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# Welcome!

*FPN Webinar:*

## **Preventing Neuropathy** *with* **Dr. Shanna Patterson**

Thursday, February 29, 2024

*We will begin our presentation shortly.*



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***Moderator:***



**Lindsay Colbert**  
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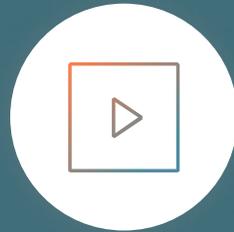
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## Before We Begin



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## ***Presenter:***



**Shanna Patterson, MD, MS**  
*Neurologist at Mount Sinai Health System*  
*FPN Patient Education Advisor*

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# Preventing Peripheral Neuropathy

Shanna Patterson, MD, MS

February 29, 2024



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Mount  
Sinai

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# Removing Blame Mindset

# Preventing Neuropathy – Removing Blame



Katie Willard Virant MSW,  
JD, LCSW  
Chronically Me

CHRONIC ILLNESS

## Self-Blame and Chronic Illness

Understanding and letting go of a painful narrative.

Posted November 15, 2021 | Reviewed by Jessica Schrader



- Society values concept of having explanations for events in life... asking “why”
- Subconscious attraction to rationalizing illness
- Research has identified that self-blame for illness is associated with emotional distress

<https://centerforspineandortho.com/news/symptoms-of-diabetic-peripheral-neuropathy/>

<https://www.psychologytoday.com/us/blog/chronically-me/202111/self-blame-and-chronic-illness>

## Preventing Neuropathy – Mindfulness



- Recognizing that many illnesses, including most instances of neuropathy are NOT entirely preventable, and if you have neuropathy, it is NOT your fault
- For example, approximately 50% of people with diabetes have some form of neuropathy, but in type 2 diabetics, even having good control over glucose levels does not necessarily halt the progression of neuropathy
- Even with a rigorous work-up, no cause for neuropathy can be found in 20-30% of cases (idiopathic)

