CLINICAL GUIDELINES

PND Imaging Policy

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eviCore healthcare Clinical Decision Support Tool Diagnostic Strategies: This tool addresses common symptoms and symptom complexes. Imaging requests for individuals with atypical symptoms or clinical presentations that are not specifically addressed will require physician review. Consultation with the referring physician, specialist and/or individual's Primary Care Physician (PCP) may provide additional insight.

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Peripheral Nerve Disorders (PND) Imaging Guidelines

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Abbreviations for Peripheral Nerve Disorders Imaging Guidelines

AIDS	Acquired Immunodeficiency Syndrome
ALS	Amyotrophic Lateral Sclerosis
CIDP	Chronic Inflammatory Demyelinating Polyneuropathy
CNS	central nervous system
CPK	creatinine phosphokinase
CT	computed tomography
EMG	electromyogram
LEMS	Lambert-Eaton Myasthenic Syndrome
MG	myasthenia gravis
MRI	magnetic resonance imaging
MRN	magnetic resonance neurography
MRS	magnetic resonance spectroscopy
NCV	nerve conduction velocity
PET	positron emission tomography
PNS	peripheral nervous system
PNST	Peripheral Nerve Sheath Tumor
POEMS	Polyneuropathy, Organomegaly, Endocrinopathy, M-protein, Skin changes
TOS	Thoracic Outlet Syndrome

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PN-1: General Guidelines

A current clinical evaluation (within 60 days) is required before advanced imaging can be considered. The clinical evaluation may include a relevant history and physical examination, including a neurological examination, appropriate laboratory studies, non-advanced imaging modalities, electromyography and nerve conduction (EMG/NCV) studies. Other meaningful contact (telephone call, electronic mail or messaging) by an established patient can substitute for a face-to-face clinical evaluation.

- MRI is, most often, preferable to CT.

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PN-2: Focal Neuropathy

Focal Disorder	EMG/NCV Initially?	Advanced Imaging
Carpal Tunnel Syndrome	YES	➢ No established role for advanced imaging. ➢ Ultrasound of the wrist to estimate size of the carpal tunnel and diameter of the median nerve may be helpful in the evaluation and confirmation of carpal tunnel syndrome pre-operatively when EMG findings are equivocal and clinical findings are uncertain. ➢ See **MS-21: Wrist** and **SP-3: Neck (Cervical Spine) Pain Without/With Neurological Features and Trauma**.
Ulnar Neuropathy	YES	Ultrasound for evaluation when clinical findings and EMG/NCV findings are uncertain. MRI of the elbow without contrast (CPT® 73221) or MRI of the upper arm forearm without contrast (CPT® 73218) for complex cases when diagnosis remains uncertain after EMG and US or for pre-op planning.
Radial Neuropathy	YES	➢ MRI of the upper arm or forearm without contrast (CPT® 73218) in severe cases when surgery is being considered. ➢ MRI of the upper arm or forearm without and with contrast (CPT® 73220) if there is a suspicion of a nerve tumor such as a neuroma.
Radial Neuropathy Notes: Leads to wrist drop with common sites of entrapment the inferior aspect of the humerus (Saturday night palsy) or the forearm (Posterior Interosseus Syndrome). Trauma or fractures of the humerus, radius, or ulna can damage the radial nerve.		
Sciatic Neuropathy	YES	CT pelvis with contrast (CPT® 72193) or MRI pelvis without contrast (CPT® 72195) should be performed in the evaluation of these entities. CT pelvis without contrast is not indicated due to lack of soft tissue contrast. It should only be performed in the rare circumstance of contrast allergy and contraindication to MRI such as pacemaking device.
Sciatic Neuropathy Notes: Trauma to the gluteal area with hematoma, injection palsy, hip or pelvic fractures, or hip replacement (arthroplasty) and rarely Piriformis Syndrome involves entrapment of the sciatic nerve at the sciatic notch in the pelvis by a tight piriformis muscle band.		
Femoral Neuropathy	NO	CT pelvis with contrast (CPT® 72193) or MRI pelvis without contrast (CPT® 72195) should be performed in the evaluation of these entities.
Femoral Neuropathy Notes: as a complication of pelvic surgery in women or those on anticoagulants with retroperitoneal bleeding.		

