

Peripheral Neuropathy

Peripheral neuropathy may occur as a side effect of cancer treatment. This brochure discusses the causes and symptoms of peripheral neuropathy, safety tips you may find helpful, resources for additional information, and a glossary.

Overview

Peripheral neuropathy is a disorder that occurs when the peripheral nerves are injured. Peripheral nerves are those located outside of the brain and the spinal cord. While they are found throughout your body, peripheral neuropathy most often is limited to the peripheral nerves in your fingers, hands, arms, toes, feet, and legs. There are two types of peripheral nerves: sensory and motor. Sensory nerves help you feel pain, touch, temperature, position, and vibration. Motor nerves help you move and maintain muscle tone.

Causes of Peripheral Neuropathy

The most common cause is diabetes, but other conditions may also lead to peripheral neuropathy:

- Some medications, including some cancer treatments
- Nutritional imbalances, especially in vitamins B or E
- Hypothyroid disease, autoimmune diseases, and some types of kidney disease
- Alcohol abuse or lead poisoning
- External pressure on the nerves
- Hereditary peripheral neuropathy
- Unknown cause (also known as idiopathic peripheral neuropathy)

If you have any of these conditions, be sure you talk to your doctor or nurse.

Tell them all the medications you are taking now or that you have taken regularly in the past. Include prescription and over-the-counter medications, as well as herbal supplements and vitamins.

Before you begin chemotherapy with drugs that might cause peripheral neuropathy, your doctor or nurse will ask questions to find out if you already have any symptoms of peripheral neuropathy.

In people who have symptoms before chemotherapy, peripheral neuropathy might begin sooner or be more severe.

Next page: *Chemotherapy Drugs Associated with Peripheral Neuropathy*

Chemotherapy Drugs Associated with Peripheral Neuropathy

bortezomib	interferon-alpha
brentuximab	ixabepilone
carboplatin	lenalidomide
cisplatin	oxaliplatin
cytarabine	paclitaxel
docetaxel	procarbazine
eribulin	thalidomide
etoposide	vinblastine
gemcitabine	vincristine
hexamethylmelamine	vindesine
ifosfamide	vinorelbine

Symptoms of Peripheral Neuropathy

Symptoms will depend on the type of nerves damaged. Usually, the sensory nerves are affected, which may cause:

- sensations described as tingling, “pins and needles,” cold, pinching, burning, or electric shocks (*paresthesia*)
- feeling an unpleasant sensation when touching or being touched (*dysesthesia*)
- numbness or diminished sensation (*anesthesia*)

The sensations usually appear in a “*stocking-glove*” pattern - you have symptoms in your hands and/or feet but they stop at wrists and ankles.

The sensations or numbness may:

- cause problems with balance, tripping, or falling
- make it difficult to pick up objects, hold onto them, or even be able to tell where your hands and feet are
- cause you to slip out of your shoes if they are untied or if they don’t come up over the instep of your foot
- mean that you can’t feel the floor under your feet when you walk or feel the shape of an object in your hand
- prevent you from feeling the difference between hot or cold temperatures (on affected areas)

Medical Therapies

If you have signs/symptoms of peripheral neuropathy, please be sure to discuss this with your doctor. He or she may be able to offer you medical therapy to improve your symptoms.

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- Vitamin E is an antioxidant that may protect against side effects such as numbness, tingling, burning, and pain in the peripheral extremities.
- Calcium and magnesium infusions may help with the neurotoxic effects of oxaliplatin.
- Analgesic medications and tricyclic antidepressants may help relieve the pain associated with peripheral neuropathy.

Please note: Do not take any medications or herbal supplements to help your peripheral neuropathy symptoms unless prescribed by your doctor.

Exercise and Massage

- ✓ Walking is good exercise for your health and helps keep your muscles flexible.
- ✓ Low back stretches and calf stretches may help keep your muscles flexible.
- ✓ If you exercise in a gym, tell the instructor that you have peripheral neuropathy and ask for instructions on the use of the equipment that may help you keep your muscles toned.
- ✓ In addition to exercise, foot and hand massages may help relieve stiffness. Remember to clean slippery lotions and creams off your hands and feet when the massage is over.

General Safety Tips

- You may purchase special equipment at health supply stores to help you dress. Examples of equipment you may find useful: zipper pulls, buttoners, molded sock aids, elastic shoelaces, Velcro® straps, in-step supports for slippers and shoes, cuff and collar extenders, and lightweight dressing sticks to put on garments without bending.
- Try using specially made pens, pencils, and utensils - they can be easier to hold.
- Wear shoes that go over the insteps of your feet.
- Wear gloves and warm socks in cold weather.
- Wear jewelry that you can put on without help, such as those without fasteners.
- Ask your healthcare provider if it is safe for you to drive based on your specific symptoms.
- Avoid alcohol or other drugs that may alter your neurologic status. All of these drugs can affect your motor nerves and produce muscle weakness.

You may have problems doing tasks that need muscle strength and coordination. For example, you may have difficulty lifting your foot from the gas pedal to the brake when you are driving.

Some people describe a feeling of muscle cramps, heaviness, or weakness in the arms or legs, or both.