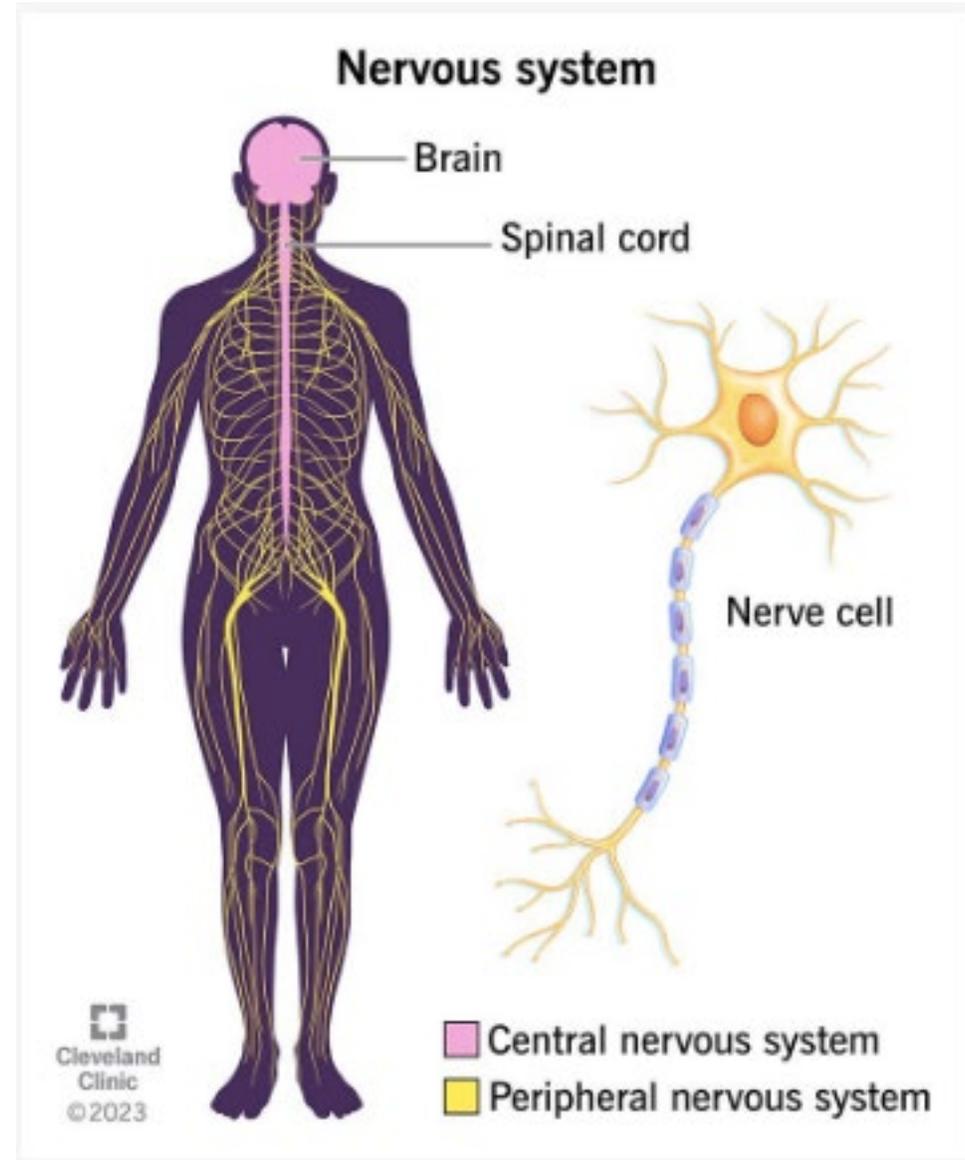
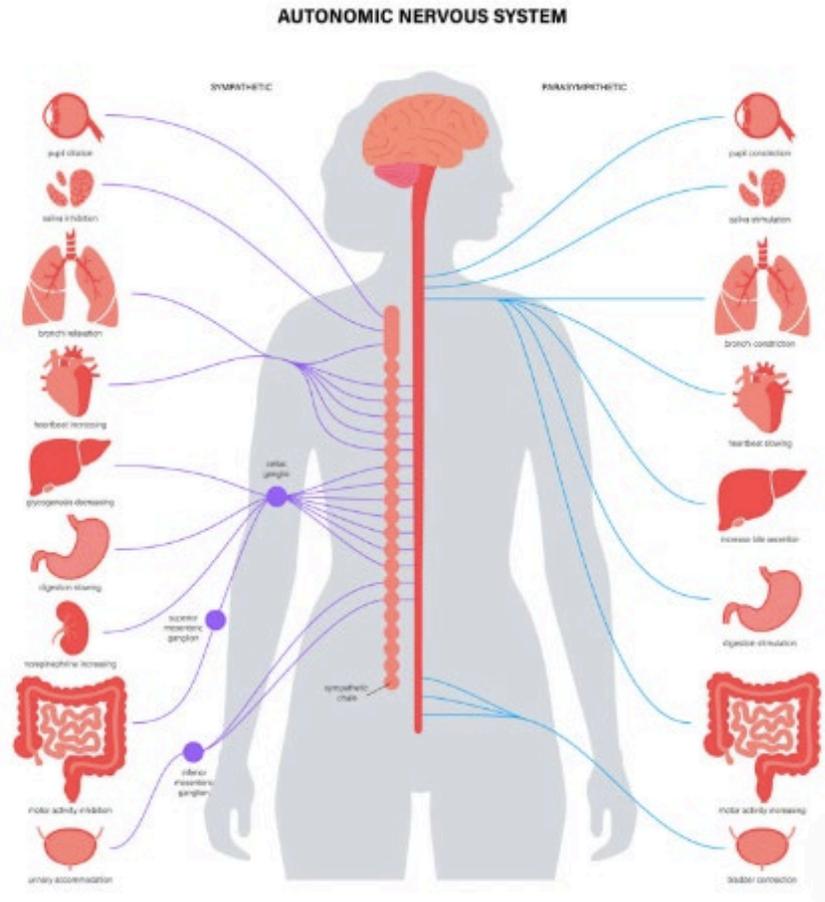
## Preventing Neuropathy – Mindfulness

- Being mindful as we speak about prevention that
  - Even if you adhere to every piece of information, you might still get neuropathy
  - Even if you do not do anything we speak about here, you might not get neuropathy

*Fostering a mindset of acceptance, doing the best we can, and being mindful of how our personal narrative of illness/neuropathy can have a significant impact.*



