

**Peripheral neuropathy** refers to a diverse group of conditions resulting from damage to the peripheral nervous system, including cranial nerves, spinal nerve roots, and autonomic nerves. It may affect motor, sensory, autonomic, or mixed fibers and can be axonal, demyelinating, or both. Affects 1–12% of the general population; up to 30% in adults >55 Incidence: ~77 per 100,000 person-years. It encompasses multiple forms:

- Mononeuropathy (single nerve)
- Mononeuropathy multiplex (multiple individual nerves, asymmetric)
- Polyneuropathy (symmetric, length-dependent, often distal).

Time Course	Patterns
<ul style="list-style-type: none"> <li>• Acute (&lt;4 weeks)</li> <li>• Subacute (4–8 weeks)</li> <li>• Chronic (&gt;8 weeks)</li> </ul>	<ul style="list-style-type: none"> <li>• Rapidly progressive (e.g., GBS)</li> <li>• Slowly progressive (e.g., diabetes)</li> <li>• Relapsing (CIDP)</li> <li>• Stepwise (mononeuritis multiplex)</li> </ul>

History	
<p><b>Risk Factors</b></p> <ul style="list-style-type: none"> <li>• diabetes</li> <li>• alcohol use</li> <li>• vitamin deficiency</li> <li>• immune-mediated</li> <li>• toxins, hereditary</li> </ul> <p><b>Pattern 1: Slowly progressive, distal symmetric, predominantly sensory</b></p> <ul style="list-style-type: none"> <li>• Numbness, paresthesia beginning in toes/feet Stocking-glove distribution Minimal or absent weakness Common causes: diabetes, alcohol, toxic, idiopathic</li> </ul> <p><b>Pattern 2: Slowly progressive with muscle wasting and foot abnormalities</b></p> <ul style="list-style-type: none"> <li>• Motor predominant Pes cavus, hammer toes Often hereditary Family history in many cases</li> </ul>	<p><b>Pattern 3: Subacute onset and/or proximal involvement</b></p> <ul style="list-style-type: none"> <li>• More rapid onset (weeks to months)</li> <li>• Often involves weakness more than sensory symptoms</li> <li>• May affect proximal muscles</li> <li>• Often immune-mediated</li> </ul> <p><b>Pattern 4: Rapidly progressive course with multifocal symptoms, pain, and autonomic dysfunction</b></p> <ul style="list-style-type: none"> <li>• Pain often prominent Asymmetric/multifocal Autonomic symptoms common</li> <li>• Consider: vasculitis, amyloidosis, paraneoplastic</li> </ul> <p><b>Pattern 5: Sensory ataxic neuropathy</b></p> <ul style="list-style-type: none"> <li>• Prominent proprioception loss Sensory ataxia Pseudoathetosis</li> <li>• Relative preservation of strength</li> </ul>

Physical Examination Findings	
<ul style="list-style-type: none"> <li>• Stocking-glove sensory loss</li> <li>• Decreased vibration/proprioception (sensory ataxia)</li> <li>• Absent reflexes</li> <li>• Weakness (distal or proximal)</li> </ul>	<ul style="list-style-type: none"> <li>• Structural deformities in hereditary types (pes cavus, hammer toes)</li> <li>• Autonomic features: orthostatic hypotension, GI symptoms</li> </ul>

Ancillary Tests	
<p><b>Laboratory</b></p> <p><i>Initial</i></p> <ul style="list-style-type: none"> <li>• Serum glucose</li> <li>• HbA1c, CBC, CMP</li> <li>• Vitamin B12</li> <li>• SPEP and UPEP with immunofixation</li> <li>• Thyroid function tests</li> <li>• Antinuclear antibodies</li> <li>• ESR, CRP</li> </ul> <p><i>Advanced (if warranted)</i></p> <ul style="list-style-type: none"> <li>• HIV</li> <li>• Urine/blood for heavy metals, porphyrins</li> <li>• Rheumatoid factor</li> <li>• Vitamin B1, methylmalonic acid and homocysteine level levels</li> <li>• Sjogren autoantibodies: ANA, anti-Ro/La</li> <li>• Paraneoplastic antibody panel (for patients with sensory neuropathy)</li> <li>• Lymes testing</li> <li>• Hepatitis screening B &amp; C</li> <li>• Criollo</li> <li>• Antineutrophil cytoplasm antibodies (ANCA)</li> </ul>	<p><b>Electrodiagnostic</b></p> <ul style="list-style-type: none"> <li>• Axonal: reduced CMAP/SNAP, preserved velocity</li> <li>• Demyelinating: slowed conduction, block, dispersion</li> </ul> <p><b>Imaging</b></p> <ul style="list-style-type: none"> <li>• MRI for compressive/inflammatory/plexopathies</li> <li>• Ultrasound for nerve enlargement (hereditary, CIDP)</li> </ul> <p><b>Biopsy</b></p> <ul style="list-style-type: none"> <li>• Nerve biopsy (rare): vasculitis, amyloidosis, leprosy</li> <li>• Skin biopsy: small fiber neuropathy</li> </ul> <p><b>Genetic Testing</b></p> <ul style="list-style-type: none"> <li>• Suspected hereditary cases (Pattern #2, early onset, family history)</li> </ul>



