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Diabetes, Foot Care and Foot Ulcers

Some people with diabetes develop foot ulcers. A foot ulcer is prone to infection, which may become severe. This leaflet aims to explain why foot ulcers sometimes develop, what you can do to help prevent them, and typical treatments if one does occur.

What is a foot ulcer?

A skin ulcer is where an area of skin has broken down and you can see the underlying tissue. Most skin ulcers occur on the lower legs or feet. The skin normally heals quickly if it is cut. However, in some people with diabetes the skin on the feet does not heal so well and is prone to developing an ulcer. This can be even after a mild injury such as stepping on a small stone in your bare feet.

Why are people with diabetes prone to foot ulcers?

Foot ulcers are more common if you have diabetes because one or both of the following complications develop in some people with diabetes:

Reduced sensation of the skin on your feet

Your nerves may not work as well as normal because even a slightly high blood sugar level can, over time, damage some of your nerves. This is a complication of diabetes, called peripheral neuropathy of diabetes.

The nerves that take messages of sensation and pain from the feet are commonly affected. If you lose sensation in parts of your feet, you may not know if you damage your feet. For example, if you tread on something sharp or develop a blister due to a tight shoe. This means that you are also more prone to problems such as minor cuts, bruises or blisters. Also, if you cannot feel pain so well from the foot, you do not protect these small wounds by not walking on them. Therefore, they can quickly become worse and develop into ulcers.

Narrowing of blood vessels (arteries) going to the feet

If you have diabetes you have an increased risk of developing narrowing of the arteries ([peripheral arterial disease](#)). This is caused by fatty deposits called [atheroma](#) that build up on the inside lining of arteries (sometimes called furring of the arteries). This can reduce the blood flow to various parts of the body.

The arteries in the legs are quite commonly affected. This can cause a reduced blood supply (poor circulation) to the feet. Skin with a poor blood supply does not heal as well as normal and is more likely to be damaged. Therefore, if you get a minor cut or injury, it may take longer to heal and be prone to becoming worse and developing into an ulcer. In particular, if you also have reduced sensation and cannot feel the wound.

What increases the risk of developing foot ulcers?

- If you have reduced sensation to your feet (see above). The risk of this occurring increases the longer you have diabetes and the older you are. Also, if your diabetes is poorly controlled. This is one of the reasons why it is very important to keep your blood sugar level as near normal as possible.
- If you have narrowed blood vessels (arteries) - see above. The risk of this occurring increases the longer you have diabetes, the older you become and also if you are male. Also, if you have any other risk factors for developing furring of the arteries. For example, if you smoke, do little physical activity, have a high cholesterol level, high blood pressure or are overweight.
- If you have had a foot ulcer in the past.
- If you have other complications of diabetes, such as kidney or eye problems.

- If your feet are more prone to minor cuts, grazes, corns or calluses which can occur:
 - If you have foot problems such as bunions which put pressure on points on the feet.
 - If your shoes do not fit properly, which can put pressure on your feet.
 - If you have leg problems which affect the way that you walk, or prevent you from bending to care for your feet.

Are foot ulcers serious?

Although foot ulcers can be serious, they usually respond well to treatment. However, foot ulcers can get worse and can take a long time to heal if you have diabetes, particularly if your circulation is not so good. In addition, having diabetes means you are more likely to have infections and an infection in the ulcer can occur. Occasionally, more serious problems can develop, such as tissue death (gangrene).

What can I do to help prevent foot ulcers?

Have your feet regularly examined

Most people with diabetes are reviewed at least once a year by a doctor and other health professionals. Part of this review is to examine the feet to look for problems such as reduced sensation or poor circulation. If any problems are detected then more frequent feet examinations will usually be recommended.

Treatment of diabetes and other health risk factors

As a rule, the better the control of your diabetes, the less likely you are to develop complications such as foot ulcers. Also, where appropriate, treatment of **high blood pressure**, **high cholesterol level** and reducing any other risk factors will reduce your risk of diabetic complications. In particular, if you smoke, you are strongly advised to **stop smoking**.

Foot care

Research has shown that people with diabetes who take good care of their feet and protect their feet from injury, are much less likely to develop foot ulcers.

Good foot care includes:

- Looking carefully at your feet each day, including between the toes. If you cannot do this yourself, you should get someone else to do it for you:
 - Looking is particularly important if you have reduced sensation in your feet, as you may not notice anything wrong at first until you look.
 - If you see anything new (such as a cut, bruise, blister, redness or bleeding) and don't know what to do, see your doctor. You can also see a person qualified to diagnose and treat foot disorders (a podiatrist - previously called a chiropodist).
 - Do not try to deal with corns, calluses, verrucas or other foot problems by yourself. They should be treated by a health professional such as a podiatrist. In particular, do not use chemicals or acid plasters to remove corns, etc.
 - Use a moisturising oil or cream for dry skin to prevent cracking. However, you should not apply it between the toes, as this can cause the skin to become too moist which can lead to an infection developing.
 - Look out for **athlete's foot** (a common minor skin infection). It causes flaky skin and cracks between the toes, which can be sore and can become infected. If you have athlete's foot, it should be treated with an antifungal cream.
- Cut your nails by following the shape of the end of your toe. But, do not cut down the sides of the nails, or cut them too short, or use anything sharp to clean down the sides of the nails. These things may cause damage or lead the nail to develop an ingrown nail. If you cannot see properly do not try to cut your nails, as you may cut your skin. You should ask someone else to do it.
- Wash your feet regularly and dry them carefully, especially between the toes.
- Do not walk barefoot, even at home. You might tread on something and damage your skin.
- Always wear socks with shoes or other footwear. However, don't wear socks that are too tight around the ankle, as they may affect your circulation.