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Meralgia Paresthetica	NO	CT pelvis with contrast (CPT® 72193) or MRI pelvis without contrast (CPT® 72195) may be performed in cases of diagnostic uncertainty or for pre-op planning. CT pelvis without contrast is not indicated due to lack of soft tissue contrast. It should only be performed in the rare circumstance of contrast allergy and contraindication to MRI such as pacemaking device.
Meralgia Paresthetica Notes: sensory loss in the lateral femoral cutaneous nerve as it exits the pelvis under the inguinal ligament (lateral thigh without extension into lower leg).		
Peroneal Neuropathy	YES	Knee MRI without contrast (CPT® 73721) or MRI lower extremity other than joint without contrast (CPT® 73718) in severe cases when surgery is considered.
Peroneal Neuropathy Notes: foot drop which usually resolves unless L5 radiculopathy.		
Tarsal Tunnel Syndrome	N/A	See **MS-27: Foot (Tarsal Tunnel Syndrome).**
Other Peripheral Mononeuropathies	N/A	MRI without or without and with contrast if preoperative.

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PN-3: Polyneuropathy

Poly-Disorder	EMG/NCV Initially?	Advanced Imaging	Comments
PNS/CNS Crossover Syndromes	YES	MRI without and with contrast of brain and/or spinal cord if clinical findings point to abnormalities in those areas.	Guillain-Barré syndrome
AIDS Related Cytomegaloviral Neuropathy/ Radiculopathy	YES	Lumbar spine MRI without and with contrast (CPT® 72158) if suspected.	Urinary retention and a clinically confusing picture in the legs.
Chronic Inflammatory Demyelinating Polyneuropathy (CIDP)	YES	Lumbar spine MRI without and with contrast (CPT® 72158) if uncertain following EMG.	
Multifocal Motor Neuropathy	YES	MRI of the brachial plexus without and with contrast (CPT® 71552 or CPT® 73220) if uncertain following EMG.	
POEMS (Polyneuropathy, Organomegaly, Endocrinopathy, M-protein, Skin changes)	YES	Advanced imaging is for the non-neurological entities of this rare osteosclerotic plasmacytoma syndrome.	See **ONC-25: Multiple Myeloma and Plasmacytomas.**
Subacute Sensory Neuronopathy & Other Paraneoplastic Demyelinating Neuropathies	YES	Advanced imaging should be guided by specific clinical concern (See relevant guideline). For evaluation of suspected paraneoplastic syndromes: See **ONC-30.3: Paraneoplastic Syndromes**	

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PN-4: Brachial Plexus

- Brachial plexus studies can be coded either as upper extremity other than joint MRI without or without and with contrast (CPT® 73218 or CPT® 73220), Chest MRI without or without and with contrast (CPT® 71550 or CPT® 71552) or Neck MRI without (CPT® 70540) or without and with contrast (CPT® 70543) (if upper trunk) after EMG/NCV examination for:
  - Malignant infiltration (EMG not required)
  - Radiation plexitis to r/o malignant infiltration
  - Brachial plexitis (Parsonage-Turner Syndrome or painful brachial amyotrophy).
    - Self-limited syndrome characterized by initial shoulder region pain followed by weakness of specific muscles in a pattern which does not conform to involvement of a single root or distal peripheral nerve
    - Consider MRI of the cervical spine if radiculopathy.
    - See **SP-3: Neck (Cervical Spine) Pain Without/With Neurological Features and Trauma**
  - Traumatic injury
  - Neurogenic Thoracic Outlet Syndrome (TOS) failed a 2 to 3 month trial of conservative management and are being considered for surgical treatment.
  - See **CH-31: Thoracic Outlet Syndrome (TOS)**
  - Preoperative study which requires evaluation of the brachial plexus

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PN-5: Lumbar and Lumbosacral Plexus

- The following studies can be considered: MRI Pelvis without and with contrast with fat suppression imaging (CPT® 72197) **OR** MRI Abdomen and Pelvis without and with contrast with fat suppression imaging (CPT® 74183 and CPT® 72197) **OR** if MRI is not available, CT Pelvis with contrast (CPT® 72193) **OR** CT Abdomen and Pelvis with contrast (CPT® 74177) can be considered after EMG/NCV based on whether the upper lumbar plexus (abdominal retroperitoneal space) or the lumbosacral plexus (pelvis), respectively, is involved based on:
  - Malignant infiltration (EMG not required)
  - Radiation plexopathy to r/o malignant infiltration
  - Traumatic injury

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PN-6: Muscle Disorders

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PN-6.1: Neuromuscular Disease

