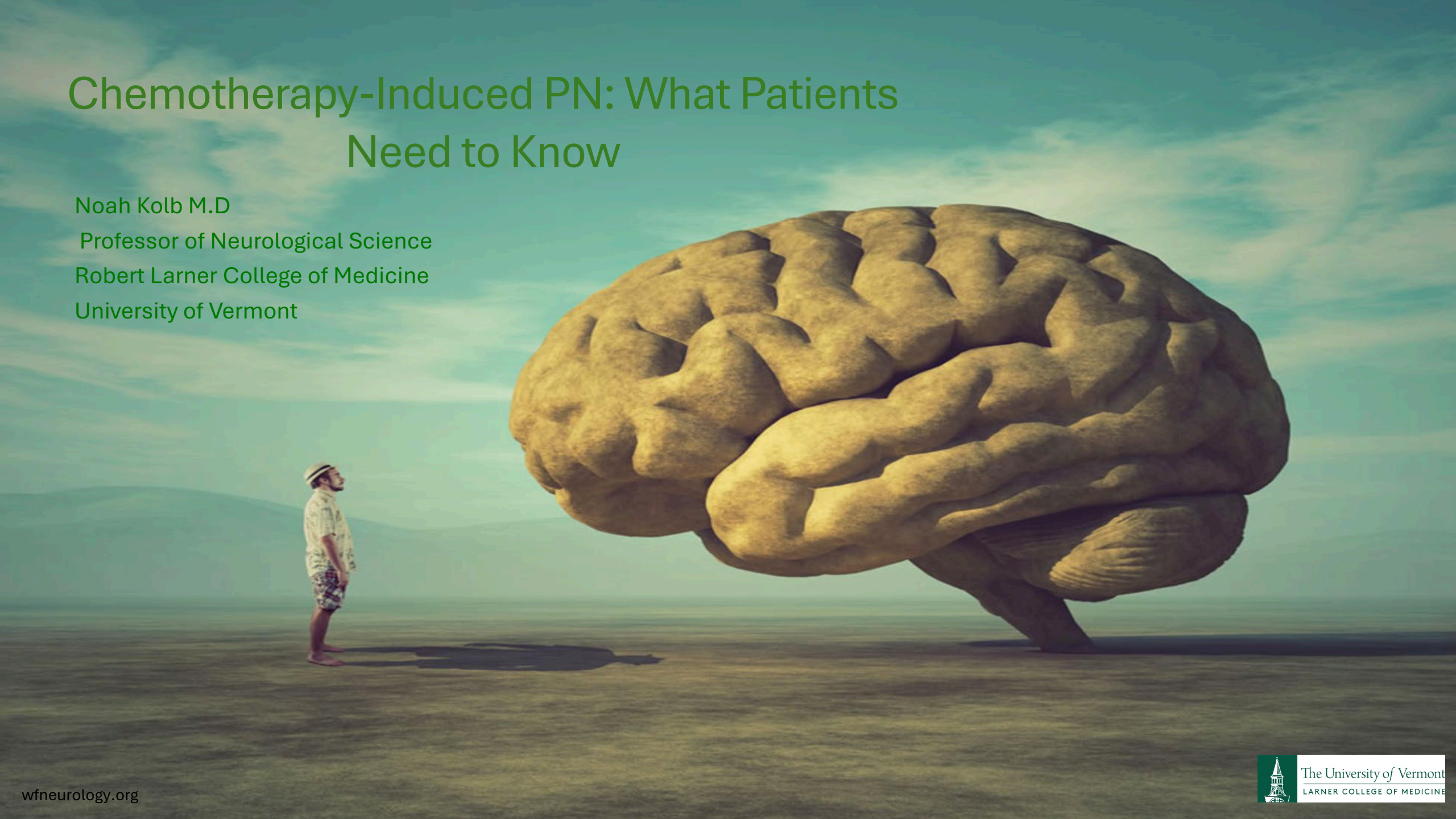
Chemotherapy-Induced PN: What Patients Need to Know

Noah Kolb M.D
Professor of Neurological Science
Robert Larner College of Medicine
University of Vermont



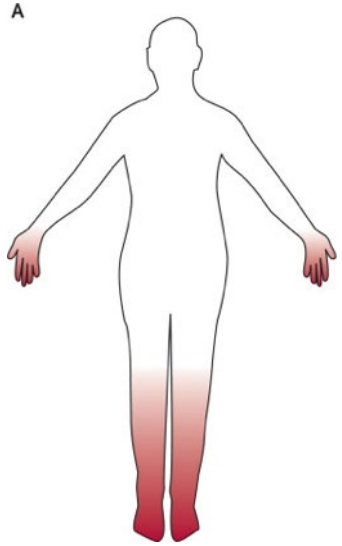
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Outline

- CIPN background
- Different kinds of CIPN
- Why CIPN is so important
- Prognosis
- Prevention
- Treatment

Background

- You are not alone
- Most common dose limiting SE of NT chemo
- Not all CIPN is the same
- Time course is predictable