Reducing the Risk of Injury

Because of sensory loss, you will depend more on visual cues from your environment. The following suggestions may help you make your environment safer and lower the chance of injury.

Lights

- Well-lit rooms can help prevent falls.
- Light switches or lamps should be at the entrance of each room.
- The light switch should be visible to you and easy to turn on with your fingers.
- Turn lights on before you enter a room.
- The room should be bright enough for you to see all the areas where you walk or do activities.
- All stairways inside and outside of your home should have the lights on before you walk on them.
- Use floor lights that shine light up from the floor toward the ceiling or wall to help reduce glare.
- Keep a night light in your room and along the path you walk during the night if you get up to use the bathroom.
- Keep a flashlight with you, or within reach, so you can use it when the lighting is not adequate.
- Use a key chain with a light to help you see keyholes.
- In addition, it may be helpful for you and a family member or friend to inspect each room in your house and make sure each one is free of hazards. Inspect the garage, the yard, your car, and your place of work to assure that they are safe.

Here is a safety checklist of places to examine for possible risks, and tips on how to make them safer.

Stairs

- Handrails should be on both sides of all stairways and hallways.
- Cover stairs with a non-slip surface.
- Paint the stairs a light color for easier visibility.
- Clear stairways and hallways - remove objects such as small area rugs, toys, and clutter.

Floors

- Floors should have non-glare and non-skid surfaces.
- If area rugs are used around sinks or in a bathroom, they should have non-slip backing.
- Tape or tack down carpet edges securely.
- Avoid surface drops between a carpet and other flooring.
- Wipe up spills and liquids immediately.

Bathroom

- Bathtub or sink area rugs should have non-slip backing.
- Avoid slippery wet floors. Wipe up liquids immediately.
- Tubs and showers should have non-skid strips or mats.
- Use portable over-the-tub hand grips or install shower grips.
- Use a nonbreakable water thermometer to check that your bath water temperature is below 110° F (43.3° C).

- Because of the decreased sensation in your extremities, you are at risk for thermal (heat) injuries. Ask a family member to test the water temperature prior to getting in the shower and adjust if necessary.
- Use a liquid soap dispenser or a wash mitt to hold your soap.
- Use long brushes for hard to reach areas of your body.
- Use adapted nail clippers to cut your nails (available at health supply stores).

Kitchen

- All rugs near the sink should have non-slip backing.
- Use rubber gloves to wash dishes.
- Use a nonbreakable water thermometer to check the dishwater temperature before you wash dishes so you do not harm your skin with water hotter than 110° F (43.1° C).
- Use lightweight, nonbreakable glasses, utensils, and plates.
- Shield your fingers when cutting foods.
- Open jars or soda cans with special equipment, such as easy jar openers, grippers, or tab grabbers.
- Use potholders and oven mitts to handle items such as hot pots or pans.

Bedroom

- Do not use chairs, tables, nightstands, or over-the-bed tables with wheels.
- Clear small area rugs, stools, clothes, shoes, and clutter from walkways through your bedroom.
- If you use extension cords, secure them along the edge of the floor with electric tape.
- Remove furniture that has sharp edges or corners.

Garage or Yard

- Absorb oil spills with sand or kitty litter.
- Store rakes, shovels, and other garden equipment off the floor.
- Place nails, screws, and other hardware in containers with covers.
- Keep walkways clean of toys, wet rags, hoses, buckets, and other clutter.
- Always wear rubber shoes or work boots when you work in the garage or garden.
- Avoid the use of motorized yard and garage equipment such as lawn mowers, branch trimmers, electric saws, and snow blowers.

Help from Professionals

Many professionals and agencies can provide additional assistance. Ask your doctor or nurse for specific suggestions.

- Physical therapists can help with exercise programs and assistive devices.
- Occupational therapists may help you find adaptive devices for work or home.
- Rehabilitation specialists can evaluate your ability to drive.
- You may wish to have a podiatrist care for your feet.

- **Call your doctor if you have any symptoms of peripheral neuropathy or if existing peripheral neuropathy is getting worse or spreading.**

Glossary

- **Anesthesia** – Numbness or diminished sensation
- **Coordination** – Balance and equilibrium
- **Dysesthesia** – An abnormality producing unpleasant sensations, particularly the sensation of touch, which may be brought on by ordinary stimuli such as touching
- **Motor nerves** – Peripheral nerves that help you move and maintain muscle tone
- **Paresthesia** – Sensations of tingling, pins and needles, prickling, burning, cold, pinching, sharp, deep stabs, electric shocks, or buzzing
- **Peripheral Nerves** – Nerves that are located outside of the brain and the spinal cord
- **Peripheral Neuropathy** – Disorders resulting from injury to peripheral nerves
- **Position Sense** – An awareness of where your feet, legs, hands, and arms are
- **Sensation** – Feeling and perception
- **Sensory Nerves** – Peripheral nerves that help you feel pain, touch, temperature, position, and vibration and then communicate them to your brain
- **Stocking Glove Pattern/Stocking-Glove Pattern/Stocking and Glove Pattern** – Refers to the most common areas on your body where peripheral neuropathy is felt; usually does not go above your wrist (the glove area) or over your ankle (the stocking area)