AMERICAN COLLEGE OF
OCCUPATIONAL AND
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Chronic Pain Guideline

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no known relationship between nociception, pain, and pain behavior when a condition becomes chronic,[51] such behavior should be conceptualized as a clinical finding.[113] Pain behavior is also not equivalent to "secondary gain." While the latter is generally based on presumptively seeking reward or other desirable consequences of an injury, pain behavior may be learned or conditioned, shaped, and maintained by subtle reinforcement in persons about whom such psychological inferences may be inappropriate and where significant suffering or antecedent psychosocial problems are not noted. There is evidence that persons with chronic non-malignant pain may be uniquely sensitive to operant and classical (Pavlovian) conditioning in the learning of pain responses.[114-116] Still, chronic non-malignant pain may foster psychosocial and behavioral dysfunction, as well as magnify pain. The distinctions between these situations become important in the development of interventions to address them.

In persons with chronic non-malignant pain, many permutations of these concepts are possible. For example, significant and disabling pain and illness behavior may evolve and become a clinical problem, even in the absence of clinically meaningful nociception, pain, or suffering. Pain behavior may be noted in the presence of nociception or neuropathy, but the patient may not be suffering in clinically meaningful ways and may not be disabled. Other persons may be suffering, but their pain complaints may be a minor part of their problems. It is important to view the patient in this context and evaluate and treat these components appropriately, which requires a more complex evaluation and treatment plan than required for the patient with uncomplicated acute pain.

Diagnostic Criteria

If the patient does not have red flags for serious conditions, the provider should determine the diagnosis. The criteria presented in Table 3 follow the clinical thought process, from the mechanism of illness or injury, to unique symptoms and signs of a particular disorder and, finally, to test results (if any tests are needed to guide treatment at this stage). The ICD coding system assigns codes based upon pathophysiologic mechanisms. Specific ICD codes are frequently required for reimbursement for medical services. However, for at least 90% of LBP cases, the ICD codes utilized are overly specific. The pathophysiologic correlates for lumbar sprain and strain, for example, have not been determined. It is also difficult to match specific diagnostic ICD codes to the clinical presentation in many patients with chronic pain, especially initially.

Table 3. Diagnostic Criteria for Non-red Flag Conditions*

Probable Diagnosis or Injury	Symptoms	Signs	Tests and Results
Chronic Persistent Pain	Pain for 12 plus hours out of 24, or pain limiting specific activities (sleep, mood, or appetite disturbances may be present)	None, other than specific for a discrete entity (e.g., osteoarthrosis)	Diagnostic tests if targeting the speci body part and there is a potential for meaningful intervention
Neuropathic Pain	Burning, lancinating, independent of activity; weakness	May have normal examination or may have abnormalities that include muscle weakness, sensibility decrements, stretch	EMG/NCS Glucose tolerance testing, fasting glu and/or hemoglobin A1c if concerns a diabetes mellitus