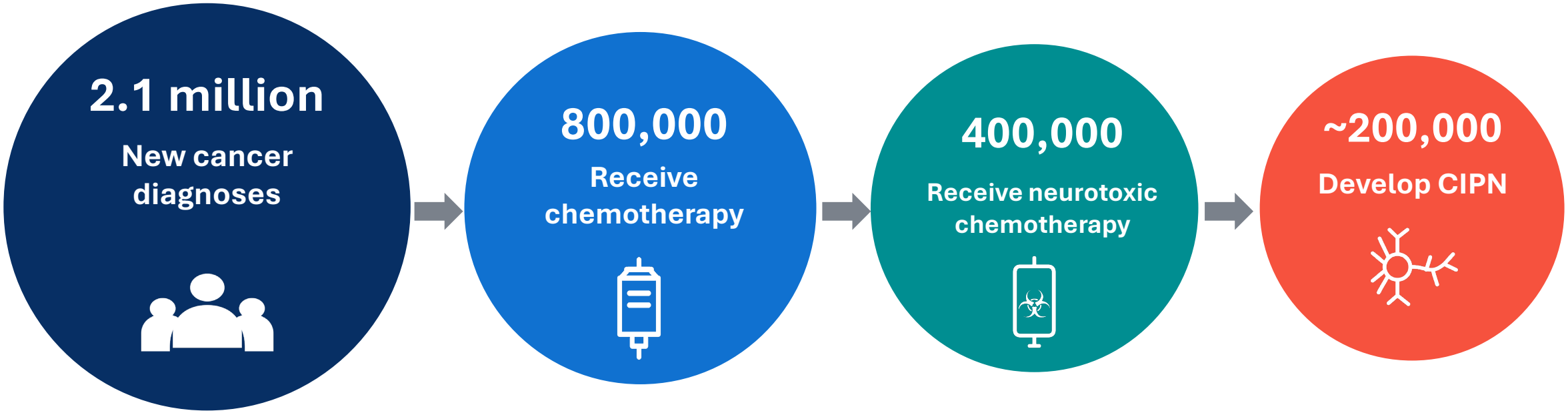






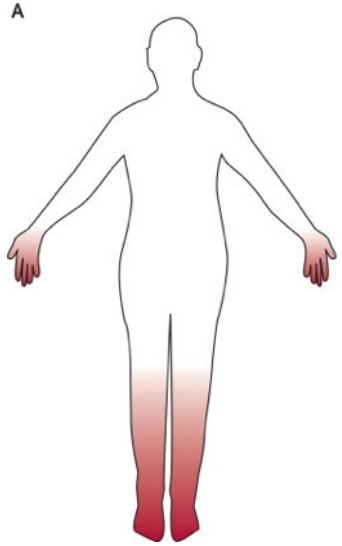
"We've found a mass. The good news is we have weapons of mass destruction."

How many people in the U.S. are affected by CIPN each year?



Background

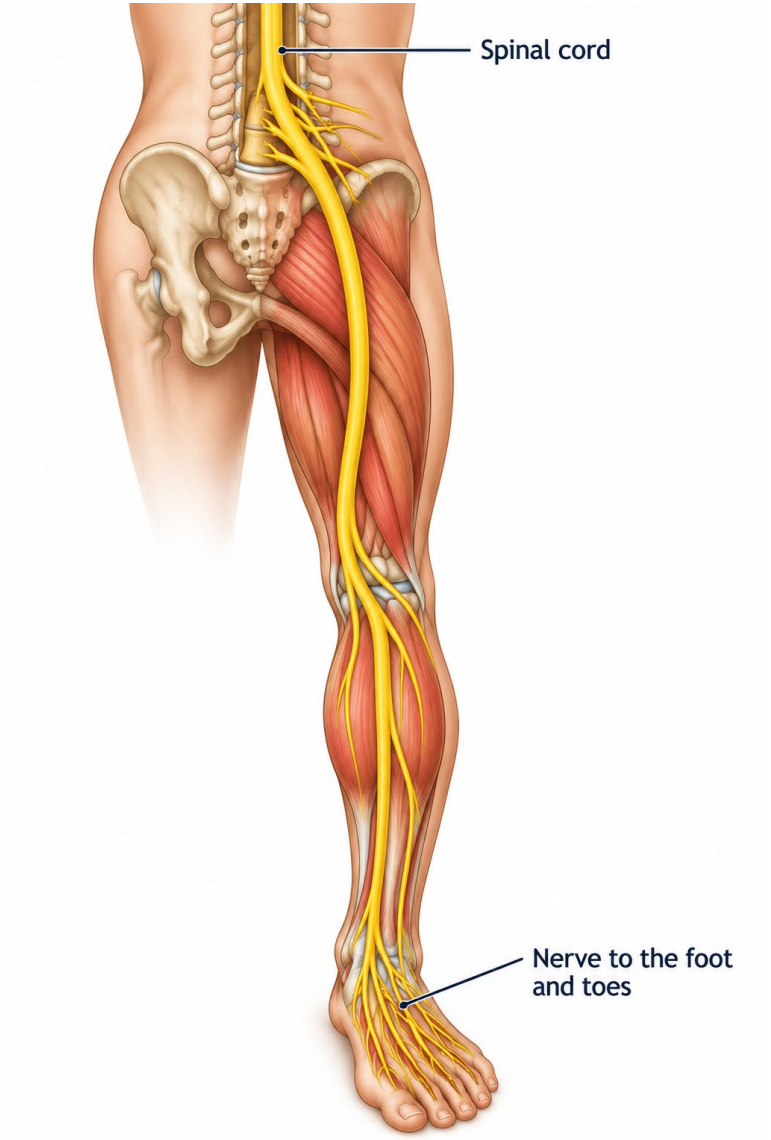
- You are not alone
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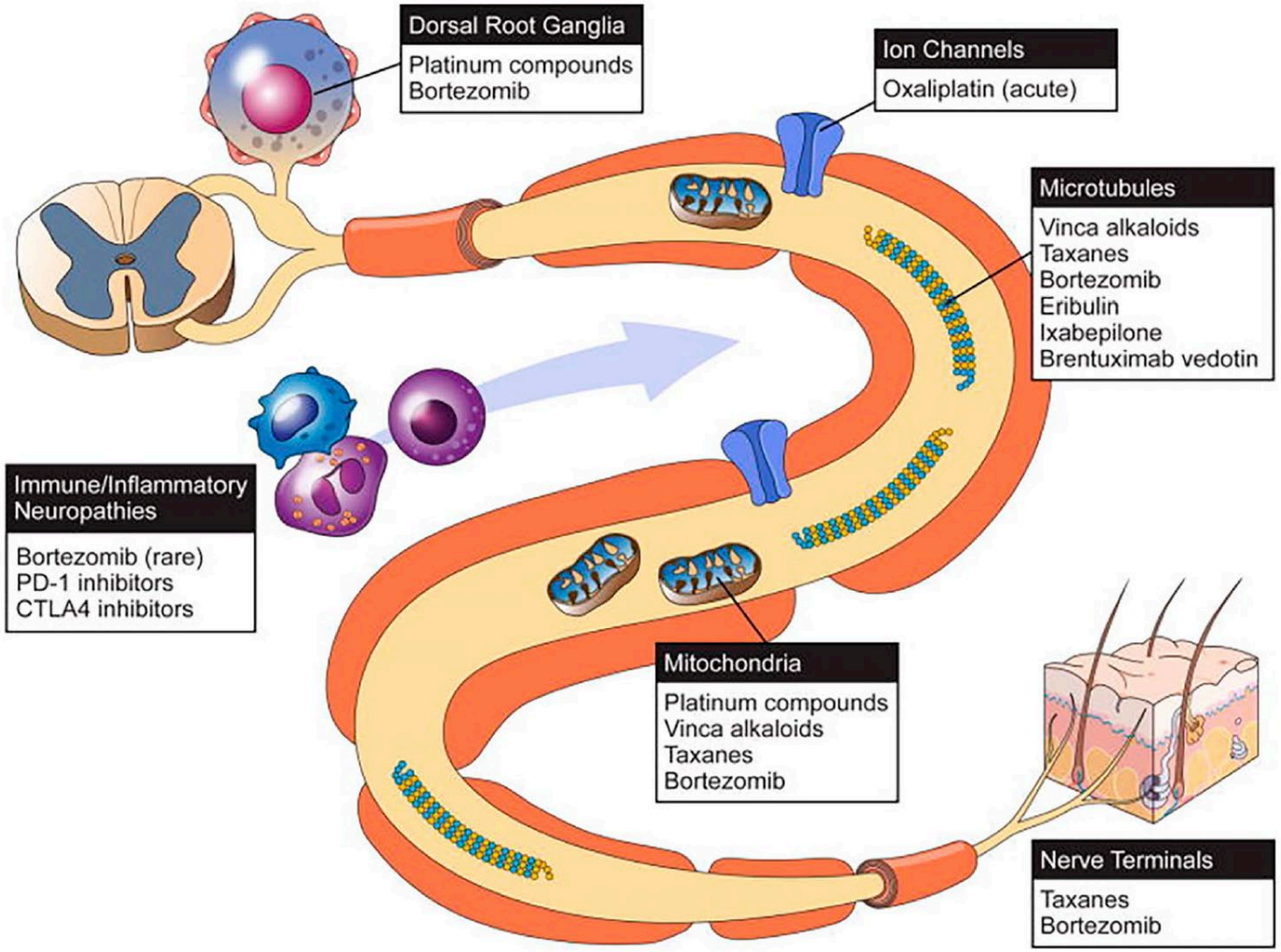


