



## Information Sheet 4 – Neuropathy Types

### What is neuropathy?

Neuropathy causes damage to the nerves that transmit impulses to and from the brain and spinal cord, to the muscles, skin, blood vessels and other organs.

### What causes neuropathy in people with diabetes?

Despite research, there is still no conclusive proof as to the cause of diabetic neuropathy. However there are factors which are thought to contribute to the condition.

Hyperglycaemia (high blood glucose) causes chemical changes in nerves that can impair their ability to transmit signals. Hyperglycaemia can also harm the blood vessels that carry oxygen and nutrients to the nerves.

Neuropathy can also be caused by other factors not necessarily associated with diabetes. These include disorders of the immune system, infectious diseases and deficiencies in certain nutrients

### What are the different types of neuropathy and how can they be treated?

There are three main types of neuropathy: sensory, motor and autonomic.

#### Sensory neuropathy

Sensory neuropathy affects the nerves that carry messages from the skin, bones and muscles to the brain. As the name suggests, it tends to influence the senses, in particular touch, and affects how we feel temperature, pain and other sensations. It is the most common form of neuropathy, mainly occurring in nerves in the feet and legs, but can sometimes occur in the arms and hands. It can lead to a loss of feeling and a failure to sense pain. For example, if you trod on something sharp, stepped in to a hot bath or wore ill-fitting shoes, you may not be aware of damage to your feet. This lack of sensation can lead to damage becoming worse, and the potential for infection. Neuropathic ulcers may also occur.

The symptoms of sensory neuropathy can include pain and numbness, tingling in the hands, legs or feet and extreme sensitivity to touch. Treatments which may help include tablets such as Carbamazepine and Gabapentin, which can be used to ease neuropathic pain; creams such as capsaicin (which contains capsaicin — found in hot red peppers) that also helps reduce pain; and tablets that are usually used for depression but can also have a calming effect on the nerves. **A test should be carried out at least every year, to check for signs of this type of neuropathy.**

#### Motor neuropathy

Motor neuropathy affects the nerves that transmit signals to the muscles enabling them to carry out movements like walking and moving the hands. Sometimes painful, it causes muscle weakness and, in areas like the thigh, muscle wasting can occur. However it is possible for some people to recover from this condition after a period of time.

If the nerves that supply the muscles in your feet are affected, motor neuropathy can lead to the development of foot deformities. One such condition is Charcot's foot, where a loss of sensation and weakened muscles cause bones in the foot to fracture or break when stressed. As you may not feel the damage, subsequently you may not heal properly and this can result in the shape of the foot becoming distorted. Your podiatrist will know more about treatments for this.



## Information Sheet 4 – Neuropathy Types

### **Autonomic neuropathy**

Autonomic neuropathy affects the nerves that control involuntary activities of the body ie, those which occur automatically. This means the action of the stomach, intestine, bladder, penis or sometimes the heart, can be affected. If autonomic neuropathy occurs in the stomach or intestine, symptoms may include altered bowel movements, such as intermittent diarrhoea or constipation. Additionally, a condition known as gastroparesis can develop. This occurs when the stomach takes too long to empty because the vagus nerve (which controls the movement of food through the gut) has been affected. Other symptoms sometimes include feeling sick, vomiting, stomach bloating, discomfort and weight loss. Tablets are available to help alleviate the symptoms.

If autonomic neuropathy occurs in the bladder, symptoms may include an inability to pass urine properly and in particular, feeling like the bladder hasn't emptied completely. In later stages this may lead to incontinence and more rarely, a total inability to pass urine.

Autonomic neuropathy of the penis may gradually lead to impotence. However there are a number of treatments that can be prescribed, such as medication like Viagra, or other products which help with erectile dysfunction.

Occasionally, the cardiovascular system (the heart and blood vessels) can be affected by nerve damage. This may result in pain from heart disease being masked.

For example, you might experience a heart attack but be unaware that it has happened (this is known as a 'silent MI' or myocardial infarction). Additionally, you may not feel pain when an attack of angina occurs, which is often a warning sign of heart disease.

Postural hypotension (low blood pressure that occurs when you stand up) can also be attributed to neuropathy. Symptoms include dizziness, weakness, visual impairment or possibly a loss of consciousness — most frequently occurring when getting out of bed in the morning. Treatment might involve excluding drugs that can reduce blood pressure further, such as water tablets.

Sweating disturbances can also be a sign of autonomic neuropathy. Nerve damage can interfere with the activity of the sweat glands, making it difficult for the body to regulate temperature. This type of neuropathy commonly occurs in the feet, causing a lack of sweating (in severe cases this extends to the whole leg and lower trunk). This lack of sweating leads to the skin of the feet becoming dry and cracked. Gustatory sweating (when eating) may start quite soon after chewing and can be brought on by certain foods. It often starts on the forehead, and spreads to the face, scalp and neck, sometimes affecting the upper part of the body.

### **What is Diabetic Neuropathy?**

Diabetic neuropathy is a peripheral nerve disorder caused by diabetes. The symptoms of diabetic neuropathy are often slight at first. In fact, some mild cases may go unnoticed for a long time.

Numbness, pain, or tingling in the feet, or legs may, after several years, lead to weakness in the muscles of the feet. The loss of sensation in the feet may increase the possibility for foot injuries to go unnoticed and develop into ulcers or lesions that become infected.



## Information Sheet 4 – Neuropathy Types

Occasionally, diabetic neuropathy can flare up suddenly and affect specific nerves so that an affected individual will develop double vision or drooping eyelids, or weakness and atrophy of the thigh muscles.

Nerve damage caused by diabetes generally occurs over a period of years and may lead to problems with the digestive tract and sexual organs, which can cause indigestion, diarrhoea or constipation, dizziness, bladder infections, and impotence.

### **Is there any treatment?**

The goal of treating diabetic neuropathy is to relieve discomfort and prevent further tissue damage.

The first step is to bring blood sugar levels under control by diet and medication. Another important part of treatment involves taking special care of the feet. Analgesics, low doses of antidepressants, and some anticonvulsant medications may be prescribed for relief of pain, burning, or tingling. Some patients may find that walking regularly, taking warm baths, or using elastic stockings may help relieve leg pain.

### **What is the prognosis?**

The prognosis for diabetic neuropathy depends largely on how well the underlying condition of diabetes is handled. Treating diabetes may halt progression and improve symptoms of the neuropathy, but recovery is slow. The painful sensations of diabetic neuropathy may become severe enough to cause depression in some patients.

### **What can you do to reduce the chances of getting neuropathy or prevent it worsening?**

The best way to cut your risk of developing neuropathy, or prevent it becoming worse, is to control blood glucose levels. This means keeping them between the acceptable limits of 4-7 mmol/l before meals and up to 10mmol/l after meals.

Following a healthy, balanced diet, ensuring your prescribed medication is taken properly and undertaking some form of regular exercise are all important factors that help keep good control of levels.

### **Further information**

If you already have some form of neuropathy and feel you could benefit from the treatments mentioned here, discuss this with your healthcare team.

*Further information can be obtained from Diabetes UK including*

*Diabetic neuropathy (8005, £2.00),  
Taking care of your feet (8018, £2.00) and  
Impotence and diabetes (8004, £1.30)*