

Practice Guidelines for Chronic Pain Management

*An Updated Report by the American Society of Anesthesiologists Task Force on Chronic Pain Management and the American Society of Regional Anesthesia and Pain Medicine**

PRactice Guidelines are systematically developed recommendations that assist the practitioner and patient in making decisions about health care. These recommendations may be adopted, modified, or rejected according to clinical needs and constraints and are not intended to replace local institutional policies. In addition, Practice Guidelines developed by the American Society of Anesthesiologists (ASA) are not intended as standards or absolute requirements, and their use cannot guarantee any specific outcome. Practice Guidelines are subject to revision as warranted by the evolution of medical knowledge, technology, and practice. They provide basic recommendations that are supported by synthesis and analysis of the current literature, expert and practitioner opinion, open forum commentary, and clinical feasibility data.

This document updates the "Practice Guidelines for Chronic Pain Management," adopted by the ASA in 1996 and published in 1997.¹

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Methodology

A. Definition of Chronic Pain

For these Guidelines, chronic pain is defined as pain of any etiology not directly related to neoplastic involvement, associated with a chronic medical condition or extending in duration beyond the expected temporal boundary of tissue injury and normal healing, and adversely affecting the function or well-being of the individual.

B. Purposes of the Guidelines

The purposes of these Guidelines are to (1) optimize pain control, recognizing that a pain-free state may not be attainable; (2) enhance functional abilities and physical and psychologic well-being; (3) enhance the quality of life of patients; and (4) minimize adverse outcomes.

C. Focus

These Guidelines focus on the knowledge base, skills, and range of interventions that are the essential elements of effective management of chronic pain and pain-related problems. The Guidelines recognize that the management of chronic pain occurs within the broader context of health care, including psychosocial function and quality of life. These Guidelines apply to patients with chronic noncancer neuropathic, somatic (e.g., myofascial), or visceral pain syndromes. The Guidelines do not apply to patients with acute pain from an injury or postoperative recovery, cancer pain, degenerative major joint disease pain, headache syndromes (e.g., migraine and cluster), temporomandibular joint syndrome, or trigeminal or other neuralgias of the head or face. In addition, the Guidelines do not apply to pediatric patients and do not address the administration of intravenous drugs or surgical interventions other than implanted intrathecal drug delivery systems and nerve stimulators.

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D. Application

These Guidelines are intended for use by anesthesiologists and other physicians serving as pain medicine specialists. The Guidelines recognize that all anesthesiologists or other physicians may not have access to the same knowledge base, skills, or range of modalities. However, aspects of the Guidelines may be helpful to anesthesiologists or other physicians who manage patients with chronic pain in a variety of practice settings. They may also serve as a resource for other physicians, nurses, and healthcare providers (*e.g.*, rehabilitation therapists, psychologists, and counselors) engaged in the care of patients with chronic pain. They are not intended to provide treatment algorithms for specific pain syndromes.

E. Task Force Members and Consultants

The ASA appointed a Task Force of 12 members, including anesthesiologists in both private and academic practice from various geographic areas of the United States and two consulting methodologists from the ASA Committee on Standards and Practice Parameters.

The Task Force developed the Guidelines by means of a seven-step process. First, they reached consensus on the criteria for evidence. Second, original published research studies from peer-reviewed journals relevant to chronic pain were reviewed and evaluated. Third, expert consultants were asked to (1) participate in opinion surveys on the effectiveness of various chronic pain management recommendations and (2) review and comment on a draft of the Guidelines. Fourth, opinions about the Guidelines recommendations were solicited from a sample of active members of the ASA and the American Society of Regional Anesthesia and Pain Medicine (ASRA). Fifth, the Task Force held open forums at two major national meetings† to solicit input on its draft recommendations. Sixth, the consultants were surveyed to assess their opinions on the feasibility of implementing the Guidelines. Seventh, all available information was used to build consensus within the Task Force to finalize the Guidelines (appendix).

F. Availability and Strength of Evidence

Preparation of these Guidelines followed a rigorous methodological process (appendix). Evidence was obtained from two principal sources: scientific evidence and opinion-based evidence.

Scientific Evidence

Study findings from published scientific literature were aggregated and are reported in summary form by evidence category, as described below. All literature (*e.g.*, randomized controlled trials, observational studies, and case reports) relevant to each topic was considered when evaluating the findings. However,

for reporting purposes in this document, only the highest level of evidence (*i.e.*, levels 1, 2, or 3 identified below) within each category (*i.e.*, A, B, or C) is included in the summary.

Category A: Supportive Literature

Randomized controlled trials report statistically significant ($P < 0.01$) differences between clinical interventions for a specified clinical outcome.

- Level 1: The literature contains multiple, randomized controlled trials, and the aggregated findings are supported by meta-analysis.‡
- Level 2: The literature contains multiple, randomized controlled trials, but there is an insufficient number of studies to conduct a viable meta-analysis for the purpose of these Guidelines.
- Level 3: The literature contains a single randomized controlled trial.

Category B: Suggestive Literature

Information from observational studies permits inference of beneficial or harmful relationships among clinical interventions and clinical outcomes.

- Level 1: The literature contains observational comparisons (*e.g.*, cohort and case-control research designs) of clinical interventions or conditions and indicates statistically significant differences between clinical interventions for a specified clinical outcome.
- Level 2: The literature contains noncomparative observational studies with associative (*e.g.*, relative risk and correlation) or descriptive statistics.
- Level 3: The literature contains case reports.

Category C: Equivocal Literature

The literature cannot determine whether there are beneficial or harmful relationships among clinical interventions and clinical outcomes.

- Level 1: Meta-analysis did not find significant differences among groups or conditions.
- Level 2: There is an insufficient number of studies to conduct meta-analysis and (1) randomized controlled trials have not found significant differences among groups or conditions or (2) randomized controlled trials report inconsistent findings.
- Level 3: Observational studies report inconsistent findings or do not permit inference of beneficial or harmful relationships.

Category D: Insufficient Evidence from Literature

The lack of scientific evidence in the literature is described by the following conditions.

- (1) No identified studies address the specified relationships among interventions and outcomes.
- (2) The available literature cannot be used to assess relationships among clinical interventions and clinical out-

† World Institute of Pain Fifth World Congress, New York, New York, March 14, 2009; and American Pain Society Annual Meeting, San Diego, California, May 7, 2009.

‡ All meta-analyses are conducted by the ASA methodology group. Meta-analyses from other sources are reviewed but not included as evidence in this document.

comes. The literature either does not meet the criteria for content as defined in the “Focus” of the Guidelines or does not permit a clear interpretation of findings due to methodological concerns (*e.g.*, confounding in study design or implementation).

Opinion-based Evidence

All opinion-based evidence relevant to each topic (*e.g.*, survey data, open-forum testimony, Internet-based comments, letters, and editorials) is considered in the development of these Guidelines. However, only the findings obtained from formal surveys are reported.

Opinion surveys were developed by the Task Force to address each clinical intervention identified in the document. Identical surveys were distributed to three groups of respondents: expert consultants, ASA, and ASRA members.

Category A: Expert Opinion

Survey responses from Task Force–appointed expert consultants are reported in summary form in the text. A complete listing of consultant survey responses is reported in table 2 in appendix 2.

Category B: Membership Opinion

Survey responses from ASA and ASRA members with expertise in chronic pain management are reported in summary form in the text. A complete listing of ASA and ASRA members' survey responses are reported in tables 3 and 4 in appendix 2.

Expert consultant, ASA membership, and ASRA membership survey responses are recorded using a 5-point scale and summarized based on median values. §

Strongly agree: Median score of 5 (at least 50% of the responses are 5).

Agree: Median score of 4 (at least 50% of the responses are 4 or 4 and 5).

Equivocal: Median score of 3 (at least 50% of the responses are 3 or no other response category or combination of similar categories contain at least 50% of the responses).

Disagree: Median score of 2 (at least 50% of responses are 2 or 1 and 2).

Strongly disagree: Median score of 1 (at least 50% of responses are 1).

Category C: Informal Opinion

Open-forum testimony, Internet-based comments, letters, and editorials are informally evaluated and discussed during the development of Guidelines recommendations. When warranted, the Task Force may add educational information or cautionary notes based on this information.

§ When an equal number of categorically distinct responses are obtained, the median value is determined by calculating the arithmetic mean of the two middle values. Ties are calculated by a predetermined formula.

Guidelines

I. Patient Evaluation

History and physical examination: The Task Force recognizes that conducting a history and physical examination and reviewing diagnostic studies by a physician are well established as essential components of each patient's evaluation. Although no controlled trials were found that address the impact of conducting a history (*e.g.*, reviewing medical records and patient interviews), physical examination, or psychologic or behavioral evaluation, numerous studies address the identification of certain health disorders (*e.g.*, diabetes, multiple sclerosis, or post-traumatic injury) that are associated with specific pain conditions (*e.g.*, complex regional pain syndrome [CRPS] or neuropathic pain) (*Category B2 evidence*). Studies with observational findings suggest that a physical examination may aid in the diagnosis of some chronic pain disorders (*Category B2 evidence*), and an observational study suggests that a psychologic evaluation may be helpful in the prediction of treatment success (*Category B2 evidence*).

The consultants, ASA members, and ASRA members strongly agree that all patients presenting with chronic pain should have a documented history and physical examination and an assessment that ultimately supports a chosen treatment strategy. In addition, they strongly agree that findings from the patient history, physical examination, and diagnostic evaluation should be combined to provide the foundation for an individualized treatment plan, and that whenever possible, direct and ongoing contact should be made and maintained with the other physicians caring for the patient to ensure optimal care management.

Interventional diagnostic procedures: Although noninterventional diagnostic procedures (*e.g.*, diagnostic imaging and electrodiagnostic studies) may be a critical part of a patient's evaluation, these Guidelines focus specifically on interventional diagnostic procedures including, but not limited to, diagnostic joint block (*i.e.*, facet and sacroiliac), diagnostic nerve block (*e.g.*, peripheral or sympathetic, celiac plexus and hypogastric), provocative discography, or neuraxial opioid trials.

One study reporting observational findings for diagnostic cervical medial branch block indicates a sensitivity value of 54%, a specificity value of 88%, and a positive predictive value of 81% for the identification of cervical facet joint pain (*Category B2 evidence*). Additional observational findings from studies examining diagnostic facet joint blocks report positive predictive values ranging from 25 to 77% and false positive rates ranging from 38 to 49% for the identification of facet joint pain (*Category B2 evidence*). Studies with observational findings for diagnostic sacroiliac joint blocks report positive predictive values ranging from 18.5 to 72% for the identification of pain of sacroiliac origin (*Category B2 evidence*). Studies with observational findings and case reports indicate that diagnostic nerve blocks may be useful in determining the location or etiology of pain (*e.g.*, peripheral, central, or psychogenic) (*Category B2 evidence*). Finally, studies with observational findings for provocative discography re-

port positive predictive values ranging from 42 to 60% for the identification of the disc as a source of pain (*Category B2 evidence*). Discitis, epidural abscess, and nucleus pulposus embolization are among the reported complications of provocative discography (*Category B3 evidence*).

Recommendations for patient evaluation. All patients presenting with chronic pain should have a documented history and physical examination and an assessment that ultimately supports a chosen treatment strategy.

History and physical examination: Pain history should include a general medical history with emphasis on the chronology and symptomatology of the presenting complaints. A history of current illness should include information about the onset, quality, intensity, distribution, duration, course, and sensory and affective components of the pain in addition to details about exacerbating and relieving factors. Additional symptoms (e.g., motor, sensory, and autonomic changes) should be noted. Information regarding previous diagnostic tests, results of previous therapies, and current therapies should be reviewed by the physician.