		reflex abnormalities, neurotrophic skin changes	Possible testing for alcohol (e.g., MC GGTP, hepatic enzymes) Rheumatological panels, ESR if conce about those disorders
Central*	Highly variable findings depending on location and extent of injury Burning pain perceived peripherally in region of CNS insult	Highly variable findings depending on mechanism, extent of injury (may range from no objective findings to paralysis) Neurotrophic skin changes usually affecting ipsilateral upper and lower limb and maybe contralateral face	Brain MRI (occasionally spinal MRI) Somatosensory evoked potential stu not indicated for radicular lesions bu diagnostic for myelopathic injury/dis EMG unlikely to be helpful, but often be abnormal depending on location a extent of insult(s)
Peripheral	Burning pain in distal limbs (may have weakness)	Usually normal; may have symmetrical neurotrophic skin changes	EMG/NCS, blood studies (glucose, ES hepatic enzymes, MCV, rheumatolog panels)
Radicular	Radiating, lancinating, burning pain Reduced sensibility along dermatomal distribution	Myotomal weakness Reduced stretch reflexes	MRI, EMG/NCS correlate with pain distribution, sensory and/or muscle/ deficits; for lumbar, positive straight raising present; for cervical, positive provocative maneuvers present
Complex Regional Pain Syndrome	Pain quality is similar to that described for "neuropathic," but involves a distal limb and extends beyond the distribution of a single peripheral nerve and is particularly severe	Asymmetrical use of extremities, swelling (or atrophy), mottling, temperature abnormalities, sudomotor findings, hair/nail/skin findings	Temperature discrepancy between li Bone scan ≥6 months after onset shc reduced uptake in affected extremity followed by increased radiotracer retention in peri-articular metaphyse distal limb 3 hours later; 6 months af onset typical demineralization in lon bones adjacent to joints distally on affected side Sweat studies
Trigger Points/ Myofascial Pain (See guideline on Shoulder Disorders)	Non-radiating, usually unilateral pain most commonly periscapular (generally unilateral and in body part subjected to injury)	Muscle taut band or knot with referred pain on palpation Palpation reproduces patient pain Absence of widespread tender points	None Occasionally, rheumatological testing helpful to demonstrate an alternativ disorder
Tender Points/ Fibromyalgia*	Widespread non-radiating pain often with prior or current depression, other affective disorders, and/or other psychological issues; fatigue often present	Absence of "objective" findings on exam. Numerous largely symmetrical tender points were a prior diagnostic requirement. Tender point(s) in muscle nevertheless are often present, which when compressed reproduce patient's pain	No inflammatory markers in blood st normal MRI, EMG, x-rays; generally r antecedent physical trauma
Chronic Pain Syndrome**	Enduring or recurring pain persisting longer than typical for an associated condition	Marked alteration in behavior with frequent depression or anxiety	Psychological evaluation (including diagnostic testing as indicated) may l useful

Chronic Persistent Pain and Chronic Pain Syndrome

Summary of Recommendations

The following summary table contains recommendations for evaluating and managing chronic persistent pain from the Evidence-based Chronic Pain Panel. These recommendations are based on critically appraised higher quality research evidence or, when such evidence was unavailable or inconsistent, on expert consensus as required in ACOEM's Methodology. Recommendations are made under the following categories:

- Strongly Recommended, "A" Level
- Moderately Recommended, "B" Level
- Recommended, "C" Level
- Insufficient – Recommended (Consensus-based), "I" Level
- Insufficient – No Recommendation (Consensus-based), "I" Level
- Insufficient – Not Recommended (Consensus-based), "I" Level
- Not Recommended, "C" Level
- Moderately Not Recommended, "B" Level
- Strongly Not Recommended, "A" Level

Laboratory Tests for Chronic Persistent Pain	Recommended, Insufficient Evidence (I)
Antibodies to Confirm Specific Disorders	Recommended, Insufficient Evidence (I)
ANSAR Testing for Diagnosing Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
Nonspecific Inflammatory Markers for Screening for Inflammatory Disorders	Recommended, Insufficient Evidence (I)
Cytokine Tests for Diagnosing Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
Needle EMG and Nerve Conduction Study to Diagnose	Recommended, Insufficient Evidence (I)
Surface EMG for Diagnosing Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
Functional MRIs for Diagnosing Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
Local Anesthetic Injections for Diagnosing Chronic Persistent Pain	Recommended, Insufficient Evidence (I)
SPECT/PET for Diagnosing Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
FCEs for Chronic Persistent Pain	Recommended, Insufficient Evidence (I)
Bed Rest for Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
Sleep Posture	Recommended, Insufficient Evidence (I)
Specific Beds or Other Commercial Sleep Products	Not Recommended, Insufficient Evidence (I)
Aerobic Exercise for Chronic Persistent Pain	Recommended, Insufficient Evidence (I)
Strengthening Exercise for Chronic Persistent Pain	Recommended, Insufficient Evidence (I)
Stretching Exercise for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
Aquatic Therapy for Chronic Persistent Pain	Recommended, Insufficient Evidence (I)

