

Guideline Summary NGC-7160

Guideline Title

Chronic pain.

Bibliographic Source(s)

American College of Occupational and Environmental Medicine. Chronic pain. In: Occupational medicine practice guidelines: evaluation and management of common health problems and functional recovery in workers. Elk Grove Village (IL): American College of Occupational and Environmental Medicine (ACOEM); 2008. p. 73-502. [1557 references]




Guideline Status

This is the current release of the guideline.

The American College of Occupational and Environmental Medicine (ACOEM) reviews the literature periodically to identify any major changes in the evidence-base by content area. Subsequent updates of the guidelines will be a full review of previous recommendations. The Panels will review new evidence and revise recommendations at least every 3 years.

FDA Warning/Regulatory Alert

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory information has been released.

- [May 25, 2010 – Ultram \(tramadol hydrochloride\)](#) : Ortho-McNeil-Janssen and the U.S. Food and Drug Administration (FDA) notified healthcare professionals of changes to the Warnings section of the prescribing information for tramadol, a centrally acting synthetic opioid analgesic indicated for the management of moderate to moderately severe chronic pain. The strengthened Warnings information emphasizes the risk of suicide for patients who are addiction-prone, taking tranquilizers or antidepressant drugs and also warns of the risk of overdose.
- [December 4, 2009 – Voltaren \(diclofenac\)](#) : Endo, Novartis and U.S. Food and Drug Administration (FDA) notified healthcare professionals of revisions to the Hepatic Effects section of the Prescribing Information to add new warnings and precautions about the potential for elevation in liver function tests during treatment with all products containing diclofenac sodium.
- [December 2, 2009 – Norpramin \(desipramine hydrochloride\)](#) : Sanofi-Aventis and the U.S. Food and Drug Administration (FDA) notified healthcare professionals of changes to the Warnings and Overdosage sections of the Prescribing Information for Norpramin (desipramine hydrochloride), indicated for the treatment of depression. The new safety information states that extreme caution should be used when this drug is given to patients who have a family history of sudden death, cardiac dysrhythmias, and cardiac conduction disturbances; and that seizures precede cardiac dysrhythmias and death in some patients.

Scope

Disease/Condition(s)

Chronic pain conditions including:

- Complex regional pain syndrome (CRPS)
- Neuropathic pain (focus on radicular pain and peripheral neuropathic pain)
- Trigger points/myofascial pain
- Osteoarthritis (OA)
- Chronic persistent pain (CPP)
- Chronic non-specific pain syndrome (CNSPS)

Guideline Category

Diagnosis

Evaluation

Management

Treatment

Clinical Specialty

Family Practice

Internal Medicine

Orthopedic Surgery

Physical Medicine and Rehabilitation

Preventive Medicine

Surgery

Intended Users

Advanced Practice Nurses

Physician Assistants

Physicians

Utilization Management

Guideline Objective(s)

- To update the 2004 American College of Occupational and Environmental Medicine's (ACOEM's) Occupational Medicine Practice Guidelines
- To improve the health care of injured workers by providing high-quality guidelines to identify the most efficacious treatment strategies to be employed at the earliest date
- To emphasize the need to account for unique interactions between biological, psychological, and social factors in order to better explain and manage chronic pain

Target Population

Adults with chronic pain seen in primary care settings

Interventions and Practices Considered

Note from the National Guideline Clearinghouse (NGC): The following general clinical measures were considered. Refer to the "Major Recommendations" section of this summary and the original guideline document for information regarding which specific interventions and practices under these general headings are recommended, optional, or not recommended by the American College of Occupational and Environmental Medicine.

1. Diagnostic testing
2. Patient education
3. Occupational therapy/programs
4. Appliances and skilled non-medical therapies
5. Exercise
6. Medications
7. Injection and infusion therapies

Major Outcomes Considered

- Pain relief
- Functional restoration
- Medication effectiveness and adverse effects
- Quality of life

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

The following databases were searched from 1966 to 2008:

- The National Library of Medicine's MEDLARS Database (Medline) (www.nlm.nih.gov)
- The Cochrane Central Register of Controlled Trials
- CINAHL (nursing, allied health, physical therapy, occupational therapy, social services)
- EMBASE
- PEDro
- EMB Online (www.bmjournals.com)
- TRIP Database (www.tripdatabase.com)

The following inclusion/exclusion criteria were used:

Original data from high- or moderate-quality randomized controlled clinical trials or cross-over trials are relied upon to develop the guidelines. The authors excluded case studies of individual patients or non-controlled groups of patients, studies that are not peer-reviewed, and other guidelines. Many "systematic" reviews, low-quality randomized controlled studies, other studies, and other guidelines for treatments are referenced and reviewed in the Appendix of the original guideline document. However, aside from Cochrane reviews, these reviews, other studies, and other guidelines were not relied upon for purposes of the development of this document's guidance on treatments. In conclusion, the authors only include high- and moderate-quality randomized controlled clinical trials or cross-over trials.

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Strength of Evidence Ratings

A: Strong evidence-base: Two or more high-quality studies.*

B: Moderate evidence-base: At least one high-quality study or multiple moderate-quality studies** relevant to the topic and the working population.

C: Limited evidence-base: At least one study of moderate quality.

I: Insufficient evidence: Evidence is insufficient or irreconcilable.

*For therapy and prevention, randomized controlled trials (RCTs) with narrow confidence intervals and minimal heterogeneity. For diagnosis and screening, cross sectional studies using independent gold standards. For prognosis, etiology or harms, prospective cohort studies with minimal heterogeneity.

**For therapy and prevention, well-conducted cohort studies. For prognosis, etiology or harms, well-conducted retrospective cohort studies or untreated control arms of RCTs.

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

As part of the update process, American College of Occupational and Environmental Medicine (ACOEM) adopted a new, more meticulous strength-of-evidence rating methodology. The enhanced methodology incorporates the highest scientific standards for reviewing evidence-based literature, thus ensuring the most rigorous, reproducible, and transparent occupational health guidelines available.

Studies are graded for actual design and for execution of that design and the subsequent analyses of results. Evidence with the highest available ranking (e.g., all randomized controlled trials [RCTs] or randomized crossover trials for treatment studies) is selected. Each article that meets inclusion criteria is reviewed and critically appraised.

As an example, RCTs that meet inclusion criteria are scored on 11 criteria. Each criterion is scored 0.0, 0.5, or 1.0. These individual ratings are summed up, resulting in an overall rating that ranges from 0 to 11.

The rating for each article is then converted into a quality grade—low quality (0–3.5), moderate quality (4.0–7.5), or high quality (8.0–11.0).

	Description
Randomization	Assessment of the degree that randomization was both reported to have been performed and successfully achieved through analyses of comparisons of variables between the two groups.
Treatment allocation concealed	Concealment of the allocation scheme from all involved, not just the patient.
Baseline comparability	Measures how well the baseline groups are comparable (e.g., age, gender, prior treatment).
Patient blinded	Blinding of the patient/subject to the treatment administered.
Provider blinded	Blinding of the provider to the treatment administered.
Assessor blinded	Blinding of the assessor to the treatment administered.
Co-interventions avoided	Assessment of the degree to which the study design avoided multiple treatments. This includes either a study design that includes combinations of interventions (e.g., a combination of exercise and anti-inflammatory medication) or patient self-administration of other treatments that may plausibly alter the results.
Compliance acceptable	Measurement of the degree of noncompliance.
Dropout rate	Measurement of the dropout rate.
Timing of assessments	Assessment of whether the timing of measurements of effects is the same between treatment groups.
Analyzed by intention to treat	Ascertainment of whether the study was analyzed with an intent-to-treat analysis.

While literature searches also seek systematic reviews and meta-analyses, on critical appraisal, very few of these

secondary studies are truly systematic as the term is used in the evidence-based medicine literature. Most typically, there are errors in analyses or interpretation. For this reason, ACOEM relies primarily on the original literature as the source for its evidence syntheses and recommendations.

Acceptable studies are abstracted into evidence tables that include details of study methods, outcomes, and statistical analyses. Research staff then use the tables to grade the strength of evidence in order to draft specific clinical practice recommendations that will be combined into collective evidence-based guidelines. Evidence is drawn almost entirely from original research studies.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

In reviewing or revising recommendations, the expert Panels review the articles, evidence tables, and strength-of-evidence ratings (A, B, C, or I). Panels discuss recommendations for diagnosis or treatment based on the critically appraised body of evidence using a "best evidence" approach.

In addition to critically appraised evidence, "first principles" of medical logic and ethics are observed in formulating recommendations.

- Imaging or testing should generally be done to confirm a clinical impression.
- Tests should affect the course of treatment.
- Treatments should improve on the natural history of the disorder, which in many cases is recovery without treatment.
- Invasive treatment should be preceded by adequate conservative treatment and may be performed if conservative treatment does not improve the health problem.
- The more invasive and permanent, the more caution should be exerted in considering invasive tests or treatments and the stronger should be the evidence of efficacy.
- The more costly the test or intervention, the more caution should be generally exerted prior to ordering the test or treatment and the stronger should be the evidence of efficacy.
- Testing/treatment decisions should be a collaboration between the clinician and patient with full disclosure of benefits and risks.
- Treatment should not create dependence or functional disability.

Health benefits, side effects, and risks are explicitly considered and discussed in formulating recommendations. Benefits should significantly exceed risks. Each recommendation specifies the clinical problem to which it relates and is linked to the relevant higher quality available evidence. Consensus recommendations, following the first principles above, are formulated when there is either a lack of quality evidence or the available evidence substantially conflicts.

See the "Availability of Companion Documents" field for more information on the formulation of recommendations.

Rating Scheme for the Strength of the Recommendations

	Evidence Rating	Description of Category
Strongly Recommended	A	The intervention is strongly recommended for appropriate patients. The intervention improves important health and functional outcomes based on high-quality evidence, and the Evidence-based Practice Panel (EBPP) concludes that benefits substantially outweigh harms and costs.
Moderately Recommended	B	The intervention is recommended for appropriate patients. The intervention improves important health and functional outcomes based on moderate-quality evidence that benefits substantially outweigh harms and costs.
Recommended	C	The intervention is recommended for appropriate patients. There is limited evidence that the intervention may improve important health and functional benefits.
Insufficient - Recommended (Consensus-based)	I	The intervention is recommended for appropriate patients and has nominal costs and essentially no potential for harm. The EBPP feels that the intervention constitutes best medical practice to acquire or provide information in order to best diagnose and treat a health condition and restore function in an expeditious manner. The EBPP believes based on the body of evidence, first principles, and/or collective experience that patients are best served by these practices, although the evidence is insufficient for an evidence-based recommendation.
Insufficient - No Recommendation (Consensus-based)	I	The evidence is insufficient to recommend for or against routinely providing the intervention. The EBPP makes no recommendation. Evidence that the intervention is effective is lacking, of poor quality, or conflicting and the balance of benefits, harms, and costs cannot be determined.

Insufficient – Not Recommended (Consensus-based)	I	The evidence is insufficient for an evidence-based recommendation. The intervention is not recommended for appropriate patients because of high costs/high potential for harm to the patient.
Not Recommended	C	Recommendation against routinely providing the intervention. The EBPP found at least moderate evidence that harms and costs exceed benefits based on limited evidence.
Moderately Not Recommended	B	Recommendation against routinely providing the intervention to eligible patients. The EBPP found at least moderate evidence that the intervention is ineffective, or that harms or costs outweigh benefits.
Strongly Not Recommended	A	Strong recommendation against providing the intervention to eligible patients. The EBPP found high-quality evidence that the intervention is ineffective, or that harms or costs outweigh benefits.

Cost Analysis

Published cost analyses were reviewed.