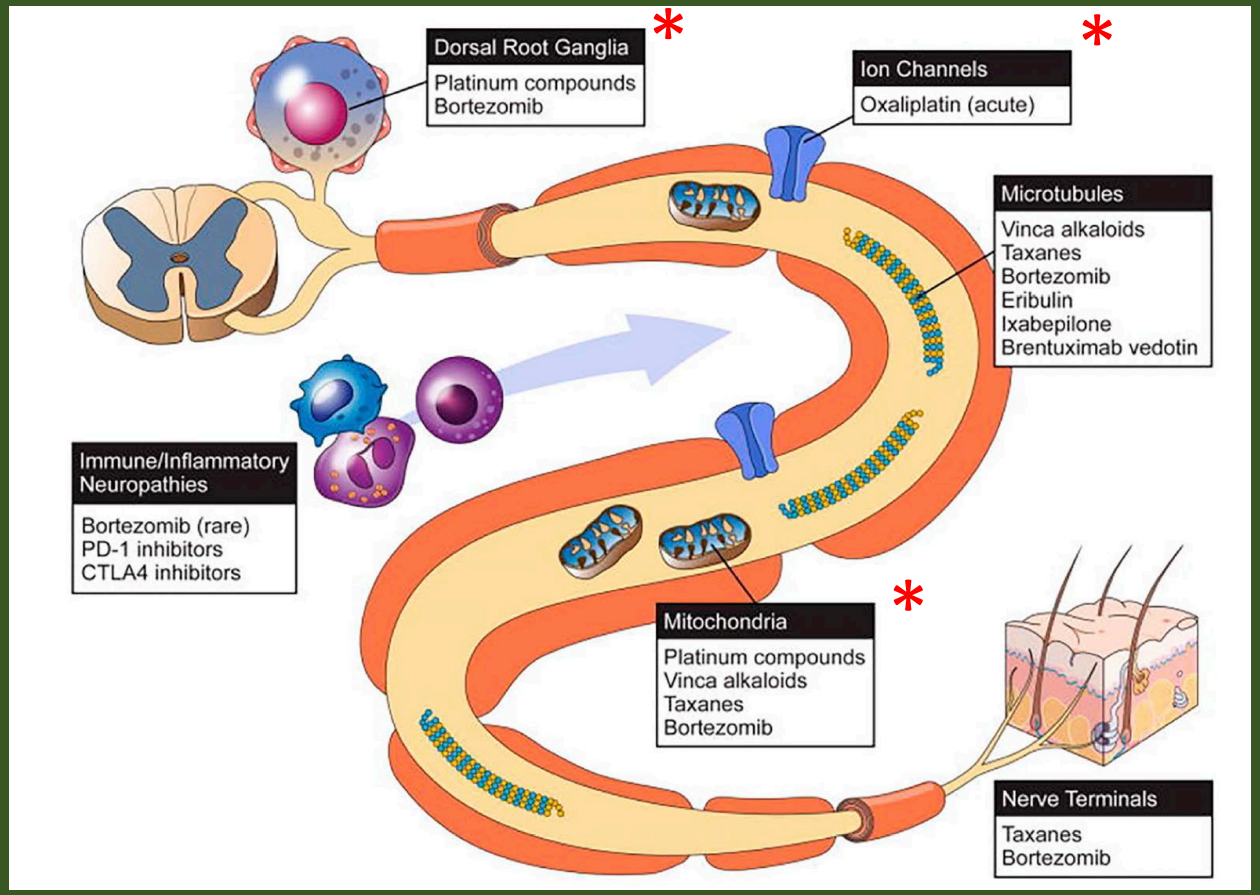




"We've found a mass. The good news is we have weapons of mass destruction."


Spinal cord
Nerve to the foot and toes


Dorsal Root Ganglia
Platinum compounds
Bortezomib
Ion Channels
Oxaliplatin (acute)
Microtubules
Vinca alkaloids
Taxanes
Bortezomib
Eribulin
Ixabepilone
Brentuximab vedotin
Immune/Inflammatory Neuropathies
Bortezomib (rare)
PD-1 inhibitors
CTLA4 inhibitors
Mitochondria
Platinum compounds
Vinca alkaloids
Taxanes
Bortezomib
Nerve Terminals
Taxanes
Bortezomib



Platins

Cisplatin, Oxaliplatin, Carboplatin

- Chronic sensory neuropathy
- Acute Cold induced dysesthesias
- Coasting



Taxanes

Paclitaxel, Docetaxel

- Breast, Ovarian, NSCLC
- Chronic Sensory neuropathy
- Paclitaxel associated acute pain syndrome (PAPS)