Yoga for Other Chronic Persistent Pain	Recommended, Insufficient Evidence (I)
Physical or Occupational Therapy for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
Oral NSAIDs for Chronic Persistent Pain	Recommended, Insufficient Evidence (I)
Acetaminophen for Chronic Persistent Pain	Recommended, Insufficient Evidence (I)
Norepinephrine Reuptake Inhibitor Anti-depressants for Chronic Persistent Pain	Recommended, Insufficient Evidence (I)
Selective Serotonin Reuptake Inhibitors (SSRIs), Bupropion, or Trazodone for Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
Duloxetine for Chronic Persistent Pain	Recommended, Insufficient Evidence (I)
Anti-convulsant Agents (Except Topiramate) for Chronic Persistent Pain	Recommended, Insufficient Evidence (I)
Topiramate for Chronic Persistent Pain	Recommended, Insufficient Evidence (I)
Gabapentin and Pregabalin for Chronic Persistent Pain	Recommended, Insufficient Evidence (I)
Clonidine	No Recommendation, Insufficient Evidence (I)
Epidural Clonidine for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
Ketamine Infusion for Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
Dextromethorphan for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
Glucocorticosteroids for Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
Ketanserin for Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
Muscle Relaxants for Acute Exacerbations of Chronic Persistent Pain	Recommended, Insufficient Evidence (I)
Topical NSAIDs for Chronic Persistent Pain Where Target Tissue Superficially Located	Recommended, Insufficient Evidence (I)
EMLA Cream for Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
Lidocaine Patches for Chronic Persistent Pain	Recommended, Insufficient Evidence (I)
Tumor Necrosis Factor-alpha Blockers for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
Magnets and Magnetic Stimulation for Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
Taping and Kinesiotaping for Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
Self-application of Cryotherapies for Chronic Persistent Pain	Recommended, Insufficient Evidence (I)
Provider-applied Cryotherapies for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
Self-application of Heat Therapy for CRPS or Other Chronic Pain Syndromes	Recommended, Insufficient Evidence (I)
Diathermy for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
External Radiation for Sympathetic Blockade for Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
Ultrasound for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
Provider-based or self-application of Infrared Therapy for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
Low-level Laser Therapy for Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
Manipulation for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
Massage for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
Mechanical Massage Devices for Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
Myofascial Release for Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
Acupuncture for Chronic Persistent Pain	Recommended, Insufficient Evidence (I)

Reflexology for Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
High-voltage Galvanic Therapy for Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
H-Wave® Device Stimulation for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
Interferential Therapy for Chronic Persistent Pain.	No Recommendation, Insufficient Evidence (I)
Iontophoresis for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
Microcurrent Electrical Stimulation for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
PENS for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
TENS for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
Intrapleural Bupivacaine Infusions for Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
Lidocaine Infusion for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
Intrathecal Drug Delivery Systems for Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)
Ziconotide for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
Psychological Evaluation for Chronic Persistent Pain Patients	Recommended, Insufficient Evidence (I)
Fear Avoidance Belief Training	Recommended, Insufficient Evidence (I)
Biofeedback	Recommended, Insufficient Evidence (I)
Cognitive Behavioral Therapy	Moderately Recommended, Evidence (B)
Herbal and Other Preparations for Chronic Persistent Pain	No Recommendation, Insufficient Evidence (I)
Vitamins for Chronic Persistent Pain	Not Recommended, Insufficient Evidence (I)

Related Terms

- Non-specific pain
- Low Back Pain (see Lumbar Spine Disorders Guideline)
- Neck Pain (see Cervical and Thoracic Spine Disorders Guideline)
- Mid-back Pain (see Cervical and Thoracic Spine Disorders Guideline)
- Thoracic Pain (see Cervical and Thoracic Spine Disorders Guideline)
- Non-specific Hand Pain (see Hand, Wrist, Forearm Disorders Guideline)
- Non-specific Forearm Pain (see Hand, Wrist, Forearm Disorders Guideline)
- Myofascial Pain Syndrome (see Shoulder Disorders Guideline)
- Trigger Points (see Shoulder Disorders Guideline)
- Fibromyalgia (see Fibromyalgia Guideline)
- Tender Points (see Fibromyalgia Guideline)
- Osteoarthrosis
- Rheumatoid Arthritis
- Systemic Lupus Erythematosus
- Polymyalgia rheumatic
- Rheumatological Disease
- Autoimmune disease
- Osteomalacia
- Porphyrias
- Cancers/neoplasias
- Pain Disorder
- Malingering
- Colitis

Needle EMG and Nerve Conduction Study to Diagnose

Recommended.

