

OKLAHOMA

**Guidelines for Treatment of
Chronic Pain Disorders**

*Developed and Adopted
by the*
Physician Advisory Committee

**Adopted by the Administrator
of the
Oklahoma Workers' Compensation Court**

Effective September 1, 2007

TABLE OF CONTENTS

A. INTRODUCTION.....	1
1. BACKGROUND.....	1
2. DEVELOPMENT OF THE GUIDELINES.....	1
3. APPLICATION OF THE GUIDELINES.....	1
B. GENERAL GUIDELINE PRINCIPLES.....	2
1. EDUCATION.....	2
2. TREATMENT PARAMETER DURATION.....	2
3. ACTIVE INTERVENTIONS.....	2
4. ACTIVE THERAPEUTIC EXERCISE PROGRAM.....	2
5. POSITIVE PATIENT RESPONSE.....	2
6. RE-EVALUATION OF TREATMENT EVERY 3 TO 4 WEEKS.....	2
7. SURGICAL INTERVENTIONS.....	2
8. SIX-MONTH TIME FRAME.....	2
9. RETURN-TO-WORK.....	3
10. DELAYED RECOVERY.....	3
11. GUIDELINE RECOMMENDATIONS AND INCLUSION OF MEDICAL EVIDENCE.....	3
12. TREATMENT OF PRE-EXISTING CONDITIONS.....	3
C. INTRODUCTION TO CHRONIC PAIN.....	4
D. DEFINITIONS.....	5
1. ABUSE.....	5
2. ACUTE PAIN.....	5
3. ADDICTION.....	5
4. AFTERSENSATION.....	5
5. ALLODYNIA.....	5
6. ANALGESIA.....	6
7. BIOPSYCHOSOCIAL.....	6
8. CENTRAL PAIN.....	6
9. CENTRAL SENSITIZATION.....	6
10. CHRONIC PAIN.....	6
11. DYSESTHESIA.....	6
12. HYPERALGESIA.....	6
13. HYPERESTHESIA (POSITIVE SENSORY PHENOMENA).....	6
14. HYPERPATHIA.....	6
15. HYPOALGESIA.....	6
16. HYPOESTHESIA (NEGATIVE SENSORY PHENOMENA).....	6
17. MALINGERING.....	6
18. MYOFASCIAL PAIN.....	6
19. MYOFASCIAL TRIGGER POINT.....	6
20. NEURALGIA.....	7
21. NEURITIS.....	7
22. NEUROGENIC PAIN.....	7
23. NEUROPATHIC PAIN.....	7
24. NEUROPATHY.....	7
25. NOCICEPTOR.....	7
26. PAIN BEHAVIOR.....	7
27. PAIN THRESHOLD.....	7
28. PARESTHESIA.....	7
29. PERIPHERAL NEUROGENIC PAIN.....	7
30. PERIPHERAL NEUROPATHIC PAIN.....	7
31. PHYSICAL DEPENDENCE.....	7

32. SUMMATION	7
33. SYMPATHETICALLY MAINTAINED PAIN (SMP)	7
34. TENDER POINTS	7
35. TOLERANCE	7
E. INITIAL EVALUATION & DIAGNOSTIC PROCEDURES	7
1. HISTORY AND PHYSICAL EXAMINATION (Hx & PE)	8
a. Medical History	8
b. Pain History	8
c. Medical Management History	9
d. Substance Use/Abuse	9
e. Other Factors Affecting Treatment Outcome	9
f. Physical Examination	9
2. PERSONALITY/PSYCHOSOCIAL/PSYCHOLOGICAL EVALUATIONS	10
a. Qualifications	11
b. Clinical Evaluation	11
c. Tests of Psychological Functioning	12
3. DIAGNOSTIC STUDIES	17
4. LABORATORY TESTING	17
5. INJECTIONS–DIAGNOSTIC	17
a. Medial Branch Blocks	18
b. Intra-Articular Facet Injections	18
c. Atlanto-Axial and Atlanto-Occipital Injections	18
d. Sympathetic Injections	18
e. Peripheral Nerve Blocks	19
6. SPECIAL TESTS	19
a. Computer-Enhanced Evaluations	19
b. Functional Capacity Evaluation (FCE)	19
c. Job Site Evaluation	19
d. Vocational Assessment	19
e. Work Tolerance Screening	20
F. THERAPEUTIC PROCEDURES – NON-OPERATIVE	20
1. ACUPUNCTURE	20
a. Acupuncture	21
b. Acupuncture with Electrical Stimulation	21
c. Other Acupuncture Modalities	21
2. BIOFEEDBACK	21
a. Electromyogram (EMG)	22
b. Skin Temperature	22
c. Respiration Feedback (RFB)	22
d. Respiratory Sinus Arrhythmia (RSA)	22
e. Heart Rate Variability (HRV)	22
f. Electrodermal Response (EDR)	22
g. Electroencephalograph (EEG, QEEG)	22
3. COMPLEMENTARY ALTERNATIVE MEDICINE (CAM)	23
a. Alternative Medical Systems	23
b. Mind-Body Interventions	23
c. Biological-based Practices	23
d. Body-Based Therapy	23
e. Energy-Based Practices	23
4. DISTURBANCES OF SLEEP	24
5. INJECTIONS—THERAPEUTIC	24
a. Epidural Steroid Spinal Injections	26
b. Zygoapophyseal (Facet) Injection	27
c. Selective Nerve Root Blocks (SNRB)	27