Windebank 2011, www.herbco.com

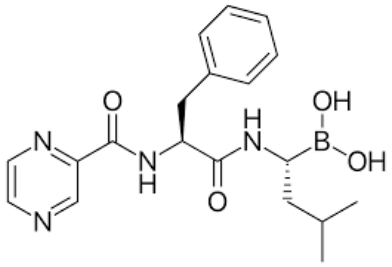


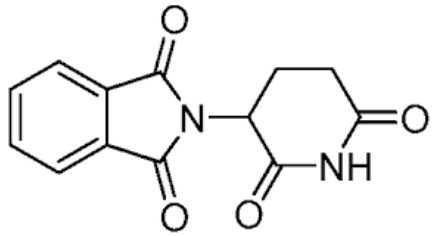
Vinca Alkaloids

Vincristine ,Vinblastine, Venorelbine

- Lymphoma, leukemia, neuroblastoma, etc
- weakness
- Pain
- Autonomic symptoms

Windebank 2011, www.herbco.com





Other Agents

- Bortezimib
- Thalidomide
- Lenolidamide

Loprinzi 2011. Reeves 2012. Pachman 2017, Koeppen 2014

Why Everyone should care about CIPN



Quality of life

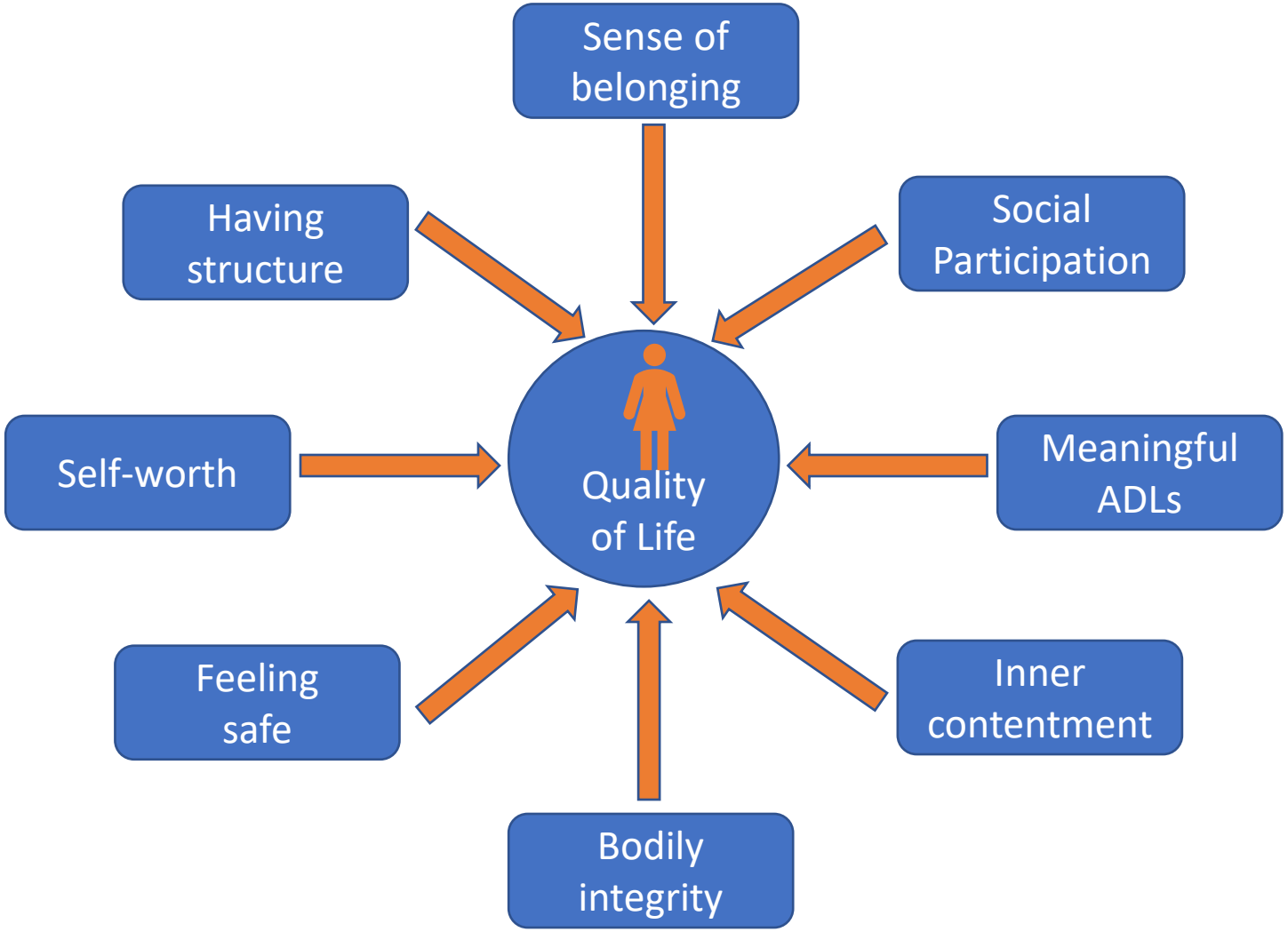


Cost to the Healthcare system and patients



Survival

The severity matters…



Why Everyone should care about CIPN



Quality of life



Cost to the Healthcare system and patients



Survival

Important Questions

- Can we prevent it?
- Why is it worse for certain people?
- Will it go away/ could it get worse?
- What if I have CIPN and need more chemo
- Treatment

Preventative Agents

Class	Drug	Trials	Cochrane	ASCO
Anticonvulsants	Oxcarbazepine		?	?
	Carbamazepine			?
	Pregabalin	NO		
	Gabapentin	NO		
Antidepressants	Amitriptyline		NO	NO
	Venlafaxine		?	?
Chemoprotectants	Amifostine		?	NO

ASCO Clinical Practice Guidelines: Prevention and Management of CIPN in Survivors of Adult Cancers:

"On the basis of the paucity of high-quality , consistent evidence, there are no agents recommended for the prevention of CIPN."

	Diethyldithiocarbamate		NO	NO
	ACTH analog		NO	NO
Vitamins, etc.	Acetyl L carnitine		NO	NO
	Ca, Mag		NO?	NO
	Glutamic acid	Yes?		?
	Glutathione an NAC			NO
	Goshajinkigan			?
	Omega 3		NO	NO
	Vitamin E			NO
	All- trans retinoic Acid		?	NO

nature reviews cancer https://doi.org/10.1038/s41568-025-00863-2

Review article

Check for updates

Mechanisms and treatment of cancer therapy-induced peripheral and central neurotoxicity

Philipp Karschnia[1,2,4], Thomas A. Nelson[3,4] & Jorg Dietrich[1]