Needle EMG and nerve conduction study is recommended for evaluation of select chronic persistent pain patients.

Strength of Evidence – **Recommended, Insufficient Evidence (I)**

Level of Confidence – High

Indications:	Indications include the evaluation of symptoms that are either in one limb or are widespread. Includes the evaluation of potential radicular pain. Also includes the post-surgical population to evaluate the potential for a nerve conduction delay identifiable by NCS with inching/segmental technique. Generally not performed until there is failure to resolve after waiting 4 to 6 weeks to provide for sufficient time to develop EMG abnormalities (usually a minimum of 3 weeks to begin to show significant changes).
Benefits:	Diagnosing an unknown condition. Identification of a neurological conduction delay caused by a scar that is remediable.
Harms:	Negligible. Modest pain from the procedure
Frequency/Dose/Duration:	One evaluation. A second evaluation may be indicated when either there is a significant change in symptoms. It is also reasonable to repeat testing after a period of a year or two as initial testing is known to occasionally become positive with the passage of time.
Rationale:	EMG/NCS is often helpful for helping define the location and extent of neurological impairments. EMG/NCS is minimally invasive, has minimal adverse effects, is moderately costly, has been found to be diagnostically helpful and is thus recommended for diagnosis in select chronic persistent pain patients.
Evidence:	There are no quality studies evaluating EMG/NCS for the diagnosis of chronic persistent pain syndrome.

Fibromyalgia

Summary of Recommendations

The following summary table contains recommendations for evaluating and managing fibromyalgia from the Evidence-based Chronic Pain Panel. These recommendations are based on critically appraised higher quality research evidence or, when such evidence was unavailable or inconsistent, on expert consensus as required in ACOEM's Methodology. Recommendations are made under the following categories:

- Strongly Recommended, "A" Level
- Moderately Recommended, "B" Level
- Recommended, "C" Level
- Insufficient – Recommended (Consensus-based), "I" Level
- Insufficient – No Recommendation (Consensus-based), "I" Level
- Insufficient – Not Recommended (Consensus-based), "I" Level
- Not Recommended, "C" Level
- Moderately Not Recommended, "B" Level
- Strongly Not Recommended, "A" Level

Cytokine Testing for Fibromyalgia	Not Recommended, Insufficient Evidence (I)
Antibodies for Fibromyalgia	Strongly Recommended, Evidence (A)
Non-specific Inflammatory Markers for Screening for Inflammatory Disorders for Fibromyalgia	Recommended, Evidence (C)
ANSAR Testing for Diagnosing Fibromyalgia	Not Recommended, Insufficient Evidence (I)
Functional MRIs for Diagnosing Fibromyalgia	No Recommendation, Insufficient Evidence (I)
SPECT/PET for Diagnosing Fibromyalgia	Not Recommended, Insufficient Evidence (I)
Needle EMG and Nerve Conduction Study to Diagnose Fibromyalgia	Not Recommended, Insufficient Evidence (I)
Surface EMG for Diagnosing Fibromyalgia	Not Recommended, Insufficient Evidence (I)
Local Anesthetic Injections for Diagnosing Fibromyalgia	Not Recommended, Insufficient Evidence (I)
Functional Capacity Evaluations for Fibromyalgia	Recommended, Insufficient Evidence (I)
Bed Rest for Fibromyalgia	Not Recommended, Insufficient Evidence (I)
Fear Avoidance Belief Training for Fibromyalgia	Recommended, Insufficient Evidence (I)
Aerobic Exercise for Fibromyalgia	Strongly Recommended, Evidence (A)
Strengthening, Stabilization, and Resistance Exercise for Fibromyalgia	Moderately Recommended, Evidence (B)
Stretching Exercises For Fibromyalgia (Non-Yoga)	Not Recommended, Evidence (C)
Yoga for Fibromyalgia	Recommended, Insufficient Evidence (I)
Pilates for Fibromyalgia	No Recommendation, Insufficient Evidence (I)
Swimming for Fibromyalgia	Recommended, Evidence (C)
Aquatic Therapy for Fibromyalgia (Other than Swimming)	Moderately Recommended, Evidence (B)
Tai Chi for Fibromyalgia (Not Swimming)	Moderately Recommended, Evidence (B)
Spa and Balneotherapy for Fibromyalgia	No Recommendation, Insufficient Evidence (I)
Mirror Therapy for Fibromyalgia	No Recommendation, Insufficient Evidence (I)
Whole Body Vibration for Fibromyalgia	No Recommendation, Insufficient Evidence (I)
Oral NSAIDs for Fibromyalgia	Recommended, Evidence (C)