Method of Guideline Validation

Clinical Validation-Pilot Testing

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

External Peer Review

American College of Occupational and Environmental Medicine's (ACOEM) conducts external peer review of the ACOEM *Occupational Medicine Practice Guidelines (Guidelines)* to 1) assure that all relevant high-quality scientific literature has been found, 2) assure that the important evidence from the scientific literature relevant to the *Guidelines* has been accurately interpreted, 3) solicit opinions on whether the findings and recommendation statements are appropriate and consistent with the evidence, and 4) obtain general information on the *Guidelines'* conclusions and presentation from external topic experts. A more detailed explanation of the external peer review process is included in Attachment 13 of the "Methodology for the Update of the Occupational Medicine Practice Guidelines, 2nd edition" (see the "Availability of Companion Documents" field). These experts review the methodology used as well as summaries of the critically appraised evidence and the recommendations in each area. The *Guidelines* list the names of all peer reviewers, along with their affiliations for those not desiring anonymity. The Panels review the comments received from the external peer reviewers and make any final modifications to the *Guidelines*.

Stakeholder Input

In order to understand the needs and preferences of those individuals and organizations who use or are affected by the use of clinical practice guidelines in workplace settings and in the workers' compensation system, ACOEM solicits input from the following stakeholders: clinicians, health-care systems, workers/patients, employers, utilization reviewers, case managers, insurers and third party administrators, attorneys, regulators and policy makers. ACOEM solicits input from these stakeholders by various formal and informal mechanisms on an ongoing basis during the *Guidelines* development and implementation process. Specific processes and formats for soliciting input from stakeholders is further described in Attachment 15 of the "Methodology for the Update of the Occupational Medicine Practice Guidelines, 2nd edition" (see the "Availability of Companion Documents" field).

Pilot Testing

The *Guidelines* are pilot tested by having clinicians, utilization review managers, case managers, state workers' compensation systems, etc., use or comment on use of the *Guidelines* in their daily practice or management activities to determine if they are clear, easy to use and generally useful. Pilot testers will not be asked if they think the recommendations or process for development were appropriate. The *Guidelines* may be modified based on the feedback received from pilot testing, if the suggestions increase usability.

Review by the Guideline Methodology Committee (GMC) and the ACOEM Board of Directors

During the entire evidence-based product development process, the GMC will work with the Panels, editors and research staff to ensure that the evidence-based product methodology is being followed, both in the literature evaluation process and development of conclusion and recommendation statements. The Board of Directors has an opportunity to comment on the *Guidelines* during the external review period. Their comments are reviewed by the Panel and any necessary changes are made to the *Guidelines*.

Recommendations

Major Recommendations

Definitions for the strength of evidence ratings (A, B, C, and I) and the criteria for evidence-based recommendations are presented at the end of the "Major Recommendations" field.

Each chapter of the American College of Occupational and Environmental Medicine (ACOEM) *Guidelines* contains the mainstays of treatment, including chronic pain management, for various specific disorders. This chapter does not supersede that specific guidance. **All chapters include analyses of numerous interventions, whether or not U.S. Food and Drug Administration (FDA)-approved. For non-FDA-approved interventions, recommendations are based on the available evidence; however, this is not an endorsement of their use. In addition, many of the medications recommended are utilized off-label.** (For example, anti-epileptic agents have been used off-label since the 1960s to treat chronic pain.) The following is a general summary of the recommendations contained in this chapter:

Evaluation and Diagnostic Issues

- In all cases, the body part that is injured should be carefully evaluated with a history, physical examination, and focused diagnostic testing (see specific chapter guidance in the original guideline document). A complete physical is recommended, since pain can be referred from remote organs or anatomical segments (e.g., gallbladder to shoulder or hip joint to knee pain).
- Treatment "failures" are often due to lack of follow-through on initial recommendations for return to function, and can be identified through the patient history.
- The first focus of the initial chronic pain examination or consultation of a patient with chronic pain should be the detection of conditions that are readily remediable or "red flags" for potential alternate conditions.
- Judicious use of diagnostic testing for the initial chronic pain examination or consultation to search for a specific remediable cause may be appropriate.
- Pain is a subjective experience for which there is no objective measure. However, verbal reports of pain can be assessed with regard to compatibility with objective medical findings, and the patient's behavior. This includes consistency of findings with those expected for the condition, consistency of findings during observations within one appointment, and between appointments.
- Repeated diagnostic testing in the absence of indicators for a specifically targeted, remediable cause is not indicated as it focuses the patient on finding an anatomic abnormality, rather than focusing on maintaining and increasing functional outcomes.
- In cases where the chronic pain condition is associated with a substantial compromise of the patient's function and the cause is not apparent, a consultation to confirm the diagnosis and management plan is often appropriate and reassuring to the patient and family. Pain medicine specialists, musculoskeletal disorders experts and other experts in the body part injured (e.g., orthopedic surgeon, neurosurgeon, neurologist, physiatrist and others) as well as behavioral health experts (e.g., pain psychologist, psychiatrist) are all potential consultants for these patients, particularly for purposes of diagnostic confirmation.

Patient Education Issues

- Reassurance that chronic pain is common, in the absence of specific disorders has a good prognosis, and does not cause (or have to cause) severe debility is important for all providers to communicate to the patient. Clinicians providing encouragement that chronic pain is common and manageable are believed to have better outcomes with more effective use of resources, including having more satisfied patients and fewer patients on disability. Reassurance should be tailored to the individual's unique perceptions and lifestyle.
- Patients should be encouraged to maintain as high a level of function at work and resume activities of daily living (ADLs) and instrumental activities of daily living (IADLs).
- Rest, bed rest, and disuse of body parts are not recommended for the routine management of chronic pain conditions as they cause further disability rather than assist in returning the patient to a functional status. The patient may need education to explain these common misconceptions and to address the accompanying fears that are frequently present.
- If the patient has been accurately diagnosed and adequately treated, continuing primary foci on pain ratings and symptoms is counterproductive. Treatment must of necessity focus on increasing function and supplementing the functional restoration plan with appropriate, judicious use of medications and other modalities.
- The patient's cultural background should be considered, including possible language barriers.

Occupational Issues

- All patients should be encouraged to return to normal activity or work as soon as possible. Modified duty is most appropriately utilized when the job demands substantially exceed the patient's capabilities. For those patients on modified or light duty, a plan to return to normal job activities should be specified.
- Non-physical factors (such as psychosocial, workplace, or socioeconomic problems) should be particularly addressed in cases of delayed recovery or delayed return to work.
- Patients should be encouraged to accept responsibility and learn necessary coping skills for managing their recovery rather than expecting the provider to supply an easy or complete "cure." Taking an active role in the recovery process is paramount if the person with pain is to return to work. This will promote using activity rather than pain as a guide, and it will make the treatment goal of return to occupational and non-occupational activities more obvious.
- Participatory ergonomics and return-to-work programs may assist in identifying job attributes that may be perceived barriers to a successful return to work.

Appliances and Skilled Non-medical Therapies

- Slings, splints, and other appliances are contraindicated in managing chronic pain in the absence of focal neurological or structural deficits as they may reinforce pain and illness behaviors.
- Ice, heat, ultrasound, and other similar modalities are rarely indicated in the clinical setting. Heat and ice may be considered as a part of self care to be used at home if their use provides the patient with temporary relief of symptoms, though the physician should be aware that these may also reinforce pain and illness behaviors in persons with chronic non-malignant pain.
- There is no evidence to support prolonged and repetitive use of skilled non-medical therapies (massage, electrical therapies, manipulation, acupuncture, etc.) and, in the absence of documentation of functional improvement, they are

not indicated in managing patients with chronic pain. These interventions tend to draw attention towards numbers of appointments and adding or trying more passive modalities, instead of focusing on and benchmarking increases in activity levels. Their use may be briefly indicated in conjunction with the introduction of an active conditioning program that includes both aerobic and strengthening components for treatment of referred patients found to have significant debility and deconditioning.

- **Judicious short-term use of skilled non-medical therapies** may be indicated for significant exacerbations of underlying chronic pain conditions when there has been documented improvement following such treatments. Such exacerbations may be analogous to acute pain episodes; however, in the patient with chronic pain, such exacerbations are also believed to entail risk of sliding into reduced functional status. Physicians who recommend these therapeutic approaches should be aware that they may detrimentally draw the focus away from increasing function and reinforce pain behavior and disability. A transition back to active treatment modalities and self care should be reinforced to the patient at that first visit to establish clear expectations.

Exercise Issues

- **Graded exercises to assist in achieving a return to maximal function** are indicated. Aerobic and strengthening exercises appear most helpful for the rehabilitation of most chronic pain conditions.
- **Stretching or flexibility exercises may be important components to treat some patients' injuries.** They are important where there is a significant reduction in range of motion and where restoration of range of motion is required to enable engagement in strengthening and functional activities. In general, stretching exercises can be taught by therapists, but should be performed by patients repeatedly, with limited numbers of repetitions to achieve most rapid gains in flexibility. Where there is either minimal or no reduction in range of motion, however, strengthening and aerobic exercise should be emphasized.

Medications

- Although there is considerable overlap between types of pain, the physician should seek to identify whether chronic non-malignant pain is due to a specific diagnosis and/or thought to be *primarily* nociceptive, neuropathic, or of unclear etiology. Treatment options for these divergent types of commonly encountered pain have some differences—e.g., there is evidence that pain patients with neuropathic conditions may respond to anti-convulsant medications, whereas patients with nociceptive or chronic non-malignant pain do not. When evidence clearly indicates that specific medications are particularly effective in managing a given diagnosis or type of pain, they should be used preferentially. When the response to a medication has been suboptimal, consideration should be given to discontinuing it either before or immediately after adding a different agent.
- **If an intervention is ineffective, it is better to stop it and try a different intervention (e.g., rather than switch to a different non-steroidal anti-inflammatory drug [NSAID], consider manipulation, exercise, and/or a different class of medications).**
- **Opioid use in the setting of chronic, non-malignant, or neuropathic pain is controversial.** Opioids used in higher doses tend to have a greater adverse effect profile. A potential for abuse or addiction does exist, especially with inappropriate use; systemic effects also are apparent over time in many patients for whom opioids are prescribed. Patients on opioids should be routinely monitored for signs of impairment, particularly those who are working in safety sensitive positions (including those who have to drive to and from work). However, while there is population-based evidence of approximately doubled crash risk continuing at 2 weeks into opioid treatment, there is also literature that suggests there may not be elevated accident risk among those who are accustomed to opioid use and are on stable doses of medication.
- **Use of opioids in patients with chronic pain should be reserved for those with improved functional outcomes** attributable to their use, in the context of an overall approach to pain management that also includes non-opioid analgesics, adjuvant therapies, psychological support, and active treatments (e.g., exercise).

Injection and Infusion Therapies

- While injection and infusion therapies are widely used in the management of patients with chronic pain, there is generally no high-quality literature demonstrating efficacy and no evidence of long-term pain relief or demonstrable increases in function in the literature (usually case series) that does promote their use. Hence, while they may have an occasional role in the management of carefully selected patients, their indiscriminate use is not recommended.
- Furthermore, when the decision is made to employ injection or infusion therapies as an adjunct to patient care, the goal should be to use the temporary decrease in pain that they afford to initiate reductions in use of opioid medications, or encourage performance of exercises that previously may not have been tolerated and functional activities that were not possible before the procedure. Documentation of objective, quantifiable benefit as a consequence of their use must be provided, and repeated interventions in the absence of this documentation would not be warranted.