In addition to a history of current illness, the history should include (1) a review of available records, (2) medical history, (3) surgical history, (4) social history, including substance use or misuse, (5) family history, (6) history of allergies, (7) current medications, including use or misuse, and (8) a review of systems. The causes and the effects of the pain (e.g., physical deconditioning, change in occupational status, and psychosocial dysfunction) and the impacts of previous treatment(s) should be evaluated and documented.

The physical examination should include an appropriately directed neurologic and musculoskeletal evaluation, with attention to other systems as indicated.

The psychosocial evaluation should include information about the presence of psychologic symptoms (e.g., anxiety, depression, or anger), psychiatric disorders, personality traits or states, and coping mechanisms. An assessment should be made of the impact of chronic pain on a patient's ability to perform activities of daily living. An evaluation of the influence of pain and treatment on mood, ability to sleep, addictive or aberrant behavior, and interpersonal relationships should be performed. Evidence of family, vocational, or legal issues and involvement of rehabilitation agencies should be noted. The expectations of the patient, significant others, employer, attorney, and other agencies may also be considered.

Interventional diagnostic procedures: Based on a patient's clinical presentation, appropriate diagnostic procedures may be conducted as part of a patient's evaluation. The choice of an interventional diagnostic procedure (e.g., selective nerve root blocks, medial branch blocks, facet joint injections, sacroiliac joint injections, or provocative discography) should be based on the patient's specific history and physical examination and the anticipated course of treatment.

Interventional diagnostic procedures should be performed with appropriate image guidance. Diagnostic medial branch

blocks or facet joint injections may be considered for patients with suspected facet-mediated pain to screen for subsequent therapeutic procedures. Diagnostic sacroiliac joint injections or lateral branch blocks may be considered for the evaluation of patients with suspected sacroiliac joint pain. Diagnostic selective nerve root blocks may be considered to further evaluate the anatomic level of radicular pain. The use of sympathetic blocks may be considered to support the diagnosis of sympathetically maintained pain. They should not be used to predict the outcome of surgical, chemical, or radiofrequency sympathectomy. Peripheral blocks may be considered to assist in the diagnosis of pain in a specific peripheral nerve distribution. Provocative discography may be considered for the evaluation of selected patients with suspected discogenic pain; it should not be used for routine evaluation of a patient with chronic nonspecific back pain.

Findings from patient history, physical examination, and diagnostic evaluation should be combined to provide the foundation for an individualized treatment plan focused on the optimization of the risk–benefit ratio with an appropriate progression of treatment from a lesser to a greater degree of invasiveness. Whenever possible, direct and ongoing contact should be made and maintained with the other physicians caring for the patient to ensure optimal care management.

II. Multimodal or Multidisciplinary Interventions

Multimodal interventions constitute the use of more than one type of therapy for the care of patients with chronic pain. Multidisciplinary interventions represent multimodality approaches in the context of a treatment program that includes more than one discipline. The literature indicates that the use of multidisciplinary treatment programs compared with conventional treatment programs is effective in reducing the intensity of pain reported by patients for periods of time ranging from 4 months to 1 yr (*Category A2 evidence*). The literature is insufficient to evaluate comparisons of multimodal therapies with single modality interventions (*Category D evidence*), possibly because of the prevailing multimodal nature of the management of patients with chronic pain.

Consultants, ASA members, and ASRA members strongly agree that multimodal interventions should be part of the treatment strategy for patients with chronic pain. They also strongly agree that a long-term approach that includes periodic follow-up evaluations should be developed and implemented as part of the overall treatment strategy, and that, whenever available, multidisciplinary programs should be used.

Recommendations for multimodal and multidisciplinary interventions. Multimodal interventions should be part of a treatment strategy for patients with chronic pain. The Task Force recognizes that a patient's pain and health status may change over time, necessitating reevaluations and changes in treatment. Therefore, a long-term approach that includes periodic follow-up evaluations should be developed and implemented as part of the overall treatment strategy. The goal of treatment should be to effectively reduce pain while improving function and re-

ducing psychosocial suffering. When available, multidisciplinary programs may be used.

III. Single Modality Interventions

This section examines the evidence for the efficacy of individual modalities used in the treatment of chronic pain. The Task Force recognizes that the vast majority of the investigations of these individual treatments were performed in the context of multimodal or multidisciplinary care. Consequently, in all cases, recommendations in this section to use individual modalities are made with the expectation that they will be used as part of the multimodal or multidisciplinary management of patients with chronic pain.

Single modality interventions, as components of a multimodality approach to pain management, include, but are not limited to, the following: (1) ablative techniques, (2) acupuncture, (3) blocks (*i.e.*, joint and nerve or nerve root), (4) botulinum toxin injections, (5) electrical nerve stimulation, (6) epidural steroids with or without local anesthetics, (7) intrathecal drug therapies, (8) minimally invasive spinal procedures, (9) pharmacologic management, (10) physical or restorative therapy, (11) psychologic treatment, and (12) trigger point injections.

1. Ablative Techniques. Ablative techniques include chemical denervation, cryoneurolysis or cryoablation, thermal intradiscal procedures (*i.e.*, intervertebral disc annuloplasty [IDET], transdiscal biaculoplasty), and radiofrequency ablation.

Chemical denervation: An observational study indicates that chemical denervation using phenol is effective in providing pain relief for patients with neuropathic, facet, or musculoskeletal pain for a period of assessment ranging from 2 to 24 weeks (*Category B2 evidence*). A case report indicates similar efficacy for alcohol denervation, with a transient burning sensation as a reported side effect (*Category B3 evidence*).

Consultants, ASA members, and ASRA members disagree that chemical denervation (*e.g.*, alcohol, phenol, or high-concentration local anesthetics) should be used for routine care of patients with chronic noncancer pain.

Cryoneurolysis or cryoablation: Studies with observational findings for cryoablation report pain relief for assessment periods ranging from 1 to 12 months among patients with lumbar facet joint pain, postthoracotomy neuralgia, or peripheral nerve pain (*Category B2 evidence*).

ASA members agree and consultants and ASRA members are equivocal with regard to whether cryoneurolysis or cryoablation should be performed for postthoracotomy pain syndrome, neuralgia, and low back pain (medial branch). Consultants, ASA members, and ASRA members are equivocal as to whether cryoneurolysis or cryoablation should be performed for facial pain of nonherpetic origin.

Thermal intradiscal procedures: Two randomized controlled trials comparing IDET with sham IDET indicate no significant differences ($P > 0.01$) for either pain or functional outcomes (*Category C2 evidence*). However, studies with observational findings for IDET indicate that pain

scores are improved over baseline scores for assessment periods of 6–12 months (*Category B2 evidence*). Cauda equina syndrome, vertebral osteonecrosis, and herniated disc are among the reported complications of IDET (*Category B3 evidence*). There is insufficient evidence to establish the efficacy of percutaneous thermal intradiscal procedures other than IDET (*Category D evidence*).

Consultants, ASA members, and ASRA member are equivocal as to whether IDET should be performed for young active patients with early single-level degenerative disc disease with well-maintained disc height.

Radiofrequency ablation: Meta-analytic findings from randomized controlled trials comparing conventional (*e.g.*, 80°C) or thermal (*e.g.*, 67°C) radiofrequency ablation of medial branches with sham controls report lower pain scores for assessment periods of 2–6 months after the procedure for patients with low back pain (*Category A1 evidence*). A randomized controlled trial of conventional radiofrequency ablation for patients with neck pain and no radiculopathy reports pain relief for up to 6 months after the procedure (*Category A3 evidence*). One randomized controlled trial comparing water-cooled radiofrequency with sham control for chronic sacroiliac joint pain reports lower pain scores in the radiofrequency ablation group for up to 3 months (*Category A3 evidence*). One randomized controlled trial reports no differences in lumbar radicular pain when thermal radiofrequency ablation of the dorsal root ganglion is compared with sham control (*Category C2 evidence*).

Consultants, ASA members, and ASRA members strongly agree that conventional (*e.g.*, 80°C) or thermal (*e.g.*, 67°C) radiofrequency ablation of the medial branch nerves to the facet joint should be performed for neck or low back (medial branch) pain. They are equivocal as to whether water-cooled radiofrequency ablation should be used for chronic sacroiliac joint pain. Consultants disagree and ASA members and ASRA members are equivocal with regard to whether conventional or thermal radiofrequency ablation of the dorsal root ganglion should be used for the treatment of lumbar radicular pain.

Recommendations for ablative techniques. The Task Force notes that other treatment modalities should be attempted before consideration of the use of ablative techniques.

Chemical denervation: Chemical denervation (*e.g.*, alcohol, phenol, or high-concentration local anesthetics) should *not* be used in the routine care of patients with chronic noncancer pain.

Cryoablation: Cryoablation may be used in the care of selected patients (*e.g.*, postthoracotomy pain syndrome, low back pain [medial branch], and peripheral nerve pain).

IDET: IDET may be considered for young active patients with early single-level degenerative disc disease with well-maintained disc height.

Radiofrequency ablation: Conventional (*e.g.*, 80°C) or thermal (*e.g.*, 67°C) radiofrequency ablation of the medial branch nerves to the facet joint should be performed for low back (me-

dial branch) pain when previous diagnostic or therapeutic injections of the joint or medial branch nerve have provided temporary relief. Conventional radiofrequency ablation may be performed for neck pain, and water-cooled radiofrequency ablation may be used for chronic sacroiliac joint pain. Conventional or thermal radiofrequency ablation of the dorsal root ganglion should not be routinely used for the treatment of lumbar radicular pain.

2. Acupuncture. Acupuncture techniques include traditional acupuncture as well as electroacupuncture techniques. Meta-analytic findings from randomized controlled trials comparing traditional acupuncture techniques with sham acupuncture are equivocal regarding the efficacy of acupuncture techniques in providing pain relief for patients with low back pain (*Category C1 evidence*). One randomized controlled trial comparing traditional acupuncture with conventional therapy (*i.e.*, drugs, physical therapy, and exercise) is equivocal ($P > 0.01$) regarding the efficacy of acupuncture at a 6-month follow-up evaluation (*Category C2 evidence*). A randomized controlled trial comparing electroacupuncture with conventional acupuncture is equivocal ($P > 0.01$) regarding pain relief for patients with low back pain (*Category C2 evidence*). Studies with observational findings indicate that acupuncture can provide pain relief for assessment periods of 1 week to 6 months (*Category B2 evidence*).

ASA and ASRA members agree and consultants are equivocal with regard to whether acupuncture should be used for nonspecific, noninflammatory low back pain.

Recommendations for acupuncture. Acupuncture may be considered as an adjuvant to conventional therapy (*e.g.*, drugs, physical therapy, and exercise) in the treatment of nonspecific, noninflammatory low back pain.

3. Blocks. Blocks include joint blocks and nerve or nerve root blocks. Joint blocks include facet joint injections (*e.g.*, atlanto-axial and atlanto-occipital joint injections) and sacroiliac joint injections. Nerve and nerve root blocks include celiac plexus block, hypogastric plexus block, lumbar sympathetic block and paravertebral sympathectomy, medial branch block, peripheral nerve block, and stellate ganglion block and cervical paravertebral sympathectomy.

Joint blocks: Randomized controlled trials report equivocal findings regarding the efficacy of facet joint steroid injections compared with facet saline injections regarding pain relief for patients with low back pain (*Category C2 evidence*). However, studies with observational findings for facet joint injections indicate that pain scores are improved over baseline scores for assessment periods of 1–6 months (*Category B2 evidence*). The literature is insufficient to evaluate the efficacy of sacroiliac joint injections for pain relief (*Category D evidence*).

Consultants, ASA members, and ASRA members agree that intraarticular facet joint injections should be used for symptomatic relief of facet-mediated pain. Consultants and ASRA members agree and ASA members strongly agree that

sacroiliac joint injections should be used for sacroiliac joint pain.