are high cost, have no quality evidence of efficacy for diagnosis of fibromyalgia, and so are not recommended.

Evidence: A comprehensive literature search was conducted using PubMed, Scopus, CINAHL, Cochrane Library, and Google Scholar without date limits using the following terms: SPECT, Single-Photon Emission Computed Tomography, Single Photon Emission Computed Tomography; fibromyalgia; diagnostic, diagnosis, sensitivity, specificity, positive predictive value, negative predictive value, and predictive value of tests, efficacy, and efficiency. We found and reviewed 9 articles in PubMed, 10 in Scopus, 0 in CINAHL, 2 in Cochrane Library, 4,030 in Google Scholar, and 0 from other sources. We considered for inclusion 4 from PubMed, 0 from Scopus, 0 from CINAHL, 0 from Cochrane Library, 1 from Google Scholar, and 0 from other sources. Of the 5 articles considered for inclusion, 2 diagnostic studies and 0 systematic studies met the inclusion criteria. A comprehensive literature search was conducted using PubMed, Scopus, CINAHL, Cochrane Library, and Google Scholar without date limits using the following terms: PET, PET Scans, Positron Emission Tomography; fibromyalgia; diagnostic, diagnosis, sensitivity, specificity, positive predictive value, negative predictive value, and predictive value of tests, efficacy, and efficiency. We found and reviewed 2 articles in PubMed, 0 in Scopus, 40 in CINAHL, 0 in Cochrane Library, 0 in Google Scholar, and 0 from other sources. Zero articles met the inclusion criteria. There is a moderate-quality study incorporated into this analysis. There is low-quality evidence listed in Appendix 4.

Electrodiagnostic studies have been used for evaluation of fibromyalgia patients [583].

Needle EMG and Nerve Conduction Study to Diagnose Fibromyalgia

Not Recommended.

Needle EMG and nerve conduction studies are not recommended for evaluation of fibromyalgia patients.

Strength of Evidence – **Not Recommended, Insufficient Evidence (I)**

Level of Confidence – **Moderate**

Rationale: EMG/NCS is often helpful for helping define the location and extent of neurological impairments (e.g., see Low Back Disorders, Cervical and Thoracic Spine Disorders and Hand, Wrist and Forearm Disorders Guidelines). EMG/NCS is minimally invasive, has minimal adverse effects, is moderately costly, has not been found to be diagnostically helpful outside of the evaluation of symptoms consistent with neurological impingement, and is thus is not recommended for routine diagnosis in fibromyalgia patients.

Evidence: A comprehensive literature search was conducted using PubMed, Scopus, CINAHL, Cochrane Library, and Google Scholar without date

limits using the following terms: Electrodiagnosis, Electrodiagnostic, Electrodiagnostic Studies; fibromyalgia; diagnostic, diagnosis, sensitivity, specificity, positive predictive value, negative predictive value, and predictive value of tests, efficacy, and efficiency. We found and reviewed 56 articles in PubMed, 15 in Scopus, 0 in CINAHL, 0 in Cochrane Library, 0 in Google Scholar, and 0 from other sources. Zero articles met the inclusion criteria. There are no quality studies evaluating the use of Needle EMG and/or Nerve Conduction Studies to diagnose fibromyalgia.

Surface EMG has been used for evaluation of fibromyalgia patients [584, 585] [586-588].

Surface EMG for Diagnosing Fibromyalgia.