Other Issues

- The majority of those with chronic pain do not seek professional health care, and are able to control symptoms with simple modalities such as over-the-counter medications, a heating pad, exercise and other remedies. Even those who have had complicated courses (e.g., complex treatment, litigation, etc.) can reach a state of self-management and coping with pain. The empowerment of patients to independently manage their pain as early as possible should be encouraged.
- **Patients using over-the-counter medications for management of chronic pain** should be educated and assessed for potential adverse effects, as those are most likely to occur among chronic medication users.
- **Significant psychological factors are nearly always present as etiologic influences and/or sequelae** when pain of non-malignant origin becomes chronic as per the biopsychosocial model (see Basic Principles in the original guideline document). Evaluation and management of these factors by the primary treating physician is recommended. When recovery is excessively delayed or psychological/psychiatric treatment by the primary physician is ineffective, consideration should be given to obtaining a comprehensive psychological evaluation. Fear of further injury or missing a diagnosis also needs to be addressed if the person with pain is to progress.
- **Focusing the treatment plan primarily on psychological issues is generally difficult for the person with pain to become engaged.** More often they become defensive and deny that there is any psychological component. Mind and body can be blended together in a comprehensive pain program by ensuring the person with pain understands the

connection. Even compliance with some of the off-label medications such as anti-depressants and anti-convulsants needs to be carefully explained to ensure the patient clearly understands the multiple purposes of these treatments.

- Fibromyalgia is a disorder which typically has significant psychological components, particularly depression and other affective problems, that is reviewed in Appendix 2 in the original guideline document for completeness although it is not an occupational disorder. Despite the underlying psychological components, treatment should consist primarily of progressive aerobic exercises, potentially combined with strengthening exercises, and anti-depressants. This is the only major pain disorder for which selective serotonin reuptake inhibitor (SSRI) anti-depressants are effective (which provides additional indirect evidence that it is a different disorder than other chronic pain conditions), although both the tricyclic anti-depressants and dual serotonin/norepinephrine reuptake inhibiting anti-depressants are also effective.
- Patient involvement in litigation or workers' compensation claims has been shown to be associated with poorer clinical outcomes, including delayed return to work, poorer satisfaction with treatment, and worse surgical outcomes. There are marked differences from state to state with regards to whether patients typically retain attorneys for workers' compensation. Accordingly, whether a patient is involved in litigation over workers' compensation may or may not raise concerns about possible advocagenic influences on the patient's clinical course and prognosis. It is recommended that these local cultural factors be taken into account when attempting to discern potential influences on pain complaints, treatment responsiveness, and disability.

Summary Tables: Recommendations and Evidence

Table 1 is a summary of the Evidence-based Practice Chronic Pain Panel's recommendations for diagnostic and other testing for chronic pain conditions and Table 2 is a summary of recommendations for managing chronic pain conditions. These recommendations are based on critically appraised higher quality research evidence and on expert consensus observing First Principles when higher quality evidence was unavailable or inconsistent. The reader is cautioned to utilize the more detailed indications, specific appropriate diagnoses, temporal sequencing, preceding testing or conservative treatment, and contraindications that are elaborated in more detail for each test or treatment in the body of the original guideline document in using these recommendations in clinical practice or medical management. These recommendations are not simple "yes/no" criteria.

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

Table 1. Summary of Recommendations for Diagnostic and Other Testing for Chronic Pain Conditions

Test	Recommendation(s)
Antibodies	Antibody levels to evaluate and diagnose specific rheumatological disorders – Recommended, Insufficient Evidence (I) . Antibodies as a screen to confirm specific disorders (e.g., rheumatoid arthritis) and for assessing patients with possible myofascial pain syndrome, especially with other symptoms – Strongly Recommended, Evidence (A) .
ANSAR (non-invasive real-time digital autonomic nervous system) Testing	ANSAR testing to assist in diagnosing chronic pain – Not Recommended, Insufficient Evidence (I) .
Bone Scans	Bone scanning to confirm diagnosis of complex regional pain syndrome (CRPS) >6 months duration – Recommended, Insufficient Evidence (I) .
Non-specific Inflammatory Markers	Erythrocyte sedimentation rate and other inflammatory markers for screening for signs of systemic inflammation, particularly in assessing patients with possible myofascial pain syndrome and ill-defined pain conditions – Recommended, Evidence (C) .
Cytokines	Routine testing or use of batteries of cytokine tests to diagnose chronic pain – Not Recommended, Insufficient Evidence (I) .
Diagnostic Facet Joint Injections (intraarticular and nerve blocks)	While the routine use of diagnostic facet joint injections for patients with chronic axial pain is not recommended, one diagnostic injection may be reasonable when pain is: 1) significantly exacerbated by extension and rotation or associated with rigidity; and 2) not alleviated with other conservative treatments (e.g., nonsteroidal anti-inflammatory drugs [NSAIDs], aerobic exercise, other exercise, manipulation) in order to determine whether specific interventions targeting the facet joint are recommended such as changes in static postures, ergonomic assessment of the workplace, etc. – No Recommendation, Insufficient Evidence (I) . Repeated diagnostic injections in the same location(s) are not recommended, particularly in the absence of objective, functional improvements.

Electromyography (EMG) – including nerve conduction studies	<p>Needle EMG when a spine computed tomogram (CT) or magnetic resonance image (MRI) is equivocal and there are ongoing pain complaints that raise questions about whether there may be an identifiable neurological compromise – Recommended, Evidence (C).</p> <p>Electrodiagnostic studies for treatment of patients with chronic back pain who do not have significant leg pain or numbness – Not Recommended, Evidence (C).</p> <p>Nerve conduction studies when there is a peripheral entrapment neuropathy that has not responded to treatment (e.g., ongoing symptoms of carpal tunnel syndrome) – Recommended, Evidence (C).</p> <p>Nerve conduction studies when there is a peripheral systemic neuropathy that is either of uncertain cause or a necessity to document extent – Recommended, Insufficient Evidence (I).</p>
Surface Electromyography	Surface electromyography for the differential diagnosis of chronic pain – Not Recommended, Insufficient Evidence (I) .
Functional MRI	Functional MRIs for diagnosing chronic pain – Not Recommended, Insufficient Evidence (I) .
Local Anesthetic Injections	Local anesthetic injections for diagnosing chronic pain – Recommended, Insufficient Evidence (I) .
Quantitative Sudomotor Axon Reflex Test (QSART)	QSART to assist in the diagnostic confirmation of CRPS – No Recommendation, Insufficient Evidence (I) .
Single Proton Emission Computed Tomography (SPECT) and Positron Emission Tomography (PET)	<p>SPECT to evaluate patients with chronic pain (aside from use in cases of suspected inflammatory arthropathies not diagnosed by more common tests) – Not Recommended, Insufficient Evidence (I).</p> <p>PET scanning to evaluate patients with chronic pain – Not Recommended, Insufficient Evidence (I).</p>
Thermography	Thermography for diagnosing CRPS – Not Recommended, Insufficient Evidence (I) .
Functional Capacity Evaluations (FCEs)	FCEs are an option for select patients with chronic pain if the information might be helpful in objectifying worker capability vis-à-vis either specific job or general job requirements – No Recommendation, Insufficient Evidence (I) .

Table 2: Summary of Recommendations for Managing Chronic Pain Conditions

Chronic Pain Condition	Treatment with Evidence Rating/Recommendation Level		
	Recommended	No Recommendation	Not Recommended
Complex Regional Pain Syndrome (CRPS)	<p>Alter sleep posture to determine if there is reduction in pain/other symptoms (I)</p> <p>Graded exercises involving progressive strengthening activities (C)</p> <p>Recreational activities for moderate to severe CRPS (I)</p> <p>Desensitization techniques for patients with moderate to severe CRPS who are engaged in a core program of graded strengthening exercises or for whom there is a plan to implement such exercises shortly after or in conjunction with desensitization techniques (I)</p> <p>A trial of aquatic therapy for patients who meet referral criteria for supervised exercise therapy and have co-morbidities that preclude effective participation in a weight-bearing physical activity (I)</p> <p>Oral NSAIDs (I)</p> <p>Concomitant use of cytoprotective agents in patients with a high risk factor profile who also have indications for NSAIDs (C)</p> <p>Discuss risks and benefits of NSAID therapy with patients who have risk factors for or have overt cardiovascular, hepatic, or renal disease (I)</p> <p>Acetaminophen particularly if NSAIDs are contraindicated (I)</p> <p>NSAIDs as intravenous adjuncts for regional blockades that also include lidocaine and clonidine (C)</p>	<p>Yoga (I)</p> <p>Topical NSAIDs (I)</p> <p>Anti-convulsants for patients with CRPS not managed by NSAIDs, other medications with documented efficacy, and a progressive exercise program – may be considered as a 4th- or 5th-line agent and initiated by practitioners familiar with their use and able to monitor patients closely for adverse effects (I)</p> <p>Long-term use (>4 weeks) of gabapentin or pregabalin for moderate to severe CRPS if other therapies insufficient to control symptoms (I)</p> <p>Epidural clonidine (I)</p> <p>Commiphora molmol, Melaleuca alternifolia, Angelica sinensis, Aloe vera, Thymus officinalis, Menthe piperita, Arnica Montana, Curcuma longa, Tancetum parthenium, and Zingiber officinalis (I)</p> <p>Ketanserin (I)</p> <p>Muscle relaxants (I)</p> <p>Capsicum creams (I)</p> <p>Eutectic mixture of local anesthetics (EMLA) cream (I)</p> <p>Other creams/ointments (I)</p> <p>Physical and occupational therapy – see individual treatment sections in</p>	<p>Bed rest (I)</p> <p>Specific commercial products or specific beds (I)</p> <p>Aquatic therapy for all other patients who do not meet referral criteria or do not have co-morbidities that preclude participation in weight-bearing physical activity (I)</p> <p>Selective serotonin reuptake inhibitors (SSRIs), bupropion, or trazodone for CRPS without depression (I)</p> <p>Willow bark (salix) (I)</p> <p>N-methyl-D-aspartate (NMDA) receptor/antagonists, including dextromethorphan (I)</p> <p>Ketamine infusion (I)</p> <p>Thalidomide (I)</p> <p>Tumor necrosis factor-alpha blockers (I)</p> <p>Wheatgrass cream (I)</p> <p>Complementary and alternative treatments, dietary supplements, etc. (I)</p> <p>Routine use of opioids (C)</p> <p>Topical hyperbaric oxygen (I)</p> <p>Taping and kinesiotaping (I)</p>

Norepinephrine reuptake inhibitor anti-depressants (tricyclic anti-depressants [TCAs]) (I)

A trial of duloxetine after attempting other treatments with documented efficacy and if TCAs are not tolerated (I)

Short-term use of gabapentin or pregabalin for moderate to severe CRPS if other therapies have proven insufficient to control symptoms (C)

Bisphosphonates after NSAIDs and physical therapy have been trialed (A)

Calcitonin for patients with CRPS who have inadequate symptom relief with NSAIDs, corticosteroids, active physical and/or occupational therapy, and bisphosphonates (C)

Clonidine administered by oral or regional blockade for moderately severe CRPS that is not responsive to rehabilitative therapy, NSAIDs, or glucocorticosteroids (C)

Intravenous regional anesthesia with clonidine for administration prior to surgery for prevention of recurrence in patients who have had CRPS; may also be considered in those undergoing surgery who are considered at increased risk for CRPS (B)

Glucocorticosteroids for short-term treatment (C)

Harpagoside in carefully selected patients – e.g., who have contraindications for NSAIDs, failed NSAIDs or have a strong, rational aversion to them (C)

Lidocaine patches for moderate to severe CRPS after other treatment strategies with documented efficacy have been tried (I)

Dimethylsulfoxide (DMSO) as an adjunct to an active exercise program with an informed warning about its potential risks (C)

N-acetylcysteine (NAC) as an adjunct to an active therapy and exercise program (I)

Vitamin C for prevention of CRPS in patients with wrist fractures or other extremity trauma or at high risk – i.e., surgical release for Dupuytren's contracture (C)

Opioids may be used for select patients (I)

Screening patients prior to initiation of opioids (I)

Use of an opioid treatment agreement (I)

Routine use of urine drug screening for patients on chronic opioids (C)

Self-application of low-tech heat therapy (I)

Mirror therapy as an option for highly motivated patients with severe and some moderate cases of CRPS who are willing to comply with treatment (C)

Stellate ganglion blocks for acute or acute flare up of CRPS as an adjunct to a functional restoration approach (C)

