

## Peripheral Neuropathy [1]

This section has been reviewed and approved by the [Cancer.Net Editorial Board](#) [2], 04/2014

### Key Messages:

- Peripheral neuropathy is a type of nerve damage that can cause numbness, tingling, pain, muscle weakness, and other changes.
- It can be caused or worsened by cancer and cancer treatment, as well as other conditions.
- Although neuropathy can be difficult to treat, there are some treatments and lifestyle changes that may be helpful.

Peripheral neuropathy is a disorder that occurs when the nerves outside of your brain and spinal cord, called the peripheral nervous system, are damaged. Peripheral nerves carry information back and forth between your brain and spinal cord, called the central nervous system, and the rest of the body. Depending on which nerves are affected, you may notice a change in sensation, especially in your hands and feet, such as numbness, tingling, or pain; muscle weakness, called myopathy; and changes in organ function, resulting in constipation or dizziness.

Peripheral neuropathy can occur in relation to diseases, such as cancer, diabetes, or thyroid disorder; nutritional deficiencies, such as a deficiency in vitamin B12; or inherited conditions, such as Charcot-Marie-Tooth disease. Cancer treatment may also cause this disorder or make it worse.

### Cancer-related risk factors

Peripheral neuropathy is a relatively common side effect. Although anyone diagnosed with cancer is at risk for this condition, these factors can increase the risk:

**Tumor location.** A tumor pressing on a peripheral nerve or one that grows into a nerve may damage the nerve.

**Chemotherapy.** Specific types of chemotherapy, particularly in high doses, can injure peripheral nerves. These drugs include the following:

- Bortezomib (Velcade)
- Platinums, including cisplatin (Platinol), oxaliplatin (Eloxatin), and carboplatin (Paraplatin)
- Taxanes, including docetaxel (Docefrez, Taxotere) and paclitaxel (Taxol)

- Thalidomide (Synovir, Thalomid)
- Vinca alkaloids, including vincristine (Vincasar), vinorelbine (Navelbine), and vinblastine (Velban)

**Radiation therapy.** Radiation therapy may cause nerve injury, although it may take several years for symptoms to appear.

**Surgery.** Neuropathy may develop after an operation on the lung or breast or after the amputation of a limb.

**Cancer-related disorders.** Paraneoplastic disorders, which are rare disorders triggered by the immune system's response to cancer cells, may cause peripheral neuropathy. This occurs most commonly in people with lung cancer. Shingles, a viral infection that often presents with pain and a rash and may develop in people with weakened immune systems, may also result in neuropathy.

It is important to let your doctor know if you already have symptoms of neuropathy before starting treatment or if you have any of the other risk factors (listed below) that are associated with peripheral neuropathy.

### Other risk factors

In addition, having any of the following pre-existing conditions, which are known to cause neuropathy, may put people with cancer at greater risk for developing the disorder:

- Diabetes
- Alcohol abuse
- Infections, such as HIV-AIDS
- Autoimmune diseases, such as lupus and rheumatoid arthritis
- Hypothyroidism (an underactive thyroid)
- Kidney disease or kidney failure
- Hereditary peripheral neuropathy conditions, such as Charcot-Marie-Tooth disease
- Lead poisoning or pesticides
- Extreme stress

### Symptoms

Neuropathy symptoms and their severity vary from person to person, depending on which nerves are damaged and how many nerves are affected. Symptoms may develop during cancer treatment or shortly after. Neuropathy may also progress slowly, developing or worsening after treatment has ended; this occurs most commonly with those who receive platinum drugs and drugs called taxanes. There are three types of peripheral nerves that can become damaged, causing a wide range of symptoms:

**Sensory nerves.** Peripheral neuropathy usually affects your sense of touch and feeling in the nerves in the hands and feet. Most people with cancer who develop neuropathy feel tingling, burning, a buzzing ?electrical? sensation, or numbness. It usually starts in the toes and fingers and can continue along the hands and feet toward the center of the body. You may feel as

though you're wearing tight gloves or stockings, even though you aren't. Nerve damage may also result in an uncomfortable sensation in your hands or feet that may be worse when you touch something. In addition, objects on your feet that usually aren't painful, such as a shoe or bedcovers, may cause pain. You may notice an overall heightened sense of pain; the painful sensations are commonly described as pinching, sharp stabs, burning, and electrical shocks. Or, you may notice a loss of sensation, making it difficult to feel hot and cold temperatures or to know if you've injured yourself. Another symptom is loss of position sense, which is knowing where your feet and hands are in space. This may make walking or picking up objects more difficult, especially if you are in a dark room or working with small objects.

**Motor nerves.** These nerves send information between your brain and muscles. When these nerves are injured, you may have trouble walking and moving around. Your legs and arms may feel heavy or weak, causing balance and coordination problems. It may become difficult to use your hands and arms, and you may have trouble with everyday tasks, such as brushing your teeth. In addition, you may experience muscle cramps and notice muscle loss in the hands and feet.

