

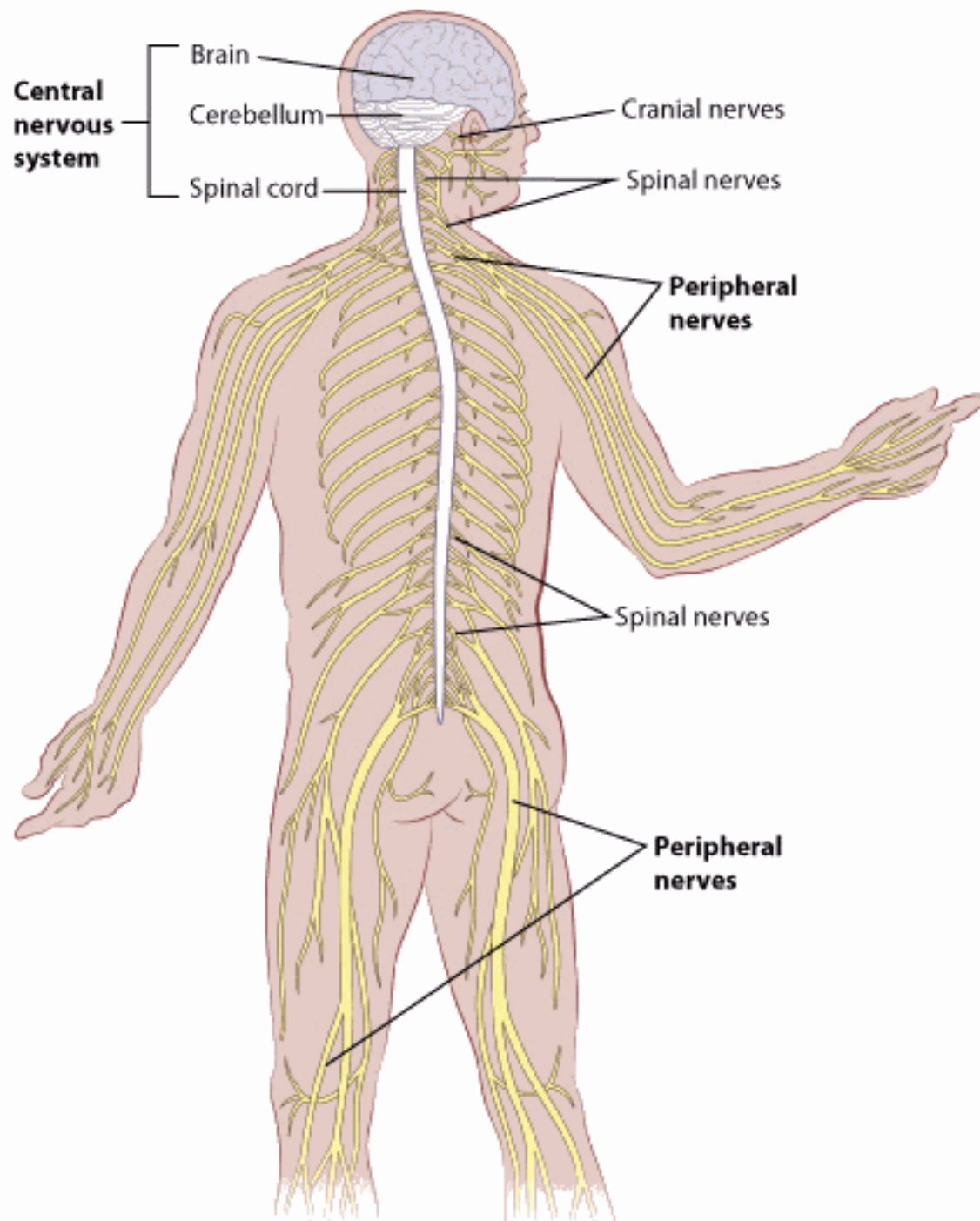
# Peripheral Neuropathy

**Peripheral neuropathy (PN)** is a condition caused by damage to the peripheral nervous system. It can cause symptoms like pain, weakness, tingling, numbness, or sensitivity, often in the hands or feet.

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## What is the peripheral nervous system?

The nerves running throughout your body make up the **peripheral nervous system**. These nerves send signals between the **central nervous system** (the brain and spinal cord) and all other parts of the body.



The three main types of peripheral nerves are:

- **Motor nerves** help us move
- **Sensory nerves** help us use our senses (for instance, hearing, smell, taste, and

touch).

- **Autonomic nerves** help control our automatic body functions such as breathing and digestion

Peripheral neuropathy can affect any of these nerves. Most often, it affects more than one type of nerve. This is called polyneuropathy. If only one nerve type is affected, it's called **mononeuropathy**.