- Myasthenia Gravis (MG) is associated with thymic disease and can undergo:
  - Chest CT with contrast (CPT® 71260) after an established diagnosis of MG.
    - Can be repeated if initial CT previously negative and now symptoms of chest mass, rising anti-striated muscle antibody titers, or need for preoperative evaluation (clinical presentation, electro-diagnostic studies, and antibody titers).
  - Chest CT without contrast (CPT® 71250) may be used if there is concern regarding adverse effects of contrast in patients with MG.
- Lambert–Eaton myasthenic syndrome (LEMS) is associated with small cell lung cancer and can undergo:
  - Chest CT with contrast (CPT® 71260) with a suspected diagnosis (CXR, symptoms of lung mass, clinical presentation, electro-diagnostic studies, and antibody titers).
    - Can be repeated if initial CT previously negative after 3 months with persistent suspicion.
- Stiff man syndrome is associated with small cell lung cancer and breast cancer
  - Chest CT with contrast (CPT® 71260) if Stiff Man Syndrome is suspected based on clinical findings.

PN-6.2: Inflammatory Muscle Diseases

- MRI and ultrasound are increasingly being used in the evaluation of muscle disease. MRI may be helpful in demonstrating abnormalities in muscles that are difficult to examine or not clinically weak, and MRI can also help distinguish between different types of muscle disease. MRI is also useful in determining sites for muscle biopsy.
- MRI Lower Extremity non-joint without contrast (CPT® 73718) or MRI Lower Extremity non-joint without and with contrast (CPT® 73720) and/or MRI Upper Extremity non-joint (CPT® 73218) or MRI Upper Extremity non-joint without and with contrast (CPT® 73220), usually the most affected muscle is imaged (when criteria is met imaging can be approved for bilateral studies) for:
  - Additional evaluation of myopathy or myositis (based on clinical exam and adjunct testing with EMG/NCV and labs)
  - To plan muscle biopsy
  - See **PEDMS-10.3: Inflammatory Muscle Diseases**
- All cases with dermatomyositis and polymyositis can undergo search for occult neoplasm (See **ONC–30.3: Paraneoplastic Syndromes**):
  - Initially with Chest CT with contrast (CPT® 71260) for lung cancer and pelvic ultrasound (in women) (CPT® 76856 or CPT® 76857 and/or CPT® 76830 [transvaginal]) for ovarian cancer should be done initially
  - Abdomen and Pelvis CT with contrast (CPT® 74177) if the above fail to make a diagnosis

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PN-6.3: Gaucher Disease (Storage Disorders)

- See **AB-11: Gaucher Disease and Hemochromatosis** in the Abdomen Imaging Guidelines.
- See **PEDPN-4: Gaucher Disease** in the pediatric PND Imaging Guidelines.

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PN-7: Newer Imaging Techniques

- See **HD-24.6: Magnetic Resonance Neurography (MRN)**.

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PN-8: Amyotrophic Lateral Sclerosis (ALS)

- MRI of the Brain, Cervical, Thoracic, and Lumbar Spine most often without contrast, but may be without and with contrast with meningeal symptoms.
  - Can be considered when ALS is suspected (combination of upper and lower motor neuron findings) to establish a diagnosis.
  - Repeat imaging can be evaluated based on the appropriate **Spine Imaging Guidelines**.

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PN-9: Peripheral Nerve Sheath Tumors (PNST)

- Tumors (Schwannomas or Neurofibromas) that arise from Schwann cells or other connective tissue of the nerve are located anywhere in the body and can undergo advanced imaging when suspected, which may include:
  - MRI Brain without and with contrast (CPT® 70553). (Vestibular Schwannomas Refer to **HD-33.1: Acoustic Neuroma and Other Cerebellopontine Angle Tumors**)
  - Cervical, thoracic, and lumbar spine MRI without and with contrast (CPT® 72156, CPT® 72157, and CPT® 72158) if paraspinalneurofibroma is found any spine level or multiple simplex perineuralneurofibromas.
  - Follow-up imaging is not needed unless:
    - New symptoms or neurological findings develop
    - Post operatively, at the discretion of the surgeon and to reestablish baseline if the tumor was not completely removed
    - Malignant transformation (5%) is known or suspected; includes a metastatic work-up with CT Chest and Abdomen with contrast (CPT® 71260 and CPT® 74160).
- See **PEDONC-2.3: Neurofibromatosis 1 and 2 (NF1 and NF2)**

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PN-10: Nuclear Imaging

- Nuclear Medicine
  - Nuclear medicine studies are not generally indicated in the evaluation of peripheral nerve disorders. See **PEDPN-2: Neurofibromatosis** for specific imaging guidelines regarding PET/CT in evaluation of peripheral nerve tumors.

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