Bretylum bier blocks for severe cases of CRPS (C)

Spinal cord stimulators as an option for highly selected CRPS patients who

the original guideline document (I)

Hyperbaric oxygen (I)

Home use of infrared therapy (I)

Massage (I)

Transcutaneous electrical nerve stimulation (TENS) (I)

Botulinum injections (I)

Intrathecal baclofen (I)

Lidocaine infusions (I)

Phentolamine bier blocks (I)

Brachial plexus/neuraxial blocks and infusions (I)

Other functional restoration (I)

Magnets and magnetic stimulation (I)

Acupuncture (I)

Home use of cryotherapies (I)

Routine use of cryotherapies in health care provider offices or use of high tech devices (I)

Application of heat by health care provider (I)

Diathermy (C)

External irradiation for sympathetic blockade (C)

Provider-based infrared therapy (I)

Low-level laser therapy (I)

Manipulation (I)

Use of mechanical massage devices applied by rehabilitation service providers or massage therapists to administer massage (C)

Myofascial release (I)

Reflexology (I)

Sympathetic electrotherapy (I)

High-voltage galvanic (I)

H-wave stimulation (I)

Interferential therapy (I)

Iontophoresis (I)

Microcurrent electrical stimulation (I)

Percutaneous electrical nerve stimulation (PENS) (I)

Facet joint hyaluronic acid injections (I)

Intrapleural bupivacaine infusions (I)

Guanethidine bier blocks (A)

Methylprednisolone bier blocks (C)

Reserpine bier blocks (I)

Intrathecal drug delivery systems (I)

Spinal cord stimulators for long-term relief (>3 years) (C)

	<p>understand that this intervention has no demonstrated long-term benefits and is for short to intermediate durations during which time there is unequivocal commitment and adherence to a functional restoration program (C)</p> <p>Psychological evaluation as part of evaluating/managing patients with chronic pain to assess if psychological factors need to be considered and treated as part of treatment plan (I)</p> <p>Cognitive-behavioral therapy as an adjunct to an interdisciplinary program for the treatment of chronic pain (C)</p> <p>Multidisciplinary or interdisciplinary pain rehabilitation program with focus on behavioral or cognitive-behavioral approaches combined with conditioning exercise for patients, who due to chronic pain, demonstrate partial/total work incapacity(I)</p> <p>Work conditioning, work hardening, and early intervention programs (I)</p>		
<p>Neuropathic Pain (Focus on Radicular Pain and Peripheral Neuropathic Pain)</p>	<p>Alter sleep posture to determine if there is reduction in pain/other symptoms (I)</p> <p>A trial of aquatic therapy for patients who meet referral criteria for supervised exercise therapy and have co-morbidities that preclude effective participation in a weight-bearing physical activity (I)</p> <p>Oral NSAIDs for radicular pain syndromes (C)</p> <p>Topical NSAIDs for other peripheral pain with superficial pain generators (I)</p> <p>Concomitant use of cytoprotective agents in patients with a high risk factor profile who also have indications for NSAIDs (C)</p> <p>Discuss risks and benefits of NSAID therapy with patients who have risk factors for or have overt cardiovascular, hepatic, or renal disease (I)</p> <p>Acetaminophen for radicular pain syndromes particularly if NSAIDs are contraindicated (C)</p> <p>TCAs (C)</p> <p>Duloxetine for limited use in select diabetic peripheral neuropathy and peripheral neuropathic pain patients as a 3rd-line agent (B)</p> <p>Carbamazepine as a potential adjunct as a 4th- or 5th-line treatment for neuropathic pain (C)</p> <p>Carbamazepine as a potential adjunct as a 4th- or 5th-line treatment for radicular pain (I)</p> <p>Gabapentin and pregabalin for neuropathic pain, particularly for diabetic neuropathy or postherpetic neuralgia, and other peripheral neuropathies (A)</p> <p>Harpagoside in carefully selected patients – e.g., who have contraindications for NSAIDs, failed NSAIDs, or have a strong, rational aversion to them (C)</p> <p>Dextromethorphan for select patients (e.g., those who have failed NSAIDs, TCAs, and anti-convulsant agents) with peripheral diabetic neuropathy and other peripheral neuropathies (C)</p>	<p>Gabapentin for chronic radicular pain syndromes – a trial may be considered as a 3rd- or 4th-line treatment (after NSAIDs, exercise, TCAs) and patients should be carefully evaluated for improvement within a few weeks prior to further treatment (I)</p> <p>Capsicum creams (I)</p> <p>Other creams/ointments (I)</p> <p>Epidural clonidine (I)</p> <p>Commiphora molmol, Melaleuca alternifolia, Angelica sinensis, Aloe vera, Thymus officinalis, Mentha piperita, Arnica Montana, Curcuma longa, Tanacetum parthenium, and Zingiber officinalis (I)</p> <p>Physical and occupational therapy – see individual treatment sections in the original guideline document (I)</p> <p>Home use of cryotherapies (I)</p> <p>Home use of infrared therapy (I)</p> <p>Massage (I)</p> <p>Botulinum injections for radicular pain syndromes (I)</p> <p>Lidocaine infusions (I)</p> <p>Therapeutic facet joint injections for flare-ups – a single intra-articular therapeutic facet joint injection for select patients with symptomatic flares that clinically appear to be facet-related for the specific purpose to maintain function (e.g., self-care and remain or return to work) (I)</p> <p>Other functional restoration (I)</p>	<p>Bed rest (I)</p> <p>Specific commercial products or specific beds (I)</p> <p>Aquatic therapy for all other patients who do not meet referral criteria or do not have co-morbidities that preclude participation in weight-bearing physical activity (I)</p> <p>SSRIs, bupropion, or trazodone (I)</p> <p>Topiramate (C)</p> <p>Bisphosphonates (I)</p> <p>Calcitonin (I)</p> <p>Clonidine (I)</p> <p>Willow bark (salix) (I)</p> <p>Ketamine infusion (I)</p> <p>Ketanserin (I)</p> <p>Thalidomide (I)</p> <p>Wheatgrass cream (I)</p> <p>DMSO (I)</p> <p>NAC (I)</p> <p>EMLA cream (I)</p> <p>Tumor necrosis alpha blockers for radicular pain syndromes (C)</p> <p>Tumor necrosis alpha blockers for other neuropathic pain (I)</p> <p>Complementary and alternative treatments, dietary supplements, etc. (I)</p> <p>Vitamins (I)</p> <p>Routine use of opioids (C)</p> <p>Hyperbaric oxygen (I)</p> <p>Topical hyperbaric oxygen (I)</p> <p>Taping and kinesiotaping (I)</p> <p>Magnets and magnetic stimulation (I)</p> <p>Routine use of cryotherapies in</p>

	<p>Muscle relaxants for brief use as a 2nd- or 3rd-line agent in acute exacerbations (I)</p> <p>Topical NSAIDs for other peripheral pain with superficial pain generators (i.e., distal upper extremity tendinosis and other conditions) (I)</p> <p>Lidocaine patches for postherpetic neuralgia when there is localized pain amenable to topical treatment (B)</p> <p>Opioids may be used for select patients (I)</p> <p>Screening patients prior to initiation of opioids (I)</p> <p>Use of an opioid treatment agreement (I)</p> <p>Routine urine drug screening for patients on chronic opioids (C)</p> <p>Self-application of low-tech heat therapy (I)</p> <p>Transcutaneous electrical nerve stimulation (TENS) for chronic radicular pain as an adjunct for more efficacious treatments (C)</p> <p>Epidural glucocorticosteroid injection as an option for subacute radicular pain syndromes (I)</p> <p>Psychological evaluation to evaluate and manage patients with chronic pain in order to assess if psychological factors need to be considered and treated as part of treatment plan (I)</p> <p>Cognitive-behavioral therapy as an adjunct to an interdisciplinary program for the treatment of chronic pain (C)</p> <p>Multidisciplinary or interdisciplinary pain rehabilitation program with a focus on behavioral or cognitive-behavioral approaches combined with conditioning exercise for patients who, due to chronic pain, demonstrate partial/total work incapacity (I)</p> <p>Work conditioning, work hardening, and early intervention programs (I)</p>		<p>healthcare provider offices or use of high tech devices (I)</p> <p>Application of heat by health care provider (I)</p> <p>Diathermy (C)</p> <p>External radiation for sympathetic blockade (I)</p> <p>Provider-based infrared therapy (I)</p> <p>Low-level laser therapy (I)</p> <p>Manipulation for radicular pain syndromes with documented acute neurological deficits (I)</p> <p>Use of mechanical massage devices applied by rehabilitation service providers or massage therapists to administer massage (C)</p> <p>Myofascial release (I)</p> <p>Reflexology (I)</p> <p>Sympathetic electrotherapy (I)</p> <p>High voltage galvanic (I)</p> <p>H-wave stimulation (I)</p> <p>Interferential therapy (I)</p> <p>Iontophoresis (I)</p> <p>Microcurrent electrical stimulation (I)</p> <p>Percutaneous electrical nerve stimulation (PENS) (I)</p> <p>Facet joint hyaluronic acid injections (I)</p> <p>Intraleural bupivacaine infusions (I)</p> <p>Prolotherapy injections for any radicular neck pain syndrome (I)</p> <p>Prolotherapy injections for any other radicular pain syndrome (C)</p> <p>Routine use of therapeutic facet joint injections for any radicular pain syndrome (B)</p> <p>Repeat use of an intra-articular therapeutic facet joint injection for those who failed to achieve lasting functional improvements with a prior injection (B)</p> <p>Intrathecal drug delivery systems (I)</p>
<p>Trigger Points/Myofascial Pain</p>	<p>Alter sleep posture to determine if there is reduction in pain/other symptoms (I)</p> <p>Aerobic exercise (I)</p> <p>Strengthening exercises (I)</p> <p>Inclusion of Fear Avoidance Belief Training (FABT) during course of treatment (I)</p> <p>A trial of aquatic therapy for patients who meet referral criteria for supervised exercise therapy and have co-morbidities that preclude effective participation in a weight-bearing physical activity (I)</p> <p>Oral NSAIDs (I)</p>	<p>Stretching exercises (I)</p> <p>Yoga (I)</p> <p>Topical NSAIDs (I)</p> <p>Duloxetine for muscle tenderness and trigger points – a trial may be considered after other treatments with documented efficacy have been attempted. However, use is generally not warranted. (I)</p> <p>Gabapentin or pregabalin (I)</p> <p>Capsicum creams (I)</p> <p>Other creams/ointments (I)</p>	<p>Bed rest (I)</p> <p>Specific commercial products or specific beds (I)</p> <p>Aquatic therapy for all other patients who do not meet referral criteria or do not have co-morbidities that preclude participation in weight-bearing physical activity (I)</p> <p>SSRIs, bupropion, or trazodone (A)</p> <p>Anti-convulsants (I)</p> <p>Bisphosphonates (I)</p>

Concomitant use of cytoprotective agents in patients with a high risk factor profile who also have indications for NSAIDs (C)

Discuss risks and benefits of NSAID therapy with patients who have risk factors for or have overt cardiovascular, hepatic, or renal disease (I)

Acetaminophen particularly if NSAIDs are contraindicated (I)

TCAs for more severe cases (I)

Harpagoside in carefully selected patients (e.g., who have contraindications for NSAIDs, failed NSAIDs, or have a strong, rational aversion to them) (C)

Lidocaine patches after other treatment strategies with documented efficacy have been tried (I)

Acupuncture for select use in chronic moderate to severe trigger points/myofascial pain (C)

Self-application of low-tech heat therapy (I)

Massage for select patients as an adjunct to active treatments consisting primarily of a graded aerobic and strengthening exercise program (I)

Trigger point injections using local anesthetic as a second or tertiary option for trigger points that are not resolving (C)

