

# InfoSheet

## MANAGING PERIPHERAL NEUROPATHY ASSOCIATED WITH MYELOMA AND ITS TREATMENT

**Multiple myeloma and novel therapies used to treat this blood cancer may affect the nerves in the peripheral nervous system. In myeloma, the nerves most affected are those in the hands and feet.**

**This InfoSheet will give you more information about peripheral neuropathy and the way it can affect your body. We will learn how to recognize the signs and symptoms, and to help manage this side effect.**

### Definition and causes of peripheral neuropathy

Peripheral neuropathy affects the nerves in the peripheral nervous system (PNS), one of the two main parts of the nervous system:

- **Central Nervous System (CNS):** Includes the brain and spinal cord.
- **Peripheral Nervous System (PNS):** Includes all nerves outside the CNS, such as those in the face, arms, legs, torso, hands, and feet.

The PNS is further divided into two systems:

- 1. Autonomic Nervous System (ANS):** Controls automatic functions like heart rate and blood pressure by connecting the brain to internal organs.
- 2. Somatic Nervous System (SNS):** Manages voluntary actions and consists of:
  - a. **Motor neurons:** Transmit signals from the brain to muscles for movement.
  - b. **Sensory neurons:** Send sensory information (pain, temperature, touch) from the body to the brain.

Medications and medical conditions associated with multiple myeloma can be a cause of peripheral neuropathy. Additionally, factors that aren't related to myeloma such as diabetes, vitamin deficiency and a history of high alcohol consumption can cause or contribute to peripheral neuropathy. When our peripheral nerves become damaged or inflamed, this can change how the nerves function. Symptoms may vary from person to person and depend on which nerves are affected.

Some myeloma patients experience peripheral neuropathy at the time of diagnosis, while many others develop it later as a complication of the disease or its treatment. The causes of peripheral neuropathy in myeloma are diverse and can result from multiple factors. Treatments (such as thalidomide, bortezomib, and vincristine) are the most common cause, as these drugs can damage nerve cells, especially at high doses or with prolonged use. Paraproteins produced by myeloma cells may harm nerves directly as high paraprotein levels can lead to hyper viscosity which reduces blood flow and contributes to nerve damage. Other causes include spinal cord compression from vertebral fractures, kidney damage, and complications such as diabetes, vitamin deficiencies, high alcohol use, or shingles. These factors may occur alone or in combination, increasing the risk and severity of neuropathy in myeloma patients.

### Symptoms of peripheral neuropathy

The symptoms of peripheral neuropathy can vary and depend on the nerves that have been affected.

Sensory nerve neuropathy symptoms include:

- Numbness, tingling; prickling or “pins and needles” sensation; vibrations in limbs
- The feeling of sand or stones in your shoes
- The sensation of burning and/or freezing
- Throbbing sensation in the hands and feet
- Altered or unusual sensations (light touch causing pain; touching something cold and feeling heat)
- Ringing in the ears or trouble hearing
- Reduction or loss of proprioception (for example the feeling of not knowing where your feet are)
- Loss of balance
- Reduction or loss of reflexes

Motor nerve neuropathy symptoms include:

- Muscle weakness and cramping
- Decrease in muscle mass
- Decrease in reflexes and coordination
- Difficulty with fine motor movements and writing

Autonomic nerve neuropathy symptoms include:

- Intolerance to heat
- Difficulty adjusting to dark lighting
- Digestive issues, bowel or bladder issues
- Orthostatic hypertension
- Sexual dysfunction

The above lists highlight common symptoms but is not exhaustive. It is important to report any new or worsening symptoms to your healthcare team promptly.

### How is peripheral neuropathy treated?

Managing peripheral neuropathy will involve treating the symptoms experienced and involve identifying the cause(s). If the cause is determined to be the myeloma itself, it may improve as the myeloma is treated. If it is being caused by a medication or treatment your doctor will discuss your options, which could include continuing treatment with close monitoring, changing the schedule/frequency, the way the medication is given, decreasing the dose, or even stopping the treatment. Treatment related neuropathy may be reversible, but it may also be permanent. For many patients with multiple myeloma these neuropathies are at least partially reversible.

Treatment depends on what is causing your neuropathy and which symptoms you have. Neuropathies do not typically respond to ordinary pain relievers such as acetaminophen but there are medications that are known to help. It should be noted that myeloma patients in general should avoid the use of non-steroidal-anti-inflammatory drugs (for example, ibuprofen).

Treatment for neuropathies may include:

- **Medication applied to the skin** - These include topical creams, gels, or patches designed to target localized areas of pain. For example, a lidocaine patch or ointment can offer local relief to a particular area of pain, as can a capsaicin cream.

