

## Nerve damage (Neuropathy)

### Key Points

- Damaged nerves are a common complication of diabetes (the medical name for this is diabetic neuropathy)
- Diabetic neuropathy is actually a range of disorders that can affect three types of nerves (sensory nerves, motor nerves and autonomic nerves)
- Some nerve damage causes pain. Other nerve damage removes the sensation of pain and causes numbness. Some people have both types of symptoms happening at the same time
- It's not known for sure what causes diabetic neuropathy. Having high glucose levels over long periods of time seems likely to play a big role
- You can reduce your risk of developing neuropathy
- Maintaining healthy blood glucose and blood pressure levels, and avoiding alcohol and cigarettes will help reduce your chances of developing nerve damage

A common complication of diabetes is damaged nerves (this is called diabetic neuropathy). Neuropathy means damage to the nerves that run throughout the body. Nerves connect your brain and spinal cord to the whole of the rest of your body. Taken all together, these nerves are called the Nervous System.

### The Nervous System

The nervous system consists of the brain and the nerves. The central core of the nervous system is the spinal chord and brain. The nerves that are outside the brain and the spinal chord are called peripheral nerves. There are three types of peripheral nerves:

- Sensory nerves which carry signals such as pain from the body to the brain (e.g., 'ouch I am standing on a pin!')
- Motor nerves that carry the signal back from the brain to the muscles ('move your foot quickly and get off that pin!')
- Autonomic nerves which control things like heart beat, blood pressure, and breathing, automatically (you don't need to feel these or do anything about them. They just happen all by themselves)

Damage to the nerves can interrupt the signals to and from the brain. Neuropathy can be caused by a number of other things as well as diabetes:

- Too much alcohol over a long period of time
- Severe vitamin B deficiency or overdose
- Injury
- Some medications

### Diabetes and Nerve Damage

There are a range of different neuropathies (or forms of nerve damage) that people with diabetes can develop. Virtually all of these conditions affect the peripheral nerves (the nerves outside the brain and spinal cord).

Some symptoms of neuropathy occur when different fibres within the nerves are lost. The symptoms vary with the type of fibre being affected:

- If the loss of nerve fibres affects the motor fibres, it can cause weakness in your muscles (you can't move your muscles as well)
- If loss of nerve fibres affects the sensory fibres, it can cause loss of feeling (you can't feel pain or other sensations as well)
- If the loss of nerve fibres affects autonomic fibres, it can cause loss of functions not normally under conscious control, like digestion (automatic functions no longer happen as well as they did)

You may experience symptoms when your nerves are damaged (or healing). These symptoms

include prickling, tingling, burning, aching, or sharp jabs of needle-like pain. These are signs of the increased nerve activity that occurs in damaged or healing nerves.

Things can be made more complex by the fact that different types of symptoms can occur together. It's common, for example, to have pain even though many sensation fibres have been lost.

## What Causes Neuropathy?

Researchers do not yet know precisely what causes the neuropathy that occurs in diabetes. Blood glucose levels play a role. Neuropathy is more likely to affect people who have had diabetes for a long time or whose blood glucose levels have been high over a long period of time.

But no one is sure how high glucose levels must be, and for how long, before nerve damage happens. Glucose may not hurt nerve cells directly. Instead, it may affect other processes in the body, which may in turn affect the nerves.

## Types of Neuropathy

What particular type of neuropathy you have depends on the answer to a few basic questions:

- Are both sides or only one side of the body affected?
- Which class of nerves is affected (motor, sensory or autonomic)?
- How many nerves are affected?
- What parts of the body are affected?

More details of the different types of neuropathy, as well as information about how neuropathy is diagnosed, can be found on the [web site of the American Diabetes Association \(ADA\)](#) in the "Complications" section under "Basic Diabetes Information".

One of the commonest types of neuropathy relate to the feet. This is explored in more detail in the ["Feet - one pair to last a lifetime"](#) section of this web site.

## Treatment

Health professionals and researchers are still looking for a way to heal nerves damaged by neuropathy. Right now, treatment aims to make the symptoms of neuropathy better. And improving your blood glucose levels may improve early neuropathy.

Most doctors say that people with neuropathy should do three things:

- Have a healthy body weight
- Get regular exercise
- Achieve the healthiest blood glucose levels possible

Painful neuropathy can be very disabling. In fact a lot of people with painful neuropathy can get quite seriously depressed. If you have this painful condition the good news is that painful neuropathy usually follows a distinct course. It starts, it goes on, and then it ends. It usually ends within several months to a year.

There are a range of medications available that can help relieve the pain of a painful neuropathy. Some of the options are:

- Non-steroidal anti-inflammatory agents, e.g., Ibuprofen
- Tricyclic antidepressant drugs, e.g., Amitriptyline
- Analgesics, e.g., tegretol

Some people have found relief through using Capsaicin cream or a therapy called TENS. TENS is short for transcutaneous nerve stimulation. This therapy is often available through hospital specialists who specialise in pain management.

If you have a painful neuropathy see a diabetes specialist as soon as possible. You may also need a referral to a doctor who specialises in pain.

Try not to lose heart if you have this condition. It is what is called a 'self limiting'

condition or one that burns itself out. Once the episode is past people usually have no further pain from it.

Recent research suggests that no one therapy works best for everyone. Instead, treatment should be tailored to the location of the pain and what kind of pain it is.

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