d.	Trigger Point Injections	28
e.	Botulinum Toxin (Botox) Injection	28
f.	Sacroiliac Joint Injection	29
g.	Peripheral Nerve Blocks	29
6.	INTERDISCIPLINARY REHABILITATION PROGRAMS	30
a.	Formal Rehabilitation Programs	32
b.	Informal Rehabilitation Program	33
7.	MEDICATIONS	33
a.	Alpha-Acting Agents	34
b.	Anticonvulsants.....	35
c.	Antidepressants.....	36
d.	Hypnotics and Sedatives	37
e.	Skeletal Muscle Relaxants	38
f.	Opioids.....	39
g.	Nonsteroidal Anti-Inflammatory Drugs	43
h.	Topical Drug Delivery	43
i.	Herbal/Dietary Supplements	44
j.	Other Agents	44
8.	ORTHOTICS/PROSTHETICS/EQUIPMENT.....	45
9.	PATIENT EDUCATION.....	46
10.	PERSONALITY/PSYCHOLOGICAL/PSYCHOSOCIAL INTERVENTION	47
11.	RESTRICTION OF ACTIVITIES.....	48
12.	RETURN-TO-WORK.....	48
a.	Job History Interview.....	48
b.	Coordination of Care	49
c.	Communication.....	49
d.	Establishment of a Return-To-Work Status	49
e.	Establishment of Activity Level Restrictions.....	49
f.	Rehabilitation and Return-to-work.....	49
g.	Vocational Assistance	49
13.	THERAPY—ACTIVE.....	50
a.	Activities of Daily Living (ADL).....	50
b.	Aquatic Therapy	50
c.	Functional Activities.....	50
d.	Functional Electrical Stimulation.....	51
e.	Lumbar Stabilization.....	51
f.	Neuromuscular Re-education.....	51
g.	Therapeutic Exercise.....	51
h.	Work Conditioning	52
i.	Work Simulation.....	52
14.	THERAPY—PASSIVE	53
a.	Electrical Stimulation (Unattended).....	53
b.	Infrared Therapy	53
c.	Iontophoresis.....	53
d.	Manipulation.....	54
e.	Massage—Manual or Mechanical	55
f.	Mobilization (Joint)	55
g.	Mobilization (Soft Tissue).....	55
h.	Superficial Heat and Cold Therapy.....	56
i.	Traction—Manual.....	56
j.	Traction—Mechanical	56
k.	Transcutaneous Electrical Nerve Stimulation (TENS)	56
l.	Ultrasound.....	57

G. THERAPEUTIC PROCEDURES – OPERATIVE.....	57
1. NEUROSTIMULATION.....	57
2. INTRATHECAL DRUG DELIVERY.....	58
3. NEUROABLATION WITH RHIZOTOMY AS THE EXCEPTION.....	59
4. FACET RHIZOTOMY.....	59
H. MAINTENANCE MANAGEMENT.....	60
1. HOME EXERCISE PROGRAMS AND EXERCISE EQUIPMENT.....	61
2. EXERCISE PROGRAMS REQUIRING SPECIAL FACILITIES.....	61
3. PATIENT EDUCATION MANAGEMENT.....	61
4. PSYCHOLOGICAL MANAGEMENT.....	61
5. NON-NARCOTIC MEDICATION MANAGEMENT.....	62
6. NARCOTIC MEDICATION MANAGEMENT.....	62
7. THERAPY MANAGEMENT.....	62
8. INJECTION THERAPY.....	63
9. PURCHASE OR RENTAL OF DURABLE MEDICAL EQUIPMENT.....	63

Guidelines for Treatment of Chronic Pain Disorders

developed and adopted by the

Physician Advisory Committee

Adopted by the Administrator of the Oklahoma Workers' Compensation Court

Effective September 1, 2007

A. INTRODUCTION

1. **BACKGROUND** The Physician Advisory Committee (PAC), a statutorily created advisory body to the Oklahoma Workers' Compensation Court, has been directed by Oklahoma Statute to develop and adopt treatment guidelines for injured Oklahoma workers, based upon nationally accepted practice standards, for adoption by the Administrator of the Workers' Compensation Court.

The PAC is composed of nine members; three appointed by the Governor, three appointed by the President Pro Tempore of the State Senate, and three appointed by the Speaker of the Oklahoma House of Representatives. By statute, the Governor's appointees must include a doctor of medicine and surgery, a family practitioner in a rural community of the state, and an osteopathic physician; the President Pro Tempore's appointees must include a doctor of medicine and surgery, a doctor of medicine or an osteopathic physician engaged in the practice of occupational medicine, and a podiatric physician; and the Speaker's appointees must include an osteopathic physician, a doctor of medicine or an osteopathic physician, and a chiropractic physician.