Not Recommended.

Surface EMG is not recommended for evaluation of fibromyalgia. There are selective indications for use with biofeedback.

Strength of Evidence – **Not Recommended, Insufficient Evidence (I)**

Level of Confidence – **High**

Rationale: Surface EMG has no demonstrated value in the clinical evaluation or treatment of fibromyalgia with resultant altered management or improved clinical outcomes. Surface EMG may be of use in biofeedback training, and gait analysis for musculoskeletal and/or neurologic disorders, but it has no established use in the management of fibromyalgia and is thus not recommended.

Evidence: A comprehensive literature search was conducted using PubMed, Scopus, CINAHL, Cochrane Library, and Google Scholar without date limits using the following terms: Surface EMG, Surface Electomyography; fibromyalgia; diagnostic, diagnosis, sensitivity, specificity, positive predictive value, negative predictive value, and predictive value of tests, efficacy, and efficiency. We found and reviewed 25 articles in PubMed, 5 in Scopus, 3 in CINAHL, 0 in Cochrane Library, 3,310 in Google Scholar, and 0 from other sources. We considered for inclusion 4 from PubMed, 1 from Scopus, 2 from CINAHL, 0 from Cochrane Library, 0 from Google Scholar, and 0 from other sources. Of the 7 articles considered for inclusion, 3 diagnostic studies and 0 systematic studies met the inclusion criteria. There are no quality studies evaluating sEMG for the diagnosis of patients with fibromyalgia. There is low-quality evidence listed in Appendix 4.

Neuropathic Pain

Summary of Recommendations

The following summary table contains recommendations for evaluating and managing neuropathic pain from the Evidence-based Chronic Pain Panel. These recommendations are based on critically appraised higher quality research evidence or, when such evidence was unavailable or inconsistent, on expert consensus as required in ACOEM's Methodology. Recommendations are made under the following categories:

- Strongly Recommended, "A" Level
- Moderately Recommended, "B" Level
- Recommended, "C" Level
- Insufficient – Recommended (Consensus-based), "I" Level
- Insufficient – No Recommendation (Consensus-based), "I" Level
- Insufficient – Not Recommended (Consensus-based), "I" Level
- Not Recommended, "C" Level
- Moderately Not Recommended, "B" Level
- Strongly Not Recommended, "A" Level

Laboratory Tests for Peripheral Neuropathic Pain	Recommended, Evidence (C)
Occupational Neurotoxin Exposure Measurement(s)	Recommended, Evidence (C)
Antibodies to Confirm Specific Disorders	Strongly Recommended, Evidence (A)
ANSAR Testing for Diagnosing Chronic Neuropathic Pain	Not Recommended, Insufficient Evidence (I)
Non-specific Inflammatory Markers for Screening for Inflammatory Disorders	Recommended, Evidence (C)
Cytokine Tests for Diagnosing Chronic Neuropathic Pain	Not Recommended, Evidence (C)
Needle EMG and Nerve Conduction Study to Diagnose	Recommended, Insufficient Evidence (I)
Surface EMG for Diagnosing Chronic Neuropathic Pain	Not Recommended, Insufficient Evidence (I)
Functional MRIs for Diagnosing Chronic Neuropathic Pain	Not Recommended, Insufficient Evidence (I)
Local Anesthetic Injections for Diagnosing Chronic Neuropathic Pain	Recommended, Insufficient Evidence (I)
SPECT/PET for Diagnosing Chronic Neuropathic Pain	Not Recommended, Insufficient Evidence (I)
FCEs for Chronic Neuropathic Pain	Recommended, Insufficient Evidence (I)
Bed Rest for Neuropathic Pain	Not Recommended, Insufficient Evidence (I)

