



Chemotherapy Induced Peripheral Neuropathy

What is it? Damage to the nerves that control sensation, detect temperature, pressure and help you balance is caused by certain types of chemotherapy or conditions such as diabetes.

What does it feel like? While symptoms vary, most commonly patients report numbness, tingling, burning, pain and decreased ability to feel. Most commonly, they occur in fingers and toes first, and may move toward the middle of the body such as the hands or feet.

How can neuropathy affect my daily life? The reduced sensation or pain may change how you do certain activities.

Daily activities requiring grip strength and fine motor control such as buttoning may be difficult. Using your hands for long periods of activity may be difficult. This condition can also impact balance and strength. Neuropathy can lead to muscle wasting, difficulty feeling objects, decreased healing time, difficulty walking, increased fall risk, and affects mental well-being.

Will it get better? If you are still on a neuropathy causing medication or having difficulty managing your diabetes, this condition can continue to worsen. If you have completed a neuropathy causing chemotherapy, it can take up to one year for the nerves to heal and recover but they may not fully recover.

We encourage you to engage in some of the interventions here early and often to provide the greatest opportunity for healing.

Talk to your provider about potential medications options: There are medications that your provider can prescribe including pain relievers (topical and oral), anti-seizure medications, tricyclic antidepressants. Most of these are covered by insurance.

Because neuropathy often changes throughout treatment, talk with your provider throughout your treatment and recovery about concerns. Check skin integrity daily and talk to your provider or nurse if you start to notice any skin breakdown.



What CAN I do?

Clinical evidence is limited regarding strategies to prevent or reduce neuropathy. However, evidence DOES support a variety of strategies you can utilize to reduce side effects and improve day to day life and function.

These strategies can be helpful at any time point including starting treatment, during treatment or after. No matter where you are, give these a try!

General Movement and Function

Balance training: Improve awareness of feet/legs and your body in space, reduce fall risk, improve quality of movement, increase circulation and help move fluid and blood flow to proper areas of your body.

Example: Stand at the kitchen sink and place 1 foot in front of the other-using your hands to support your balance. Wider stance = easier. More narrow stance = more challenging. Do what is challenging, yet safe and try to hold a position x 10 seconds, then switch the positions of your feet.

Strengthening: Increase leg strength to reduce muscle wasting, improve body awareness, improve brain function, helps with moving blood and fluid to proper areas of the body.

Example: Repeated sit to stand from a chair. Stand at a counter and try to go up on your tiptoes, march in place and try to kick your rear end.

Aerobic exercise: Maintain and improve good blood flow to affected areas. Improves brain function. Can preserve nerve function, can possibly prevent neuropathy in cancer patients in some studies.

Examples: Walking (use a cane or walker if needed), stationary biking, swimming.

We have professionals including rehabilitation services & the cancer wellness team who can help you and your caregiver with a personalized movement plan needs- just ask for wellness!



Lifestyle Tips

Maintain a healthy diet, healthy weight and body composition: Manage your blood sugar if possible through nutrition strategies. Adequate nutrients can reduce worsening of nerve alterations and improve healing and recovery. Registered Dieticians are available to assist with nutrition.

Don't smoke and reduce alcohol intake: Both of these habits will reduce nutrients needed to assist in nerve recovery and healing.

Take care of your feet: check for blisters, cuts and open areas. Wear protective shoes and cover feet even while at home (socks with grips or good house shoes are helpful!)

While clinical evidence is limited, some patients report relief from **complementary strategies** such as:

Massage (by a massage therapist, family member or see below for self-massage ideas), acupuncture, acupressure, vibration therapies, as well as wearing compression socks or fitted soft knit gloves. Cryotherapy (using cold to reduce blood flow and sensation to the nerves or tissues) has been helpful for some patients in preventing neuropathy but it is important to talk to your provider as some medications increase cold sensitivity.

Supplements have very limited data on effectiveness related to neuropathy. Talk to your provider before taking anything orally to check for any contraindications with chemotherapy medicines.

Some supplements that have been discussed are: B-Complex, Vitamin E, Glutamine, Alpha Lipoic Acid. We don't recommend doing a general online search for neuropathy supplements due to the lack of valid information that may be online. If you want to read more, www.aboutherb.com is a good evidence-based website to research supplements.



Numb and tingling feet driving you crazy? Try these strategies to calm them down: Spend time each night rubbing your feet down with lotion-get in between toes, on the tops and bottoms of your feet.

Look for creams or heavy lotions that have arthritis benefits such as: Blu-Emu or Voltarin. These lotions can have some pain numbing to provide relief.