2. **DEVELOPMENT OF THE GUIDELINES** Input from employers, insurance carriers, and health care providers was received. Appropriate scientific literature and statutory provisions (Title 63, Oklahoma Statutes, Section 2-551) were reviewed, together with the Occupational Medicine Practice Guidelines promulgated by the American College of Occupational and Environmental Medicine, the Official Disability Guidelines published by the Work Loss Data Institute, the Federation of State Medical Boards of the United States, and practice parameters of the various specialty societies (The American Academy of Pain Medicine, International Association for the Study of Pain, and American Pain Society).

These guidelines are based primarily on the Colorado Department of Labor and Employment, Division of Workers' Compensation, Chronic Pain Disorder Medical Treatment Guidelines effective January 1, 2006, and the accompanying Chronic Pain Disorder Task Force Bibliography.

3. **APPLICATION OF THE GUIDELINES** These treatment guidelines should not be construed as including all proper methods of care or excluding other acceptable methods of care which are based upon nationally accepted practice standards.

For injury or illness treated under the Oklahoma Workers' Compensation Act, compliance with these treatment guidelines shall be mandatory and an employer or insurer for an employer shall not be required to pay for treatment which is not in compliance with these guidelines, unless prior authorization is received. If prior authorization is refused, independent review may be obtained under court procedures.

Authorization for treatment may not be denied on the sole basis the treatment is not addressed by these guidelines if it is documented to be based upon nationally accepted practice standards.

These guidelines do not affect any determination of liability for an injury under the Oklahoma Workers' Compensation Act, 85 O.S., Section 1, et seq., and are not intended to expand or restrict a health care provider's scope of practice under any other statutes.

B. GENERAL GUIDELINE PRINCIPLES

The principles summarized in this section are key to the intended implementation of all PAC Workers' Compensation guidelines and critical to the reader's application of the guidelines in this document.

1. **EDUCATION** of the patient and family, as well as the employer, insurer, policy makers and the community should be the primary emphasis in the treatment of chronic pain and disability. Currently, practitioners often think of education last, after medications, manual therapy, and surgery. Practitioners must develop and implement an effective strategy and skills to educate patients, employers, insurance systems, policy makers, and the community as a whole. An education-based paradigm should always start with inexpensive communication providing reassuring information to the patient. More in-depth education currently exists within a treatment regime employing functional restorative and innovative programs of prevention and rehabilitation. No treatment plan is complete without addressing issues of individual and/or group patient education as a means of facilitating self-management of symptoms and prevention.
2. **TREATMENT PARAMETER DURATION** Timeframes for specific interventions commence once treatments have been initiated, not on the date of injury. Obviously, duration will be impacted by patient compliance, as well as availability of services. Clinical judgment may substantiate the need to accelerate or decelerate the timeframes discussed in this document.
3. **ACTIVE INTERVENTIONS** emphasizing patient responsibility, such as therapeutic exercise and/or functional treatment, are generally emphasized over passive modalities, especially as treatment progresses. Generally, passive interventions are viewed as a means to facilitate progress in an active rehabilitation program with concomitant attainment of objective functional gains.
4. **ACTIVE THERAPEUTIC EXERCISE PROGRAM** goals should incorporate patient strength, endurance, flexibility, coordination, and education. This includes functional application in vocational or community settings.
5. **POSITIVE PATIENT RESPONSE** results are defined primarily as functional gains that can be objectively measured. Objective functional gains include, but are not limited to, positional tolerances, range of motion (ROM), strength, endurance activities of daily living cognition, psychological behavior, and efficiency/velocity measures that can be quantified. Subjective reports of pain and function should be considered and given relative weight when the pain has anatomic and physiologic correlation. Anatomic correlation must be based on objective findings.
6. **RE-EVALUATION OF TREATMENT EVERY 3 TO 4 WEEKS** If a given treatment or modality is not producing positive results within 3 to 4 weeks, the treatment should be either modified or discontinued. Reconsideration of diagnosis should also occur in the event of poor response to a seemingly rational intervention.
7. **SURGICAL INTERVENTIONS** Surgery should be contemplated within the context of expected functional outcome and not purely for the purpose of pain relief. The concept of "cure" with respect to surgical treatment by itself is generally a misnomer. All operative interventions must be based upon positive correlation of clinical findings, clinical course, and diagnostic tests. A comprehensive assimilation of these factors must lead to a specific diagnosis with positive identification of pathologic conditions.
8. **SIX-MONTH TIME FRAME** The prognosis drops precipitously for returning an injured worker to work once he/she has been temporarily totally disabled for more than six months.

The emphasis within these guidelines is to move patients along a continuum of care and return to work within a six-month timeframe, whenever possible. It is important to note that timeframes may not be pertinent to injuries that do not involve work-time loss or are not occupationally related.

9. **RETURN-TO-WORK** is therapeutic, assuming the work is not likely to aggravate the basic problem or increase long-term pain. The practitioner must provide specific written physical limitations and the patient should never be released to “sedentary” or “light duty.” The following physical limitations should be considered and modified as recommended: lifting, pushing, pulling, crouching, walking, using stairs, overhead work, bending at the waist, awkward and/or sustained postures, tolerance for sitting or standing, hot and cold environments, data entry and other repetitive motion tasks, sustained grip, tool usage and vibration factors. Even if there is residual chronic pain, return-to-work is not necessarily contraindicated.