Nerve and nerve root blocks: Studies with observational findings report that celiac plexus blocks can provide pain relief for 25–50% of patients with pancreatitis for assessment periods ranging from 1 to 6 months (*Category B2 evidence*). No studies were found that examined the long-term efficacy of either lumbar sympathetic blocks or stellate ganglion blocks (*Category D evidence*). One randomized controlled trial comparing lumbar sympathetic block with saline placebo injection reports equivocal findings for low back pain at a 24-h follow-up (*Category C2 evidence*). However, one observational study indicates that lumbar sympathetic blocks can provide effective relief for CRPS pain for up to 1 week (*Category B2 evidence*). One case report indicates that stellate ganglion blocks can provide effective relief for neuropathic pain associated with CRPS for an assessment period of up to 4 weeks (*Category B3 evidence*). Randomized controlled trials comparing medial branch block with placebo controls were not found (*Category D evidence*). Studies with observational findings for medial branch blocks indicate improved pain outcomes for assessment periods ranging from 3 to 12 months (*Category B2 evidence*). Studies with observational findings for peripheral nerve blocks indicate effective pain relief for assessment periods ranging from 1 to 14 days (*Category B2 evidence*). There is insufficient evidence to evaluate peripheral nerve blocks for longer periods of time (*Category D evidence*).

ASA members and ASRA members agree and consultants are equivocal as to whether celiac plexus blocks using local anesthetics with or without steroids should be used for pain secondary to chronic pancreatitis. Consultants agree and ASA members and ASRA members strongly agree that lumbar sympathetic blocks or stellate ganglion blocks should be used for CRPS. Consultants, ASA members, and ASRA members are equivocal with regard to whether sympathetic nerve blocks should be used for long-term treatment of non-CRPS neuropathic pain; however, they strongly agree that medial branch blocks should be used for facet-mediated spine pain. Finally, consultants, ASA members, and ASRA members are equivocal with regard to whether peripheral somatic nerve blocks should be used for the long-term treatment of chronic pain.

Recommendations for blocks. *Joint blocks:* Intraarticular facet joint injections may be used for symptomatic relief of facet-mediated pain. Sacroiliac joint injections may be considered for symptomatic relief of sacroiliac joint pain.

Nerve and nerve root blocks: Celiac plexus blocks using local anesthetics with or without steroids may be used for the treatment of pain secondary to chronic pancreatitis. Lumbar sympathetic blocks or stellate ganglion blocks may be used as components of the multimodal treatment of CRPS if used in the presence of consistent improvement and increasing duration of pain relief. Sympathetic nerve blocks should *not* be used for long-term treatment of non-CRPS neuropathic pain. Medial branch blocks may be used for the treatment of

facet-mediated spine pain. Peripheral somatic nerve blocks should *not* be used for long-term treatment of chronic pain.

4. Botulinum Toxin. Randomized controlled trials comparing injection of botulinum toxin type A with saline placebo report equivocal findings for myofascial pain (*Category C2 evidence*). Randomized controlled trials comparing botulinum toxin type A with saline indicate that botulinum toxin is an effective adjunct in the treatment of piriformis pain for assessment periods of 8–12 weeks (*Category A2 evidence*).

ASA members agree and consultants and ASRA members are equivocal with regard to whether botulinum toxin should be used for myofascial pain. ASRA members agree whereas consultants and ASA members are equivocal as to whether botulinum toxin should be used for piriformis syndrome.

Recommendations for botulinum toxin. Botulinum toxin should *not* be used in the routine care of patients with myofascial pain. Botulinum toxin may be used as an adjunct for the treatment of piriformis syndrome.

5. Electrical Nerve Stimulation. Electrical nerve stimulation techniques include neuromodulation with electrical stimulus (*i.e.*, subcutaneous peripheral nerve stimulation and spinal cord stimulation) and transcutaneous electrical nerve stimulation (TENS).

Neuromodulation with Electrical Stimulus

Subcutaneous peripheral nerve stimulation: Studies with observational findings indicate that subcutaneous peripheral nerve stimulation can provide pain relief for assessment periods ranging from 4 months to 2 yr (*Category B2 evidence*).

Consultants, ASA members, and ASRA members agree that subcutaneous peripheral nerve stimulation should be used for painful peripheral nerve injuries.

Spinal cord stimulation: One randomized controlled trial reports effective pain relief for CRPS patients at follow-up assessment periods of 6 months to 2 yr when spinal cord stimulation in combination with physical therapy is compared with physical therapy alone (*Category A3 evidence*). One randomized controlled trial reports effective pain relief for an assessment period of 6 months when failed lumbosacral spine surgery patients are treated with spinal cord stimulation compared with reoperation (*Category A3 evidence*). Studies with observational findings report that spinal cord stimulation also provides pain relief for other conditions (*e.g.*, peripheral neuropathic pain, peripheral vascular disease, or postherpetic neuralgia) (*Category B2 evidence*). Reported side effects include insertion-site pain and infections (*Category B2 evidence*).

ASA members agree and consultants and ASRA members strongly agree that spinal cord stimulation should be used for persistent radicular pain; they all agree that it should be used for other conditions (*e.g.*, postherpetic neuralgia, postamputation pain, peripheral neuropathic pain, spinal cord injury, CRPS, cauda equina syndrome, cervical root injury pain, peripheral vascular disease, and visceral pain). Consultants,

ASA members, and ASRA members strongly agree that a spinal cord stimulation trial should be performed before considering permanent implantation of a stimulation device.

TENS: A meta-analysis of randomized controlled trials of TENS compared with sham TENS reports lower pain scores or greater pain relief from back pain for assessment periods ranging from 1 h to 1 month (*Category A1 evidence*). Observational findings indicate that TENS provides improved pain scores for a variety of pain conditions for assessment periods of 3–6 months (*Category B2 evidence*).

Consultants, ASA members, and ASRA members agree that TENS should be used for patients with chronic noncancer pain.

Recommendations for electrical nerve stimulation.

Neuromodulation with Electrical Stimulus. *Subcutaneous peripheral nerve stimulation:* Subcutaneous peripheral nerve stimulation may be used in the multimodal treatment of patients with painful peripheral nerve injuries who have not responded to other therapies.

Spinal cord stimulation: Spinal cord stimulation may be used in the multimodal treatment of persistent radicular pain in patients who have not responded to other therapies. It may also be considered for other selected patients (*e.g.*, those with CRPS, peripheral neuropathic pain, peripheral vascular disease, or postherpetic neuralgia). Shared decision making regarding spinal cord stimulation should include a specific discussion of potential complications associated with spinal cord stimulator placement. A spinal cord stimulation trial should be performed before considering permanent implantation of a stimulation device.

TENS: TENS should be used as part of a multimodal approach to pain management for patients with chronic back pain and may be used for other pain conditions (*e.g.*, neck and phantom limb pain).

6. Epidural Steroids with or without Local Anesthetics.

Studies with observational findings on both interlaminar and transforaminal epidural steroid administration with or without local anesthetics report back pain relief for assessment periods ranging from 2 weeks to 3 months and neck pain relief for assessment periods ranging from 1 week to 12 months (*Category B2 evidence*). Reported complications include dural puncture, insertion-site infections, cauda equina syndrome, sensorimotor deficits, discitis, epidural granuloma, and retinal complications (*Category B3 evidence*). Randomized controlled trials comparing interlaminar epidural steroids with interlaminar epidural saline are equivocal regarding pain relief for patients with low back pain with radiculopathy for assessment periods ranging from 2 days to 3 months (*Category C2 evidence*). One randomized controlled trial reports lower pain scores at 6 months for leg pain (*Category A3 evidence*), but is equivocal for back pain (*Category C2 evidence*) when a transforaminal epidural steroid injection with local anesthetic is compared with a transforaminal epidural saline injection. A randomized controlled trial compar-

ing the parasagittal interlaminar approach with the transforaminal approach, with fluoroscopic guidance used for both approaches, reports equivocal pain scores for low back pain between the two groups (*Category C2 evidence*). In addition, randomized controlled trials are equivocal regarding the efficacy of interlaminar or transforaminal epidural steroids with local anesthetics compared with epidural local anesthetics alone for back, leg, or neck pain for assessment periods ranging from 3 weeks to 3 months (*Category C2 evidence*). The literature is insufficient at this time to determine the clinical impact of using image guidance with epidural injections (*Category D evidence*).

Consultants, ASA members, and ASRA members strongly agree that epidural steroid injections with or without local anesthetics should be used for radicular pain or radiculopathy. They all strongly agree that image guidance (e.g., fluoroscopy) should be used for both interlaminar and transforaminal epidural injections. The Task Force notes that image guidance for transforaminal epidural injections represents current practice.

Recommendations for epidural steroids. Epidural steroid injections with or without local anesthetics may be used as part of a multimodal treatment regimen to provide pain relief in selected patients with radicular pain or radiculopathy. Shared decision making regarding epidural steroid injections should include a specific discussion of potential complications, particularly with regard to the transforaminal approach. Transforaminal epidural injections should be performed with appropriate image guidance to confirm correct needle position and spread of contrast before injecting a therapeutic substance; image guidance may be considered for interlaminar epidural injections.

7. Intrathecal Drug Therapies. Intrathecal drug therapies include intrathecal neurolytic blocks, intrathecal nonopioid injections (e.g., steroids, ziconotide, local anesthetics), and intrathecal opioid injections.

Neurolytic blocks: The literature is insufficient to evaluate the efficacy of intrathecal neurolytic blocks for pain relief in chronic non-cancer pain (*Category D evidence*).

ASA and ASRA members disagree and consultants strongly disagree that intrathecal neurolytic blocks should be performed for routine care.

Intrathecal nonopioid injections: Studies with observational findings indicate effective pain relief for intrathecal injections of steroid with or without local anesthetic for assessment periods ranging from 1 week to 2 yr for intractable postherpetic neuralgia patients (*Category B2 evidence*). One randomized trial was equivocal ($P > 0.01$) regarding the efficacy of ziconotide (*Category C2 evidence*). An observational study indicates that ziconotide can provide pain relief for an assessment period of up to 48 h for selected patients with refractory neuropathic pain (*Category B2 evidence*).

Consultants, ASA members, and ASRA members are equivocal with regard to whether intrathecal preservative-

free steroid injections should be used for intractable postherpetic neuralgia. Similarly, they are equivocal as to whether ziconotide infusions should be used for refractory chronic pain.

Intrathecal opioid injections: Studies with observational findings indicate that intrathecal opioid injections can provide effective pain relief for assessment periods ranging from 1 to 12 months for patients with neuropathic pain (*Category B2 evidence*).

Consultants, ASA members, and ASRA members are equivocal with regard to whether intrathecal opioid injection or infusion should be used for neuropathic pain. However, they strongly agree that neuraxial opioid trials should be performed before considering permanent implantation of intrathecal drug delivery systems.

Recommendations for intrathecal drug therapies. **Neurolytic blocks:** Intrathecal neurolytic blocks should not be performed in the routine management of patients with noncancer pain.

Intrathecal nonopioid injections: Intrathecal preservative-free steroid injections may be used for the relief of intractable postherpetic neuralgia nonresponsive to previous therapies. Ziconotide infusion may be used in the treatment of a select subset of patients with refractory chronic pain.

Intrathecal opioid injections: Intrathecal opioid injection or infusion may be used for patients with neuropathic pain. Shared decision making regarding intrathecal opioid injection or infusion should include a specific discussion of potential complications. Neuraxial opioid trials should be performed before considering permanent implantation of intrathecal drug delivery systems.

8. Minimally Invasive Spinal Procedures. Minimally invasive spinal procedures include vertebroplasty, kyphoplasty, and percutaneous disc decompression (e.g., nucleoplasty or coblation). Randomized sham-controlled trials of vertebroplasty are equivocal regarding pain relief for patients with osteoporotic vertebral compression fractures (*Category C2 evidence*). Studies with observational findings indicate that vertebroplasty and kyphoplasty provide effective relief for osteoporosis compression fracture pain for assessment periods ranging from 6 to 12 months (*Category B2 evidence*). In addition, studies with observational findings indicate that percutaneous disc decompression provides effective pain relief for back and radicular pain for assessment periods ranging from 2 weeks to 12 months (*Category B2 evidence*).