Psychological evaluation as part of evaluation and management of patients with chronic pain in order to assess whether psychological factors will need to be considered and treated as part of treatment plan (I)

Cognitive-behavioral therapy as an adjunct to an interdisciplinary program for the treatment of chronic pain (C)

Multidisciplinary or interdisciplinary pain rehabilitation program with a focus on behavioral or cognitive-behavioral approaches combined with conditioning exercise for patients who, due to chronic pain, demonstrate partial/total work incapacity (I)

Work conditioning, work hardening, and early intervention programs (I)

Epidural clonidine (I)

Commiphora molmol, Melaleuca alternifolia, Angelica sinensis, Aloe vera, Thymus officinalis, Menthe piperita, Arnica Montana, Curcuma longa, Tanacetum parthenium, and Zingiber officinalis (I)

Physical and occupational therapy – see individual treatment sections in the original guideline document (I)

Home use of cryotherapies (I)

Home use of infrared therapy (I)

Low-level laser therapy (I)

Myofascial release – may be used as an option in place of trigger point injections and should not exceed 4-6 treatments (I)

Transcutaneous electrical nerve stimulation (TENS) (I)

Botulinum injections (I)

Other functional restoration (I)

Calcitonin (I)

Clonidine (I)

Glucocorticosteroids by systemic or topical routes (I)

Willow bark (salix) (I)

NMDA receptor/antagonists, including dextromethorphan (I)

Ketamine infusion (I)

Ketanserin (I)

Muscle relaxants (I)

Thalidomide (I)

Wheatgrass cream (I)

DMSO (I)

NAC (I)

EMLA cream (I)

Tumor necrosis alpha blockers (I)

Complementary and alternative treatments, dietary supplements, etc. (I)

Vitamins (I)

Opioids (I)

Hyperbaric oxygen (I)

Topical hyperbaric oxygen (I)

Taping and kinesiotaping (I)

Magnets and magnetic stimulation (I)

Routine use of cryotherapies in health care provider offices or use of high tech devices (I)

Application of heat by health care provider (I)

Diathermy (C)

External radiation for sympathetic blockade (I)

Provider-based infrared therapy (I)

Ultrasound (C)

Use of mechanical massage devices applied by rehabilitation service providers or massage therapists to administer massage (C)

Reflexology (I)

Sympathetic electrotherapy (I)

High-voltage galvanic (I)

H-wave stimulation (I)

Interferential therapy (I)

Iontophoresis (I)

Microcurrent electrical stimulation (I)

Percutaneous electrical nerve stimulation (PENS) (I)

Glucocorticosteroids for use in trigger point injections (C)

Facet joint hyaluronic acid injections (I)

Prolotherapy injections (C)

			<p>Intrapleural bupivacaine infusions (I)</p> <p>Intrathecal drug delivery systems (I)</p>
<p>Chronic Persistent Pain (CPP)</p>	<p>Alter sleep posture to determine if there is reduction in pain/other symptoms (I)</p> <p>Aerobic exercise (A)</p> <p>Strengthening exercises (C)</p> <p>A trial of aquatic therapy for patients who meet referral criteria for supervised exercise therapy and have co-morbidities that preclude effective participation in a weight-bearing physical activity (I)</p> <p>Yoga for select, highly motivated patients (I)</p> <p>Oral NSAIDs (B)</p> <p>Concomitant use of cytoprotective agents in patients with a high risk factor profile and indications for NSAIDs (C)</p> <p>Discuss risks and benefits of NSAID therapy with patients who have risk factors for or have overt cardiovascular, hepatic, or renal disease (I)</p> <p>Acetaminophen particularly if NSAIDs are contraindicated (C)</p> <p>TCA's (A)</p> <p>Harpagoside in carefully selected patients (e.g., who have contraindications for NSAIDs, failed NSAIDs, or have a strong, rational aversion to them) (C)</p> <p>Muscle relaxants for brief use as a 2nd- or 3rd-line agent in acute exacerbations (I)</p> <p>Capsicum creams for short-term treatment of acute exacerbations (B)</p> <p>Lidocaine patches for moderate to severe CRPS after other treatment strategies with documented efficacy have been tried (I)</p> <p>Opioids may be used for select patients (I)</p> <p>Screening patients prior to initiation of opioids (I)</p> <p>Use of an opioid treatment agreement (I)</p> <p>Routine urine drug screening for patients on chronic opioids (C)</p> <p>Acupuncture for select use in chronic moderate to severe neck pain (C)</p> <p>Self-application of low-tech heat therapy (I)</p> <p>Brief course of mobilization or manipulation for neck pain (B)</p> <p>Brief course of mobilization or manipulation for recurrent exacerbations of neck pain (C)</p> <p>Massage for select patients with chronic persistent neck pain as an adjunct to active treatments consisting primarily of a graded aerobic and strengthening exercise program (C)</p> <p>Transcutaneous electrical nerve stimulation (TENS) for select use in other chronic persistent pain as an adjunct for more efficacious treatments (C)</p> <p>Trigger point injections using local</p>	<p>Topical NSAIDs (I)</p> <p>Duloxetine (I)</p> <p>Epidural clonidine (I)</p> <p>Other creams/ointments (I)</p> <p>Commiphora molmol, Melaleuca alternifolia, Angelica sinensis, Aloe vera, Thymus officinalis, Mentha piperita, Arnica Montana, Curcuma longa, Tanacetum parthenium, and Zingiber officinalis (I)</p> <p>Physical and occupational therapy – see individual treatment sections in the original guideline document (I)</p> <p>Home use of cryotherapies (I)</p> <p>Home use of infrared therapy (I)</p> <p>Ultrasound (I)</p> <p>Transcutaneous electrical nerve stimulation (TENS) for chronic persistent neck pain (I)</p> <p>Other functional restoration (I)</p>	<p>Bed rest (I)</p> <p>Specific commercial products or specific beds (I)</p> <p>Stretching exercises (I)</p> <p>Active-assisted or "aggressive" stretching (I)</p> <p>Aquatic therapy for all other patients who do not meet referral criteria or do not have co-morbidities that preclude participation in weight-bearing physical activity (I)</p> <p>SSRIs, bupropion, trazodone for chronic pain without depression (A)</p> <p>Anti-convulsants except topiramate (I)</p> <p>Gabapentin or pregabalin (C)</p> <p>Bisphosphonates (I)</p> <p>Calcitonin (I)</p> <p>Clonidine (I)</p> <p>Glucocorticosteroids (I)</p> <p>Willow bark (salix) (I)</p> <p>NMDA receptor/antagonists, including dextromethorphan (I)</p> <p>Ketamine infusion (I)</p> <p>Ketanserin (I)</p> <p>Muscle relaxants for mild to moderate chronic persistent pain other than acute exacerbations (I)</p> <p>Thalidomide (I)</p> <p>DMSO (I)</p> <p>Wheatgrass cream (I)</p> <p>NAC (I)</p> <p>EMLA cream (I)</p> <p>Tumor necrosis alpha blockers (I)</p> <p>Complementary and alternative treatments, dietary supplements, etc. (I)</p> <p>Vitamins (I)</p> <p>Routine use of opioids (C)</p> <p>Hyperbaric oxygen (I)</p> <p>Topical hyperbaric oxygen (I)</p> <p>Taping and kinesiotaping (I)</p> <p>Magnets and magnetic stimulation (I)</p> <p>Routine use of cryotherapies in health care provider offices or use of high tech devices (I)</p> <p>Application of heat by health care provider (I)</p> <p>Diathermy (C)</p>

	<p>anesthetic as a 2nd or 3rd option for trigger points that are not resolving (C)</p> <p>Psychological evaluation as part of evaluation/management of patients with chronic pain to assess if psychological factors need to be considered and treated as part of treatment plan (I)</p> <p>Cognitive-behavioral therapy as an adjunct to an interdisciplinary program for chronic pain (C)</p> <p>Multidisciplinary or interdisciplinary pain rehabilitation program with a focus on behavioral or cognitive-behavioral approaches combined with conditioning exercise for patients who, due to chronic pain, demonstrate partial/total work incapacity (I)</p> <p>Work conditioning, work hardening, and early intervention programs (I)</p>		<p>External radiation for sympathetic blockade (I)</p> <p>Provider-based infrared therapy (I)</p> <p>Low-level laser therapy (I)</p> <p>Regular or routine use of mobilization or manipulation (I)</p> <p>Adjustments/manipulation of neck/cervical spine, or areas outside lumbopelvic region (I)</p> <p>Use of mechanical massage devices applied by rehabilitation service providers or massage therapists to administer massage (C)</p> <p>Myofascial release (I)</p> <p>Reflexology (I)</p> <p>Sympathetic electrotherapy (I)</p> <p>High-voltage galvanic (I)</p> <p>H-wave stimulation (I)</p> <p>Interferential therapy (I)</p> <p>Iontophoresis (I)</p> <p>Microcurrent electrical stimulation (I)</p> <p>Percutaneous electrical nerve stimulation (PENS) (I)</p> <p>Glucocorticosteroids for use in trigger point injections (C)</p> <p>Botulinum injections for non-specific neck pain (C)</p> <p>Epidural glucocorticosteroid injections for chronic neck pain (C)</p> <p>Facet joint hyaluronic acid injections (I)</p> <p>Prolotherapy injections for chronic neck pain (I)</p> <p>Prolotherapy injections for chronic muscular pain involving areas other than the spine (C)</p> <p>Intraleural bupivacaine infusions (I)</p> <p>Intrathecal drug delivery systems (I)</p>
<p>Chronic Low Back Pain (LBP)</p>	<p>Alter sleep posture to determine if there is reduction in pain/other symptoms (I)</p> <p>Aerobic exercise (A)</p> <p>Strengthening exercises (C)</p> <p>A trial of aquatic therapy trial for patients who meet referral criteria for supervised exercise therapy and have co-morbidities that preclude effective participation in a weight-bearing physical activity (I)</p> <p>Yoga for select, highly motivated patients (C)</p> <p>Oral NSAIDs (B)</p> <p>Concomitant use of cytoprotective agents in patients with a high risk factor profile who also have indications for NSAIDs (C)</p> <p>Discuss risks and benefits of NSAID therapy with patients who have risk</p>	<p>Topical NSAIDs (I)</p> <p>Duloxetine (I)</p> <p>Epidural clonidine (I)</p> <p>Thiocolchicoside (I)</p> <p>Other creams/ointments (I)</p> <p>Commiphora molmol, Melaleuca alternifolia, Angelica sinensis, Aloe vera, Thymus officinalis, Menthe piperita, Arnica Montana, Curcuma longa, Tanacetum parthenium, and Zingiber officinalis (I)</p> <p>Physical and occupational therapy – see individual treatment sections in the original guideline document (I)</p> <p>Home use of infrared therapy (I)</p> <p>Ultrasound (I)</p>	<p>Bed rest (B)</p> <p>Specific commercial products or specific beds (I)</p> <p>Stretching exercises (I)</p> <p>Active-assisted or "aggressive" stretching (I)</p> <p>Abdominal exercises for treatment or prevention of LBP (I)</p> <p>Aquatic therapy for all other patients who do not meet referral criteria or do not have co-morbidities that preclude participation in weight-bearing physical activity (I)</p> <p>SSRIs, bupropion, and trazodone for chronic pain without depression (A)</p>

factors for or have overt cardiovascular, hepatic, or renal disease (I)

Acetaminophen particularly if NSAIDs are contraindicated (C)

TCAs (A)

Topiramate for limited use as 4th- or 5th-line agent in select patients (C)

Gabapentin for severe neurogenic claudication (C)

Harpagoside in carefully selected patients – e.g., who have contraindications for NSAIDs, failed NSAIDs, or have a strong, rational aversion to them (C)

Muscle relaxants for brief use as a 2nd- or 3rd-line agent in acute exacerbations (I)

Capsicum creams for short-term treatment of acute exacerbations (B)

Lidocaine patches after other treatment strategies with documented efficacy have been tried (I)