The practitioner should understand all of the physical demands of the patient's job position before returning the patient to full duty and should request clarification of the patient's job duties. Clarification should be obtained from the employer or, if necessary, including, but not limited to, an occupational health nurse, occupational therapist, vocational rehabilitation specialist, or an industrial hygienist.

10. **DELAYED RECOVERY** Strongly consider a psychological evaluation, if not previously provided, as well as initiating interdisciplinary rehabilitation treatment and vocational goal setting, for those patients who are failing to make expected progress 6 to 12 weeks after an injury. The PAC recognizes that 3 to 10% of all industrially injured patients will not recover within the timelines outlined in this document despite optimal care. Such individuals may require treatments beyond the limits discussed within this document, but such treatment will require clear documentation by the authorized treating practitioner focusing on objective functional gains afforded by further treatment and impact upon prognosis.

11. **GUIDELINE RECOMMENDATIONS AND INCLUSION OF MEDICAL EVIDENCE**
Guidelines are recommendations based on available evidence and/or consensus recommendations. When possible, guideline recommendations will note the level of evidence supporting the treatment recommendation. When interpreting medical evidence statements in the guideline, the following apply:

Consensus means the opinion of experienced professionals based on general medical principles. Consensus recommendations are designated in the guideline as “generally well accepted,” “generally accepted,” “acceptable,” or “well-established.”

“Some” means the recommendation considered at least one adequate scientific study, which reported that a treatment was effective.

“Good” means the recommendation considered the availability of multiple adequate scientific studies or at least one relevant high-quality scientific study, which reported that a treatment was effective.

“Strong” means the recommendation considered the availability of multiple relevant and high quality scientific studies, which arrived at similar conclusions about the effectiveness of a treatment.

All recommendations in the guideline are considered to represent reasonable care in appropriately selected cases, regardless of the level of evidence attached to it. Those procedures considered inappropriate, unreasonable, or unnecessary are designated in the guideline as “not recommended.”

12. **TREATMENT OF PRE-EXISTING CONDITIONS** that preexisted the work injury/disease will need to be managed under two circumstances: (a) A pre-existing condition exacerbated by a work injury/disease should be treated until the patient has returned to their prior level of

functioning or MMI; and (b) A pre-existing condition not directly caused by a work injury/disease but which may prevent recovery from that injury should be treated until its negative impact has been controlled. The focus of treatment should remain on the work injury/disease.

C. INTRODUCTION TO CHRONIC PAIN

The International Association for the Study of Pain (IASP) defines pain as "an unpleasant sensory and emotional experience with actual or potential tissue damage." Pain is a complex experience embracing physical, mental, social, and behavioral processes that often compromises the quality of life of many individuals. Pain is an unpleasant subjective perception usually in the context of tissue damage.

Pain is subjective and cannot be measured or indicated objectively. Pain evokes negative emotional reactions such as fear, anxiety, anger, and depression. People usually regard pain as an indicator of physical harm, despite the fact that pain can exist without tissue damage and tissue damage can exist without pain. Many people report pain in the absence of tissue damage or any likely pathophysiologic cause. There is no way to distinguish their experience from that due to actual tissue damage. If they regard their experience as pain and they report it the same way as pain caused by tissue damage, it should be accepted as pain.

Pain can generally be classified as:

- Nociceptive which includes pain from visceral origins or damage to other tissues. Myofascial pain is a nociceptive type of pain characterized by myofascial trigger points limited to a specific muscle or muscles.
- Neuropathic including that originating from brain, peripheral nerves or both; and
- Psychogenic that originates in mood, characterological, social, or psychophysiological processes.

Recent advances in the neurosciences reveal additional mechanisms involved in chronic pain. In the past, pain was seen as a sensation arising from the stimulation of pain receptors by damaged tissue, initiating a sequence of nerve signals ending in the brain and there recognized as pain. A consequence of this model was that ongoing pain following resolution of tissue damage was seen as less physiological and more psychological than acute pain with identifiable tissue injury. Current research indicates that chronic pain involves additional mechanisms that cause: 1) neural remodeling at the level of the spinal cord and higher levels of the central nervous system; 2) changes in membrane responsiveness and connectivity leading to activation of larger pain pathways; and 3) recruitment of distinct neurotransmitters.

Changes in gene function and expression may occur, with lasting functional consequences. These physiologic functional changes cause chronic pain to be experienced in body regions beyond the original injury and to be exacerbated by little or no stimulation. The chronic pain experience clearly represents both psychologic and complex physiologic mechanisms, many of which are just beginning to be understood.

Chronic Pain is defined as "pain that persists for at least 30 days beyond the usual course of an acute disease or a reasonable time for an injury to heal, pain that is associated with a chronic pathological process that causes continuous pain (e.g., reflex sympathetic dystrophy), or pain recurring at intervals of months or years." The very definition of chronic pain describes a delay or outright failure to relieve pain associated with some specific illness or accident. Delayed recovery should prompt a clinical review of the case and a psychological evaluation by a qualified health care provider. Referral to a recognized pain specialist for further evaluation is recommended. Consideration may be given to new diagnostic testing or a change in treatment plan.