Consultants, ASA members, and ASRA members strongly agree that minimally invasive spinal procedures should be performed for pain related to vertebral compression fractures.

Recommendations for minimally invasive spinal procedures. Minimally invasive spinal procedures may be used for the treatment of pain related to vertebral compression fractures.

9. Pharmacologic Management. Pharmacologic management for chronic pain includes (1) anticonvulsants, (2) anti-

depressants,^{||} (3) benzodiazepines, (4) *N*-methyl-D-aspartate (NMDA) receptor antagonists, (5) nonsteroidal antiinflammatory drugs (NSAIDs), (6) opioid therapy (*e.g.*, oral, transdermal, transmucosal, intranasal, and sublingual), (7) skeletal muscle relaxants, and (8) topical agents (*e.g.*, lidocaine, capsaicin, and ketamine).

Anticonvulsants: Meta-analyses of randomized controlled trials report that α -2-delta calcium-channel antagonists provide effective neuropathic pain relief for assessment periods ranging from 5 to 12 weeks (*Category A1 evidence*). Dizziness, somnolence or sedation, and peripheral edema are reported side effects of pregabalin (*Category A1 evidence*). In addition, a meta-analysis found that sodium-channel antagonists or membrane-stabilizing anticonvulsants provide effective pain relief for assessment periods ranging from 2 to 18 weeks (*Category A1 evidence*).

Consultants, ASA members, and ASRA members strongly agree that anticonvulsants (*e.g.*, α -2-delta calcium-channel antagonists, sodium-channel blockers, and membrane-stabilizing drugs) should be used for patients with neuropathic pain.

Antidepressants: Meta-analyses of randomized controlled trials indicate that tricyclic antidepressants provide effective pain relief for a variety of chronic pain etiologies for assessment periods ranging from 2 to 8 weeks, with dry mouth and somnolence or sedation as reported side effects (*Category A1 evidence*). In addition, meta-analyses of randomized controlled trials indicate that selective serotonin-norepinephrine reuptake inhibitors provide effective pain relief for a variety of chronic pain etiologies for assessment periods ranging from 3 to 6 months (*Category A1 evidence*). A meta-analysis of randomized placebo-controlled trials is equivocal regarding the efficacy of selective serotonin reuptake inhibitors in providing effective pain relief for diabetic neuropathy (*Category C1 evidence*).

Consultants, ASA members, and ASRA members strongly agree that tricyclic antidepressants should be used. ASA members and ASRA members agree and consultants strongly agree that selective serotonin reuptake inhibitors should be used. Finally, ASA members and ASRA members agree and consultants are equivocal with regard to whether selective serotonin reuptake inhibitors should be used for diabetic neuropathy.

Benzodiazepines: One case report indicates that benzodiazepines can provide pain relief for up to 2 months for neuropathic pain syndrome (*Category B3 evidence*).

Consultants and ASRA members disagree and ASA members are equivocal with regard to whether benzodiazepines should be used for chronic pain.

NMDA receptor antagonists: Randomized, placebo-controlled controlled trials of NMDA receptor antagonists (*e.g.*,

dextromethorphan and memantine) are equivocal regarding pain relief for patients with diabetic neuropathy, postherpetic neuralgia, or other neuropathic pain conditions (*e.g.*, phantom limb pain, peripheral nerve injury, and CRPS) (*Category C2 evidence*). Observational data from these studies indicate that NMDA receptor antagonists provide pain relief for neuropathic pain for assessment periods ranging from 2 to 16 weeks (*Category B2 evidence*).

Consultants, ASA members, and ASRA members agree that NMDA receptor antagonists should be used for neuropathic pain.

NSAIDs: Randomized controlled trials indicate that NSAIDs compared with placebo provide effective pain relief for patients with back pain for assessment periods ranging from 2 to 12 weeks (*Category A2 evidence*).

Consultants, ASA members, and ASRA members agree that NSAIDs should be used for patients with back pain.

Opioid therapy: A meta-analysis of randomized controlled trials indicates that controlled or extended release opioid therapy (*e.g.*, morphine, codeine, and oxycodone) provides effective pain relief for patients with low back pain or neuropathic pain for assessment periods ranging from 1 to 9 weeks, with nausea or vomiting and constipation as side effects (*Category A1 evidence*). Randomized controlled trials indicate that tramadol provides effective pain relief for assessment periods ranging from 4 to 6 weeks (*Category A2 evidence*). Studies with observational findings report that immediate release opioids, transdermal opioids, and sublingual opioids provide relief for back, neck, leg, and neuropathic pain for assessment periods ranging from 2 weeks to 3 months (*Category B2 evidence*). Dizziness, somnolence, and pruritus are among reported side effects associated with opioid therapy (*Category B2 evidence*).

ASA and ASRA members agree and consultants are equivocal as to whether opioids should be used for patients with neuropathic or back pain.

Skeletal muscle relaxants: The literature is insufficient to evaluate the efficacy of skeletal muscle relaxants in providing pain relief for patients with chronic pain (*Category D evidence*).

ASA members and ASRA members agree and consultants are equivocal with regard to whether skeletal muscle relaxants should be used for patients with chronic pain.

Topical agents: Randomized, placebo-controlled controlled trials of topical agents (*e.g.*, capsaicin, lidocaine, and ketamine) are equivocal regarding relief of peripheral pain for patients with neuropathic pain (*e.g.*, diabetic neuropathy and postherpetic neuralgia) (*Category C2 evidence*). Studies with observational findings indicate that topical agents (*e.g.*, capsaicin, lidocaine, and ketamine) provide relief for peripheral neuropathic pain for assessment periods ranging from 3 to 6 weeks (*Category B2 evidence*).

Consultants, ASA members, and ASRA members agree that topical agents should be used for patients with peripheral neuropathic pain.

^{||} Tricyclic antidepressants (TCAs): amitriptyline, nortriptyline, desipramine, imipramine; selective serotonin reuptake inhibitors (SSRIs): paroxetine, fluoxetine, citalopram; selective norepinephrine reuptake inhibitors (SNRIs): duloxetine, venlafaxine, desvenlafaxine, milnacipran.

Recommendations for pharmacologic management. *Anticonvulsants:* Anticonvulsants (e.g., α -2-delta calcium-channel antagonists, sodium-channel antagonists, and membrane-stabilizing drugs) should be used as part of a multimodal strategy for patients with neuropathic pain.

Antidepressants: Tricyclic antidepressants and serotonin-norepinephrine reuptake inhibitors should be used as part of a multimodal strategy for a variety of patients with chronic pain. Selective serotonin reuptake inhibitors may be considered specifically for patients with diabetic neuropathy.

Other drugs: As part of a multimodal pain management strategy, extended-release oral opioids should be used for neuropathic or back pain patients, and transdermal, sublingual, and immediate-release oral opioids may be used. For selected patients, NMDA (ionotropic) receptor antagonists (e.g., neuropathic pain), NSAIDs (e.g., back pain), and topical agents (e.g., peripheral neuropathic pain) may be used, and benzodiazepines and skeletal muscle relaxants may be considered.

A strategy for monitoring and managing side effects, adverse effects, and compliance should be in place before prescribing any long-term pharmacologic therapy.

10. Physical or Restorative Therapy. Randomized controlled trials combining a variety of physical or restorative therapies (e.g., physiotherapy, fitness classes, and exercise therapy) indicate effective low back pain relief for a period of assessment ranging from 2 to 18 months (*Category A2 evidence*).

Consultants, ASA members, and ASRA members strongly agree that physical or restorative therapy should be used for patients with low back pain. Similarly, they strongly agree that physical or restorative therapy should be used for other (nonlow back pain) chronic pain conditions.

Recommendations for physical or restorative therapy. Physical or restorative therapy may be used as part of a multimodal strategy for patients with low back pain and may be considered for other chronic pain conditions.

11. Psychological Treatment. Psychological treatment includes (1) cognitive behavioral therapy, biofeedback, and relaxation training; and (2) supportive psychotherapy, group therapy, or counseling.

Randomized controlled trials evaluating a cognitive behavioral therapy, biofeedback, and relaxation training indicate that these therapies provide relief of back pain for assessment periods ranging from 4 weeks to 2 yr (*Category A2 evidence*). Case reports suggest that supportive psychotherapy, group therapy, and counseling may be useful for chronic pain management (*Category B3 evidence*).

Consultants, ASA members, and ASRA members agree that cognitive behavioral therapy, biofeedback, or relaxation training should be performed for low back pain and other chronic pain conditions. Consultants, ASA members, and ASRA members also agree that supportive psychotherapy, group therapy, or counseling should be performed for patients with chronic pain.

Recommendations for psychological treatment. *Cognitive behavioral therapy, biofeedback, or relaxation training:* These interventions may be used as part of a multimodal strategy for low back pain and for other chronic pain conditions.

Supportive psychotherapy, group therapy, or counseling: These interventions may be considered as part of a multimodal strategy for chronic pain management.

12. Trigger Point Injections. The literature is insufficient to evaluate the efficacy of trigger point injections (i.e., compared with sham trigger point injection) as a technique for providing pain relief for patients with chronic pain (*Category D evidence*). Studies with observational findings suggest that trigger point injections may provide relief for patients with myofascial pain for assessment periods ranging from 1 to 4 months (*Category B2 evidence*).

Consultants, ASA members, and ASRA members agree that trigger point injections should be used for patients with myofascial pain.

Recommendations for trigger point injections. Trigger point injections may be considered for treatment of patients with myofascial pain as part of a multimodal approach to pain management.

Reference

1. American Society of Anesthesiologists: Practice guidelines for chronic pain management. *ANESTHESIOLOGY* 1997; 86: 995-1004

Appendix 1: Summary of Recommendations

I. Patient Evaluation

- All patients presenting with chronic pain should have a documented history and physical examination and an assessment that ultimately supports a chosen treatment strategy.
 - *History:*
 - A pain history should include a general medical history with emphasis on the chronology and symptomatology of the presenting complaints.
 - A history of current illness should include information about the onset, quality, intensity, distribution, duration, course, and sensory and affective components of the pain and details about exacerbating and relieving factors.
 - Additional symptoms (e.g., motor, sensory, and autonomic changes) should be noted.
 - Information regarding previous diagnostic tests, results of previous therapies, and current therapies should be reviewed by the physician.
 - In addition to a history of current illness, the history should include (1) a review of available records, (2) medical history, (3) surgical history, (4) social history including substance use or misuse, (5) family history, (6) history of allergies, (7) current medications including use or misuse, and (8) review of systems.
 - The causes as well as the effects of pain (e.g., physical deconditioning, change in occupational status, and psychosocial dysfunction) and the impacts of previous treatment(s) should be evaluated and documented.