Abstract

Sections

Agent	Potential target or mechanism of action	Disease or prior therapy	Location	Clinical trial identifier
Management of peripheral neuropathy				
Repurposed and novel oral agents				
Duloxetine alone vs combination therapy	Potential augmentation of the effects of duloxetine when given with either amitriptyline or gabapentin	CIPN in patients with digestive tract cancers	Taiwan (Tainan)	NCT06331962
GM1	Neuroprotective agent	CIPN from paclitaxel treatment	USA (multiple states)	NCT05751668
LY3848575	Unknown	Painful sensory-only distal polyneuropathy; no specific chemotherapy exposure or tumour type	Multiple (Canada, Czechia, Germany, Japan, Korea, Mexico, Poland, USA)	NCT06568042
Methadone	Opioid receptor agonism	CIPN from platinum, taxane or vinca alkaloid agents; bortezomib; or thalidomide; tumour agnostic	Canada (British Columbia)	NCT05786599
Topical or injected agents				
Botulinum toxin A	Inhibition of the release of ACh, substance P, CGRP and glutamate	Breast cancer with CIPN following treatment with paclitaxel		NCT03571334
Capsaicin	Inhibition of neural transmission	Neuropathic pain; no specific chemotherapy or tumour type	Amsterdam[a] and France[b] (multiple)	NCT05560516[a] NCT05840562[b]
Gonyautoxin (PSP neuro serum)	Mitigation of neural hyperexcitability via voltage-gated sodium channel receptor inhibition	CIPN grade 2 or higher by CTCAEs; any treatment for any haematological malignancy or solid tumour	Brazil (multiple)	NCT05052398
Lidocaine patch	Analgesia via sodium ion channel inhibition	Colorectal cancer with CIPN after oxaliplatin	Bangladesh (Dhaka)	NCT05866653
Tetrodotoxin	Inhibition of voltage-gated sodium channels to block nociceptive signal pathways	Painful CIPN following platinum or taxane agents; any tumour type	USA (multiple states)	NCT05359133
Device based				
Focal or whole body vibration; muscle stimulation	Chronic neuromuscular adaptive effects	Breast cancer post-taxane; breast cancer any treatment; and CIPN from taxane, platinum, vincristine or bortezomib or from any treatment	Austria (Vienna), Sweden (Stockholm), USA (Indiana and Oklahoma)	NCT06132776, NCT05361018 NCT04207437 NCT04959929
Photobiomodulation (laser therapy)	Anti-inflammatory; stimulation of nerve regeneration	Any tumour type with CIPN post-treatment with taxanes, platinum, thalidomide or bortezomib	Belgium (Hasselt)	NCT05763706
Neuromodulation (including spinal cord), scrambler therapy, transcranial direct current stimulation	Mitigation of neural hyperexcitability	Any tumour type with painful CIPN from any classical chemotherapy; platinum or taxane chemotherapy; paclitaxel, vinblastine or platinum agents; taxanes; or in young adults aged 15–39 years	Taiwan (Changhua), USA (Georgia, Maryland and Texas)	NCT06121232 NCT06162403 NCT06324344, NCT06616649 NCT06522685, NCT06596200 NCT05904340 NCT05368428 NCT05357469
Behavioural, herbal and multimodal				
Acupuncture, some in combination with traditional Chinese therapies	Anti-inflammatory	CIPN after any platinum agent with paclitaxel; in gastrointestinal cancers after oxaliplatin; in breast cancer after taxane; or from any agent	China (Yiwu), France (multiple), Italy (multiple), USA (multiple states)	NCT06492083, NCT05850130 NCT05673746, NCT05458284 NCT04917796
Behavioural	Pain coping skills and sensory training	Any cancer; any prior treatment	Israel (Beer Yaaqov), USA (North Carolina)	NCT05382520 NCT05556447
Cryotherapy	Reduced vasodilation and muscle excitability	Breast cancer after any taxane; children (8–17 years) with leukaemia after any treatment; breast cancer after paclitaxel; or children (7–18 years) with leukaemia, medulloblastoma, rhabdomyosarcoma or Wilms tumour after vincristine or etoposide	Denmark (Copenhagen), Egypt (Qina), Taiwan (Kaohsiung), Turkey (Istanbul)	NCT05928429, NCT06543264 NCT06020222 NCT06488963

Agent	Potential target or mechanism of action	Disease or prior therapy	Location	Clinical trial identifier
Management of peripheral neuropathy (continued)				
Behavioural, herbal and multimodal (continued)				
EGCG	Antioxidant; anti-inflammatory	Any cancer post-paclitaxel	China (Jinan)	NCT06524609
Exercise, including acupressure and yoga	Management of inflammation and interoception (internal sensory system)	CIPN with any tumour or treatment; with breast cancer post-taxane or any agent; or with digestive tract cancers	Canada (Toronto), Hong Kong, Taiwan (Taichung and Tainan), USA (multiple states)	NCT06405542 NCT05121558 NCT04888988, NCT04920097 NCT05764447 NCT05641571 NCT05959811 NCT06331962
Neurofeedback with duloxetine	Modification of inhibitory descending pain pathways alongside retraining of symptom perception	Any tumour or treatment	USA (Texas)	NCT04560673
Ozone therapy	Anti-inflammatory; antioxidant	Any tumour or treatment	Spain (Las Palmas)	NCT04299893
Prevention of peripheral neuropathy				
Repurposed and novel oral agents				
GM1	Neuroprotective agent	Breast cancer with planned paclitaxel treatment	France (Nice), USA (multiple states)	NCT06400849 NCT05751668
Ketotifen (antihistamine)	Mast cell stabilization	Colorectal cancer with planned oxaliplatin treatment	Egypt (Tanta)	NCT05624138
Losartan	Angiotensin receptor blocker, potentially neuroprotective	Breast cancer that will be treated with paclitaxel	Egypt (Cairo)	NCT06135493
Nilotinib	Selective tyrosine kinase inhibitor that may reverse paclitaxel accumulation	Breast cancer that will be treated with paclitaxel	USA (Ohio)	NCT04205903
Omeprazole	Antioxidant; inhibition of OCT2	Colorectal or pancreatic cancer that will be treated with FOLFOX or FOLFOX variants	Egypt (Tanta)	NCT05680870
Roflumilast	Phosphodiesterase 4 inhibitor; anti-inflammatory	Breast cancer that will be treated with paclitaxel	Egypt	NCT05884281
Rosemary oil	Inhibition of AChE, 5-HT and TRPA1; antioxidant	Any tumour or treatment	Germany (Filderstadt)	NCT05855044
Trimetazidine	Inhibition of long-chain 3-ketoacyl-coenzyme A thiolase, potentially neuroprotective	Breast cancer that will be treated with paclitaxel	Egypt (Minya)	NCT06459193
Venlafaxine	SNRI that may alter inhibitory descending pain pathways	Any tumour being treated with oxaliplatin or taxanes	Egypt (Mansoura)	NCT05875610
Dietary supplementation, herbal and topical				
Aconite oil	Reduction in neural hyperexcitability; warming properties	Solid tumours planned for taxane or platinum therapy for at least 3 months	Germany	NCT06186479
Curcumin	Anti-inflammatory, neuroprotective	Breast cancer with planned paclitaxel treatment	Egypt (Cairo)	NCT05966441
Cholecalciferol (vitamin D_3)	Neuroprotective; possible neural regeneration after injury	Breast cancer that will be treated with paclitaxel	Egypt (Cairo)	NCT06596122
Acetyl-L-carnitine	Inhibition of glutamine release	Any tumour with planned treatment with oxaliplatin	China (Guangzhou)	NCT05601479
n-3 PUFAs	Anti-inflammatory, neuroprotective	Colorectal cancer with planned oxaliplatin treatment	Denmark (Vejle)	NCT05404230
N-acetylcysteine	Antioxidant	Any tumour with planned treatment with cisplatin	Egypt (Cairo)	NCT06297369
Stibium metallicum praeparatum	Homeopathic preparation given subcutaneously	Breast cancer that will be treated with paclitaxel	Switzerland (Bern)	NCT04715542