Opioids may be used for select patients (I)

Screening patients prior to initiation of opioids (I)

Use of an opioid treatment agreement (I)

Routine use of urine drug screening for patients on chronic opioids (C)

Acupuncture for select use in chronic moderate to severe LBP (C)

Home use of cryotherapies (I)

Self-application of low-tech heat therapy (C)

Brief course of mobilization or manipulation (B)

Brief course of mobilization or manipulation for recurrent exacerbations (C)

Massage for select use in patients with chronic persistent low back pain as an adjunct to active treatments consisting primarily of a graded aerobic and strengthening exercise program (C)

Neuroreflexotherapy for moderate to severe chronic LBP in patients who have failed management with NSAIDs, progressive aerobic exercise program or other exercises, or manipulation (C)

Transcutaneous electrical nerve stimulation (TENS) for select use as an adjunct for more efficacious treatments (C)

Trigger point injections using local anesthetic as a second or tertiary option for trigger points that are not resolving (C)

Epidural glucocorticosteroid injections as an option for 2nd-line treatment of acute flare-ups of spinal stenosis associated with true radicular or radiculomyelopathic symptoms (I)

Psychological evaluation as part of evaluation and management of patients with chronic pain in order to assess whether psychological factors will need to be considered and treated as part of treatment plan (I)

Psychological evaluation prior to considering back surgery in patients with

Botulinum injections (I)

Radiofrequency neurotomy, neurotomy, or facet rhizotomy for cervicogenic spinal conditions (I)

Therapeutic facet joint injections for flare-ups – a single intra-articular therapeutic facet joint injection for select patients with symptomatic flares that clinically appear to be facet-related for the specific purpose to maintain function (e.g., self-care and remain or return to work) (I)

Other functional restoration (I)

Anti-convulsants except topiramate (I)

Gabapentin or pregabalin (C)

Bisphosphonates (I)

Calcitonin (I)

Clonidine (I)

Oral and IV colchicine (I)

Glucocorticosteroids (I)

Willow bark (salix) (I)

NMDA receptor/antagonists, including dextromethorphan (I)

Ketamine infusion (I)

Ketanserin (I)

Muscle relaxants for chronic LBP (other than for acute exacerbations) (I)

Thalidomide (I)

DMSO (I)

Wheatgrass cream (I)

NAC (I)

EMLA cream (I)

Tumor necrosis alpha blockers (I)

Complementary and alternative treatments, dietary supplements, etc. (I)

Vitamins (I)

Routine use of opioids (C)

Hyperbaric oxygen (I)

Topical hyperbaric oxygen (I)

Taping and kinesiotaping (I)

Magnets and magnetic stimulation (I)

Routine use of cryotherapies in health care provider offices or use of high tech devices (I)

Application of heat by health care provider (I)

Diathermy (C)

Provider-based infrared therapy (I)

Low-level laser therapy (I)

Regular or routine use of mobilization or manipulation (I)

Adjustments/manipulation of neck/cervical spine, or areas outside of lumbopelvic region (I)

Manipulation under anesthesia (MUA) and medication-assisted spinal manipulation (MASM) (I)

Use of mechanical massage devices applied by rehabilitation service providers or massage therapists to administer massage (C)

Myofascial release (I)

Reflexology (C)

High voltage galvanic (I)

	<p>chronic benign pain (I)</p> <p>Cognitive-behavioral therapy as an adjunct to an interdisciplinary program for the treatment of chronic pain (C)</p> <p>Biofeedback for select patients as a component (not a separate procedure) of cognitive-behavioral therapy or as a procedure in the context of an interdisciplinary or functional rehabilitation program (I)</p> <p>Work conditioning, work hardening, and early intervention programs for chronic spinal pain (C)</p> <p>Interdisciplinary pain rehabilitation programs (C)</p>		<p>H-wave stimulation (I)</p> <p>Interferential therapy (C)</p> <p>Iontophoresis (I)</p> <p>Microcurrent electrical stimulation (I)</p> <p>Percutaneous electrical nerve stimulation (PENS) (I)</p> <p>Glucocorticosteroids for use in trigger point injections (C)</p> <p>Epidural glucocorticosteroid injections for dorsal spine symptoms that predominate over leg pain (C)</p> <p>Facet joint hyaluronic acid injections (I)</p> <p>Prolotherapy injections (C)</p> <p>Radiofrequency neurotomy, neurotomy, or facet rhizotomy for lumbar spinal conditions (C)</p> <p>Routine use of therapeutic facet joint injections for chronic non-specific axial pain (B)</p> <p>Repeat use of an intra-articular therapeutic facet joint injection for those who failed to achieve lasting functional improvements with a prior injection (B)</p> <p>Intrathecal drug delivery systems (I)</p>
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Definitions:

Strength of Evidence Ratings

A: Strong evidence-base: Two or more high-quality studies.*

B: Moderate evidence-base: At least one high-quality study or multiple moderate-quality studies** relevant to the topic and the working population.

C: Limited evidence-base: At least one study of moderate quality.

I: Insufficient evidence: Evidence is insufficient or irreconcilable.

*For therapy and prevention, randomized controlled trials (RCTs) with narrow confidence intervals and minimal heterogeneity. For diagnosis and screening, cross sectional studies using independent gold standards. For prognosis, etiology or harms, prospective cohort studies with minimal heterogeneity.

**For therapy and prevention, well-conducted cohort studies. For prognosis, etiology or harms, well-conducted retrospective cohort studies or untreated control arms of RCTs.

	Evidence Rating	Description of Category
Strongly Recommended	A	<p>The intervention is strongly recommended for appropriate patients.</p> <p>The intervention improves important health and functional outcomes based on high-quality evidence, and the Evidence-based Practice Panel (EBPP) concludes that benefits substantially outweigh harms and costs.</p>
Moderately Recommended	B	<p>The intervention is recommended for appropriate patients.</p> <p>The intervention improves important health and functional outcomes based on moderate-quality evidence that benefits substantially outweigh harms and costs.</p>
Recommended	C	<p>The intervention is recommended for appropriate patients.</p> <p>There is limited evidence that the intervention may improve important health and functional benefits.</p>
Insufficient - Recommended (Consensus-based)	I	<p>The intervention is recommended for appropriate patients and has nominal costs and essentially no potential for harm.</p> <p>The EBPP feels that the intervention constitutes best medical practice to acquire or provide information in order to best diagnose and treat a health condition and restore function in an expeditious manner. The EBPP believes based on the body of evidence, first principles, and/or collective experience that patients</p>

		are best served by these practices, although the evidence is insufficient for an evidence-based recommendation.
Insufficient - No Recommendation (Consensus-based)	I	The evidence is insufficient to recommend for or against routinely providing the intervention. The EBPP makes no recommendation. Evidence that the intervention is effective is lacking, of poor quality, or conflicting and the balance of benefits, harms, and costs cannot be determined.
Insufficient – Not Recommended (Consensus-based)	I	The evidence is insufficient for an evidence-based recommendation. The intervention is not recommended for appropriate patients because of high costs/high potential for harm to the patient.
Not Recommended	C	Recommendation against routinely providing the intervention. The EBPP found at least moderate evidence that harms and costs exceed benefits based on limited evidence.
Moderately Not Recommended	B	Recommendation against routinely providing the intervention to eligible patients. The EBPP found at least moderate evidence that the intervention is ineffective, or that harms or costs outweigh benefits.
Strongly Not Recommended	A	Strong recommendation against providing the intervention to eligible patients. The EBPP found high quality evidence that the intervention is ineffective, or that harms or costs outweigh benefits.

Clinical Algorithm(s)

The following clinical algorithms are provided in the original guideline document:

- Chronic pain management
- Management of complex regional pain syndrome (CRPS)
- Management of trigger points/myofascial pain
- Management of neuropathic pain
- Management of fibromyalgia

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate evaluation and treatment of patients with chronic pain

Potential Harms

- False-positive or false-negative diagnostic tests
- Risks and complications of imaging studies (e.g., radiation)
- Side effects of activity modification and exercise (e.g., strains, increased symptoms)
- Side effects of medications, physical and occupational therapies, injection therapies, and surgical therapies

Contraindications

Contraindications

- Tricyclic anti-depressants (TCAs) have demonstrated efficacy—particularly amitriptyline, although nortriptyline and desipramine are usually better tolerated than amitriptyline and imipramine—but are often contraindicated in the elderly or patients with cardiovascular disease.
- Non-steroidal anti-inflammatory drugs (NSAIDs) may be contraindicated in patients with a history of gastrointestinal (GI) bleeding, past history of peptic ulcer disease, or intolerance of other NSAIDs.
- Valproate carbamazepine, phenytoin, and phenobarbital are potent teratogens and are contraindicated in women of reproductive age.
- Relative contraindications to opioid therapy include significant psychopathology or an elevated risk of abuse, addiction, or adverse outcome.

- While bed rest has been used to treat fibromyalgia patients, it is believed to be strongly contraindicated and there are no quality studies evaluating its use as a treatment strategy.
- Selective serotonin-norepinephrine reuptake inhibitors (SSNRIs) such as duloxetine and venlafaxine have both been shown to be efficacious, but duloxetine is contraindicated in hepatic dysfunction and venlafaxine is associated with hypertension at SSNRI doses.
- Slings, splints, and other appliances are contraindicated in managing chronic pain in the absence of focal neurological or structural deficits as they may reinforce pain and illness behaviors.
- Inactivity is contraindicated for essentially every chronic condition associated with persistent pain.

Qualifying Statements

Qualifying Statements

The American College of Occupational and Environmental Medicine (ACOEM) provides this segment of guidelines for practitioners and notes that decisions to adopt particular courses of actions must be made by trained practitioners on the basis of the available resources and the particular circumstances presented by the individual patient. Accordingly, the ACOEM disclaims responsibility for any injury or damage resulting from actions taken by practitioners after considering these guidelines.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Chart Documentation/Checklists/Forms

Clinical Algorithm

Resources

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

American College of Occupational and Environmental Medicine. Chronic pain. In: Occupational medicine practice guidelines: evaluation and management of common health problems and functional recovery in workers. Elk Grove Village (IL): American College of Occupational and Environmental Medicine (ACOEM); 2008. p. 73-502. [1557 references]

Adaptation

Not applicable: The guideline was not adapted from another source.