# Defining Neuropathy – Anatomy



<https://my.clevelandclinic.org/health/body/21202-nervous-system>

<https://www.simplypsychology.org/autonomic-nervous-system.html>

## Defining Neuropathy

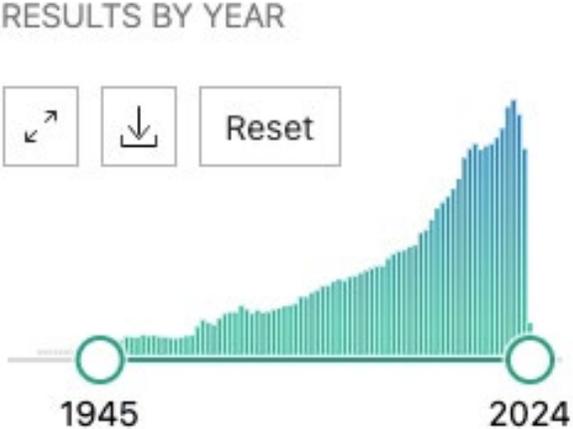


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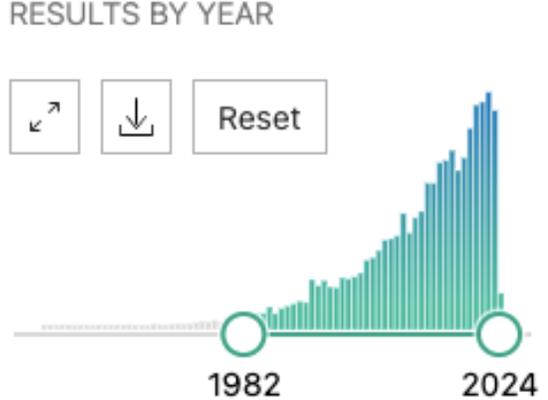
**Peripheral neuropathy** occurs when peripheral nerve(s) is/are damaged. The message coming from the periphery (sensation) and going towards the brain can be altered: in this case sensory loss or pain can be present. If the message cannot go from the brain to the periphery (e.g., muscles) weakness will be there. Moreover, as stated above, some components of the PNS are responsible for involuntary functions (e.g., sweating, bowel movements, ...); these functions might be altered too.

Peripheral Neuropathy is not a single disease. It's a general term for a series of disorders that result from damage to the body's peripheral nervous system.

Peripheral neuropathy can affect multiple nerves (polyneuropathy) or only one nerve (mononeuropathy) or nerve group (multiple mononeuropathies) at a time.



PubMed search results for **Prevention of** Peripheral Neuropathy by Year



# Historical Perspective on Prevention of Peripheral Neuropathy

# Current Perspectives on Neuropathy Prevention

# Neuropathy Prevention in Diabetic Neuropathy

- Diabetic neuropathy is polyfactorial and likely also has a genetic influence
- Type 1 Diabetes: glycemic control usually effective in reducing the incidence of diabetic neuropathy
- Type 2 Diabetes: mechanisms are more complex, and a multifactorial approach is needed, including glycemic control, blood pressure control, exercise program, healthy diet

[Diabetes Care](#). 2017 Jan; 40(1): 136–154.

Published online 2016 Dec 10. doi: [10.2337/dc16-2042](#)

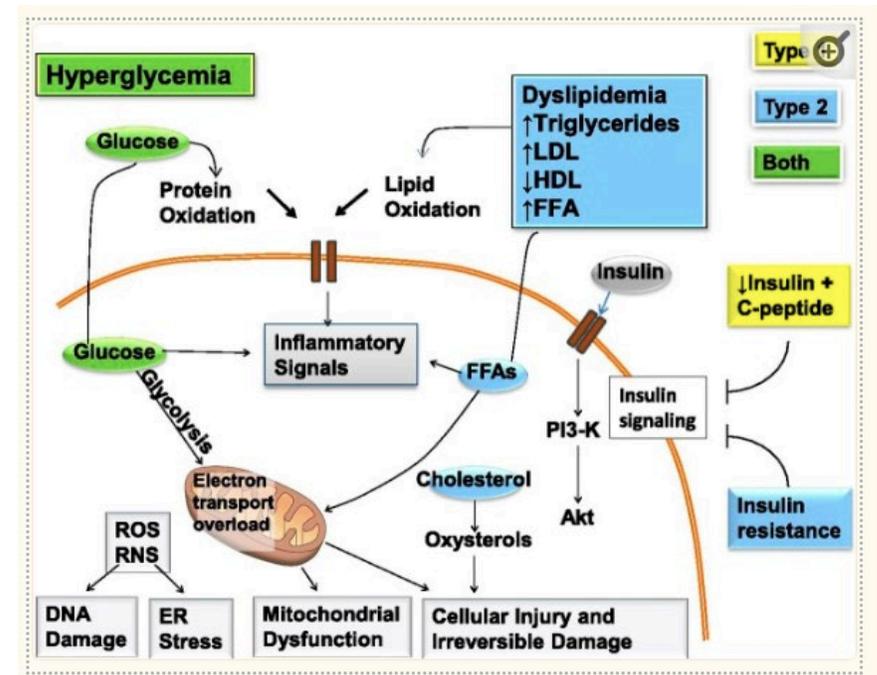
PMCID: PMC6977405

PMID: [27999003](#)