Agent	Potential target or mechanism of action	Disease or prior therapy	Location	Clinical trial identifier
Prevention of peripheral neuropathy (continued)				
Device based				
Concurrent low-frequency sound waves	Stimulation of tissue repair via proliferation and differentiation	Gynaecological cancer with planned carboplatin and paclitaxel treatment	USA (Georgia)	NCT05980169
Cryotherapy and cryocompression; one trial of cryocompression with and without cilostazol (antiplatelet drug)	Reduced vasodilation and muscle excitability	Breast cancer, gynaecological cancer or any tumour planned for paclitaxel treatment; any tumour planned for taxane therapy; or colorectal or gastrointestinal cancer planned for oxaliplatin treatment	China (Beijing), Italy (Milan), France (Nice and multiple sites), Germany (Ulm), Singapore, USA (multiple states)	NCT05341141 NCT06422949, NCT06400849 NCT06627348 NCT06139458 NCT06492070 NCT05606068 NCT05642611 NCT06281925 NCT05850130
Downsized surgical or other gloves worn during chemotherapy treatment	Reduced drug exposure in the periphery	Nasopharyngeal, breast or urogenital cancer with planned taxane therapy	China (Guangzhou), South Korea (Incheon), Switzerland (St Gallen)	NCT05531916 NCT05771974 NCT06464536
Photobiomodulation (laser therapy)	Anti-inflammatory, stimulation of nerve regeneration	Breast cancer with any planned treatment or gastrointestinal malignancy with planned oxaliplatin treatment	Brazil (Rio de Janeiro), France (Saint-Gregoire)	NCT05663723 NCT06199115
Behavioural				
Acupuncture	Anti-inflammatory	Breast cancer that will be treated with taxanes	USA (Massachusetts)	NCT05528263
Behavioural	Relaxation and sensorimotor training	Children (6–18 years) planned to receive platinum or vinca alkaloid therapy or adults with colorectal cancer with planned FOLFOX treatment	Switzerland (Basel), Turkey (Karatay)	NCT05606588 NCT06499129
Exercise and nutrition	Management of inflammation and interoception	Breast cancer with planned taxane therapy; colorectal cancer with any planned treatment; any tumour on platinum agents or taxanes; or any tumour with any planned therapy	Spain (Granada and Salamanca), Turkey (Konyaalti), USA (Maryland and New York)	NCT04652609 NCT06404359 NCT06012253 NCT03858153

Neuro-oncology

OPEN ACCESS

Review

Axonal degeneration in chemotherapy-induced peripheral neurotoxicity: clinical and experimental evidence

Susanna B Park ,[1] Aysel Cetinkaya-Fisgin,[2] Andreas A Argyriou ,[3] Ahmet Höke ,[2] Guido Cavaletti,[4] Paola Alberti [4]

Table 1 Preclinical evidence for SARM1 pathway involvement in axonal degeneration in CIPN

Chemotherapy Regimen	Model type	Model details	Evidence of axonal degeneration	Type and effect of SARM1 inhibition	Reference
Paclitaxel 25 mg/kg IV t.i.w CD: 75 mg/kg	In vivo Mice	C57BL/6J SARM1 KO	Significant decrease in IENFD density and SNAP amplitude	IENFD preservation with genetic inhibition of SARM1	Turkiew *et al*, 2017
Paclitaxel 50 mg/kg IV CD: 100 mg/kg	In vivo Mice	C57BL/6J SARM1 KO	65% reduction in tail nerve SNAP amplitude	Genetic deletion of SARM1 preserves SNAP amplitude	Bosanac *et al*, 2021
Paclitaxel 50 mg/kg IV CD: 100 mg/kg	In vivo Mice	C57BL/6J	Reduction in SNAP amplitude, thermal hyperalgesia, reduced IENFD	SARM1 pharmacological inhibition provides partial protection from axonal degeneration	Bosanac *et al*, 2021
Paclitaxel 30 nM, 24 hours	In vitro DRG cultures	E14 S&D rat embryonic	Axonal degeneration in DRG cultures	SARM inhibition by shRNA transduction blocks cADPR production and axonal degeneration	Li *et al*, 2021
Vincristine 1.5 mg/kg IP b.i.w CD:12 mg/kg	In vivo Mice	C57BL/6 SARM1 KO	Reduction in IENFD, distal myelinated axons, SNAP amplitude; development of hyperalgesia	Genetic deletion of SARM1 preserves SNAP amplitude+prevents loss of IENFD, axons and hyperalgesia	Geisler *et al*, 2016
Vincristine 40 nM, 24 hours	In vitro DRG cultures	WT and SARM1 KO ED12.5 mice	Axon fragmentation in DRG cultures	Lack of axon fragmentation in SARM -/- axons	Gerdts *et al*, 2013
Vincristine 40 nM, 48 hours	In vitro DRG culture	E13.5 WT or SARM1 enzymatically disabled (E642A) mice	Axonal degeneration quantified in DRG cultures	Enzymatically active SARM1 mediated axon loss, protection in enzymatically disabled SARM1 cultures	Essuman *et al*, 2017
Vincristine 40 nM, 72 hours	In vitro DRG cultures	E13.5 CD-1 and SARM1 KO mice	WT DRG axons completely fragmented after 12–36 hours	Genetic deletion of SARM1 prevented axonal degeneration in primary cultures	Geisler *et al*, 2019
Vincristine 20 nM, 72 hours	In vitro cell cultures	SCG (SARM1 Haploinsufficient; Homozygous); SARM1 ASO-treated DRGs	80% of axon degeneration in 72 hours post Vincristine	Axons remained intact (54 hours in SARM1 haploinsufficient SGC; 72 hours in SARM1 homozygous SCG; 96 hours in ASO-treated DRGs)	Gould *et al*, 2021
Bortezomib 0.8 mg/kg IV b.i.w CD: 6.4 mg/kg	In vivo Mice	C57BL/6J SARM1 KO	Significant decrease in IENFD	SARM1 KO preserves IENFD	Geisler *et al*, 2019
Bortezomib 100 nM, 72 hours	In vitro DRG cultures	E13.5 CD-1 and SARM1 KO mice	WT DRG axons degenerated after 24–36 hours	Genetic deletion of SARM1 prevented axonal degeneration in primary cultures	Geisler *et al*, 2019
Bortezomib 0.1–15 nM 24 or 72 hours, 3 days	In vitro cell culture	Human-induced pluripotent stem cell derived motor and sensory neurons	Reduced neurite length, decrease in neurite diameter, axonal swellings	Degeneration blocked by NAD^+ but no effect of SARM1 inhibitor	Snavely *et al*, 2022
Oxaliplatin 6 mg/kg IP CD: 6 mg/kg	In vivo Mice	C57BL/6 SARM1 KO	Increased mechanical and cold hypersensitivity	SARM1 KO blocks development of mechanical and thermal allodynia	Gould *et al*, 2021
Cisplatin 4 mg/kg IV weekly CD: 16 mg/kg	In vivo Mice	SARM1 KO; C57BL/6	Decreased SNAP amplitude, IENFD, thermal hyperalgesia, formation of DNA-platinum adducts, increased calpain activation	Genetic deletion of SARM1 protected SNAP amplitude and IENFD; prevented thermal hyperalgesia, DNA-platinum adducts and calpain activation	Cetinkaya-Fisgin *et al*, 2020
Paclitaxel 40 µm, Docetaxel 0.1 µm, Oxaliplatin 500 µm, Cisplatin 50 µm, vincristine 50 µm	Zebrafish	WT and SARM1 KO	Damage to distal Schwann cells in wild-type specimens but not in SARM1 KO mutants	Genetic deletion of SARM1 increases Schwann-cell resistance to toxicity by diverse chemotherapeutic agents after axonal injury	Tian *et al*, 2020