- *Physical examination:* The physical examination should include an appropriately directed neurologic and musculoskeletal evaluation, with attention to other systems as indicated.
- *Psychosocial evaluation:* The psychosocial evaluation should include information about the presence of psychological symptoms (e.g., anxiety, depression, or anger), psychiatric disorders, personality traits or states, and coping mechanisms.
 - An assessment should be made of the impact of chronic pain on a patient's ability to perform activities of daily living.
 - An evaluation of the influence of pain and treatment on mood, ability to sleep, addictive or aberrant behavior, and interpersonal relationships should be performed.
 - Evidence of family, vocational, or legal issues and involvement of rehabilitation agencies should be noted.
 - The expectations of the patient, significant others, employer, attorney, and other agencies may also be considered.
- *Interventional diagnostic procedures:* Appropriate diagnostic procedures may be conducted as part of a patient's evaluation, based on a patient's clinical presentation.
 - The choice of an interventional diagnostic procedure (e.g., selective nerve root blocks, medial branch blocks, facet joint injections, sacroiliac joint injections, and provocative discography) should be based on the patient's specific history and physical examination and anticipated course of treatment.
 - Interventional diagnostic procedures should be performed with appropriate image guidance.
 - Diagnostic medial branch blocks or facet joint injections may be considered for patients with suspected facet-mediated pain to screen for subsequent therapeutic procedures.
 - Diagnostic sacroiliac joint injections or lateral branch blocks may be considered for the evaluation of patients with suspected sacroiliac joint pain.
 - Diagnostic selective nerve root blocks may be considered to further evaluate the anatomic level of radicular pain.
 - The use of sympathetic blocks may be considered to support the diagnosis of sympathetically maintained pain.
 - They should not be used to predict the outcome of surgical, chemical, or radiofrequency sympathectomy.
 - Peripheral blocks may be considered to assist in the diagnosis of pain in a specific peripheral nerve distribution.
 - Provocative discography may be considered for the evaluation of selected patients with suspected discogenic pain.
 - Provocative discography should not be used for the routine evaluation of the patient with chronic nonspecific back pain.
- Findings from the patient history, physical examination, and diagnostic evaluation should be combined to provide the foundation for an individualized treatment plan focused on the optimization of the risk–benefit ratio with an appropriate progression of treatment from a lesser to greater degree of invasiveness.
- Whenever possible, direct and ongoing contact should be made and maintained with the other physicians caring for the patient to ensure optimal care management.

II. Multimodal or Multidisciplinary Interventions

- Multimodal interventions should be part of a treatment strategy for patients with chronic pain.
- A long-term approach that includes periodic follow-up evaluations should be developed and implemented as part of the overall treatment strategy.
- When available, multidisciplinary programs may be used.

III. Single Modality Interventions

- *Ablative techniques* (other treatment modalities should be attempted before consideration of the use of ablative techniques):
 - Chemical denervation (e.g., alcohol, phenol, or high concentration local anesthetics) should not be used in the routine care of patients with chronic noncancer pain.
 - Cryoablation may be used in the care of selected patients (e.g., postthoracotomy pain syndrome, low back pain [medial branch], and peripheral nerve pain).
 - Thermal intradiscal procedures: IDET may be considered for young, active patients with early single-level degenerative disc disease with well-maintained disc height.
 - Radiofrequency ablation:
 - Conventional (e.g., 80°C) or thermal (e.g., 67°C) radiofrequency ablation of the medial branch nerves to the facet joint should be performed for low back (medial branch) pain when previous diagnostic or therapeutic injections of the joint or medial branch nerve have provided temporary relief.
 - Conventional radiofrequency ablation may be performed for neck pain.
 - Water-cooled radiofrequency ablation may be used for chronic sacroiliac joint pain.
 - Conventional or other thermal radiofrequency ablation of the dorsal root ganglion should not be routinely used for the treatment of lumbar radicular pain.
- *Acupuncture:* Acupuncture may be considered as an adjuvant to conventional therapy (e.g., drugs, physical therapy, and exercise) in the treatment of nonspecific, noninflammatory low back pain.
- *Blocks:*
 - *Joint blocks:*
 - Intraarticular facet joint injections may be used for the symptomatic relief of facet-mediated pain.
 - Sacroiliac joint injections may be considered for the symptomatic relief of sacroiliac joint pain.
 - *Nerve and nerve root blocks:*
 - Celiac plexus blocks using local anesthetics with or without steroids may be used for the treatment of pain secondary to chronic pancreatitis.
 - Lumbar sympathetic blocks or stellate ganglion blocks may be used as components of the multimodal treatment of CRPS if used in the presence of consistent improvement and increasing duration of pain relief.
 - Sympathetic nerve blocks should not be used for the long-term treatment of non-CRPS neuropathic pain.
 - Medial branch blocks may be used for the treatment of facet-mediated spine pain.
 - Peripheral somatic nerve blocks should not be used for long-term treatment of chronic pain.
- *Botulinum toxin:*
 - Botulinum toxin should not be used in the routine care of patients with myofascial pain.

- Botulinum toxin may be used as an adjunct for the treatment of piriformis syndrome.
- *Electrical nerve stimulation:*
 - *Neuromodulation with electrical stimulus:*
 - *Subcutaneous peripheral nerve stimulation:* Subcutaneous peripheral nerve stimulation may be used in the multimodal treatment of patients with painful peripheral nerve injuries who have not responded to other therapies.
 - *Spinal cord stimulation:* Spinal cord stimulation may be used in the multimodal treatment of persistent radicular pain in patients who have not responded to other therapies.
 - Spinal cord stimulation may also be considered for other selected patients (e.g., CRPS, peripheral neuropathic pain, peripheral vascular disease, and postherpetic neuralgia).
 - Shared decision making regarding spinal cord stimulation should include a specific discussion of potential complications associated with spinal cord stimulator placement.
 - A spinal cord stimulation trial should be performed before considering permanent implantation of a stimulation device.
 - *TENS:*
 - TENS should be used as part of a multimodal approach to pain management for patients with chronic back pain and may be used for other pain conditions (e.g., neck and phantom limb pain).
- *Epidural steroids with or without local anesthetics:*
 - Epidural steroid injections with or without local anesthetics may be used as part of a multimodal treatment regimen to provide pain relief in selected patients with radicular pain or radiculopathy.
 - Shared decision making regarding epidural steroid injections should include a specific discussion of potential complications, particularly with regard to the transforaminal approach.
 - Transforaminal epidural injections should be performed with appropriate image guidance to confirm correct needle position and spread of contrast before injecting a therapeutic substance
 - Image guidance may be considered for interlaminar epidural injections to confirm correct needle position and spread of contrast before injecting a therapeutic substance
- *Intrathecal drug therapies:*
 - *Neurolytic blocks:* Intrathecal neurolytic blocks should not be performed in the routine management of patients with non-cancer pain.
 - *Intrathecal nonopioid injections:*
 - Intrathecal preservative-free steroid injections may be used for the relief of intractable postherpetic neuralgia nonresponsive to previous therapies.
 - Ziconotide infusion may be used in the treatment of a select subset of patients with refractory chronic pain.
 - *Intrathecal opioid injections:* Intrathecal opioid injection or infusion may be used for neuropathic pain patients.
 - Shared decision-making regarding intrathecal opioid injection or infusion should include a specific discussion of potential complications.
- Neuraxial opioid trials should be performed before considering permanent implantation of intrathecal drug delivery systems.
- *Minimally invasive spinal procedures:* Minimally invasive spinal procedures (e.g., vertebroplasty) may be used for the treatment of pain related to vertebral compression fractures.
- *Pharmacologic management:*
 - *Anticonvulsants:* Anticonvulsants (e.g., α -2-delta calcium-channel antagonists, sodium-channel antagonists, and membrane-stabilizing drugs) should be used as part of a multimodal strategy for patients with neuropathic pain.
 - *Antidepressants:*
 - Tricyclic antidepressants should be used as part of a multimodal strategy for patients with chronic pain.
 - Serotonin–norepinephrine reuptake inhibitors should be used as part of a multimodal strategy for a variety of chronic pain patients.
 - Selective serotonin reuptake inhibitors may be considered specifically for patients with diabetic neuropathy.
 - *Other drugs:*
 - As part of a multimodal pain management strategy, extended-release oral opioids should be used for neuropathic or back pain patients, and transdermal, sublingual, and immediate-release oral opioids may be used.
 - For selected patients, ionotropic NMDA receptor antagonists (e.g., neuropathic pain), NSAIDs (e.g., back pain), and topical agents (e.g., peripheral neuropathic pain) may be used, benzodiazepines and skeletal muscle relaxants may be considered.
 - A strategy for monitoring and managing side effects, adverse effects, and compliance should be considered for all patients undergoing any long-term pharmacologic therapy.
- *Physical or restorative therapy:*
 - Physical or restorative therapy may be used as part of a multimodal strategy for patients with low back pain.
 - Physical or restorative therapy may be considered for other chronic pain conditions.
- *Psychological treatment:*
 - *Cognitive behavioral therapy, biofeedback, or relaxation training:* These interventions may be used as part of a multimodal strategy for patients with low back pain, as well as for other chronic pain conditions.
 - *Supportive psychotherapy, group therapy, or counseling:* These interventions may be considered as part of a multimodal strategy for chronic pain management.
- *Trigger point injections:* These injections may be considered for treatment of myofascial pain as part of a multimodal approach to pain management.

Appendix 2: Methods and Analyses

A. State of the Literature

For these Guidelines, a literature review was used in combination with opinions obtained from expert consultants and other sources (e.g., ASA members, ASRA members, open forums, and Internet postings). Both the literature review and opinion data were based on evidence linkages or statements regarding potential relationships between clinical interventions and outcomes. The interventions

listed below were examined to assess their impact on a variety of outcomes related to chronic noncancer pain.[#]

- I. Patient evaluation:
 1. Medical records review or patient condition
 2. Physical examination
 3. Psychological and behavioral evaluation
 4. Interventional diagnostic procedures
 - Diagnostic facet joint block
 - Diagnostic sacroiliac joint block
 - Diagnostic nerve block (*e.g.*, peripheral or sympathetic, medial branch, celiac plexus, and hypogastric).
 - Provocative discography
- II. Multimodal or multidisciplinary pain management programs (*e.g.*, pain centers *vs.* single discipline care)
- III. Single Modality Interventions
 - Ablative techniques:
 - Chemical denervation
 - Cryoneurolysis or cryoablation
 - Thermal intradiscal procedures (intervertebral disc annuloplasty [IDET], transdiscal biaculoplasty)
 - Conventional or thermal radiofrequency ablation (facet joint, sacroiliac joint, dorsal root ganglion)
 - 2. Acupuncture
 - 3. Blocks:
 - Joint blocks*
 - Facet joint injections
 - Sacroiliac joint injections
 - Nerve or nerve root blocks*
 - Celiac plexus blocks
 - Lumbar sympathetic blocks or lumbar paravertebral sympathectomy
 - Medial branch blocks
 - Peripheral nerve blocks
 - Stellate ganglion blocks or cervical paravertebral sympathectomy
 - 4. Botox
 - 5. Electrical nerve stimulation:
 - Peripheral nerve stimulation
 - Spinal cord or dorsal column stimulation
 - TENS
 - 6. Epidural steroids:
 - Interlaminar steroids *versus* placebo
 - Interlaminar steroids with local anesthetics *versus* without local anesthetics
 - Transforaminal steroids *versus* placebo
 - Transforaminal steroids with local anesthetics *versus* without local anesthetics
 - 7. Intrathecal drug therapies
 - Intrathecal neurolytic blocks
 - Intrathecal nonopioid injection (*e.g.*, ziconotide, clonidine, or local anesthetics)
 - Intrathecal opioid injection
 - 8. Minimally invasive spinal procedures
 - Kyphoplasty (percutaneous, glue, and balloon)
 - Vertebroplasty
 - Percutaneous disc decompression
 - 9. Pharmacologic interventions

Anticonvulsants

Alpha-2-delta calcium channel antagonists
Sodium channel blockers
Membrane-stabilizing drugs

Antidepressants

Tricyclic antidepressants
Selective serotonin–norepinephrine reuptake inhibitors
Selective serotonin reuptake inhibitors
Benzodiazepines
NMDA receptor antagonists
NSAIDs

Opioid therapy

Sustained or controlled-release opioids
Tramadol
Skeletal muscle relaxants
Topical agents
Capsaicin
Lidocaine
Ketamine

10. Physical or restorative therapy
11. Psychologic treatment or counseling
 - Cognitive behavioral therapy, biofeedback, or relaxation training
 - Supportive psychotherapy or group therapy
12. Trigger point injections

For the literature review, potentially relevant clinical studies were identified through electronic and manual searches of the literature. The electronic and manual searches covered a 56-yr period from 1944 to 2009. More than 5,000 citations were initially identified, yielding a total of 2,246 nonoverlapping articles that addressed topics related to the evidence linkages. After a review of the articles, 1550 studies did not provide direct evidence and were subsequently eliminated. A total of 696 articles contained direct linkage-related evidence. A complete bibliography used to develop these Guidelines, organized by section, is available as Supplemental Digital Content 2, <http://links.lww.com/ALN/A566>.