## What are symptoms of peripheral neuropathy?

Symptoms of peripheral neuropathy mostly affect the hands or feet, sometimes spreading farther into arms or legs. It can feel like:

- Tingling (or a “pins and needles” feeling)
- Burning or warm feeling
- Numbness
- Weakness
- Discomfort or pain that feels sharp, throbbing, or burning
- Sweating or chilling from decreased ability to feel hot and cold
- Cramps in your legs and feet

Other signs of peripheral neuropathy include:

- Balance problems
- Increased or decreased skin sensitivity
- Muscle loss and weakness
- Bowel and bladder problems

Signs and symptoms usually come on gradually, but this can vary. Any of the signs and symptoms can be intermittent (come and go) or may be constant.

**Seek medical care right away if you notice unusual tingling, weakness, or pain in your hands or feet. Early diagnosis and treatment give you the best chance for controlling your symptoms and preventing further damage to your peripheral nerves.**

## How does peripheral neuropathy affect daily life?

Having peripheral neuropathy can seriously affect daily life and can lead to safety concerns and injury. Pain and other symptoms can make it hard to get comfortable which can affect your sleep habits. Peripheral neuropathy can make it hard to get around and do things you used to do. It can cause severe pain and can affect things like the way you walk, write, button your shirt, or pick up coins. Even sensing danger like being near a hot stove or handling a sharp object, can be dangerous. Remember: what you can't feel can hurt you.

Peripheral neuropathy can last for weeks, months, or even years after cancer treatment is done. If it gets worse, it can also cause changes in your heart rate and blood pressure, falls, trouble breathing, and not being able to move well on your own. It's important to let your cancer care team know if your symptoms get worse.

## What causes peripheral neuropathy?

Some of the most common causes of peripheral neuropathy are medicines used to treat cancer. When this happens, it is called **chemotherapy-induced peripheral neuropathy (CIPN)**. The risk of CIPN depends on the type of chemotherapy and dose given, and increases with each cycle of chemotherapy.

Peripheral neuropathy also can be caused by things other than (or in addition to) chemotherapy, such as:

- Other cancer treatments, like surgery or radiation
- Tumors pressing on nerves
- Infections that affect the nerves
- Spinal cord injuries
- Diabetes
- Drinking too much alcohol
- Shingles infection
- Low vitamin B levels
- Some autoimmune disorders
- HIV (human immunodeficiency virus) infection
- Poor circulation (peripheral vascular disease)

It's important to know what's causing peripheral neuropathy so that the right treatment can be given. **The information on this page is about peripheral neuropathy as a side effect of chemotherapy.**

## What medicines are most likely to cause chemotherapy-induced peripheral neuropathy (CIPN)?

Certain cancer medicines are more likely to cause CIPN. Some of the more common ones include:

### Chemotherapy

- Platinum drugs like cisplatin, carboplatin, and oxaliplatin
- Taxanes, including paclitaxel (Taxol), docetaxel (Taxotere), and cabazitaxel (Jevtana)
- Plant alkaloids, such as vinblastine (Velban), vincristine (Oncovin), vinorelbine (Navelbine), and etoposide (VP-16)

### Non-chemotherapy drugs

- Immunomodulating drugs like thalidomide (Thalomid), lenalidomide (Revlimid), and pomalidomide (Pomalyst)
- Proteasome inhibitors, such as bortezomib (Velcade), carfilzomib (Kyprolis), and ixazomib (Ninlaro)

If you're not sure if a cancer treatment you're getting might cause CIPN, ask your cancer care team.

## Can peripheral neuropathy be prevented during cancer treatment?

There are some therapies that have been used to prevent or limit the effects of peripheral neuropathy caused by chemotherapy, but more research is needed to prove they are effective.

During chemo infusions, some experts recommend:

- **Cold therapy (Cryotherapy):** This involves cooling down your hands and feet during your chemo infusions. This is often done by freezing ice packs that fit into special socks and mittens or gloves.
- **Compression therapy:** This involves wearing tight gloves to compress (squeeze) your fingertips during your chemo infusions. This is often done by wearing two pairs

of tight-fitting disposable nitrile or latex gloves.

These therapies may help by reducing circulation in the hands and feet while chemo is being given, which may lower the amount of chemo drugs reaching these areas. More research is needed to prove these methods are effective and to determine the best ways to apply cold or compression.

**Exercising at least twice a week**, including strength, balance, and general movement exercises, might also lower your risk for neuropathy. Exercise may improve circulation to support nerve health and help keep you stronger and healthier during treatment. But again, more research is needed to understand how exercise might help prevent CIPN.

These methods can be used alone or together. Ask your cancer care team about options that might be best for you.

## **Can peripheral neuropathy be reversed?**

Sometimes peripheral neuropathy can be reversed. Whether or not it can depends on the type and extent of nerve damage. For some people, the nerve damage gets better slowly over time after chemo ends — sometimes it goes away completely. For other people, symptoms might improve a little or stay the same for a long time. In some cases, nerve damage can be permanent. But there are ways to help control symptoms.

## **Managing peripheral neuropathy**

During treatment, your cancer care team will ask you about your symptoms and watch you to see if the peripheral neuropathy is getting worse. Your team may need to delay your treatment, use smaller doses of the chemo drugs, or stop treatment with the drug that is causing the neuropathy until your symptoms get better. These actions must be started right away to prevent long-term damage that might get worse over time. And remember that taking precautions to avoid injury is important for anyone with neuropathy.