Use of the term “chronic pain syndrome” has been used and defined in a variety of ways that generally indicate a belief on the part of the health care provider that the patient's pain is inappropriate or out of proportion to existing problems or illness. Use of the term “chronic pain syndrome” should be discontinued because the term ceases to have meaning due to the many different physical and psychosocial issues associated with it. Instead, practitioners should use the nationally accepted terminology indicated in the definition section and/or the psychiatric diagnosis of "Pain Disorder" and the subtypes according to established standards of the American Psychiatric Association (APA).

The IASP offers taxonomy of pain, which underscores the wide variety of pathological conditions associated with chronic pain. This classification system may not address the psychological and psychosocial issues that occur in the perception of pain, suffering, and disability and may require referral to psychiatric or psychological clinicians. These issues should be documented with preference to the diagnostic categories of the Diagnostic and Statistical Manual of Mental Disorders (DSM), published by the American Psychiatric Association including the subcategories of pain disorder and any other applicable diagnostic categories (i.e., depressive, anxiety, and adjustment disorders).

Chronic pain is a phenomenon not specifically relegated to anatomical or physiologic parameters. The prevailing biomedical model (which focuses on identified disease pathology as the sole cause of pain) cannot capture all of the important variables in pain behavior. While diagnostic labels may pinpoint contributory physical and/or psychological factors and lead to specific treatment interventions that are helpful, a large number of patients defy precise taxonomic classification. Furthermore, such diagnostic labeling often overlooks important social contributions to the chronic pain experience. Failure to address these operational parameters of the chronic pain experience may lead to incomplete or faulty treatment plans. The term "pain disorder" is perhaps the most useful term in the medical literature today, in that it captures the multi-factorial nature of the chronic pain experience.

It is recognized that some health care practitioners, by virtue of their experience, additional training, and/or accreditation by pain specialty organizations, have much greater expertise in the area of chronic pain evaluation and treatment than others. Referrals for the treatment of chronic pain should be to such recognized specialists. Chronic pain treatment plans should be monitored and coordinated by pain medicine physicians with such specialty training, in conjunction with other health care specialists.

Most acute and some chronic pain problems are adequately addressed in other treatment guidelines, and are generally beyond the scope of these guidelines. However, because chronic pain is more often than not multi-factorial, involving more than one pathophysiologic or mental disorder, some overlap with other guidelines is inevitable. These guidelines are meant to apply to any patient who fits the operational definition of chronic pain discussed at the beginning of this section.

D. DEFINITIONS

1. **ABUSE** Overuse in cases of celebration, stress, anxiety, despair, ignorance or self-medication.
2. **ACUTE PAIN** An essential biologic signal of the potential for or the extent of injury. It is usually short-lived and it generally disappears with healing.
3. **ADDICTION** A disease process involving use of psychoactive substances wherein there is a loss of control, compulsive use, and continued use despite adverse social, physical, psychological, or spiritual consequences.
4. **AFTERSENSATION** Refers to the abnormal persistence of a sensory perception, provoked by a stimulus even though the stimulus has ceased.
5. **ALLODYNIA** Pain due to a non-noxious stimulus that does not normally provoke pain.

Mechanical Allodynia – Refers to the abnormal perception of pain from usually non-painful mechanical stimulation.

Static Mechanical Allodynia – Refers to pain obtained by applying a single stimulus such as light pressure to a defined area.

Dynamic Mechanical Allodynia – Obtained by moving the stimulus such as a brush or cotton tip across the abnormal hypersensitive area.

Thermal Allodynia – Refers to the abnormal sensation of pain from usually non-painful thermal stimulation such as cold or warmth.

6. **ANALGESIA** Absence of pain in response to stimulation that would normally be painful.
7. **BIOPSYCHOSOCIAL** A term that reflects the multiple facets of any clinical situation; namely, the biological, psychological, and social situation of the patient.
8. **CENTRAL PAIN** Pain initiated or caused by a primary lesion or dysfunction in the central nervous system.
9. **CENTRAL SENSITIZATION** The experience of pain evoked by the excitation of non-nociceptive neurons or of nerve fibers that normally relay non-painful sensations to the spinal cord. This results when non-nociceptive afferent neurons act on a sensitized central nervous system (CNS).
10. **CHRONIC PAIN** Pain is usually considered chronic if it persists more than 3 to 6 months. For purposes of this guideline chronic pain is defined as pain that persists 2 to 4 months from the date of injury.
11. **DYSESTHESIA** An abnormal sensation described by the patient as unpleasant. As with paresthesia, dysesthesia may be spontaneous or evoked by maneuvers on physical examination.
12. **HYPERALGESIA** Refers to an exaggerated pain response from a usually painful stimulation.
13. **HYPERESTHESIA (POSITIVE SENSORY PHENOMENA)** Includes allodynia, hyperalgesia, and hyperpathia. Elicited by light touch, pin prick, cold, warm, vibration, joint position sensation or two-point discrimination, which is perceived as increased or more.
14. **HYPERPATHIA** Refers to an abnormally painful and exaggerated reaction to stimulus, especially to a repetitive stimulus.
15. **HYPOALGESIA** Diminished pain perception in response to a normally painful stimulus.
16. **HYPOESTHESIA (NEGATIVE SENSORY PHENOMENA)** Refers to a stimulus such as light touch, pin prick, cold, joint position sensation, two-point discrimination, or sensory neglect which is perceived as decreased.
17. **MALINGERING** Intentional feigning of illness or disability in order to escape work or gain compensation.
18. **MYOFASCIAL PAIN** A regional pain characterized by tender points in taut bands of muscle that produce pain in a characteristic reference zone.
19. **MYOFASCIAL TRIGGER POINT** A physical sign in a muscle which includes a) exquisite tenderness in a taut muscle band; and b) referred pain elicited by mechanical stimulation of the trigger point. The following findings may be associated with myofascial trigger points: 1) Local twitch or contraction of the taut band when the trigger point is mechanically stimulated; 2) Reproduction of the patient's spontaneous pain pattern when the trigger point is mechanically stimulated; 3) Weakness without muscle atrophy; 4) Restricted range of motion of the affected muscle; and 5) Autonomic dysfunction associated with the trigger point such as changes in skin or limb temperature.