Initially, each pertinent outcome reported in a study was classified as supporting an evidence linkage, refuting a linkage, or equivocal. The results were then summarized to obtain a directional assessment for each evidence linkage before conducting a formal meta-analysis. Literature pertaining to eight evidence linkages contained enough studies with well-defined experimental designs and statistical information sufficient for meta-analyses. These linkages were (1) ablative techniques: radiofrequency ablation *versus* placebo; (2) acupuncture *versus* sham acupuncture; (3) botulinum toxin A *versus* placebo; (4) electrical nerve stimulation: TENS *versus* sham TENS; (5) anticonvulsants: calcium-channel antagonists *versus* placebo, and sodium-channel blockers or membrane-stabilizing drugs *versus* placebo; (6) antidepressants: tricyclic antidepressants, selective serotonin–norepinephrine reuptake inhibitors, and selective serotonin reuptake inhibitors *versus* placebo; (7) NMDA receptor antagonists *versus* placebo; and (8) extended or controlled-release opioids *versus* placebo.

General variance-based effect-size estimates or combined probability tests were obtained for continuous outcome measures, and Mantel-Haenszel odds-ratios were obtained for dichotomous outcome measures. Two combined probability tests were used as follows: (1) the Fisher combined test, producing chi-square values based on logarithmic transformations of the reported *P* values from the independent studies, and (2) the Stouffer combined test, providing weighted representation of the studies by weighting each of

[#] Unless otherwise specified, outcomes for the listed interventions refer to pain scores or relief, health, and functional outcomes.

the standard normal deviates by the size of the sample. An odds-ratio procedure based on the Mantel-Haenszel method for combining study results using 2×2 tables was used with outcome frequency information. An acceptable significance level was set at $P < 0.01$ (one tailed). Tests for heterogeneity of the independent studies were conducted to ensure consistency among the study results. DerSimonian-Laird random-effects odds ratios were obtained when significant heterogeneity was found ($P < 0.01$). To control for potential publishing bias, a "fail-safe n " value was calculated. No search for unpublished studies was conducted, and no reliability tests for locating research results were done.

Meta-analyses were limited to single modality interventions (*e.g.*, extended-release oral opioids *vs.* placebo) because multimodal interventions (*e.g.*, multidisciplinary pain programs) typically combine a variety of different treatment or comparison groups. These groupings of interventions (or controls) were not consistent across the aggregated studies, leading to high levels of heterogeneity in meta-analytic findings. Findings from such meta-analyses may be unclear and could risk undue bias in interpretation.

Meta-analytic results from single modality interventions are reported in table 1. To be accepted as significant findings, Mantel-Haenszel odds ratios must agree with combined test results whenever both types of data are assessed. In the absence of Mantel-Haenszel odds ratios, findings from both the Fisher and weighted Stouffer combined tests must agree with each other to be acceptable as significant.

Interobserver agreement among Task Force members and two methodologists was established by interrater reliability testing. Agreement levels using a kappa (κ) statistic for two-rater agreement pairs were as follows: (1) type of study design, $\kappa = 0.63$ – 0.88 ; (2) type of analysis, $\kappa = 0.87$; (3) evidence linkage assignment, $\kappa = 0.82$ – 1.00 ; and (4) literature inclusion for database, $\kappa = 0.83$ – 1.00 . Three-rater chance-corrected agreement values were (1) study design, $Sav = 0.72$, $Var(Sav) = 0.008$; (2) type of analysis, $Sav = 0.87$, $Var(Sav) = 0.005$; (3) linkage assignment, $Sav = 0.88$, $Var(Sav) = 0.003$; (4) literature database inclusion, $Sav = 0.88$, $Var(Sav) = 0.018$. These values represent moderate to high levels of agreement.

B. Consensus-based Evidence

Consensus was obtained from multiple sources, including (1) survey opinion from consultants who were selected based on their knowledge or expertise in chronic pain management, (2) survey opinions solicited from active members of the ASA and ASRA membership, (3) testimony from attendees of publicly held open forums at two national anesthesia meetings, (4) Internet commentary, and (5) Task Force opinion and interpretation. The survey rate of return was 78 of 182 (42.9%) for the consultants, 304 surveys were received from active ASA members, and 171 surveys were received from active ASRA members. Results of the surveys are reported in tables 2–4 and in the text of the Guidelines.

The consultants were asked to indicate which, if any, of the evidence linkages would change their clinical practices if the Guidelines were instituted. The rate of return was 16% ($n = 29$ of 182). The percent of responding consultants expecting no change associated with each linkage were as follows: (1) history, physical, and psychologic examination = 91%; (2) interventional diagnostic procedures = 92.5%; (3) multidisciplinary programs = 88%; (4) thermal intradiscal procedures = 91%; (5) radiofrequency ablation = 97%; (6) acupuncture = 91%; (7) joint blocks = 94%; (8) nerve or nerve root blocks = 97%; (9) botulinum toxin injections = 88%; (10) neuromodulation with electrical stimulus = 97%; (11) TENS = 98.5%; (12) epidural steroids = 92.5%; (13) intrathecal drug therapies = 95.5%; (14) anticonvulsants = 98.5%; (15) antidepressants = 98.5%; (16) NMDA receptor antagonists = 97%; (17) opioid therapy = 100%; (18) topical agents = 100%; (19) physical therapy = 100%; (20) psychologic treatment or counseling = 94%; and (21) trigger point injections = 98.5%. Seventy-two percent of the respondents indicated that the Guidelines would have no effect on the amount of time spent on a typical case, and 27.6% indicated that there would be an increase in the amount of time spent on a typical case with the implementation of these Guidelines. Seventy-three percent indicated that new equipment, supplies, or training would not be needed to implement the Guidelines, and 64% indicated that implementation of the Guidelines would not require changes in practice that would affect costs.

Table 1. Meta-analysis Summary

Evidence Linkages	N	Fisher χ^2	P Values	Weighted Stouffer Zc	P Values	Effect Size	Odds Ratio	Confidence Interval	Heterogeneity	
									Significance	Effect Size
Ablative techniques: RF ablation vs. sham controls										
Pain scores at 2–6 mo follow-up	5	39.82	0.001	–4.02	0.001	–0.30			NS	NS
Acupuncture vs. sham controls										
Pain scores/relief at 1–2 mo	6	33.19	0.001	–2.24	0.013	–0.10			NS	NS
Pain scores/relief at 3–6 mo	6	41.82	0.001	–2.28	0.011	–0.11			NS	0.008
Botulinum toxin A vs. placebo										
Pain scores at 1-mo follow-up	5	17.53	0.040	–1.00	0.159	–0.30			NS	0.001
Electrical nerve stimulation: TENS vs. sham controls										
Pain scores/relief 1 h–1 mo	10	80.67	0.001	–4.30	0.001	–0.28			NS	NS
Anticonvulsants: calcium channel antagonists vs. placebo										
Gabapentin vs. placebo										
Pain scores at 6–8 wk	7	64.01	0.001	–6.69	0.001	–0.22			NS	NS
Dizziness*	6						2.32	0.41–8.91		0.001
Somnolence/sedation*	7						2.16	0.52–5.34		0.001
Pregabalin vs. placebo										
Pain scores/relief at 5–12 wk	7	98.22	0.001	–8.50	0.001	–0.31			NS	NS
Dizziness	7						4.10	2.77–6.05		NS
Somnolence/sedation	7						4.46	2.79–7.13		NS
Peripheral edema	7						4.32	2.43–7.67		NS
Sleep scores/relief at 8–12 wk	5	69.21	0.001	–7.56	0.001	–0.30			NS	NS
Sodium channel blockers/ membrane stabilizing drugs vs. placebo										
Pain scores/relief at 2–18 wk	10	91.01	0.001	–5.83	0.001	–0.47			0.001	0.001
Antidepressants										
TCAs vs. placebo										
Pain scores/relief at 2–8 wk	11	114.22	0.001	–6.10	0.001	–0.32			NS	NS
Dry mouth	9						2.82	1.70–4.70		NS
Somnolence/sedation	6						2.62	1.39–4.92		NS
SNRIs vs. placebo										
Duloxetine 60 mg/d: pain scores at 3 mo	6	75.31	0.001	–7.64	0.001	–0.21			NS	NS
Duloxetine 120 mg/d: pain scores at 3 mo	5	75.52	0.001	–8.00	0.001	–0.23			NS	NS
SSRIs vs. placebo										
Pain scores/relief at 3–8 wk	5	20.95	0.030	–0.10	0.460	–0.08			NS	NS
Extended release opioids vs. placebo										
Pain scores/relief at 1–9 wk	7	96.71	0.001	–11.11	0.001	–0.47			0.001	0.001
Nausea/vomiting	7						3.79	2.19–6.56		NS
Constipation	6						3.48	2.12–5.73		NS

* Random-effects odds ratio.

RF = radiofrequency; SNRIs = Selective norepinephrine reuptake inhibitors; TCAs = Tricyclic antidepressants; TENS = transcutaneous electrical nerve stimulation.

Table 2. Consultant Survey Responses

	N	Percent Responding to Each Item				
		Strongly Agree	Agree	Equivocal	Disagree	Strongly Disagree
I. Patient evaluation						
1. All patients presenting with chronic pain should have a documented history and physical examination, and an assessment that ultimately supports a chosen treatment strategy	78	91.0*	9.0	0.0	0.0	0.0
2. Findings from the patient history, physical examination, and diagnostic evaluation should be combined to provide the foundation for an individualized treatment plan	78	92.3*	7.7	0.0	0.0	0.0
3. Whenever possible, direct and ongoing contact should be made and maintained with the other physicians caring for the patient to ensure optimal care management	77	80.5*	15.6	2.6	1.3	0.0
II. Multimodal or multidisciplinary interventions						
4. Multimodal interventions should be part of a treatment strategy for patients with chronic pain	78	68.0*	28.2	2.5	1.3	0.0
5. A long-term approach that includes periodic follow-up evaluations should be developed and implemented as part of the overall treatment strategy	77	71.4*	24.7	3.9	0.0	0.0
6. When available, multidisciplinary programs should be used	77	50.7*	33.7	13.0	1.3	1.3
III. Single modality interventions						
<i>Ablative techniques</i>						
7. Chemical denervation for routine care	75	4.0	6.7	17.3	33.3*	38.7
8. Cryoneurolysis or cryoablation for postthoracotomy pain syndrome, neuralgia, or low back pain (medial branch)	78	6.4	29.5	42.3*	14.1	7.7
9. Cryoneurolysis or cryoablation for facial pain of nonherpetic origin strategy	78	5.1	12.8	53.9*	19.2	9.0
10. Thermal intradiscal procedures for young active patients with early single-level degenerative disc disease with well-maintained disc height	76	15.8	23.7	29.0*	19.7	11.8
11. Conventional (e.g., 80°C) or other thermal (e.g., 67°C) radiofrequency ablation of the medial branch nerves to the facet joint for neck or low back (medial branch) pain	77	54.5*	29.9	11.7	2.6	1.3
12. Water-cooled radiofrequency ablation for chronic sacroiliac joint pain	78	6.4	29.5	52.5*	9.0	2.6
13. Conventional or other thermal radiofrequency ablation of the dorsal root ganglion for lumbar radicular pain	78	3.8	12.8	33.3	35.9*	14.1
<i>Acupuncture</i>						
14. Acupuncture for nonspecific, noninflammatory low back pain	77	6.5	42.9	37.6*	11.7	1.3
<i>Blocks</i>						
<i>Joint injections</i>						
15. Intra-articular facet joint injections for facet mediated pain	78	25.6	35.9*	19.2	12.8	6.4
16. Sacroiliac joint injections for sacroiliac joint pain	78	47.4	42.3*	7.7	1.3	1.3
<i>Nerve and nerve root blocks</i>						
17. Celiac plexus blocks using local anesthetics with or without steroids for pain secondary to chronic pancreatitis	77	13.0	32.5	28.6*	20.8	5.2
18. Lumbar sympathetic blocks or stellate ganglion blocks for CRPS	77	44.2	42.8*	7.8	3.9	1.3