## **How is peripheral neuropathy treated?**

Peripheral neuropathy isn't always preventable, but treatment can often help ease the symptoms. Sometimes these symptoms go away shortly after cancer treatment is done, but sometimes they last much longer. Severe peripheral neuropathy may lessen over time but may not go away completely.

Treatment for peripheral neuropathy focuses on relieving the discomfort that can come with it. Some of the medicines used include:

- **Patches or creams with numbing medicine** that can be put right on the painful area (for example, lidocaine patches or capsaicin cream).
- **Gabapentin** (Neurontin) is an anticonvulsant medicine used to treat seizures and nerve pain.
- **Opioids<sup>1</sup> or narcotics** are used to treat severe pain.
- **Duloxetine** (Cymbalta) is an antidepressant used to treat anxiety and depression. Also, it is used to help decrease neuropathy pain.

Sometimes more than one type of treatment is needed. Tell your cancer care team if medicine used to treat neuropathy is not working so that something else can be tried. Other [non-medical treatments<sup>2</sup>](#) can be tried to ease nerve pain and its effect on you.

### What can I do to cope with peripheral neuropathy?

There are some things you can do to better manage the symptoms of peripheral neuropathy, such as:

- Drink at least 8 cups of water a day and eat fruits, vegetables, and whole grains to get enough fiber.
- Take pain medicines as instructed by your cancer care team. See [Cancer Pain<sup>3</sup>](#) to learn more about pain, how to talk about it, and how to manage it.
- If you have diabetes, control your blood sugar. High blood sugar levels can damage nerves.
- If you have [constipation<sup>4</sup>](#), talk to your cancer care team about medicines that might help you.
- Avoid or limit alcohol.

### What should I do to avoid injury?

If you have peripheral neuropathy, the loss of sensation or balance might put you at a higher risk of injury. Here are some things you can do to stay safe:

- If you have neuropathy in your hands, be careful when using knives, scissors, box cutters, and other sharp objects. Ask someone else to help with these tasks whenever possible.

- Protect your hands by wearing gloves when you clean, work outdoors, or do repairs.
- Take care of your feet. Look at them once a day to see if you have any injuries or open sores.
- Always wear shoes that cover your whole foot when walking, even at home. Be sure that shoes aren't too tight. Talk to your cancer care team about shoes or special inserts that can help protect your feet.
- Use handrails, a cane, or a walker (assistive devices) to support yourself and keep your balance.
- Use night lights or flashlights when getting up in the dark.
- Protect yourself from heat injuries. Set hot water heaters between 105° to 120°F to reduce scalding risk while washing your hands. Use oven gloves and hot pads when handling hot dishes, racks, or pans.
- Keep your hands and feet warm and well covered in cold weather. For example, consider keeping a pair of gloves in your car. Avoid extreme temperatures, hot and cold, that can make PN worse.

## **What questions should I ask about peripheral neuropathy?**

Here are some questions you might want to ask your cancer care team:

- Is the treatment I'm getting likely to cause peripheral neuropathy?
- Am I at risk for peripheral neuropathy?
- Is there anything I can do to help prevent peripheral neuropathy?
- What symptoms do I need to watch for and report to you?
- Have you treated peripheral neuropathy in other people? How? Did it work?
- What can I do to manage my peripheral neuropathy?
- If my peripheral neuropathy gets bad and is very painful, will it change my treatment plan?
- Is it likely that my peripheral neuropathy will get better or go away after treatment is over?

## **Talk to your cancer care team**

It's important to work closely with your cancer care team to manage peripheral neuropathy.

Talk to your cancer care team:

- About any changes in how you feel, and any trouble you have walking or holding things.
- About how your symptoms affect the things you do every day.
- If the medicines for neuropathy are or aren't helping or if new problems start up.
- About whether you can get into a clinical trial to help deal with your peripheral neuropathy.
- If you are concerned about how future treatments might affect your quality of life.
- About what's most important to you.

Remember that only you decide if you want to get, or keep getting, a certain treatment.

## Hyperlinks

1. [www.cancer.org/cancer/managing-cancer/side-effects/pain/cancer-pain/opioid-pain-medicines-for-cancer-pain.html](http://www.cancer.org/cancer/managing-cancer/side-effects/pain/cancer-pain/opioid-pain-medicines-for-cancer-pain.html)
2. [www.cancer.org/cancer/managing-cancer/side-effects/pain/cancer-pain/non-medical-treatments-for-cancer-pain.html](http://www.cancer.org/cancer/managing-cancer/side-effects/pain/cancer-pain/non-medical-treatments-for-cancer-pain.html)
3. [www.cancer.org/cancer/managing-cancer/side-effects/pain.html](http://www.cancer.org/cancer/managing-cancer/side-effects/pain.html)
4. [www.cancer.org/cancer/managing-cancer/side-effects/stool-or-urine-changes/constipation.html](http://www.cancer.org/cancer/managing-cancer/side-effects/stool-or-urine-changes/constipation.html)

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