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Guideline Developer(s)

American College of Occupational and Environmental Medicine - Medical Specialty Society

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American College of Occupational and Environmental Medicine

Guideline Committee

American College of Occupational and Environmental Medicine's Evidence-based Practice Chronic Pain Panel

Composition of Group That Authored the Guideline

Panel Members: Gerald M. Aronoff, MD, DABPM; Daniel Bruns, PsyD; Jeffrey L. Cole, MD; Penney Cowan; Steven D. Feinberg, MD, MPH (Chronic Pain Chapter Associate Editor); Corey D. Fox, PhD, ABPP; Jill Galper, PT, MEd; Elizabeth Genovaese, MD, MBA, FACOEM (Chronic Pain Chapter Associate Editor and Lead Chair); Lee S. Glass, MD, JD; Scott Haldeman, MD, DC, PhD, FRCP(C), FAAN, FCCS; Jeffrey S. Harris, MD, MPH, MBA, FACOEM (Methodology Committee Consultant); Kurt T. Hegmann, MD, MPH, FACOEM (Editor-in-Chief); Wilhelmina C. Korevaar, MD, MMM (Chronic Pain Chapter Associate Editor and Associate Chair); James E. Lessenger, MD, FACOEM; Steven Mandel, MD; Tom G. Mayer, MD; Kathryn L. Mueller, MD, MPH, FACOEM (Chronic Pain Chapter Associate Editor and Associate Chair); Albert J. Osbahr III, MD, MSCM, FACOEM; Russell Travis, MD; April Hazard Vallerand, PhD, RN, FAAN; Pamela A. Warren, PhD; Janet S. Weiss, MD; Thomas Winters, MD, FACOEM

Financial Disclosures/Conflicts of Interest

Gerald M. Aronoff, MD, DABPM (Panel Member)

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National, Regional, Local Committee Affiliations—Past President, North Carolina Pain Society; Past President, American Academy of Pain Medicine; Past President, New England Pain Association, Eastern Pain Association, NC Pain Society; Past Chairman, American Pain Society's Committee on Pain Centers; Past member of the Commission Accreditation of Rehabilitation (CARF) National Advisory Committee for Pain; Past pain consultant to FDA, Arthritis Advisory Committee; Past Chairman, American Academy of Pain Medicine's End of Life Task Force; Advisory Board, National Pain Foundation

Guidelines Related Professional Activities—Pain consultant to the Federation of State Medical Boards; Consensus Panel to develop guidelines for the use of controlled substances for chronic pain; Task Force to develop national guidelines for management of non-malignant pain in the elderly; Chairman, AADEP Task Force to Develop Guidelines for CRPS (RSD) Impairment and Disability Issues (2002); Co-Chairman, AADEP Task Force to develop Guidelines for Fibromyalgia Syndrome: A Consensus Report on Fibromyalgia Impairment and Disability (1999); Reviewer, Pain Chapter, *AMA Guides to the Evaluation of Permanent Impairment, 6th Edition*

Research Grants/Other Support—None

Financial/Non-Financial Conflict of Interest—Multiple speaker bureaus; educational 'think tanks'

Daniel Bruns, PsyD (Panel Member)

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National, Regional, Local Committee Affiliations—Chairperson, Clinical Health Services Council; American Psychological Association Division of Health Psychology; Board Member, American Psychological Association's Division of Health Psychology

Guidelines Related Professional Activities—Member, State of Colorado Workers' Compensation Task Force for Evidence-Based Medicine Guidelines (Psychiatric Disability, Chronic Pain, CRPS); State of Colorado Workers' Compensation Advisory Panels for Evidence-Based Guidelines for Low Back/Neck Injury, TBI; Reviewer for *AMA Guide to Impairment Ratings*; Reviewer, *Pain Medicine Journal*

Research Grants/Other Support—None

Financial/Non-Financial Conflict of Interest—Author of 3 published psychological tests for injured patients and their test manuals, and receive royalties for them: The Battery for Health Improvement 2 (BHI 2), the Brief Battery for Health Improvement 2 (BBHI 2), and the Comprehensive Pain Scale (CPS).

Jeffrey L. Cole, MD (Panel Member)

Director, Electrodiagnostic Service and Musculoskeletal Rehabilitation, Kessler Institute for Rehabilitation, Department of Physical Medicine & Rehabilitation; Psychiatrist, Physical Medicine & Rehabilitation Consultant, PC; Nassau University Medical Center, Department of Physical Medicine & Rehabilitation; Attending Physician, Consultant and former Director of Interventional Pain Management, Department of PM&R; Attending and Consultant, Board Certified, Physiatric Interventional Pain Management; Clinical Associate Professor, Department of Physical Medicine and Rehabilitation, UMDNJ; Clinical Associate Professor, Department of Medicine, NYCOM; Diplomate and Fellow, American Academy of Physical Medicine and Rehabilitation

National, Regional, Local Committee Affiliations—Member, Program Planning Committee, American Academy of Physical Medicine and Rehabilitation; Past President, American Society for Clinical Potentials; Vice Chairman, Committee on Physical Medicine and Rehabilitation, Medical Society of the State of New York; Member, Physiatric Association of Spine, Sports and Occupational Rehabilitation; Member, Institute of Electrical and Electronics Engineers.

Guidelines Related Professional Activities—None

Research Grants/Other Support—New Jersey Commission on Spinal Cord Research

Financial/Non-Financial Conflict of Interest—Consultations: health care and business organizations, hospitals

Penney Cowan (Panel Member)

Founder & Executive Director, American Chronic Pain Association

National, Regional, Local Committee Affiliations—Member, Pain Care Forum; Member, IMMPACT II, III, IV, V, VI, VII (Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials) Steering Committee; Member, International Neuropathic Pain Network Steering Committee; Member, Northern California Pain Initiative; Member, Evidence-based Medicine Working Group; Member, Alliance for Better Medicine (CA); Member, AgrAbility Project; Member, Chronic Pain Network Steering Committee; Member, American Academy of Pain Medicine's Medical School Curriculum Advisory Board for TOPMED (Topics in Medical Education)

Guidelines Related Professional Activities—Panel Member, American College of Physicians and American Pain Society's Clinical Practice Guidelines for Low Back Pain; Member, Chronic Pain Panel of the Practice Guidelines Coalition

Research Grants/Other Support—None

Financial/Non-Financial Conflict of Interest—None

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National, Regional, Local Committee Affiliations—Past Member and President, Board of Directors, American Academy of Pain Medicine; Past Member and President, Board of Directors of the California Society of Industrial Medicine and Surgery; Member, Board of Directors (Medical Advisor), American Chronic Pain Association; Member, Board of Directors, California Academy of Pain Medicine

Guidelines Related Professional Activities—Member, Pain Chapter Team, *AMA Guides to the Evaluation of Permanent Impairment, 6th Edition*

Research Grants/Other Support—None

Financial/Non-Financial Conflict of Interest—None

Corey D. Fox, PhD, ABPP (Panel Member)

Principal, Healthcare Consulting Associates

National, Regional, Local Committee Affiliations—Member, Medical Advisory Board, Collaborative for Excellence in Occupational Medicine; Past Member, Advisory Committee, UniMed Direct, LLC; Past Member, Editorial Board, American Pain Society Bulletin; Past Member, Managed Care Committee, American Pain Society

Guidelines Related Professional Activities—Chair, American Pain Society's Committee to develop guidelines on pain management in managed care; developed guidelines on chronic pain for a workers' compensation carrier and a group health plan; Member, CARF International Advisory Committee for Standards

Research Grants/Other Support—None

Financial/Non-Financial Conflict of Interest—Consultations: health care and business organizations, hospitals, health plans and insurers, government agencies regarding health and disability management, guidelines and standards, clinical programs, utilization review, accreditation, staff and program development, and evaluation

Jill Galper, PT, MEd (Panel Member)

Vice President, Clinical Program Development, IMX Medical Management Services

National, Regional, Local Committee Affiliations—Executive Committee, Southeast District, Pennsylvania Physical Therapy Association

Guidelines Related Professional Activities—Affiliate Editor, ACOEM's *APG Insights*; American Physical Therapy Association (APTA) Representative for *Occupational Medicine Practice Guidelines, 2nd Edition* (2004)

Research Grants/Other Support—None

Financial/Non-Financial Conflict of Interest—None

Elizabeth Genovese, MD, MBA, FACOEM (Chronic Pain Chapter Associate Editor and Lead Chair)

Medical Director, IMX Medical Management Services; Adjunct Assistant Professor of Medicine, Associated Faculty, University of Pennsylvania School of Medicine

National, Regional, Local Committee Affiliations—Board of Directors, American Academy of Disability Evaluating Physicians; Advisory Committee, Athena Institute for Women's Wellness; Board of Directors, Philadelphia OEMS; Committee on Coding and Classification, ACOEM; Committee on Return to Work, ACOEM; Evidence-based Practice Committee, ACOEM; AMA CPT Advisory Committee, ACOEM Representative; Director, "Musculoskeletal Diagnosis and Treatment" course, ACOEM; Co-Director, "Clinical Guidelines" course, ACOEM

Guidelines Related Professional Activities—Member, Evidence-based Practice Committee, *Occupational Medicine Practice Guidelines, 2nd Edition, 2004*; Editor, ACOEM's *APG Insights*; Section Reviewer, *AMA Guides to the Evaluation of Permanent Impairment, 6th Edition*

Research Grants/Other Support—None

Financial/Non-Financial Conflict of Interest—Consultations: Client companies are often interested in guidelines

Lee S. Glass, MD, JD (Panel Member)

Associate Medical Director, State of Washington's Department of Labor and Industries

National, Regional, Local Committee Affiliations—Chair, Coding and Classification Committee, ACOEM; Member, Council on OEM Practice, ACOEM; ACOEM Representative to AMA's Relative Value System Update Committee; Committee on Homeland Security, State of Washington Department of Emergency Management; Disaster Preparedness Task Force, Washington State Medical Association; and Bioterrorism Preparedness and Response Program Advisory Committee, Washington State 's Department of Health

Guidelines Related Professional Activities—Member, APS/ACP Low Back Pain Guideline Project; Immediate Past Chair, Guidelines Committee, ACOEM; Editor, ACOEM's *Occupational Medicine Practice Guidelines, 2nd Edition*; and Past Associate Editor, *APG Insights*

Research Grants/Other Support—None

Financial/Non-Financial Conflict of Interest—None

Scott Haldeman, MD, DC, PhD, FRCP(C), FAAN, FCCS (Panel Member)

Clinical Professor, Department of Neurology, UCI; Adjunct Professor, Department of Epidemiology, UCLA School of Public Health

National, Regional, Local Committee Affiliations— Past President and Committee Member, North American Spine Society; President, American Back Society; Chairman, World Federation of Chiropractic Research Council

Guidelines Related Professional Activities— Member, IASP Neuropathic Pain Special Interest Group; Member, State of California Department of Workers' Compensation Medical Evidence Evaluation Advisory Committee; Panel Member, U.S. Department of Health and Human Services, Agency for Health Care Policy and Research's Clinical Practice Guidelines on "Acute Low Back Pain in Adults"; Commission Chairman, Guidelines for Chiropractic Quality Assurance and Practice Parameters; Facilitator, American Academy of Neurology's Assessment: The Neurological Evaluation of Male Sexual Dysfunction. Report of the Therapeutics and Technology Assessment Subcommittee; Practice Guidelines Committee and Guidelines Committee Advisory Panel, North American Spine Society; President, The Bone and Joint Decade 2000–2010 Task Force on Neck Pain and Its Associated Disorders; Associate Editor, *Spine*; Associate Editor and past Deputy Editor, *The Spine Journal*; Editorial Board, *Journal of Manipulative and Physiological Therapeutics*; Editorial Board, *Alternative Therapies*; Editorial Board, *Australian Chiropractic Association*; Editorial Board, *Journal of the Canadian Chiropractic Association*; Editorial Board, *The Back Letter*; International Advisory Board, *Clinical Chiropractic*

Research Grants/Other Support—None at present; grants to the Task Force on Neck Pain and Its Associated Disorders

Financial/Non-Financial Conflict of Interest—Financial-private practice/non-financial; multiple positions in organizations and associations

Jeffrey S. Harris, MD, MPH, MBA, FACOEM (Methodology Committee Consultant)

Senior Physician, The Permanente Medical Group; President, J. Harris Associates Inc; Clinical Associate Professor, University of California at San Francisco, University of Utah, and Medical College of Wisconsin

National, Regional, Local Committee Affiliations—Board of Directors, Finance Committee, Policies and Procedures Committee, ACOEM; President and Member, Board of Directors, Collaborative for Excellence in Occupational Medicine (CEOM)

Guidelines Related Professional Activities—Guidelines Methodology Committee and Evidence-Based Practice Committee, ACOEM; Consultant, Evidence-Based Medicine Task Force, ACOEM; Editor, *ACOEM Occupational Medicine Practice Guidelines, 1st Edition* and Associate Editor, *2nd Edition*; Past Chair, Practice Guidelines Committee, ACOEM (1994–1998); Guideline Quality Review Committee and Guideline Medical Editor, The Permanente Federation/Care Management Institute; Reviewer, the Cochrane Collaboration, Musculoskeletal and Low Back Groups and Occupational Medicine Field; Panel Member, American College of Physicians/American Pain Society Low Back Guideline

Research Grants/Other Support—University of California at Davis to CEOM

Financial/Non-Financial Conflicts of Interest—None

Kurt T. Hegmann, MD, MPH, FACOEM (Editor-in-Chief)

Associate Professor and Center Director, Rocky Mountain Center for Occupational and Environmental Health, University of Utah

National, Regional, Local Committee Affiliations—Member, Ergonomics Committee (Chair 2001–2005), ACOEM; Board of Trustees, American Board of Preventive Medicine (Chair, Examination Committee); and Chair, Federal Motor Carrier Safety Administration's Medical Review Board

Guidelines Related Professional Activities—Chair, Evidence-based Practice Committee (update of 2nd Edition), ACOEM; Member, Council on Scientific Affairs (2001–2005), ACOEM

Research Grants/Other Support—NIOSH (CDC) training grants and research grants primarily on the epidemiology of musculoskeletal disorders (e.g., CTS, shoulder tendinosis, LBP) and truck driver safety and a grant from the Utah Labor Commission studying cancers among firefighters and police officers.