They may be very sensitive so be nice to your feet, but it is very important that they are touched and moved! Using a soft cloth and gently rub your feet and toes with this until the sensitivity calms down. Once the soft cloth does not make your feet as sensitive, try a rougher material to continue to increase the tolerance to different materials.

Calming your feet's sensitivity down is important and can help you do things like tolerate socks and shoes better and help improve sleep.

Try Foot Exercises!

If possible, do these exercises while barefoot to improve your coordination and balance!

1. Lift up your big toe. Lower. Lift up your 4 smaller toes. Lower. Alternate lifting and lowering big and small toes x 10 to improve coordination which can help with balance.
2. Toe scrunches: Place foot flat on a towel. Try to use your toes to pick up the towel by curling your toes in. This improves toe coordination and supports the arch in your foot!
3. Sitting up tall in a chair: hold your knee straight as you draw circles with your foot/ankle. Go clockwise and counterclockwise with each foot 10 times.

Contact us for help with connections or a personalized plan including home exercises or management strategies or assistance with a referral to physical therapy.



Clinical Evidence

1. Lyman, G. H., Greenlee, H., Bohlke, K., Bao, T., DeMichele, A. M., Deng, G. E., ... & Cohen, L. (2018). Integrative therapies during and after breast cancer treatment: ASCO endorsement of the SIO clinical practice guideline. *Journal of Clinical Oncology*, 36(25), 2647-2655.
2. Kleckner, I. R., Kamen, C., Gewandter, J. S., Mohile, N. A., Heckler, C. E., Culakova, E., ... & Mustian, K. M. (2018). Effects of exercise during chemotherapy on chemotherapy-induced peripheral neuropathy: a multicenter, randomized controlled trial. *Supportive Care in Cancer*, 26(4), 1019-1028.
Conclusion: Clinicians should consider prescribing exercise to patients during taxane, platinum and vinca alkaloid based chemotherapies.
3. Bland, K. A., Kirkham, A. A., Bovard, J., Shenkier, T., Zucker, D., McKenzie, D. C., ... & Campbell, K. L. (2019). Effect of exercise on taxane chemotherapy-induced peripheral neuropathy in women with breast cancer: a randomized controlled trial. *Clinical breast cancer*, 19(6), 411-422.
Conclusion: Exercise during and after both reduced CIPN SE in breast CA pts with taxane based chemotherapy.
4. Knoerl, R., Gilchrist, L., Kanzawa-Lee, G. A., Donohoe, C., Bridges, C., & Smith, E. M. L. (2020, February). Proactive rehabilitation for chemotherapy-induced peripheral neuropathy. In *Seminars in oncology nursing* (Vol. 36, No. 1, p. 150983). WB Saunders.
Conclusion: Screening and assessment of neuropathy-associated physical function deficits should occur throughout neurotoxic chemotherapy treatment. If such deficits are identified, referral for rehabilitation (ie, physical or occupational therapy) and/or exercise interventions is warranted.
5. Dhawan, S., Andrews, R., Kumar, L., Wadhwa, S., & Shukla, G. (2020). A randomized controlled trial to assess the effectiveness of muscle strengthening and balancing exercises on chemotherapy-induced peripheral neuropathic pain and quality of life among cancer patients. *Cancer nursing*, 43(4), 269-280.
Conclusion: Muscle strengthening, and balancing exercises are effective in reducing CIPN pain and improving QOL among cancer patients.
6. Izgu, N., Metin, Z. G., Karadas, C., Ozdemir, L., Çetin, N., & Demirci, U. (2019). Prevention of chemotherapy-induced peripheral neuropathy with classical massage in breast cancer patients receiving paclitaxel: An assessor-blinded randomized controlled trial. *European Journal of Oncology Nursing*, 40, 36-43.
Conclusion: This study suggested that classical massage successfully prevented chemotherapy-induced peripheral neuropathic pain, improved the QOL, and showed beneficial effects on the NCS findings.
7. Miao, H., Li, R., Chen, D., Hu, J., Chen, Y., Xu, C., & Wen, Z. (2021). Protective effects of vitamin E on chemotherapy-induced peripheral neuropathy: a meta-analysis of randomized controlled trials. *Annals of Nutrition and Metabolism*, 77(3), 127-137.
Conclusion: Eight RCTs, involving 488 patients, were identified. Upon pooling these RCTs, patients who received vitamin E supplementation of 600 mg/day had a lower incidence of CIPN than the placebo group. Available data in this meta-analysis showed that vitamin E supplementation can confer modest improvement in the prevention of CIPN.