FEET

Diabetes Research & Wellness Foundation

Foot health and diabetes

By:
Emma Howard
Specialist Podiatrist and Team Leader
Oxford Health NHS Foundation Trust

Staying well until a cure is found...

Diabetes and feet

What is neuropathy?

This leaflet explains how diabetes can affect your feet, what neuropathy is and how to keep your feet healthy. Diabetes-related foot complications develop as a result of raised blood glucose levels over time and are of two main types.

Ischaemia happens when small blood vessels in the feet become partially blocked leading to reduced blood supply to the feet.

Diabetic neuropathy happens in people with type 1 and type 2 diabetes and is the commonest cause of loss of feeling in the leg.

Damage to the nerves results from erosion of the protective sheath surrounding the nerves. This can result from raised blood glucose levels disrupting the structure and function of the nerve, or reduced flow in small blood vessels supplying nerves in the feet.

Neuropathy can affect nerves throughout the body but due to the long length of the nerves to the foot, damage happens there first.

1

Figure 1 **The progress of the neuropathy is dependent on blood glucose control but factors such as duration of diabetes, age, smoking, high blood pressure and high cholesterol also play a part.**

2

Figure 2 **Overtly dry skin can lead to deep cracks in the skin and could lead to a foot ulcer.**

3

Figure 3 **Never try to treat corns or hard skin yourself. See your podiatrist. If not treated, the pressure may lead to ulceration.**

4

Figure 4 **If you have a wound which does not heal, see your podiatrist immediately.**

The progress of the neuropathy is dependent on blood glucose control but factors such as duration of diabetes, age, smoking, high blood pressure and high cholesterol also play a part (**Figure 1**).

Let's look at the different symptoms and the types of neuropathy in more detail. If you feel you have any of these symptoms, consult your GP or diabetologist for advice.

Sensory diabetic neuropathy

This neuropathy affects the nerves which carry messages from the skin, bones and muscles to the brain and is the most common. The changes usually happen in both feet at the same time and can progress from your toes to your feet, and sometimes the legs, fingers and hands can be affected, although this is less common.

Symptoms can range from feelings of numbness or walking on cotton wool or sponges, to more severe symptoms like pins and needles, tingling, burning or small electric shocks. Symptoms are typically worse at night.

Sensory neuropathy can affect balance, but the main problem is the inability to feel damage to your feet, and sense pain associated with this. You could tread on a sharp object, or even burn your feet in hot water without your feet detecting pain to tell you your foot is damaged. The lack of sensation can allow further damage to happen which may result in a foot ulcer.

Autonomic neuropathy

Autonomic neuropathy affects the nerves which control involuntary activity in the body. Damaged nerves can lead to more blood flowing to the foot. This results in a reduction of sweating and moisture in the foot. The skin will be warm but very dry. Overtly dry skin can lead to deep cracks in the skin, especially around the heels, and could lead to a foot ulcer (**Figure 2**).

Motor neuropathy

Small muscles in your foot could lose strength and size due to the loss of nerve function. This means the toes start to claw and the arch of the foot becomes higher. As the foot changes shape more pressure is loaded on the bones under the foot and calluses can form. This neuropathy causes problems with balance and stability when walking and can be limiting in daily life.

Reduced blood flow

Reduced blood flow (ischaemia) is caused by a process called atherosclerosis where small blood vessels within the foot develop thickened walls. Thickened walls means less blood flow to the foot. Ischaemia is exacerbated by raised blood glucose, high blood pressure, high cholesterol and smoking.

The absence of foot pulses will indicate that blood flow is reduced to the foot. Other symptoms which suggest ischaemia are cramp in the calves during exercise, which is relieved by rest, or pain in the feet when the feet are elevated. If you have neuropathy, symptoms are not always present, but signs such as cold feet or thin/discoloured skin may also indicate ischaemia.

Diagnosis and treatment

Assessment of the feet for neuropathy should be carried out annually. This may be by a podiatrist or trained health professional. Tests include the use of a monofilament (a graded nylon filament applied to the foot), or using a tuning fork, which tests the perception of vibration. Tests determine the presence of neuropathy and reduce the risk of foot ulcers developing.

Reduced blood supply to the foot should always be taken seriously. Carefully managed exercise and stopping smoking are essential. Medication for raised cholesterol and high blood pressure may also be appropriate. Other treatments are available, so ask your healthcare team about all of your options.

Top tips for healthy feet

- **Check your feet daily.** If you have poor sight, ask a family member or carer to help. Look for colour change, swelling, damage to skin, heat, redness, discharge and pain/discomfort.
- **Hard skin (callus).** Never try to treat corns or hard skin yourself (**Figure 3**). A trained podiatrist will remove the callus or corn thereby reducing pressure on the area. If not treated, the pressure may lead to ulceration. NEVER apply corn plasters or acid preparations. They can burn the skin and cause a wound. Neuropathy or ischaemia makes you especially susceptible.
- **Nail care.** If you can easily cut your toenails yourself, do not let diabetes stop you. Trim them straight across and file rough edges. If you suspect a deformity, infection or ingrown nails, consult a podiatrist.
- **Footwear.** Always wear footwear for protection; feet are easily damaged when bare. Check shoes and socks for foreign objects which cause skin damage, and purchase well-fitting shoes.
- **Heat.** Check the temperature of water and avoid hot-water bottles. Heat sources can burn the skin if neuropathy is present, and a wound can develop.
- **Skin care.** Wash your feet daily and dry well between the toes to avoid athlete's foot. Skin can get very dry; apply moisturising cream daily, except between the toes.
- **Holidays.** Apply sun cream to prevent burning and protect the soles of your feet from heat by wearing sandals. Take a small first aid kit to treat wounds and seek advice on your return if they don't heal (**Figure 4**).

Remember: Diabetes-related foot complications can be prevented, but without care will progress with time. The following measures help prevent complications:

- Control diabetes as effectively as possible
- Attend foot screening
- Seek treatment for foot problems such as corns and hard skin
- Don't trust the nerves in your feet if they are damaged; trust your sight and your instincts!

More information

When you are looking for a podiatrist, remember all should be registered with the Health Care Professions Council (HCPC). You can search for a local podiatrist at **rcpod.org.uk/find-a-podiatrist** or ask your diabetes healthcare professional.

The Diabetes Research & Wellness Foundation works towards educating, informing and reminding you of the best and healthiest choices to make.

If you would like to become part of our Diabetes Wellness community, visit our website for more details.

www.drwf.org.uk

DRWF, Building 1000, Langstone Park, Havant, Hampshire, PO9 1SA
Tel: **023 9263 7808**
Email: **enquiries@drwf.org.uk**

Registered Charity No. 1070607
Registered in England, Company Number 03496304
Company Limited by Guarantee

Trusted Information Creator
Patient Information Forum

PIFTICK is the only independently-assessed UK quality mark for trusted health information. It is operated by the Patient Information Forum.

Source references can be provided on request
All details correct at time of print

V2.0 published: June 2025
Due to be reviewed within 3 years of publication date
Printed by Holbrooks Printers Ltd.
Portsmouth, Hampshire, UK