-the-counter preparations that remove warts or corns should be avoided because they can burn the skin and cause irreplaceable damage to the foot of a diabetic sufferer. Never try to cut calluses with a razor blade or any other instrument because the risk of cutting yourself is too high, and such wounds can often lead to more serious ulcers and lacerations. See your podiatric physician for assistance in these cases.

Your podiatric physician/surgeon has been trained specifically and extensively in the diagnosis and treatment of all manners of foot conditions. This training encompasses all of the intricately related systems and structures of the foot and lower leg including neurological, circulatory, skin, and the musculoskeletal system, which includes bones, joints, ligaments, tendons, muscles, and nerves.