A complete reference list for table 1 is located in online supplemental information.

ASO, antisense oligonucleotide; b.i.w, twice a week; cADPR, Cyclic adenosinediphosphate ribose; CD, cumulative dose; CIPN, chemotherapy-induced peripheral neurotoxicity; DRG, dorsal root ganglia; IENFD, Intra Epidermal Nerve Fibre Density; IP, intraperitoneal; IV, intravenous; KO, Knockout; SARM1, sterile-α and Toll/interleukin 1receptor (TIR) motif containing protein 1; SGC, superior cervical ganglion; SNAP, sensory nerve action potential; t.i.w, three times a week; WT, wild type.

SARM1 inhibition to prevent chemotherapy-induced peripheral neuropathy: Translational and early clinical evaluation of SIR2501.

Linping Yu
Sironax, Beijing, China

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NCT07765446 New

Study of **SIR2501** in Solid Tumor Patients Receiving Paclitaxel

Conditions

Chemotherapy-induced Peripheral Neuropathy

Locations

Hollywood, Florida, United States
Baltimore, Maryland, United States
East Brunswick, New Jersey, United States

Recruiting

Find contact information

Check who can join

HEALTH

The New York Times

GIVE THE TIMES

Psilocybin May Prevent Nerve Damage Caused by Chemotherapy, Study Finds

The preliminary research was conducted in mice, but scientists were optimistic the results would apply to humans. Clinical trials begin this month.

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There are no effective treatments for neuropathy, which causes pain, tingling and numbness in the hands and feet, and can force patients to scale back or halt chemotherapy when the discomfort becomes too much. Mason Trinca for The New York Times

I don't believe you…

Do it again.

THE UNIVERSITY OF TEXAS MD Anderson Cancer Center



Dr. Moran Amit

Psilocybin prevents chemotherapy-induced peripheral neuropathy through mitochondrial trafficking preservation

MARIO HELES, LILACH PASVOLSKY, HINDUJA SATHISHKUMAR, SHOROOK NAARA, YEN VU, CAITLYN L. STEWART, TONGXIN XIE, FREDERICO O. GLEBER-NETTO, WILLIAM MCCARTHY, [...], AND MORAN AMIT +20 authors Authors Info & Affiliations

SCIENCE · 3 Sep 2026 · Vol 393, Issue 6815 · DOI: 10.1126/science.aec6116

https://www.nytimes.com/2026/09/03/health/psilocybin-cancer-nerve-damage.html

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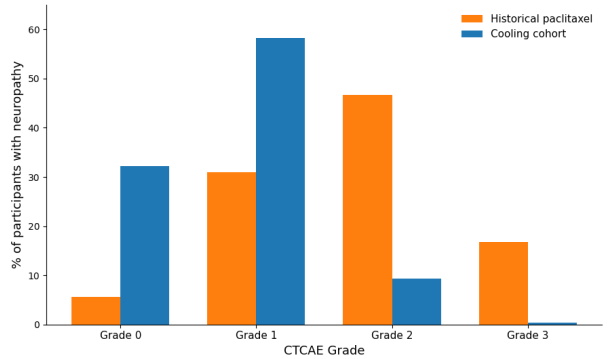
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Temperature-controlled hand-foot cooling for prevention of chemotherapy-induced polyneuropathy (CIPN): Updated real-world data collection in 600 patients.

Athina Kostara
GynOnco Düsseldorf - MVZ Medical Center Duesseldorf, Düsseldorf, Germany

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https://www.hud.ac.uk/news/2024/may/paxman-ktp-ukri-outstanding-grade/

https://www.eisanahealth.com/

https://www.actionmed.ae/images/downloads/hilotherm/Brochure-Hand-foot-syndrome.pdf

Critical Reviews in Oncology/Hematology
Volume 171, March 2022, 103575

Rehabilitation, exercise, and related non-pharmacological interventions for chemotherapy-induced peripheral neurotoxicity: Systematic review and evidence-based recommendations

Stefano Tamburin [a], Susanna B. Park [b], Angelo Schenone [c, d], Elisa Mantovani [a], Mehrnaz Hamedani [c], Paola Alberti [e], Vesile Yildiz-Kabak [f], Ian R. Kleckner [g], Noah Kolb [h], Miryam Mazzucchelli [i], Brendan L. McNeish [h], Andreas A. Argyriou [j], Guido Cavaletti [e], Ahmet Hoke [k], on behalf of the Toxic Neuropathy Consortium [1]



How about exercise?