Aerobic Exercise for Neuropathic Pain	Recommended, Insufficient Evidence (I)
Strengthening Exercise for Neuropathic Pain	Recommended, Insufficient Evidence (I)
Aquatic Therapy for Neuropathic Pain	Recommended, Insufficient Evidence (I)
Physical or Occupational Therapy for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
NSAIDs for Chronic Neuropathic Pain	Recommended, Insufficient Evidence (I)
Acetaminophen for Neuropathic Pain	Recommended, Insufficient Evidence (I)
Tricyclic, Tetracyclic, and SNRI Anti-depressants for Neuropathic Pain	Moderately Recommended, Evidence (B)
Selective Serotonin Reuptake Inhibitors for Neuropathic Pain	Recommended, Evidence (C)
Antipsychotics for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Anti-convulsant Agents for Neuropathic Pain	Moderately Recommended, Evidence (B)
Anti-virals for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Homeopathy and Complementary Medicines for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Clonidine for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Dextromethorphan for Neuropathic Pain	Recommended, Evidence (C)
Muscle Relaxants for Acute Exacerbations of Neuropathic Pain	Recommended, Insufficient Evidence (I)
Magnesium	Not Recommended, Evidence (C)
Tumor Necrosis Factor-alpha Blockers for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Topical NSAIDs for Chronic Pain Where Target Tissue Superficially Located	No Recommendation, Insufficient Evidence (I)
Other Topical Creams (Ketamine, Amitriptyline and Combination Ketamine and Amitriptyline)	Moderately Not Recommended, Evidence (B)
Capsaicin Patches for Neuropathic Pain	Moderately Recommended, Evidence (B)
Lidocaine Patches for Neuropathic Pain	Moderately Recommended, Evidence (B)
Motor Cortex Stimulation for Neuropathic Pain	Not Recommended, Evidence (C)
Magnets and Magnetic Stimulation for Neuropathic Pain	Not Recommended, Insufficient Evidence (I)
Taping and Kinesiotaping for Neuropathic Pain	Not Recommended, Insufficient Evidence (I)
Self-application or Healthcare Provider Application of Cryotherapies for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Diathermy for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)

Ultrasound for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Provider-Based or Self-Application of Infrared Therapy for Neuropathic Pain	Not Recommended, Evidence (C)
Low-level Laser Therapy for Neuropathic Pain	Not Recommended, Insufficient Evidence (I)
Manipulation for Neuropathic Pain	Not Recommended, Insufficient Evidence (I)
Massage for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Mechanical Massage Devices for Neuropathic Pain	Not Recommended, Insufficient Evidence (I)
Myofascial Release for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Acupuncture/Electroacupuncture for Neuropathic Pain	Not Recommended, Evidence (C)
Reflexology for Neuropathic Pain	Not Recommended, Insufficient Evidence (I)
High-voltage Galvanic Therapy for Neuropathic Pain	Not Recommended, Insufficient Evidence (I)
H-Wave® Device Stimulation for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Interferential Therapy for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Iontophoresis for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Microcurrent Electrical Stimulation for Neuropathic Pain	Not Recommended, Evidence (C)
PENS for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
TENS for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Repetitive Transcranial Magnetic Stimulation (rTMS) for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Sympathetic Electrotherapy	Not Recommended, Insufficient Evidence (I)
External Radiation for Sympathetic Blockade for Neuropathic Pain	Not Recommended, Insufficient Evidence (I)
Corticosteroids for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Immunoglobulin for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Ketamine Infusion for Neuropathic Pain	Not Recommended, Insufficient Evidence (I)
Intrapleural Bupivacaine Infusions for Neuropathic Pain	Not Recommended, Insufficient Evidence (I)
Lidocaine Infusion for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Intravenous Phenytoin for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Intravenous Adenosine for Neuropathic Pain	Not Recommended, Insufficient Evidence (I)

Monoclonal Antibody Injections for Neuropathic Pain	No Recommendation, Insufficient Evidence (I)
Dorsal Ganglion Destruction for Neuropathic Pain	Not Recommended, Insufficient Evidence (I)
Nerve Blocks for Neuropathic Pain	Recommended, Insufficient Evidence (I)
Botulinum Toxin A (BTX_A) for Neuropathic Pain	Recommended, Insufficient Evidence (I)
Surgical Decompression for Neuropathic Pain	Recommended, Insufficient Evidence (I)
Spinal Cord Stimulation for Neuropathic Pain No Recommendation	No Recommendation, Insufficient Evidence (I)
Intrathecal Drug Delivery Systems for Chronic Nonmalignant Pain Conditions	Not Recommended, Insufficient Evidence (I)