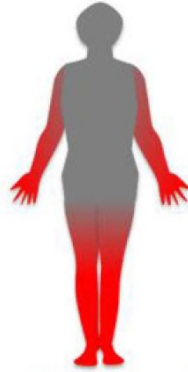
**Clinical Pearls: One of the most common neurological disorders encountered in practice**

**Pattern 1**



Sensory deficits are drawn in blue

**Pattern 2**



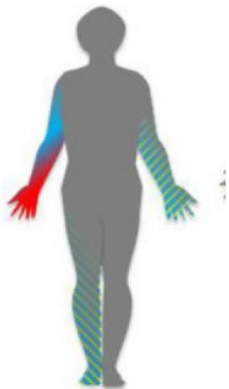
Motor deficits are drawn in red

**Pattern 3**



Sensorimotor in magenta color

**Pattern 4**



Painful and / or autonomous dysfunction is colored with green lines

**Pattern 5**



Loss of proprioception is colored in brown.

**AAN Criteria for Distal Symmetric Polyneuropathy**

**Highest likelihood**

- Multiple neuropathic symptoms
- Multiple neuropathic signs
- Abnormal electrodiagnostic studies

**Moderate likelihood**

- Multiple symptoms and signs without electrodiagnostic studies

**Lower likelihood**

- Discordant symptoms, signs
- electrodiagnostic findings

**Treatment Options**

**Conservative**

- Foot checks, proper footwear, fall prevention
- Physical therapy: strength, ROM, balance
- OT: adaptive devices, home safety
- Lifestyle: nutrition, supplements, stress reduction

**Underlying Causes**

- Diabetes: glycemic control
- Alcohol: cessation
- Vitamin deficiency: supplementation
- Immune: IVIG, steroids, plasma exchange
- Toxins: remove agent

**Pharmacologic**

- First-line: gabapentinoids, TCAs, SNRIs
- Second-line: lidocaine, capsaicin, tramadol
- Third line: opioids (limited role)

**Common Treatment Duration**

- Chronic conditions may require long-term or lifelong management
- Immune-mediated (e.g., GBS): recovery over weeks to months with intensive rehab

**Potential ICD 10 Codes**

- **G62.9:** Polyneuropathy, unspecified
- **G60.0:** Hereditary motor and sensory neuropathy
- **G61.0:** Guillain-Barré syndrome
- **G62.1:** Alcoholic polyneuropathy
- **G63:** Polyneuropathy in diseases classified elsewhere

**DDX List for this Condition**

- Diabetic polyneuropathy
- Vitamin B12 deficiency
- Alcoholic neuropathy
- CIDP
- GBS
- Monoclonal gammopathy
- Radiculopathy
- CNS disorders (e.g., MS, stroke)
- Functional neurological disorder
- Myopathies, peripheral vascular disease

## Author(s)

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## References

1. Watson JC, Dyck PJ. Peripheral Neuropathy: A Practical Approach to Diagnosis and Symptom Management. *Mayo Clin Proc.* 2015 Jul;90(7):940-51. doi: 10.1016/j.mayocp.2015.05.004. PMID: 26141332.
2. Lehmann HC, Wunderlich G, Fink GR, Sommer C. Diagnosis of peripheral neuropathy. *Neurol Res Pract.* 2020 Jul 15;2:20. doi: 10.1186/s42466-020-00064-2. PMID: 33324924; PMCID: PMC7650053.
3. Castelli G, Desai KM, Cantone RE. Peripheral Neuropathy: Evaluation and Differential Diagnosis. *Am Fam Physician.* 2020 Dec 15;102(12):732-739. PMID: 33320513.
4. Hammi C, Yeung B. Neuropathy. [Updated 2022 Oct 15]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK542220/>
5. England JD, Gronseth GS. Overview of polyneuropathy. UpToDate. <https://www.uptodate.com/contents/overview-of-polyneuropathy>.
6. American Academy of Neurology: Neurology Resources (AAN)