Financial/Non-Financial Conflict of Interest—Honoraria: Teaching honoraria from various courses, mostly ACOEM-related; Consultations: Consulting with companies regarding how to reduce work-related injuries, causation and apportionment of injuries, and consultations with unions regarding return to work, work restrictions, and work-relatedness injuries; Clinical: Primary, secondary, and tertiary clinical management of occupational injuries and diseases

Wilhelmina C. Korevaar, MD, MMM (Chronic Pain Chapter Associate Editor and Associate Chair)

President, Wilhelmina C. Korevaar, MD, PC; Medical Director, Employee Disability Program, City of Philadelphia

National, Regional, Local Committee Affiliations—None

Guidelines Related Professional Activities—Member, American Society of Anesthesiologist's Task Force for Chronic Pain Guidelines

Research Grants/Other Support—None

Financial/Non-Financial Conflict of Interest—Private practice: evaluation, diagnosis, and treatment of chronic pain and associated conditions; Consultations: government agencies/programs; Independent contractor: specialist evaluations of chronic pain complaints, diagnosis, treatment, and causality

James E. Lessenger, MD, FACOEM (Panel Member)

Private Practice; Disability Examiner, Department of Social Services, State of California; Consultant, Medical Board of California; Lecturer, Occupational Medicine Residency, University of California, San Francisco

National, Regional, Local Committee Affiliations—Board Member, Benicia Historical Museum; Editorial Board, *Journal of Agromedicine*; Western Occupational Medicine Association

Guidelines Related Professional Activities—None

Research Grants/Other Support—None

Financial/Non-Financial Conflict of Interest—None

Steven Mandel, MD (Panel Member)

Clinical Professor of Neurology, Jefferson Medical College

National, Regional, Local Committee Affiliations—AADEP Disability Newsletter; Expert Opinion Editor, *Practical Neurology*; Editor Health Policy, Pennsylvania Neurological Society; Member, Occupational Health Subcommittee, Philadelphia County Medical Society

Guidelines Related Professional Activities—Developed evidence-based guidelines for laryngeal EMG in most peer-reviewed journals

Research Grants/Other Support—None

Financial/Non-Financial Conflict of Interest—None

Tom G. Mayer, MD (Panel Member)

Private Practice: Medical Director, Productive Rehabilitation Institute of Dallas for Ergonomics (PRIDE), Dallas, TX; Clinical Professor of Orthopedic Surgery, University of Texas Southwestern Medical Center

National, Regional, Local Committee Affiliations—Editorial Board and Founding Editor, *The Spine Journal*; Board of Associate Editors, *SPINE*; Interdisciplinary Program Work Group, Division of Workers' Compensation/Texas Department of Insurance; International Editorial Board, Isokinetics and Exercise Science; Editorial Board, *The Back Letter*; Board of Trustees, Dallas Opera Association

Guidelines Related Professional Activities—Musculoskeletal Section Editor and Spine Chapter Author, Executive Editorial Board, *6th Edition, AMA Guides to the Evaluation of Permanent Impairment*; Editorial Advisory Board, Official Disability Guidelines (ODG); AMA Guides Newsletter Advisory Board; Co-Chair, North American Spine Society, Spine Treatment Guideline (1996–2004); Co-Chairman, Texas Spine Treatment Guideline Work Group (1990–1995)

Research Grants/Other Support—None

Financial/Non-Financial Conflict of Interest—None

Kathryn L. Mueller, MD, MPH, FAOEM (Chronic Pain Chapter Associate Editor and Associate Chair)

Medical Director, Colorado Division of Workers' Compensation, Colorado Department of Labor; Professor of Surgery, Division of Emergency Medicine and Department of Preventive Medicine, University of Colorado Health Science Center; UCHSC Graduate School Faculty

National, Regional, Local Committee Affiliations—International Association of Injury and Accident Boards and Commissions Committee on Occupational Health and Disability Management; ACOEM: Bylaws Revision Committee, Committee on Workers' Compensation, Committee on Evidence-based Medicine, Steering Committee for Revision of ACOEM Guidelines; Colorado Division of Workers' Compensation: Task Force on Chronic Pain, Task Force on Complex Regional Pain Syndrome/Reflex Sympathetic Dystrophy, Upper Extremity Task Force on Carpal Tunnel, Cumulative Trauma Disorder and Thoracic Outlet Syndrome, Task Force on Lumbar and Cervical Spine and Lower Extremity; Workers' Compensation Personal Injury and Workers' Compensation Committee, Colorado Medical Society; Preventive Medicine Residency Advisory Committee, Occupational Medicine Residency Advisory Committee, MSPH Policy Committee, MSPH Curriculum Committee, University of Colorado School of Medicine

Guidelines Related Professional Activities—Section Editor, *AMA Guides to the Evaluation of Permanent Impairment, 6th Edition*; LBP Guideline Subcommittee, American Pain Society/American College of Physicians; Guidelines for State of Colorado; Editorial Board, *AMA Guides Newsletter*; Adviser/Reviewer, *Medical Disability Advisor, 3rd Edition*

Research Grants/Other Support—NIOSH Training Grant for Occupational Medicine Residencies, University of Colorado Health Sciences Department of Preventive Medicine completed July 1, 2007

Financial/Non-Financial Conflict of Interest—Received less than \$2,000 in honorarium for teaching engagements for ACOEM; Consultations: research purposes and impairment rating

Albert J. Osbahr III, MD, MSCM, FAOEM (Panel Member)

Medical Director, Occupational Health, Catawba Valley Medical Center

National, Regional, Local Committee Affiliations—Member, AMA Council of Science and Public Health; Member, NC Medical Society Board; Chair/Member, NCMS Industrial Commission Liaison Committee; Chair/Member, NCMS Public Health Committee

Guidelines Related Professional Activities—Independent Reviewer, ACOEM's *Occupational Medicine Practice Guidelines, 2nd Edition*

Research Grants/Other Support—None

Financial/Non-Financial Conflict of Interest—Consultations: government agencies and corporations

Russell Travis, MD (Panel Member)

Associate Medical Director, Cardinal Hill Rehabilitation Hospital; Voluntary Faculty, University of Kentucky Physical Medicine and Rehabilitation Department

National, Regional, Local Committee Affiliations—Past President, American Association of Neurological Surgeons; Past President, The Neurological Society of America; Member, Kentucky Medical Licensure Board

Guidelines Related Professional Activities—Chapter Work Group, *AMA Guides to the Evaluation of Permanent Impairment, 6th Edition*; Editorial Advisory Board, Official Disability Guidelines, ODG Treatment; Advisory Board, ACOEM's *APG Insights*

Research Grants/Other Support—None

Financial/Non-Financial Conflict of Interest—None

April Hazard Vallerand, PhD, RN, FAAN (Panel Member)

Associate Professor, Wayne State University College of Nursing

National, Regional, Local Committee Affiliations—Elected Member, Pain and Disparities Special Interest Group Advisory Committee, American Pain Society; Member, Board of Directors, Midwest Pain Society; Member, Scientific Program Committee, Midwest Pain Society; Member, Board of Directors, Michigan Cancer Pain Initiative; Past Member, Board of Directors, American Society of Pain Management Nurses

Guidelines Related Professional Activities—Member, American Pain Society's Panel for development of *Guidelines for the Management of Pain in Osteoarthritis, Rheumatoid Arthritis, and Juvenile Chronic Arthritis*; Member, American Geriatric Society's Panel for development of *Guidelines for the Management of Persistent Pain in Older Persons*; Reviewer of following journals: *Cancer, Expert, Reviews in Neurotherapeutics, Cancer Nursing, Journal of General Internal Medicine, Social Science and Medicine, Journal of American Geriatrics Society, American Journal of Nursing, Journal of Pain*

Research Grants/Other Support—Detroit Center/College of Nursing Scholar Award

Financial/Non-Financial Conflict of Interest—Reviewer, American Pain Society's guidelines for use of opioids in chronic nonmalignant pain; Consultations: public agencies, foundations, professional associations, and private enterprises

Pamela A. Warren, PhD (Panel Member)

Clinical Psychologist, Carle Clinic Association; Faculty, College of Education, Department of Counseling Psychology and College of Medicine, Department of Psychiatry, University of Illinois-Urbana, Champaign

National, Regional, Local Committee Affiliations—Member, Reed Group Medical Disability Advisory Board; Member, Disability Research Institute Advisory Board; Member, International Association of Rehabilitation Professionals (IARP) Case Management Board of Directors; Member, American Psychological Association's Health Psych Board

Guidelines Related Professional Activities—Sole author of Work Loss Data Institute's Mental Health Guidelines; developed evidence-based guidelines for all major adult psychological diagnoses; Advisor, ACOEM's *APG Insights*; Reviewer, Mental Health and Behavioral Disorders Chapter, *AMA Guides to the Evaluation of Permanent Impairment, 6th Edition*; consulted with the Social Security Administration Medical Policy administration in development of utilization of best practice standards for federal psychological guidelines for disability claims

Research Grants/Other Support—Co-investigator for study on evaluation of psychological concerns in women with breast cancer; Co-investigator for EUMASS (European Union of Medicine in Assurance and Social Security) study on psychological aspects of disability and healthcare

Financial/Non-Financial Conflict of Interest—Consultations: health plans and insurers, state and federal governmental agencies, corporations, and legal firms

Janet S. Weiss, MD (Panel Member)

Medical Director, TheToxDoc

National, Regional, Local Committee Affiliations—Member, Reed Group Medical Disability Advisory Board; Member, American Industrial Hygiene Association's Environmental Health Committee; Occupational and Environmental Medicine Committee and Education Committee, American Academy of Clinical Toxicology

Guidelines Related Professional Activities—Contributed 32 chapters to *Workplace Guidelines for Disability Duration, 5th Edition*

Research Grants/Other Support—None

Financial/Non-Financial Conflict of Interest—Consultation: state and federal governmental agencies, insurance agencies, corporations, and legal firms

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National, Regional, Local Committee Affiliations—Member, Residency Advisory Committee, Occupational/Environmental Health, Harvard School of Public Health

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Guideline Status

This is the current release of the guideline.

The American College of Occupational and Environmental Medicine (ACOEM) reviews the literature periodically to identify any major changes in the evidence-base by content area. Subsequent updates of the guidelines will be a full review of previous recommendations. The Panels will review new evidence and revise recommendations at least every 3 years.

Guideline Availability

Print copies are available from ACOEM, 25 Northwest Point Boulevard, Suite 700, Elk Grove Village, IL 60007; Phone:

847-818-1800. To order a subscription to the online version, call 800-441-9674 or visit

<http://www.acoempracguides.org/> 

Availability of Companion Documents

The following is available:

- Methodology for the update of the occupational medicine practice guidelines, 2nd edition. Elk Grove Village (IL): American College of Occupational and Environmental Medicine (ACOEM); 2006. Available from the [ACOEM Web site](#)



Also, the appendices of the [original guideline document](#)  provide assessment forms and a sample treatment agreement form.

Patient Resources

None available

NGC Status

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