Diabetic Neuropathy: A Position Statement by the American Diabetes Association

[Rodica Pop-Busui](#),<sup>1</sup> [Andrew J.M. Boulton](#),<sup>2</sup> [Eva L. Feldman](#),<sup>3</sup> [Vera Bril](#),<sup>4</sup> [Roy Freeman](#),<sup>5</sup> [Rayaz A. Malik](#),<sup>6</sup> [Jay M. Sosenko](#),<sup>7</sup> and [Dan Ziegler](#)<sup>8</sup>

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## Neuropathy Prevention in Diabetic Neuropathy

# Vitamin D in the Prevention and Treatment of Diabetic Neuropathy

[Zsuzsanna Putz, MD](#)   • [Dóra Tordai, MD](#) • [Noémi Hajdú, MD](#) • ... [Manfredi Rizzo, MD](#) • [Nikolaos Papanas, MD](#) • [Péter Kempler, MD](#) • [Show all authors](#)

**Open Access** • Published: April 12, 2022 • DOI: <https://doi.org/10.1016/j.clinthera.2022.03.012> •

- Patients with diabetic neuropathy had higher incidence of vitamin D deficiency
- In some cases, correcting vitamin D deficiency led to improvement in neuropathy symptoms

# Neuropathy Prevention in Chemotherapy-Induced Peripheral Neuropathy

- Certain types of chemotherapy are well known to have toxic effects on nerves
- The mechanisms for different types of chemotherapy are different, making prevention more complicated
- There is no current treatment to globally prevent chemotherapy-induced PN
  
- Assessing risk in advance and mitigating other risk factors (diabetes, obesity) may be useful
- Adjusting chemotherapy regimen/dosing/timing may be considered in select cases
  
- Preliminary evidence exists for a preventive benefit of the following modalities:
  - acupuncture, compression therapy, exercise therapy, cryotherapy
- Duloxetine is recommended for treatment of painful neuropathy symptoms
  - other treatments may be effective but have not been specifically studied in CIPN

# Neuropathy Prevention in Chemotherapy-Induced Peripheral Neuropathy

neuropathy



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## Preventing Neuropathy – How do we know what we know?

- Significant research looks at outcomes in targeted groups who have PN or risk factors for PN, such as patients with diabetes.
- When we learn about a risk factor for or cause of PN, lifestyle recommendations for prevention evolve from mitigating or avoiding that cause.
- However, there is no absolute prevention because we know some people with known risk factors do not develop PN and some people with no identifiable risk factors do develop PN
- Unfortunately, we do not have a 100% guaranteed prevention



# Preventing Neuropathy – Maintaining a Healthy Body Weight

## What is metabolic syndrome?

- Metabolic syndrome is a collection of symptoms that often occur together and increase your risk of diabetes, stroke and heart disease. The main components include obesity, high blood pressure, high triglycerides, low HDL (“good cholesterol”) and insulin resistance.
- A person’s weight is a major cause of metabolic syndrome. *Abdominal fat cells can raise levels of free fatty acids, which can raise other chemical and hormone levels in a way that affects the way your body controls blood sugar levels.*
- *Studies have shown a higher risk of neuropathy in the setting of obesity, even in the absence of diabetes or pre-diabetes.*
- *There appears to be an interplay between lipid and calcium signaling and inflammation.*

## Original Investigation

December 2016

## Association Between Metabolic Syndrome Components and Polyneuropathy in an Obese Population

Brian C. Callaghan, MD, MS<sup>1</sup>; Rong Xia, MS<sup>2</sup>; Evan Reynolds, MS<sup>2</sup>; [et al](#)

[» Author Affiliations](#) | [Article Information](#)

*JAMA Neurol.* 2016;73(12):1468-1476. doi:10.1001/jamaneurol.2016.3745

# Preventing Neuropathy Lifestyle – Diet

- Balanced diet, healthy portions
- Balance is key – usually a healthy diet is all that is needed, excessive supplements are often unnecessary

**9 TOP TIPS**  
TO MEASURE AND CONTROL  
PORTION SIZES

**3 Use your hands as a serving guide**

A palm-sized serving for women and two palm-sized portions for men

A thumb-sized portion for women and 2 thumb-sized portions for men

A fist-sized portion for women and 2 fist-sized portions for men

**4 When Eating Out Ask For A Half Portion**

Restaurant serving sizes are on average 2.5 times larger than standard ones.