(continued)

(continued)

Table 2. Continued

	N	Percent Responding to Each Item				
		Strongly Agree	Agree	Equivocal	Disagree	Strongly Disagree
19. Sympathetic nerve blocks for the long-term treatment of non-CRPS neuropathic pain	76	3.9	22.4	39.5*	27.6	6.6
20. Medial branch blocks for facet-mediated spine pain	77	54.5*	31.2	9.1	3.9	1.3
21. Peripheral somatic nerve blocks for long-term treatment	77	10.4	29.9	32.4*	23.4	3.9
<i>Botulinum toxin</i>						
22. Botulinum toxin for myofascial pain	77	6.5	32.5	41.5*	18.2	1.3
23. Botulinum toxin for piriformis syndrome	78	8.9	28.2	44.9*	15.4	2.6
<i>Electrical nerve stimulation</i>						
<i>Neuromodulation with electrical stimulus</i>						
24. Subcutaneous peripheral nerve stimulation for painful peripheral nerve injuries	77	15.5	44.2*	29.9	6.5	3.9
25. Spinal cord stimulation for persistent radicular pain	78	52.6*	33.3	10.3	3.8	0.0
26. Spinal cord stimulation for other conditions (e.g., postherpetic neuralgia, postamputation pain, peripheral neuropathic pain, spinal cord injury, CRPS, cauda equina syndrome, cervical root injury pain, peripheral vascular disease, and visceral pain)	76	38.2	38.2*	18.4	5.2	0.0
27. Spinal cord stimulation trial before considering permanent implantation of a stimulation device	78	91.0*	9.0	0.0	0.0	0.0
<i>Transcutaneous electrical nerve stimulation</i>						
28. TENS for chronic non-cancer pain	78	19.2	62.8*	11.5	6.4	0.0
<i>Epidural steroids with or without local anesthetics</i>						
29. Epidural steroid injections with or without local anesthetics for radicular pain or radiculopathy	78	65.4*	33.3	1.3	0.0	0.0
30. Image guidance (e.g., fluoroscopy) for transforaminal epidural injections	78	89.7*	6.4	2.6	0.0	1.3
31. Image guidance (e.g., fluoroscopy) for interlaminar epidural injections	78	50.0*	28.2	15.4	5.1	1.3
<i>Intrathecal drug therapies</i>						
<i>Neurolytic blocks</i>						
32. Intrathecal neurolytic blocks for routine care	76	1.3	0.0	9.2	32.9	56.6*
<i>Intrathecal nonopioid injections</i>						
33. Intrathecal preservative-free steroid injections for intractable postherpetic neuralgia	77	2.6	22.1	36.3*	29.9	9.1
34. Ziconotide infusion for refractory chronic pain	78	11.5	32.1	46.2*	6.4	3.8
<i>Intrathecal opioid injections</i>						
35. Intrathecal opioid injection or infusion for neuropathic pain	78	9.0	38.5	28.2*	21.8	2.5
36. Neuraxial opioid trials should be performed before considering permanent implantation of intrathecal drug delivery systems	77	70.1*	22.1	3.9	2.6	1.3
<i>Minimally invasive spinal procedures</i>						
37. Minimally invasive spinal procedures (e.g., vertebroplasty) for pain related to vertebral compression fractures	78	53.9*	33.3	11.5	0.0	1.3
<i>Pharmacologic management</i>						
38. Anticonvulsants (e.g., alpha-2-delta calcium channel antagonists, sodium channel blockers, membrane stabilizing drugs) for neuropathic pain	77	83.1*	15.6	1.3	0.0	0.0
39. Tricyclic antidepressants	77	63.6*	31.2	3.9	1.3	0.0
40. Serotonin-norepinephrine reuptake inhibitors	76	51.3*	36.8	6.6	4.0	1.3

(continued)

Table 2. Continued

	N	Percent Responding to Each Item				
		Strongly Agree	Agree	Equivocal	Disagree	Strongly Disagree
41. Selective serotonin reuptake inhibitors for diabetic neuropathy	78	18.0	25.6	19.2*	26.9	10.3
42. NMDA receptor antagonists for neuropathic pain	78	19.2	44.9*	33.3	1.3	1.3
43. Opioids for neuropathic or back pain	77	7.8	32.5	41.6*	11.7	6.5
44. Benzodiazepines	75	1.3	8.0	22.7	42.7*	25.3
45. NSAIDs for back pain	77	35.1	45.4*	14.3	3.9	1.3
46. Topical agents for peripheral neuropathic pain	78	33.3	50.0*	14.1	2.6	0.0
47. Skeletal muscle relaxants	76	13.2	35.5	32.9*	14.5	3.9
<i>Physical or restorative therapy</i>						
48. Physical or restorative therapy for low back pain	78	70.5*	24.4	5.1	0.0	0.0
49. Physical or restorative therapy for other chronic pain conditions	77	55.8*	35.1	9.1	0.0	0.0
<i>Psychological treatment</i>						
50. Cognitive behavioral therapy, biofeedback, or relaxation training for low back pain	78	38.5	50.0*	11.5	0.0	0.0
51. Cognitive behavioral therapy, biofeedback, or relaxation training for other chronic pain conditions	77	42.9	48.0*	9.1	0.0	0.0
52. Supportive psychotherapy, group therapy, or counseling	77	40.3	42.5*	18.2	0.0	0.0
<i>Trigger point injections</i>						
53. Trigger point injections for myofascial pain	78	29.5	47.4*	19.2	2.6	1.3

* Median.

CRPS = complex regional pain syndrome; N = number of consultants who responded to each item; NMDA = *N*-methyl-D-aspartate; NSAID = nonsteroidal antiinflammatory drug; TENS = transcutaneous electrical nerve stimulation.

Table 3. ASA Member Survey Responses

	Percent Responding to Each Item					
	N	Strongly Agree	Agree	Equivocal	Disagree	Strongly Disagree
I. Patient evaluation						
1. All patients presenting with chronic pain should have a documented history and physical examination, and an assessment that ultimately supports a chosen treatment strategy	304	82.2*	15.2	2.0	0.3	0.3
2. Findings from the patient history, physical examination, and diagnostic evaluation should be combined to provide the foundation for an individualized treatment plan	305	84.3*	14.4	1.3	0.0	0.0
3. Whenever possible, direct and ongoing contact should be made and maintained with the other physicians caring for the patient to ensure optimal care management	305	64.3*	29.8	5.6	0.0	0.3
II. Multimodal or multidisciplinary interventions						
4. Multimodal interventions should be part of a treatment strategy for patients with chronic pain	305	65.9*	27.9	4.9	1.0	0.3
5. A long-term approach that includes periodic follow-up evaluations should be developed and implemented as part of the overall treatment strategy	304	63.2*	30.3	4.9	1.3	0.3
6. When available, multidisciplinary programs should be used	303	56.1*	31.0	8.9	2.7	1.3
III. Single modality interventions						
<i>Ablative techniques</i>						
7. Chemical denervation for routine care	298	4.4	8.4	24.8	41.3*	21.1
8. Cryoneurolysis or cryoablation for postthoracotomy pain syndrome, neuralgia, or low back pain (medial branch)	295	15.9	34.6*	33.6	13.9	2.0
9. Cryoneurolysis or cryoablation for facial pain of nonherpetic origin strategy	294	5.4	28.2	44.6*	19.4	2.4
10. Thermal intradiscal procedures for young active patients with early single-level degenerative disc disease with well-maintained disc height	294	13.6	32.3	30.6*	17.7	5.8
11. Conventional (e.g., 80°C) or other thermal (e.g., 67°C) radiofrequency ablation of the medial branch nerves to the facet joint for neck or low back (medial branch) pain	298	51.0*	30.9	12.1	5.3	0.7
12. Water-cooled radiofrequency ablation for chronic sacroiliac joint pain	295	13.2	27.8	47.5*	9.8	1.7
13. Conventional or other thermal radiofrequency ablation of the dorsal root ganglion for lumbar radicular pain	299	10.4	27.1	39.1*	19.1	4.3
<i>Acupuncture</i>						
14. Acupuncture for nonspecific, noninflammatory low back pain	300	15.0	40.7*	34.3	6.7	3.3
<i>Blocks</i>						
<i>Joint injections</i>						
15. Intra-articular facet joint injections for facet-mediated pain	303	31.0	46.9*	12.2	6.9	3.0
16. Sacroiliac joint injections for sacroiliac joint pain	303	51.1*	41.9	5.6	0.7	0.7
<i>Nerve and nerve root blocks</i>						
17. Celiac plexus blocks using local anesthetics with or without steroids for pain secondary to chronic pancreatitis	298	26.9	48.0*	18.1	5.0	2.0
18. Lumbar sympathetic blocks or stellate ganglion blocks for CRPS	299	62.2*	31.1	5.7	1.0	0.0

(continued)

(continued)

Table 3. Continued

	N	Percent Responding to Each Item				
		Strongly Agree	Agree	Equivocal	Disagree	Strongly Disagree
19. Sympathetic nerve blocks for the long-term treatment of non-CRPS neuropathic pain	299	17.7	28.1	32.5*	17.7	4.0
20. Medial branch blocks for facet-mediated spine pain	299	51.9*	33.5	13.0	1.3	0.3
21. Peripheral somatic nerve blocks for long-term treatment	298	17.4	28.2	34.6*	17.1	2.7
<i>Botulinum toxin</i>						
22. Botulinum toxin for myofascial pain	294	12.2	41.5*	34.4	8.5	3.4
23. Botulinum toxin for piriformis syndrome	290	12.4	36.2	41.4*	5.9	4.1
<i>Electrical nerve stimulation</i>						
<i>Neuromodulation with electrical stimulus</i>						
24. Subcutaneous peripheral nerve stimulation for painful peripheral nerve injuries	296	22.3	46.3*	27.7	2.0	1.7
25. Spinal cord stimulation for persistent radicular pain	294	48.0	37.0*	10.9	3.1	1.0
26. Spinal cord stimulation for other conditions (e.g., postherpetic neuralgia, postamputation pain, peripheral neuropathic pain, spinal cord injury, CRPS, cauda equina syndrome, cervical root injury pain, peripheral vascular disease, and visceral pain)	296	44.9	38.2*	12.2	3.7	1.0
27. Spinal cord stimulation trial before considering permanent implantation of a stimulation device	297	84.5*	12.8	2.7	0.0	0.0
<i>Transcutaneous electrical nerve stimulation</i>						
28. TENS for chronic non-cancer pain	302	31.8	48.6*	16.9	2.0	0.7
<i>Epidural steroids with or without local anesthetics</i>						
29. Epidural steroid injections with or without local anesthetics for radicular pain or radiculopathy	302	72.9*	23.8	3.3	0.0	0.0
30. Image guidance (e.g., fluoroscopy) for transforaminal epidural injections	301	83.1*	12.0	4.6	0.0	0.3
31. Image guidance (e.g., fluoroscopy) for interlaminar epidural injections	302	56.0*	26.2	12.9	3.3	1.6
<i>Intrathecal drug therapies</i>						
<i>Neurolytic blocks</i>						
32. Intrathecal neurolytic blocks for routine care	295	1.0	3.4	13.6	41.7*	40.3
<i>Intrathecal nonopioid injections</i>						
33. Intrathecal preservative-free steroid injections for intractable postherpetic neuralgia	293	7.2	22.2	39.2*	25.3	6.1
34. Ziconotide infusion for refractory chronic pain	286	10.8	29.7	50.0*	6.7	2.8
<i>Intrathecal opioid injections</i>						
35. Intrathecal opioid injection or infusion for neuropathic pain	296	11.5	34.1	35.5*	15.5	3.4
36. Neuraxial opioid trials should be performed before considering permanent implantation of intrathecal drug delivery systems	297	73.0*	19.9	6.4	0.7	0.0
<i>Minimally invasive spinal procedures</i>						
37. Minimally invasive spinal procedures (e.g., vertebroplasty) for pain related to vertebral compression fractures	296	51.7*	37.2	9.8	1.3	0.0
<i>Pharmacologic management</i>						
38. Anticonvulsants (e.g., alpha-2-delta calcium channel antagonists, sodium channel blockers, membrane stabilizing drugs) for neuropathic pain	300	67.3*	29.3	2.7	0.3	0.3
39. Tricyclic antidepressants	298	56.4*	37.6	5.4	0.3	0.3
40. Serotonin-norepinephrine reuptake inhibitors	299	43.1	42.8*	12.7	1.3	0.0

