

## Diabetes and Nerve Damage (Neuropathy)

### What is neuropathy?

Neuropathy is damage to the nerves that run through the body. Signs of neuropathy vary depending on which nerves are damaged. Often the signs are slight at first, since the nerve damage occurs over a period of years.

### What causes diabetic neuropathy?

The cause is not known. High blood sugar may cause chemical changes in nerves, and in blood vessels that feed the nerves. Scientists are studying how these changes occur and how to prevent and treat damage.

### Peripheral neuropathy

The most common type of neuropathy damages the nerves that control movement and feeling in your arms and legs. Signs and symptoms include:

- Numbness or less feeling of pain or temperature of your hands, feet or legs.
- Tingling, burning or prickling.
- Pain that may be sharp or lightning-like, deep aches that make sleep or daily work hard, or sensitivity to the slightest touch.
- Loss of balance and coordination.
- Slower reflexes and weak muscles.
- Changes in your foot, leading to deformity, ulcers and infections.
- Carpal tunnel signs include numbness, swelling, or prickling of fingers, with or without pain, when driving a car, keyboarding, doing hand sewing and crafts, or when resting at night.

### Autonomic neuropathy

Autonomic neuropathy affects the nerves that control your heart and internal organs. Signs may include:

- Bladder not emptying all the way.
- Trouble knowing when your bladder is full or controlling your bladder.

- Gradual loss of sexual function in men and women. A man may be unable to have erections or may reach sexual climax without ejaculating normally.
- Slow stomach emptying, called “gastroparesis.” Signs include nausea and vomiting, bloating and loss of appetite. Blood glucose levels tend to stay high for many hours after eating.
- Trouble swallowing if nerves of the esophagus are involved.
- Constipation or frequent diarrhea, especially at night.
- Dizziness, lightheadedness, or fainting when sitting or standing.
- Rapid or irregular heartbeats.
- Damage to the nerves of the heart can decrease the symptoms of chest pain, a warning sign of heart attacks.
- Fewer signs of low blood sugar making it hard to tell if you are having an insulin reaction (hypoglycemia).
- Night sweats or sweating while you eat caused by nerve damage to the sweat glands. Your body may have a hard time controlling body temperature.

### Focal neuropathy

Sometimes, neuropathy appears suddenly and affects specific nerves, most often in the body, leg or head. Focal neuropathy may cause:

- Pain in the front of your thigh.
- Severe pain in your lower back or pelvis
- Pain in your chest, stomach or flank.
- Aching behind an eye, trouble focusing an eye, or double vision.
- Paralysis on one side of your face (Bell’s palsy).
- Problems with hearing.

## Charcot arthropathy

You may develop a condition after several years called Charcot arthropathy or “Charcot’s joint.” The foot changes in stages. In the first stage, the joint and bones of the middle part of the foot are destroyed. The bone breaks apart and the joints become unstable. During this stage, the foot becomes swollen, red and warm to touch. The joints may shift and bones change position, causing deformities of the foot. This stage may last as long as 6 to 12 months. After this stage, your body begins to heal itself. The swelling and heat begin to disappear. Deformities after healing are permanent, so treatment is aimed at prevention of deformity.

## How is diabetic neuropathy diagnosed?

Your doctor can tell if you have neuropathy based on the signs you have and by examining you. You may be asked to see to a neurologist, a doctor who specializes in diseases of the nerves, spinal cord and brain. You may need more tests or examinations, such as:

- Nerve conduction studies that check the flow of signals through a nerve. A picture of the nerve signal is shown on a screen. Signals that seem slower or weaker than usual may mean damage to the nerve. This test allows the doctor to check the nerves in the arms and legs.
- Electromyography (EMG), used to see how well muscles respond to signals sent by nerves. This test may be done at the same time as nerve conduction studies.
- An X-ray of the foot to show changes of Charcot arthropathy.
- Seeing specialists in gastrointestinal (stomach and intestine), heart, bone or urinary problems.

## How is diabetic neuropathy treated?

Treatment aims to relieve pain and prevent further tissue damage.

1. Keep blood sugar within the target range.
2. Stay an ideal weight.
3. Exercise for at least 30 minutes most days.
4. Urinate every 3 to 4 hours to help prevent infection (germs grow easily if your bladder does not empty completely). Watch for signs of bladder infection and report these to your doctor:
  - cloudy or bloody urine
  - pain when urinating
  - low back pain
  - fever
5. If you have dizziness, diarrhea, constipation, or frequent nausea or vomiting, talk with your doctor. Medicines may help.
6. Use pain medicines at regular times during the day when you have pain. Your doctor may suggest over-the-counter or prescribed pain medications. Other medications that are sometimes used include:
  - Capsaicin cream that contains hot pepper extract can be applied to the skin over the painful area.
  - Antidepressants such as amitriptyline or imipramine, which are used to treat nerve pain
  - Gabapentin or other anti-seizure medications used to reduce nerve pain.
7. Injections or applying certain drugs or vacuum devices can enhance erection.

Medications such as sildenafil (Viagra), tadalafil (Cialis) and vardenafil (Levitra) have been shown to improve sexual function in 50 to 70% of men with diabetes. You will need to have a physical check up, including tests for heart disease, before using Viagra. Viagra cannot be used with nitroglycerine or other nitrate medications.

*The information presented is intended for general information and educational purposes. It is not intended to replace the advice of your health care provider. Contact your health care provider if you believe you have a health problem.*