# Preventing Neuropathy Lifestyle – Diet

 **TOP TIPS**  
TO MEASURE AND CONTROL  
**PORTION SIZES**

**1 Use smaller dinnerware**  
Using smaller dishes can lower the amount of food you consume while making you feel just as satisfied

**2 Use your plate as a portion guide**



Protein, 1/4 of a plate

Vegetables or Salad 1/2 a plate

High-fat foods 1/2 a tbsp

Complex carbs 1/4 of a plate

## Preventing Neuropathy Lifestyle – Nutrients



- Meat, poultry, fish and eggs, fortified soymilk and cereals are rich in vitamin B12
- Green vegetables, legumes, fruits, nuts, beans, peas, eggs and milk are rich in folate (B9)
- Whole grains, meat, fish and fortified cereals are rich in thiamine (B1)
- Shellfish, nuts, whole grain products and beans are rich in copper
  
- *Special attention to considering supplements in cases of vegetarian or vegan diet, or any case where nutrient absorption may be impaired (Celiac disease, bariatric surgery, other GI diseases)*
- *Avoid excess alcohol consumption: alcohol inhibits absorption of vital nutrients (vitamins B1 and B12)*
- *Avoid excess sugar*

# Preventing Neuropathy Lifestyle – Physical Activity

 Centers for Disease Control and Prevention  
CDC 24/7: Saving Lives. Protecting People™

Search

Healthy Weight, Nutrition, and Physical Activity

CDC > Healthy Weight, Nutrition, and Physical Activity

 [Healthy Weight, Nutrition, and Physical Activity](#)

## Physical Activity for a Healthy Weight

Most weight loss comes from reducing caloric activity.

Maintaining a current weight requires physical activity.

CDC recommends 150 minutes of moderate intensity aerobic exercise per week (could include 30-minute brisk walks 5 days a week).

Other benefits of regular physical activity: improved sleep; reduced risk of diabetes, high blood pressure and stroke; reduced arthritis; reduced osteoporosis; reduced depression and anxiety.

# Looking to the Future of Neurological Health

## The Brain Health Imperative in the 21st Century —A Call to Action

Natalia S. Rost, MD, MPH, Joel Salinas, MD, MBA, MSc , Justin T. Jordan, MD MPH, Brenda Banwell, MD, Daniel J. Correa, MD , Rana R. Said, MD, Linda M. Selwa, MD , Sarah Song, MD, MPH, and David A. Evans, MBA for the American Academy of Neurology's Committee on Public Engagement | [AUTHORS INFO & AFFILIATIONS](#)



Brain health is a continuous state of attaining and maintaining the optimal neurologic function that best supports one's physical, mental, and social well-being through every stage of life.

# Opinion & Special Article: Preventive Neurology

## An Emerging Field Toward Brain Health

Behnam Sabayan, MD, PhD , Richard Isaacson, MD, and Natalia Rost, MD, MPH  | [AUTHORS INFO & AFFILIATIONS](#)

### Universal prevention training

#### Prevention science:

- Demographic trends
- Health policy and procedures
- Population-based prevention strategies
- Communication in preventive health care

#### Brain health science:

- Trends in prevalence, incidence, and outcomes of neurologic disorders
- Neurologic care and health care systems
- Social determinants of brain health
- Prevention approach and interventions in neurology

### Selective prevention training

#### Prevention science:

- Screening and risk stratification
- Personalized medicine
- High-risk groups prevention interventions
- High-risk groups surveillance and engagement

#### Brain health science:

- Brain health metrics
- Neurogenetics
- Individualized brain health interventions
- Ethics and professionalism
- Pharmacologic, behavioral, and environmental interventions

### Clinical and public health research

#### Public health research:

- Demographic models and tools
- Epidemiology and biostatistics
- Population based cohort studies
- Community based interventional studies

#### Clinical research:

- Developing biomarkers for brain health
- Pattern recognition and artificial intelligence
- Multimodal randomized clinical trials
- Genetic epidemiology

- Research
- Population level interventions
- Individual level Interventions
- Medical Training
- Lobbying/Legislation

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# Discussion



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