Saint Alphonsus
A Member of Trinity Health

NEUROMUSCULAR CHEAT SHEET FOR PRIMARY CARE PROVIDERS

Typical Peripheral Polyneuropathy (AKA "neuropathy")

Definition: Dysfunction of the peripheral nerves that is:

- Gradually progressive (over many months to years)
- Length-dependent (begins in the toes/feet and gradually spreads proximally to about the knees before fingers/hands are affected)
- Sensory predominant
- Symmetric (approximately)

Common Symptoms:

- Sensory: altered sensation, numbness, tingling, burning, electric shocks, cold sensations, itching, pain
- Unsteadiness, imbalance, disequilibrium
- Weakness (if severe)

Exam Findings:

- Decreased distal sensation (pain/temperature +/- vibration/proprioception)
- Calcaneal tendon areflexia +/- diffuse deep tendon hyporeflexia
- Distal weakness (if severe)

Evaluation of Typical Peripheral Polyneuropathy

Most Common Causes (in order)

- Diabetes mellitus/Prediabetes
- Alcohol abuse
- Hypovitaminosis B12
- Monoclonal gammopathies
- Toxins such as certain chemotherapeutic medications

Serum Laboratory Evaluation

- Hemoglobin A1c: to evaluate for diabetes mellitus/ prediabetes
  - Any A1c >5.6% is abnormal and may cause nerve damage
  - If borderline (5.5–5.6%), consider a 2-hour glucose tolerance test
- Vitamin B12 with methylmalonic acid (MMA):
  - Deficiency may exist with levels up to 500
  - Elevated MMA indicates true deficiency
- Serum protein electrophoresis (SPEP) with immunofixation:
  - To evaluate for monoclonal gammopathies

If serum laboratory evaluation and alcohol/toxin history are unrevealing, consider referral to a neuromuscular specialist for further evaluation.

Nerve Conduction Studies / Electromyography (NCS/EMG)

NCS/EMG Overview:

- The most useful test for evaluating peripheral nervous system disorders. It can confirm diagnoses and characterize features such as:
  - Chronic vs. acute (active vs. inactive)
  - Axonal vs. demyelinating
- It generally does not determine etiology
- Not necessary for typical peripheral polyneuropathy based on history and exam

Testing process:

- Includes a brief history and focused neuromuscular exam
- NCS may be performed by a technician or physician
- EMG is performed by a physician
- ***The ordering provider receives the interpreted results and is responsible for follow up.***
- ***If a full neuromuscular evaluation is desired, refer to a neuromuscular clinic rather than ordering isolated NCS/EMG.***

When to order NCS/EMG:

- Radiculopathy
- Common mononeuropathies
  - Median mononeuropathy at the wrist (carpal tunnel syndrome)
  - Ulnar mononeuropathy at the elbow (cubital tunnel syndrome)
  - Peroneal mononeuropathy at the fibular head

When neuromuscular clinic consultation is preferred:

- Motor neuron disorders (amyotrophic lateral sclerosis [ALS])
- Plexopathies

- Atypical polyneuropathies (CIDP, vasculitic neuropathies)
    - Asymmetry
    - Motor predominance
    - Non-length dependence
    - Subacute or rapid progression
- Neuromuscular junction disorders (myasthenia gravis)
- Myopathies

Neuropathic Symptom Management

Role of Neuromuscular Specialist and Primary Care

- Neuromuscular Specialist Role
    - Diagnosis of neuromuscular disorders
    - Prognosis discussions
    - Management of primary neuromuscular diseases (e.g., immunotherapy for MG, multidisciplinary ALS care)
    - Not routinely needed for: typical length-dependent polyneuropathy symptom management
- Primary Care / Pain Specialist:
    - Ongoing management of neuropathic symptoms in typical peripheral polyneuropathy

Neuropathic Medications

- Symptom-modifying only (not disease-modifying)
- Realistic goal: ~50% symptom improvement
- May improve ("positive" symptoms): pain, burning, tingling
- Does NOT improve ("negative" symptoms): numbness, imbalance / dysequilibrium / unsteadiness, or weakness
- May take weeks to months for full benefit

Pharmacologic Management

- First-line
    - SNRIs
        - Duloxetine 30 mg daily > May ^ to 60 mg after 1 week
        - Venlafaxine ER 37.5 mg daily > May ^ by 37.5 mg weekly (max 225 mg/day)
    - TCAs
        - Nortriptyline / Amitriptyline 25 mg nightly
        - May ^ by 25 mg every 1–2 weeks (max 100 mg nightly)
- Second-line: – Gabapentin
    - 300 mg TID > ^ by 300 mg weekly
    - Max 900 mg QID (renal dosing required)
- Third-line: – Pregabalin
    - 50 mg TID > ^ by 50 mg weekly
    - Max 150 mg TID (renal dosing; higher cost vs gabapentin)
- Topical Therapies
    - Less evidence-based but low risk; best for localized symptoms
    - Use consistently BID–TID for several weeks
    - Capsaicin 0.025% cream TID
    - Lidocaine 4–5% cream/patch BID–TID

Additional Considerations

- Opioids: contraindicated for chronic pain particularly neuropathic pain (risk of dependence, tolerance, withdrawal, hyperalgesia)
- Chiropractic neuropathy clinics:
    - Modalities such as TENS, lasers, etc. lack strong evidence
    - Not FDA approved, not covered by insurance, and often costly
- Providers are not neuromuscular specialists
- Physical activity: recommended
- Physical therapy: may improve gait, balance, and strength

Key Principle

- Management of the underlying etiology (e.g., diabetes, alcohol abuse) is essential to prevent progression.