(continued)

Table 3. Continued

	N	Percent Responding to Each Item				
		Strongly Agree	Agree	Equivocal	Disagree	Strongly Disagree
41. Selective serotonin reuptake inhibitors for diabetic neuropathy	298	28.8	35.9*	23.5	10.1	1.7
42. NMDA receptor antagonists for neuropathic pain	293	35.1	48.5*	15.4	0.7	0.3
43. Opioids for neuropathic or back pain	295	15.6	42.4*	29.1	9.8	3.1
44. Benzodiazepines	299	4.0	16.4	33.1*	32.1	14.4
45. NSAIDs for back pain	299	43.1	46.2*	9.0	1.7	0.0
46. Topical agents for peripheral neuropathic pain	300	33.0	48.7*	16.7	1.7	0.0
47. Skeletal muscle relaxants	297	19.0	37.5*	29.2	8.9	5.4
<i>Physical or restorative therapy</i>						
48. Physical or restorative therapy for low back pain	297	74.4*	22.2	3.4	0.0	0.0
49. Physical or restorative therapy for other chronic pain conditions	299	64.5*	29.8	5.7	0.0	0.0
<i>Psychological treatment</i>						
50. Cognitive behavioral therapy, biofeedback, or relaxation training for low back pain	300	45.3	41.7*	12.3	0.0	0.7
51. Cognitive behavioral therapy, biofeedback, or relaxation training for other chronic pain conditions	301	47.2	41.5*	10.3	0.7	0.3
52. Supportive psychotherapy, group therapy, or counseling	299	41.5	45.5*	10.4	2.3	0.3
<i>Trigger point injections</i>						
53. Trigger point injections for myofascial pain	302	43.7	42.4*	12.2	1.7	0.0

* Median.

CRPS = complex regional pain syndrome; N = number of American Society of Anesthesiologists (ASA) members who responded to each item; NMDA = N-methyl-D-aspartate; NSAID = nonsteroidal antiinflammatory drug; TENS = transcutaneous electrical nerve stimulation.

Table 4. ASRA Member Survey Responses

	Percent Responding to Each Item					
	N	Strongly Agree	Agree	Equivocal	Disagree	Strongly Disagree
I. Patient evaluation						
1. All patients presenting with chronic pain should have a documented history and physical examination, and an assessment that ultimately supports a chosen treatment strategy	171	88.3*	8.2	2.3	0.0	1.2
2. Findings from the patient history, physical examination, and diagnostic evaluation should be combined to provide the foundation for an individualized treatment plan	170	85.3*	11.7	1.8	0.0	1.2
3. Whenever possible, direct and ongoing contact should be made and maintained with the other physicians caring for the patient to ensure optimal care management	171	67.2*	25.2	7.6	0.0	0.0
II. Multimodal or multidisciplinary interventions						
4. Multimodal interventions should be part of a treatment strategy for patients with chronic pain	171	67.2*	25.7	5.3	1.2	0.6
5. A long-term approach that includes periodic follow-up evaluations should be developed and implemented as part of the overall treatment strategy	170	65.3*	25.3	6.5	2.9	0.0
6. When available, multidisciplinary programs should be used	171	55.0*	29.2	11.1	3.5	1.2
III. Single modality interventions						
<i>Ablative techniques</i>						
7. Chemical denervation for routine care	167	4.2	12.0	17.4	41.9*	24.5
8. Cryoneurolysis or cryoablation for postthoracotomy pain syndrome, neuralgia, or low back pain (medial branch)	170	13.5	33.5	30.0*	16.5	6.5
9. Cryoneurolysis or cryoablation for facial pain of nonherpetic origin strategy	171	4.1	22.2	43.9*	22.8	7.0
10. Thermal intradiscal procedures for young active patients with early single-level degenerative disc disease with well-maintained disc height	170	14.7	20.0	31.2*	21.7	12.4
11. Conventional (e.g., 80°C) or other thermal (e.g., 67°C) radiofrequency ablation of the medial branch nerves to the facet joint for neck or low back (medial branch) pain	169	54.4*	26.0	14.2	3.6	1.8
12. Water-cooled radiofrequency ablation for chronic sacroiliac joint pain	170	12.3	31.8	45.9*	7.6	2.4
13. Conventional or other thermal radiofrequency ablation of the dorsal root ganglion for lumbar radicular pain	170	11.2	24.1	36.5*	20.6	7.6
<i>Acupuncture</i>						
14. Acupuncture for nonspecific, noninflammatory low back pain	170	13.5	39.4*	38.8	7.7	0.6
<i>Blocks</i>						
<i>Joint injections</i>						
15. Intra-articular facet joint injections for facet mediated pain	169	30.2	39.0*	15.4	13.0	2.4
16. Sacroiliac joint injections for sacroiliac joint pain	170	48.8	45.9*	4.1	1.2	0.0
<i>Nerve and nerve root blocks</i>						
17. Celiac plexus blocks using local anesthetics with or without steroids for pain secondary to chronic pancreatitis	171	18.1	37.4*	21.1	19.3	4.1
18. Lumbar sympathetic blocks or stellate ganglion blocks for CRPS	170	64.7*	25.9	7.0	1.2	1.2
(continued)						

(continued)

Table 4. Continued

	N	Percent Responding to Each Item				
		Strongly Agree	Agree	Equivocal	Disagree	Strongly Disagree
19. Sympathetic nerve blocks for the long-term treatment of non-CRPS neuropathic pain	170	13.5	28.8	34.7*	20.0	2.9
20. Medial branch blocks for facet-mediated spine pain	169	58.6*	29.6	7.1	3.5	1.2
21. Peripheral somatic nerve blocks for long-term treatment	170	15.3	30.6	34.7*	15.3	4.1
<i>Botulinum toxin</i>						
22. Botulinum toxin for myofascial pain	170	12.3	36.5	35.9*	10.0	5.3
23. Botulinum toxin for piriformis syndrome	169	11.2	42.6*	31.4	11.8	3.0
<i>Electrical nerve stimulation</i>						
<i>Neuromodulation with electrical stimulus</i>						
24. Subcutaneous peripheral nerve stimulation for painful peripheral nerve injuries	171	18.1	46.2*	27.5	7.0	1.2
25. Spinal cord stimulation for persistent radicular pain	167	53.9*	35.3	6.0	3.6	1.2
26. Spinal cord stimulation for other conditions (e.g., postherpetic neuralgia, postamputation pain, peripheral neuropathic pain, spinal cord injury, CRPS, cauda equina syndrome, cervical root injury pain, peripheral vascular disease, and visceral pain)	171	41.5	40.4*	14.0	2.3	1.8
27. Spinal cord stimulation trial before considering permanent implantation of a stimulation device	171	90.6*	7.0	1.2	0.6	0.6
<i>Transcutaneous electrical nerve stimulation</i>						
28. TENS for chronic non-cancer pain	170	42.9	40.6*	14.1	2.4	0.0
<i>Epidural steroids with or without local anesthetics</i>						
29. Epidural steroid injections with or without local anesthetics for radicular pain or radiculopathy	170	71.2*	22.9	4.1	1.2	0.6
30. Image guidance (e.g., fluoroscopy) for transforaminal epidural injections	168	86.9*	10.7	1.2	1.2	0.0
31. Image guidance (e.g., fluoroscopy) for interlaminar epidural injections	170	62.9*	24.7	7.1	3.5	1.8
<i>Intrathecal drug therapies</i>						
<i>Neurolytic blocks</i>						
32. Intrathecal neurolytic blocks for routine care	167	3.0	6.0	9.6	34.1*	47.3
<i>Intrathecal nonopioid injections</i>						
33. Intrathecal preservative-free steroid injections for intractable postherpetic neuralgia	169	4.7	24.9	37.9*	27.2	5.3
34. Ziconotide infusion for refractory chronic pain	167	8.4	31.1	45.5*	9.0	6.0
<i>Intrathecal opioid injections</i>						
35. Intrathecal opioid injection or infusion for neuropathic pain	170	10.6	27.6	40.0*	17.7	4.1
36. Neuraxial opioid trials should be performed before considering permanent implantation of intrathecal drug delivery systems	168	73.8*	22.0	3.6	0.0	0.6
<i>Minimally invasive spinal procedures</i>						
37. Minimally invasive spinal procedures (e.g., vertebroplasty) for pain related to vertebral compression fractures	169	52.1*	40.2	6.5	1.2	0.0
<i>Pharmacologic management</i>						
38. Anticonvulsants (e.g., alpha-2-delta calcium channel antagonists, sodium channel blockers, membrane stabilizing drugs) for neuropathic pain	171	76.0*	23.4	0.6	0.0	0.0
39. Tricyclic antidepressants	171	54.4*	39.8	5.8	0.0	0.0
40. Serotonin-norepinephrine reuptake inhibitors	170	43.5	44.1*	10.0	2.4	0.0

(continued)

Table 4. Continued

	N	Percent Responding to Each Item				
		Strongly Agree	Agree	Equivocal	Disagree	Strongly Disagree
41. Selective serotonin reuptake inhibitors for diabetic neuropathy	171	34.5	30.4*	19.3	11.1	4.7
42. NMDA receptor antagonists for neuropathic pain	169	36.7	47.3*	15.4	0.6	0.0
43. Opioids for neuropathic or back pain	170	19.4	37.1*	31.2	8.2	4.1
44. Benzodiazepines	169	3.6	7.7	30.2	39.6*	18.9
45. NSAIDs for back pain	169	43.8	43.8*	10.0	1.8	0.6
46. Topical agents for peripheral neuropathic pain	169	37.9	52.6*	8.9	0.6	0.0
47. Skeletal muscle relaxants	168	19.0	37.5*	29.2	8.9	5.4
<i>Physical or restorative therapy</i>						
48. Physical or restorative therapy for low back pain	169	75.7*	22.5	1.8	0.0	0.0
49. Physical or restorative therapy for other chronic pain conditions	168	62.5*	32.7	4.8	0.0	0.0
<i>Psychological treatment</i>						
50. Cognitive behavioral therapy, biofeedback, or relaxation training for low back pain	170	47.6	38.8*	11.8	1.8	0.0
51. Cognitive behavioral therapy, biofeedback, or relaxation training for other chronic pain conditions	171	48.5	42.7*	8.8	0.0	0.0
52. Supportive psychotherapy, group therapy, or counseling	170	48.2	38.2*	12.4	1.2	0.0
<i>Trigger point injections</i>						
53. Trigger point injections for myofascial pain	170	42.4	41.2*	13.5	2.9	0.0

* Median.

CRPS = complex regional pain syndrome; N = number of American Society of Regional Anesthesia and Pain Medicine (ASRA) members who responded to each item; NMDA = *N*-methyl-D-aspartate; NSAID = nonsteroidal antiinflammatory drug; TENS = transcutaneous electrical nerve stimulation.