- Shoes, trainers and other footwear should:
 - Fit well to take into account any awkward shapes or deformities (such as bunions).
 - Have broad fronts with plenty of room for the toes.
 - Have low heels to avoid pressure on the toes.
 - Have good laces, buckles or Velcro® fastening to prevent movement and rubbing of feet within the shoes.
- When you buy shoes, wear the type of socks that you usually wear. Avoid slip-on shoes, shoes with pointed toes, sandals and flip-flops. Break in new shoes gradually.
- Always feel inside footwear before you put footwear on (to check for stones, rough edges, etc).
- If your feet are an abnormal shape, or if you have bunions or other foot problems, you may need specially fitted shoes to stop your feet rubbing.
- Tips to avoid foot burns include: checking the bath temperature with your hand before stepping in; not using hot water bottles, electric blankets or foot spas; not sitting too close to fires.

What if I develop a foot ulcer?

You should tell your doctor or a person qualified to diagnose and treat foot disorders (a podiatrist - previously called a chiropodist) straightaway if you suspect an ulcer has formed. Treatment aims to dress and protect the ulcer, to prevent or treat any infection and also to help your skin to heal.

- The ulcer is usually covered with a protective dressing.
- A nurse or podiatrist will normally examine, clean and re-dress the ulcer regularly.
- A podiatrist may need to remove any hard skin that prevents the ulcer from healing. Also, depending on the site and size of the ulcer, they may protect it from further injury by using padding to take the pressure off the area.
- You may also be advised to wear special shoes or have a cast made for your foot to keep the pressure off the ulcer.
- Antibiotics will be advised if the ulcer, or nearby tissue, becomes infected.
- Sometimes a small operation is needed to drain pus and clear dead tissue if infection becomes more severe.
- In some cases, the arteries in the legs are very narrow and greatly reduce the blood flow to the feet. In these cases an operation to bypass, or widen, the arteries may be advised.

Many foot ulcers will heal with the above measures. However, they can take a long time to heal.

In some cases, the ulcer becomes worse, badly infected and does not heal. Sometimes infection spreads to nearby bones or joints, which can be difficult to clear, even with a long course of antibiotics. Occasionally, the tissue in parts of the foot cannot survive and the only solution then is to surgically remove (amputate) the affected part.

What care can I expect if I am admitted to hospital with a diabetic foot problem?

If you have a diabetic foot problem, you will be able to get most of the treatment you need from your GP or other health professionals working in the community. However, there are some problems which may require you to go into hospital for treatment. The National Institute for Health and Care Excellence (NICE) has released some guidance as to what you can expect if this should happen:

- You should expect to be treated by a team which deals especially with people who have diabetic foot problems. This team usually includes:
 - A specialist in diabetes.
 - A surgeon who deals with diabetic foot problems.
 - A person qualified to diagnose and treat foot disorders (a podiatrist - previously called a chiropodist).
 - A diabetes nurse specialist.
 - A tissue viability nurse (who assesses whether the skin and underlying tissues of your feet have been affected by circulation changes due to diabetes).
- You should be given information about your foot condition.

- You will have your diabetes assessed and checks will be made to make sure you have not developed complications such as kidney disease (or if you have already developed complications, to make sure they are not getting any worse).
- You will have an examination of both feet to check for ulcers, cuts and abrasions to the feet, signs of poor circulation, areas of numbness and the development of Charcot's arthropathy. This is a condition in which the sensation of pain is reduced because of the diabetes, resulting in damage to bones, such as tiny fractures.
- You will have a general examination to make sure you do not have a high temperature (fever) or any other signs of a severe generalised infection.
- If you have an ulcer, this will be checked for infection and baseline measurements of the size and depth will be taken.
- You may be asked to have an X-ray or scan of your foot to make sure the bones have not been affected by your condition.

Further help & information

Diabetes UK

Macleod House, 10 Parkway, London, NW1 7AA

Tel: (Careline) 0845 120 2960 (Admin) 0207 424 1000

Web: www.diabetes.org.uk

The Society of Chiropodists & Podiatrists

1 Fellmongers Path, Tower Bridge Road, London, SE1 3LY

Tel: 020 7234 8620

Web: www.scpod.org/foot-health/

Further reading & references

- [Type 2 diabetes: Prevention and management of foot problems](#); NICE Clinical Guideline (January 2004)
- [Diabetic foot problems - inpatient management](#); NICE Clinical Guideline (March 2011)
- [Management of diabetes](#); Scottish Intercollegiate Guidelines Network - SIGN (March 2010)
- [Diabetes - type 2](#); NICE CKS, July 2010 (UK access only)

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