Related Terms

- Nerve pain
- Radicular pain
- Radiculitis
- Diabetic neuropathy
- Alcoholic peripheral neuropathy
- Central nerve pain
- Peripheral nerve pain
- Phantom limb pain
- Shingles

Overview

Neuropathic pain is pathophysiologic pain associated with a nerve and has been defined by the International Association for the Study of Pain (IASP) as "pain initiated or caused by a primary lesion or dysfunction of the nervous system"[945] It is generally categorized as central or peripheral. While radicular pain and chronic CRPS are also forms of neuropathic pain, they are usually discussed as separate entities, as are acute forms of neuropathic pain that can be addressed by specific interventions. It is important to note that many times, neuropathic pain is not able to be objectively demonstrated, although sometimes, objective findings are present.

Chronic neuropathic pain has a reported prevalence of 8.2-8.9% of adults [946]. It has been estimated that 26.4% of Type 2 diabetics have painful peripheral diabetic neuropathy [947]. The cumulative incidence of diabetic neuropathy in Type 1 diabetics has been estimated at 17-25%. Two-thirds of those using insulin had some form of neuropathy in one population-based study [948]. Post-stroke pain has been estimated to affect 30% of stroke patients [949]. Other disorders considered to be neuropathic include: channelopathies (e.g., familial episodic pain syndrome, inherited erythromelalgia), intracranial tumor, multiple sclerosis, peripheral nerve entrapment, trigeminal neuralgia, polyneuropathy (e.g., post-chemotherapy, alcoholic, HIV disease), postherpetic neuralgia, radiculopathy, some spinal cord injuries, syringomyelia, syrinx of the central canal in the brainstem or spinal cord, traumatic nerve injury (identifiable separate from the pain complaint, e.g. amputation).

Needle EMG and Nerve Conduction Study to Diagnose

Recommended.

Needle EMG and Nerve Conduction Study is recommended for evaluation of select chronic neuropathic pain patients.

Strength of Evidence – **Recommended, Insufficient Evidence (I)**

Level of Confidence – High

Indications:	Indications include the evaluation of symptoms that are either in one limb or are widespread. Includes the evaluation of potential radicular pain. Also includes the post-surgical population to evaluate the potential for a nerve conduction delay identifiable by NCS with inching/segmental technique. Generally not performed until there is failure to resolve after waiting 4 to 6 weeks to provide for sufficient time to develop EMG abnormalities (usually a minimum of 3 weeks to begin to show significant changes).
Benefits:	Diagnosing an unknown condition. Identification of a neurological conduction delay caused by a scar that is remediable.
Harms:	Negligible. Modest pain from the procedure
Frequency/Dose/Duration:	One evaluation. A second evaluation may be indicated when either there is a significant change in symptoms. It is also reasonable to repeat testing after a period of a year or two as initial testing is known to occasionally become positive with the passage of time.
Rationale:	EMG/NCS is often helpful for helping define the location and extent of neurological impairments. EMG/NCS is minimally invasive, has minimal adverse effects, is moderately costly, has been found to be diagnostically helpful and is thus recommended for diagnosis in select neuropathic pain patients.
Evidence:	*A comprehensive literature search was conducted using PubMed, Scopus, CINAHL, Cochrane Library, and Google Scholar without date limits using the following terms: needle EMG, needle electromyography; neuralgia, neuropathic pain; diagnostic, diagnosis, sensitivity, specificity, positive predictive value, negative predictive value, predictive value of tests, efficacy, and efficiency. We found and reviewed 41 articles in PubMed, 360 in Scopus, 0 in CINAHL, 0 in Cochrane Library, 5,710 in Google Scholar, and 0 from other sources. We considered for inclusion 1 from PubMed, 2 from Scopus, 0 from CINAHL, 0 from Cochrane Library, 0 from Google Scholar, and 0 from other sources. Of the 3 articles considered for inclusion, 0 randomized trials and 0 systematic studies met the inclusion criteria.*