- **Anti-seizure or antidepressant medications** – Certain medications in these categories can effectively reduce neuropathic pain by altering how the nervous system processes pain signals. For example, duloxetine, amitriptyline, gabapentin and pregabalin.
- **Physical therapy** – For those experiencing muscle weakness, numbness, or coordination issues, physical therapy can improve mobility, strength, and overall function.
- **Assistive devices** – Tools such as hand or foot braces, canes, walkers, or wheelchairs can provide support and enhance independence for individuals with significant mobility challenges.
- **TENS therapy** – Transcutaneous electrical nerve stimulation (TENS) involves placing small adhesive patches (electrodes) on the skin. These electrodes deliver a low-level electric current that can help alleviate pain by interrupting nerve signals.
- **Nerve blocks** – Injections of medications close to targeted nerves to help relieve the pain symptoms by altering the pain signals to the brain.
- **Electrolytes** – May help ease stiffness, cramping, and nerve pain. For example, magnesium (taken orally, or applied as a spray) and Epsom salts baths may be effective.
- **Specialized treatments** – Interventions may also be needed to address complications affecting eating, sexual health, or bladder and bowel function, ensuring these essential systems are managed effectively.
- **Complementary therapies** – these may include acupuncture, massage, counselling, occupational and/or physical therapy, referral to a pain clinic.

There are many treatments and interventions available to help with peripheral neuropathy. If one is not a good fit for you, please discuss alternatives with your healthcare team.

## Tips for self-management

There are many things you can try to help make living with peripheral neuropathy more manageable or reduce its severity. Here are a few suggestions:

- **Care for hands and feet** – Keep feet clean and dry, and toenails trimmed as ingrown toenails can cause infections and neuropathy may reduce your ability to feel pain. Regularly check your feet for sores or signs of infection, especially if you have diabetes. Wear protective, well-fitting shoes. Keep your hands and feet warm, as cold can worsen symptoms. Ask for help or consult your doctor if needed.
- **Limit alcohol** – Excessive alcohol consumption can worsen peripheral neuropathy. Consult your doctor about safe limits.
- **Quit smoking** – Smoking reduces blood flow to peripheral nerves, potentially worsening symptoms. Your healthcare provider can offer support to help you quit.
- **Prevent falls** – Weakness, balance issues, or numbness can increase your risk of falling. Reduce hazards by removing clutter, loose rugs and cords, and ensure your home is well-lit, especially in hallways and on stairs. Store frequently used items within easy reach to avoid climbing or stretching.
- **Engage in regular gentle exercise** – Light exercise can help maintain muscle tone, improve circulation, and reduce symptoms. Consult your healthcare team for guidance before beginning any new exercise routine.

- **Avoid burns and cuts** – Peripheral neuropathy can impair your ability to feel temperature changes or pain. Always check water temperature before bathing or showering and handle hot objects or sharp items with extra care to prevent injury.
- **Eat a well-balanced diet** – Focus on a diet rich in essential vitamins and minerals, including vitamins B6, B12, D, E, folate, and healthy fats to support your nervous system. Include plenty of fresh fruits, vegetables, whole grains, and omega-3 rich fish. Stay well hydrated with water and non-alcoholic beverages, and limit sugar intake to prevent damage to peripheral circulation and nerves.

## Precautionary measures

- It's important to prevent and address problems early, especially with neuropathy. Symptoms often start gradually but can worsen over time, affecting your quality of life, sleep, and daily activities. In severe cases, permanent nerve damage can occur. Early communication with your healthcare team is key — inform them as soon as you notice any new or worsening symptoms. Early diagnosis and intervention can make peripheral neuropathy more manageable and can help prevent further complications.
- Do not stop or adjust medications without discussing it with your healthcare provider as some medications should be tapered down. Your healthcare team may change your dose or medication schedule to help reduce your discomfort.
- It is extremely important that you speak to your hematologist before taking any kind of supplement or alternative treatment that they have not prescribed. These treatments may include herbal, traditional or natural medicines and remedies, vitamins<sup>1</sup> or supplements as they have the potential to cause complications when taken alongside your prescribed regimen.
- Some common non-medical strategies are used to help treat or relieve pain. People living with myeloma are at increased risk of infection and should consult their doctor before undergoing acupuncture.

<sup>1</sup> Nathan P Staff, Anthony J Windebank. Peripheral Neuropathy Due to Vitamin Deficiency, Toxins, and Medications. The American Academy of Neurology, 2014. <https://pmc.ncbi.nlm.nih.gov/articles/PMC4208100/#:~:text=6%20Since%20many%20patients%20with,6%20and%20worsening%20their%20disease.>

### When to seek immediate medical attention?

Contact your healthcare team if you experience any of the following red flags for peripheral neuropathy:

- A fever of 38°C (100.4°F) or higher, with or without chills
- A wound that won't heal; a wound with swelling, redness, warmth, foul smell, or discharge (yellow/green/blood)
- New numbness or weakness in your foot, leg, or other areas
- Worsening symptoms or increased pain
- Dizziness, lightheadedness, or fainting
- Double vision or confusion
- Trouble breathing or chest pain/discomfort

These could indicate serious complications that need prompt medical attention.

To learn more, visit Myeloma Canada's Resource library at [www.myeloma.ca](http://www.myeloma.ca).

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