20. **NEURALGIA** Pain in the distribution of a nerve or nerves.
21. **NEURITIS** Inflammation of a nerve or nerves.
22. **NEUROGENIC PAIN** Pain initiated or caused by a primary lesion, dysfunction, or transitory perturbation in the peripheral or central nervous system.
23. **NEUROPATHIC PAIN** Pain due to an injured or dysfunctional central or peripheral nervous system.
24. **NEUROPATHY** A disturbance of function or pathological change in a nerve: in one nerve, mononeuropathy; in several nerves, mononeuropathy multiplex; if diffuse and bilateral, polyneuropathy.
25. **NOCICEPTOR** A receptor preferentially sensitive to a noxious stimulus or to a stimulus which would become noxious if prolonged.
26. **PAIN BEHAVIOR** The non-verbal actions (such as grimacing, groaning, limping, using visible pain relieving or support devices and requisition of pain medications, among others) that are outward manifestations of pain, and through which a person may communicate that pain is being experienced.
27. **PAIN THRESHOLD** The smallest stimulus perceived by a subject as painful.
28. **PARESTHESIA** An abnormal sensation that is not described as pain. It can be either a spontaneous sensation (such as pins and needles) or a sensation evoked from non-painful or painful stimulation, such as light touch, thermal, or pinprick stimulus on physical examination.
29. **PERIPHERAL NEUROGENIC PAIN** Pain initiated or caused by a primary lesion or dysfunction or transitory perturbation in the peripheral nervous system.
30. **PERIPHERAL NEUROPATHIC PAIN** Pain initiated or caused by a primary lesion or dysfunction in the peripheral nervous system.
31. **PHYSICAL DEPENDENCE** A physiologic state of adaptation to a specific psychoactive substance characterized by the emergence of a withdrawal syndrome during abstinence, which may be relieved in total or in part by re-administration of the substance. Physical dependence is not necessarily associated with addiction.
32. **SUMMATION** Refers to abnormally painful sensation to a repeated stimulus although the actual stimulus remains constant. The patient describes the pain as growing and growing as the same intensity stimulus continues.
33. **SYMPATHETICALLY MAINTAINED PAIN (SMP)** A pain that is maintained by sympathetic efferent innervations or by circulating catecholamines.
34. **TENDER POINTS** Tenderness on palpation at a tendon insertion, muscle belly or over bone. Palpation should be done with the thumb or forefinger, applying pressure approximately equal to a force of 4 kilograms (blanching of the entire nail bed).
35. **TOLERANCE** State in which an increased dosage of a psychoactive substance is needed to produce a desired effect.

E. INITIAL EVALUATION & DIAGNOSTIC PROCEDURES

The PAC recommends the following diagnostic procedures be considered, at least initially, the responsibility of the workers' compensation carrier to ensure that an accurate diagnosis and treatment plan can be established. Standard procedures that should be utilized when initially diagnosing a work-related chronic pain complaint are listed below.