**Autonomic nerves.** These nerves control involuntary body functions, such as blood pressure and bowel and bladder function. Symptoms include an inability to sweat normally; gastrointestinal issues, such as diarrhea and constipation; dizziness or lightheadedness; trouble swallowing; and sexual dysfunction.

If you have any of these symptoms, talk with your doctor or another member of your health care team so that you can get help managing these symptoms.

### **Preventing neuropathy related to chemotherapy**

Currently, there is no good evidence that any medications, vitamins, or supplements can help you avoid neuropathy. Research on several antidepressants and other medications is ongoing but has not shown a consistent and/or strong benefit in preventing peripheral neuropathy from chemotherapy. In addition, ASCO does not recommend the following vitamins or supplements to prevent neuropathy from chemotherapy for the same reasons:

- Acetyl-L-carnitine
- Calcium and magnesium
- Glutathione
- Vitamin E

### **Managing neuropathy**

Relieving side effects, also called symptom management, palliative care [3], or supportive care, is an important part of cancer care and treatment. Talk with your health care team about any symptoms you experience, including new symptoms or a change in symptoms.

How peripheral neuropathy is treated depends on the cause and the related symptoms. Many people recover fully from the disorder over time, in a few months or a few years. Sometimes, the condition may be more difficult to treat and may require long-term management. Your doctor will work to diagnose and eliminate the cause of your neuropathy and manage symptoms. There are

a number of methods available that may provide some relief:

**Medication.** Although medication cannot reverse the neuropathy, it may relieve the pain. However, it does not relieve the numbness. The most common medications to treat neuropathic pain are anticonvulsants and antidepressants. For neuropathy related to chemotherapy, the American Society of Clinical Oncology (ASCO) recommends the antidepressant duloxetine (Cymbalta), as other medications have not been shown to have as much of a benefit. Over-the-counter pain medications may be recommended for mild pain. Prescription nonsteroidal anti-inflammatory drugs or very strong painkillers called analgesics may be prescribed for severe pain. Topical treatments, such as lidocaine patches and creams, may also help control pain. However, the medications used to manage neuropathy are related to your specific situation and the cause of your neuropathy.

**Better nutrition.** Eating a diet rich in B vitamins (including B1 and B12), folic acid, and antioxidants may help manage neuropathy. You should also eat a balanced diet and avoid drinking too much alcohol.

**Physical and/or occupational therapy.** Physical and/or occupational therapy can keep muscles strong and improve coordination and balance. Therapists can often recommend assistive devices that may allow you to more easily complete your usual daily activities. Regular exercise may also help reduce pain.

**Complementary medicine.** Massage, acupuncture, and relaxation techniques may help decrease pain and reduce mental stress. Additional tips include placing stress mats for feet in your home and work environment and wearing shoes with a rocker bottom sole.

## **Safety at home**

Depending on your symptoms, these tips may help you avoid injury in your home if you have sensory or motor difficulties:

- Keep all rooms, hallways, and stairways well lit.
- Install handrails on both sides of stairways.
- Remove small area rugs and any other clutter that could cause you to trip or slip.
- Install grab bars in the shower or handgrips in the tub, and lay down skid-free mats.
- Use a thermometer to check that any water you bathe in or use is below 110 degrees Fahrenheit, or set your water heater accordingly.
- Clean up any spilled water or liquids immediately.
- Use non-breakable dishes.
- Use potholders while cooking and rubber gloves when washing dishes.
- If you drive, make sure you can fully feel the gas and brake pedals and the steering wheel and that you can quickly move your foot from the gas pedal to the brake pedal.
- If prescribed, use a cane or walker when moving from one room to the other.

## **More Information**

[Nervous System Disturbances \[4\]](#)

American Society of Clinical Oncology Clinical Practice Guideline: Prevention and management of chemotherapy-induced peripheral neuropathy in survivors of adult cancers [5]

### **Additional Resources**

LIVESTRONG: Neuropathy [6]

The Foundation for Peripheral Neuropathy: What is Peripheral Neuropathy [7]

The Neuropathy Association: About Peripheral Neuropathy [8]

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### **Links:**

[1] <http://www.cancer.net/navigating-cancer-care/side-effects/peripheral-neuropathy>

[2] <http://www.cancer.net/about-us>

[3] <http://www.cancer.net/node/25282>

[4] <http://www.cancer.net/node/25258>

[5] <http://www.asco.org/guidelines/neuropathy>

[6] <http://www.livestrong.org/we-can-help/finishing-treatment/neuropathy/>

[7] <https://www.foundationforpn.org/livingwithperipheralneuropathy/>

[8] [http://www.neuropathy.org/site/PageServer?pagename=About\\_Facts](http://www.neuropathy.org/site/PageServer?pagename=About_Facts)