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## **Peripheral Neuropathy [1]**

**This section has been reviewed and approved by the [Cancer.Net Editorial Board](#) [2], 03/2016**

The peripheral nervous system consists of the nerves outside of the brain and spinal cord. Your brain and spinal cord are called the central nervous system. Peripheral nerves carry information between your central nervous system and the rest of the body. Peripheral neuropathy is nerve damage to the peripheral nervous system. Depending on which nerves are affected by peripheral neuropathy, you may notice some of these symptoms:

- Change in sensation, especially in your hands and feet, such as numbness, tingling, or pain
- Muscle weakness, called myopathy
- Changes in organ function, resulting in constipation or dizziness

Peripheral neuropathy can happen because of:

- Disease, such as cancer, diabetes, or a thyroid disorder
- Nutrition problems, such as too little vitamin B12
- 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. 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:

- 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 damage nerves. Symptoms may take years to appear.

**Surgery.** Operations on the lung or breast may lead to neuropathy. Having a leg or arm removed may cause it, too.

**Cancer-related disorders.** Paraneoplastic disorders are rare disorders. They arise when the immune system reacts to cancer cells. These disorders may cause peripheral neuropathy. These disorders are more common in people with lung cancer. Shingles is a viral infection that often causes pain and a rash in people with weakened immune systems. It may also cause neuropathy.

Before starting cancer treatment, tell your doctor if you already have symptoms of neuropathy. You should also discuss any of the other risk factors (listed below) that you may have. They are associated with peripheral neuropathy.

## Other risk factors

The following preexisting conditions are known to cause neuropathy. Having any of these may put people with cancer at higher risk for developing neuropathy.

- 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 exposure to pesticides
- Extreme stress

## Symptoms

Neuropathy is different for every person. The symptoms and their severity depend on which nerves are damaged and how many nerves are affected. Symptoms may develop during or shortly after cancer treatment. Neuropathy may also slowly develop or worsen after treatment has ended. This occurs most commonly in those who receive platinum drugs and drugs called taxanes. There are 3 types of peripheral nerves that can become damaged.

**Sensory nerves.** Peripheral neuropathy usually affects your sense of touch and feeling in the hands and feet. Here are the symptoms when the sensory nerves are affected.

- Common symptoms are tingling, burning, a buzzing “electricity” sensation, or numbness. It usually starts in the toes and fingers. It can continue along the hands and feet toward the

center of the body

- You may feel like you're wearing tight gloves or stockings, even though you aren't
- You may have an uncomfortable sensation in your hands or feet that may get worse when you touch something
- Objects on your feet that usually aren't painful, such as a shoe or bedcovers, may cause pain.
- You may notice an increased sense of pain, usually described as pinching, sharp stabs, burning, and electrical shocks
- You may notice that it is difficult to feel hot and cold temperatures or to know if you've injured yourself
- You may have a hard time knowing where your feet and hands are in space. This is called loss of position sense. It may make walking or picking up objects more difficult, especially if you are in a dark room or working with small objects

**Motor nerves.** Motor nerves send information between your brain and muscles. When these nerves are injured, you may have these symptoms:

- Trouble walking and moving around
- Your legs and arms may feel heavy or weak, causing balance and coordination problems
- It may be difficult to use your hands and arms
- You may have trouble with everyday tasks, such as texting or buttoning a shirt
- You may have muscle cramps and notice muscle loss in the hands and feet

**Autonomic nerves.** These nerves control the body functions you don't think about to make happen, such as blood pressure and bowel and bladder function. Symptoms include:

- Inability to sweat normally
- Gastrointestinal problems, such as diarrhea and constipation
- Dizziness or lightheadedness
- Trouble swallowing
- Sexual problems

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 them.

## **Preventing neuropathy related to chemotherapy**

There is no proven way to prevent neuropathy from chemotherapy. There is no good evidence that any medications, vitamins, or supplements can help you avoid neuropathy. Several antidepressants and other medications are being studied, but there has not been a proven benefit in preventing neuropathy from chemotherapy. The American Society of Clinical Oncology (ASCO) does not recommend using the following vitamins or supplements to prevent neuropathy from chemotherapy:

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

## **Managing neuropathy**

Relieving side effects, also called [palliative care](#) [3], is an important part of cancer care and treatment. Talk with your health care team about any symptoms you have, including new ones or a change in symptoms.

How peripheral neuropathy is treated depends on what caused it and its symptoms. Many

people fully recover 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 remove the cause of your neuropathy and manage its symptoms. There are a number of methods to provide relief from symptoms:

**Medication.** Although medication cannot cure neuropathy, it may relieve the pain. However, it does not relieve numbness. The most common medications to treat neuropathy pain are anticonvulsants and antidepressants. For neuropathy related to chemotherapy, ASCO recommends the antidepressant duloxetine (Cymbalta). 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. Topical 1% menthol also seems to be helpful, based on early studies.

**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 and interventional treatments.** Physical and/or occupational therapy can keep muscles strong and improve coordination and balance. Therapists can often recommend devices that may allow you to more easily complete your usual daily activities. Regular exercise may also help reduce pain. Devices that stimulate the skin with electricity may also be useful for treating neuropathy pain, but more research is needed.

**[Integrative medicine](#)** [4]. Massage, acupuncture, and relaxation techniques may help decrease pain and reduce mental stress. Additional tips:

- Place stress mats in your home and work environment to cushion your feet
- Wear shoes with a rocker-bottom sole

## **Safety at home**

Having peripheral neuropathy increases your chances of hurting yourself, especially in the home. If you have sensory or motor difficulties, these tips may help you avoid injury:

- Keep all rooms, hallways, and stairways well lit.
- Install handrails on both sides of stairways.

- Remove tripping and slipping hazards, like small area rugs and clutter.
- Install grab bars in the shower or handgrips in the tub. Lay down skid-free mats in the tub.
- Make sure that your shower or bathwater is below 110 degrees Fahrenheit. Use a thermometer to check. Set your water heater at a lower temperature.
- Clean up spilled water or liquids immediately.
- Use nonbreakable 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. Make sure you can quickly move your foot from the gas pedal to the brake pedal.
- If your doctor prescribes a cane or walker, use it when moving from one room to the next.

## More Information

[Nervous System Side Effects](#) [5]

American Society of Clinical Oncology Clinical Practice Guideline: [Prevention and management of chemotherapy-induced peripheral neuropathy in survivors of adult cancers](#) [6]

[Side Effects](#) [7]

## Additional Resources

[LIVESTRONG: Neuropathy](#) [8]

[Foundation for Peripheral Neuropathy: What Is Peripheral Neuropathy](#) [9]

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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/25011>

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

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

[7] <http://www.cancer.net/node/25238>

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

[9] <https://www.foundationforpn.org/what-is-peripheral-neuropathy/>