1. HISTORY AND PHYSICAL EXAMINATION (Hx & PE)

- a. **Medical History:** As in other fields of medicine, a thorough patient history is an important part of the evaluation of chronic pain. In taking such a history, factors influencing a patient's current status can be made clear and taken into account when planning diagnostic evaluation and treatment. One efficient manner in which to obtain historical information is by using a questionnaire. The questionnaire may be sent to the patient prior to the initial visit or administered at the time of the office visit. The following items are considered essential history:
- i. General Information – General items requested are name, sex, age, birth date, etc.
 - ii. Level of Education – The level of patients' education may influence response to treatment.
 - iii. Work History/Occupation – To include both impact of injury on job duties and impact on ability to perform job duties, work history, job description, mechanical requirements of the job, duration of employment, and job satisfaction.
 - iv. Current Employment Status
 - v. Marital Status
 - vi. Family Environment – Is the patient living in a nuclear family or with friends? Is there or were there, any family members with chronic illness or pain problems? Responses to such questions reveal the nature of the support system or the possibility of conditioning toward chronicity.
 - vii. Ethnic Origin – Ethnicity of the patient, including any existing language barriers, may influence the patient's perception of and response to pain. There is evidence that providers may under-treat patients of certain ethnic backgrounds due to underestimation of their pain.
 - viii. Belief System – The patient may refuse various treatments or may have an altered perception of his pain due to his particular beliefs.
 - ix. Activities of Daily Living – Pain has a multidimensional effect on the patient that is reflected in changes in usual daily vocational, social, recreational, and sexual activities.
 - x. Past and Present Psychological Problems
 - xi. History of Abuse – Physical, emotional, sexual.
 - xii. History of Disability in the Family
 - xiii. Sleep Disturbances
- b. **Pain History:** Characterization of the patient's pain and of the patient's response to pain is one of the key elements in treatment.
- i. Site of Pain – localization and distribution of the pain help determine the type of pain the patient has (i.e., central versus peripheral).
 - ii. Pain Drawing/Visual Analog Scale (VAS)
 - iii. Duration
 - iv. Place of onset
 - v. Pain Characteristics – time of pain occurrence as well as intensity, quality and radiation give clues to the diagnosis and potential treatment.

- vi. Response of Pain to Activity
- vii. Associated Symptoms – Does the patient have numbness or paresthesia, dysesthesia, weakness, bowel or bladder dysfunction, decreased temperature, increased sweating, cyanosis or edema? Is there local tenderness, allodynia, hyperesthesia, or hyperalgesia?

c. Medical Management History:

- i. Prior Treatment – What has been tried and which treatments have helped?
- ii. Prior Surgery – If the patient has had prior surgery specifically for the pain, he/she is less likely to have a positive outcome.
- iii. Medications – History of and current use of medications, including over the counter and herbal/dietary supplements to determine drug usage (or abuse) interactions and efficacy of treatment.
- iv. Review of Systems Check List – Determine if there is any interplay between the pain complaint and other medical conditions.
- v. Psychosocial Functioning - Determine if the following are present: current symptoms of depression or anxiety, evidence of stressors in the workplace or at home, and past history of psychological problems. It is recommended that patients diagnosed with Chronic Pain be referred for a psychosocial evaluation.
- vi. Diagnostic Tests – All previous radiological and laboratory investigations should be reviewed.
- vii. Pre-existing Conditions – Treatment of these conditions is appropriate when the pre-existing condition affects recovery from chronic pain.

d. Substance Use/Abuse:

- i. Alcohol use
- ii. Smoking History
- iii. History of drug use and abuse.
- iv. Caffeine or caffeine-containing beverages.

e. Other Factors Affecting Treatment Outcome:

- i. Compensation/Disability/Litigation
- ii. Treatment Expectations – What does the patient expect from treatment: complete relief of pain or reduction to a more tolerable level?

f. Physical Examination:

- i. Neurologic Evaluation – Cranial nerves, muscle tone and strength, atrophy, upper motor neuron signs, motor evaluation reflexes, and provocative neurological maneuvers.
- ii. Sensory Evaluation – A detailed sensory examination is crucial in evaluating a patient with chronic pain complaints. Quantitative sensory testing, such as Semmes-Weinstein, may be useful tools in determining sensory abnormalities. The examination should determine if the following sensory signs are present:

- A) Hyperalgesia

- B) Hyperpathia
 - C) Paresthesia
 - D) Dysesthesia
 - E) Mechanical Allodynia – static versus dynamic
 - F) Thermal Allodynia
 - G) Hypoesthesia
 - H) Hyperesthesia
 - I) Summation
- iii. Musculoskeletal Evaluation – Range of motion, segmental mobility, musculoskeletal provocative maneuvers, palpation, observation, and functional activities. All joints, muscles, ligaments, and tendons should be examined for swelling, laxity, and tenderness. A portion of the musculoskeletal evaluation is the myofascial examination. The myofascial examination includes palpating soft tissues for evidence of tightness and trigger points.
- iv. Evaluation of Nonphysiologic Findings
- A) Waddell's nonorganic findings including: a) superficial or nonorganic tenderness; b) pseudo maneuvers; c) discrepant straight leg raise; d) nonanatomic sensory and/or motor examination; and e) overreaction: collapsing, tremor, pain behavior, muscle tension.
 - B) Variabilities on formal exam including variable sensory exam, inconsistent tenderness, and/or swelling secondary to extrinsic sources.
 - C) Inconsistencies between formal exam and observed abilities of range of motion, motor strength, gait and cognitive/emotional state.
 - D) Observation of consistencies between pain behavior, affect and verbal pain rating, and affect and physical re-examination.

2. **PERSONALITY/PSYCHOSOCIAL/PSYCHOLOGICAL EVALUATIONS** are generally accepted, well-established diagnostic procedures not only with selected use in acute pain problems, but also with more widespread use in subacute and chronic pain populations. Diagnostic evaluations should distinguish between conditions that are pre-existing, aggravated by the current injury or work related.