The NEW ENGLAND JOURNAL of MEDICINE
ESTABLISHED IN 1812 JULY 3, 2025 VOL. 393 NO. 1

Structured Exercise after Adjuvant Chemotherapy for Colon Cancer

Kerry S. Courneya, Ph.D.,[1] Janette L. Vardy, M.D., Ph.D.,[2,3] Christopher J. O'Callaghan, D.V.M., Ph.D.,[4] Sharlene Gill, M.D.,[5] Christine M. Friedenreich, Ph.D.,[6,7] Rebecca K.S. Wong, M.B., Ch.B.,[8] Haryana M. Dhillon, Ph.D.,[9] Victoria Coyle, M.B., B.Ch., Ph.D.,[10] Neil S. Chua, M.D.,[11] Derek J. Jonker, M.D.,[12] Philip J. Beale, Ph.D.,[13] Kamal Haider, M.D.,[14] Patricia A. Tang, M.D.,[15] Tony Bonaventura, M.D.,[16] Ralph Wong, M.D.,[17] Howard J. Lim, M.D., Ph.D.,[5,18] Matthew E. Burge, M.B., B.S.,[19,20] Stacey Hubay, M.D.,[21] Michael Sanatani, M.D.,[22] Kristin L. Campbell, Ph.D.,[18,23] Fernanda Z. Arthuso, Ph.D.,[1] Jane Turner, M.Phil.,[3] Ralph M. Meyer, M.D.,[24] Michael Brundage, M.D.,[25] Patti O'Brien, M.Sc.,[4] Dongsheng Tu, Ph.D,[4] and Christopher M. Booth, M.D.,[25] for the CHALLENGE Investigators*

Level B Recommendations	Preliminary/ Inconclusive Evidence for Recommendations
Exercise (aerobic)	Cryotherapy
Endurance Training	Electrical stimulation
Strength Training	Massage
Balance Training	Neurofeedback
Sensorimotor Training	

Image: Joshmcguire.com

Important Questions



Can we prevent it?



Why is it worse for certain people?



Will it go away/ could it get worse?



What if I have CIPN and need more chemo



Treatment

Important Questions



Can we prevent it?



Why is it worse for certain people?



Will it go away/ could it get worse?



What if I have CIPN and need more chemo

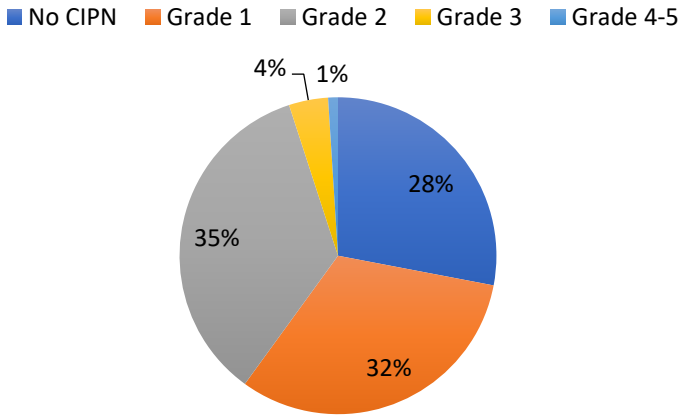


Treatment

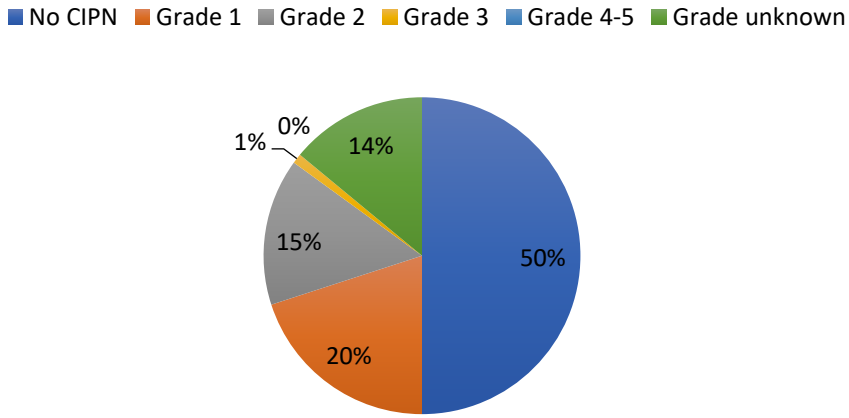
Example: Natural History of Paclitaxel Induced PN

(unpublished data)

CIPN Severity End of Treatment



CIPN Severity 2 yrs post chemo





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RESEARCH ARTICLE | September 30, 2026

Check for updates

Multifactorial Contributors to Dose Limiting and Post-Treatment Neurologic Toxicity During Chemotherapy Treatment

Tiffany Li, Hannah C. Timmins, Lisa G. Horvath, Michelle Harrison, Peter Grimison, Michael Friedlander, Gavin Marx, Frances Boyle, David Wyld, Robert D. Henderson, Tracy King, Sally Baron-Hay, Matthew C. Kiernan, Elizabeth H. Barnes, David Goldstein, and Susanna B. Park SHOW FEWER | AUTHORS INFO & AFFILIATIONS





Neuropathy Burden

- 12 months post treatment, 73% with persistent CIPN, of which 52% was moderate/severe

Scenarios

#1 Previous CIPN, needs more chemo
#2 CIPN very early
#3 Severe CIPN



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Treatment

Important Questions



Can we prevent it?



Why is it worse for certain people?



Will it go away/ could it get worse?



What if I have CIPN and need more chemo



Treatment

CIPN Symptoms

Negative Symptoms

Positive Symptoms

Oral medication

- **Duloxetine 60-120mg/d**
- TCAs- 25-100mg/day
- Gabapentin 900-3600mg/day
- Pregabalin 300-600mg/day
- Mexelitine 300-450mg/day

Topical Medications

- Lidocaine cream
- Compounded cream
  - Ketamine 10%, Gabapentin 6%, Amitriptyline 2%, Baclofen 2%, Clonidine 0.2%, Nifedipine 2%, Tetracaine 2%

Other Therapies

- Exercise
- Acupuncture
- TENS unit
- Scrambler therapy
- Massage
- PT
- Mindfulness
- CBD

Conclusions

- You are not alone
- Here is hope!
- Exercise is important
- The right treatment takes trial and error
- If you are struggling find a neurologist to help