Psychosocial evaluations should determine if further psychosocial interventions are indicated for patients diagnosed with chronic pain. The interpretations of the evaluation should provide clinicians with a better understanding of the patient in their social environment, thus allowing for more effective rehabilitation. Psychosocial assessment requires consideration of variations in pain experience and expression because of factors such as gender, age, race, ethnicity, national origin, religion, sexual orientation, disability, language, or socioeconomic status.

Psychometric Testing is a valuable component of a consultation to assist the physician in making a more effective treatment plan. There is strong evidence that psychometric testing provides unique and useful information, and that the validity of such tests is comparable to the validity of medical tests.

All patients who are diagnosed as having chronic pain should be referred for a Psychosocial Evaluation as well as concomitant interdisciplinary rehabilitation treatment whenever appropriate.

- a. Qualifications:**
- i. A licensed psychologist with a PhD, PsyD, or EdD credentials, or a physician with psychiatric MD/DO credentials may perform initial evaluation and treatment. In addition, a Licensed Clinical Social worker (LCSW), or a Licensed Professional Counselor (LPC) may provide treatment. It is preferable that these professionals have education/training and experience in diagnosing and treating chronic pain disorders in injured workers.
 - ii. Psychometric tests may be administered and interpreted by a licensed psychologist with PhD, PsyD, or EdD credentials, a Licensed Professional Counselor (LPC) with appropriate credentialing, or a psychiatric physician with appropriate experience or training.
- b. Clinical Evaluation:** All chronic pain patients should have a clinical evaluation that addresses the following areas:
- i. History of Injury – The history of the injury should be reported in the patient's words or using similar terminology. Caution must be exercised when using translators.
 - A) Nature of injury
 - B) Psychosocial circumstances of the injury
 - C) Current symptomatic complaints
 - D) Extent of medical corroboration
 - E) Treatment received and results
 - F) Compliance with treatment
 - G) Coping strategies used, including perceived locus of control
 - H) Perception of medical system and employer
 - I) History of response to prescription medications
 - ii. Health History
 - A) Nature of injury
 - B) Medical history
 - C) Psychiatric history
 - D) History of alcohol or substance abuse
 - E) Activities of daily living
 - F) Mental status exam
 - G) Previous injuries, including disability, impairment, and compensation
 - iii. Psychosocial history
 - A) Childhood history, including abuse
 - B) Educational history
 - C) Family history, including disability
 - D) Marital history and other significant adulthood activities and events

- E) Legal history, including criminal and civil litigation
- F) Employment and military history
- G) Signs of pre-injury psychological dysfunction
- H) Current interpersonal relations, support, living situation
- I) Financial history
- iv. Psychological test results, if performed
- v. Danger to self or others.
- vi. Current psychiatric diagnosis consistent with the standards of the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders.
- vii. Pre-existing psychiatric conditions. Treatment of these conditions is appropriate when the pre-existing condition affects recovery from chronic pain.
- viii. Causality (to address medically probable cause and effect, distinguishing pre-existing psychological symptoms, traits and vulnerabilities from current symptoms).
- ix. Treatment recommendations with respect to specific goals, frequency, timeframes, and expected outcomes.

c. **Tests of Psychological Functioning:** Psychometric Testing is a valuable component of a consultation to assist the physician in making a more effective treatment plan. Psychometric testing is useful in the assessment of mental conditions, pain conditions, cognitive functioning, treatment planning, vocational planning, and evaluation of treatment effectiveness. There is no general agreement as to which standardized psychometric tests should be specifically recommended for psychological evaluations of chronic pain conditions. It is appropriate for the mental health provider to use their discretion and administer selective psychometric tests within their expertise and within standards of care in the community. Some of these tests are available in Spanish and other languages, and many are written at a 6th grade reading level. Examples of frequently used psychometric tests performed include, but are not limited to, the following.

- i. Comprehensive Inventories for Medical Patients
 - A) Battery for Health Improvement, 2nd Edition (BHI-2)

What it measures – Depression, anxiety and hostility; violent and suicidal ideation; borderline, dependency, chronic maladjustment, substance abuse, conflicts with work, family and physician, pain preoccupation, somatization, perception of functioning and others.

Benefits – When used as a part of a comprehensive evaluation, can contribute substantially to the understanding of psychosocial factors underlying pain reports, perceived disability, somatic preoccupation, and help to design interventions. Serial administrations can track changes in a broad range of variables during the course of treatment, and assess outcome.
 - B) Millon Behavioral Medical Diagnostic (MBMD)

What it Measures – Updated version of the Millon Behavioral Health Inventory (MBHI). Provides information on Coping Styles

(introversive, inhibited, dejected, cooperative, sociable, etc), Health Habits (smoking, drinking, eating, etc.), Psychiatric Indications (anxiety, depression, etc), stress moderators (Illness Apprehension vs. Illness Tolerance, etc), treatment prognostics (Interventional Fragility vs. Interventional Resilience, Medication Abuse vs. Medication Competence, etc) and other factors.

Benefits – When used as a part of a comprehensive evaluation, can contribute substantially to the understanding of psychosocial factors affecting medical patients. Understanding risk factors and patient personality type can help to optimize treatment protocols for a particular patient.

C) Pain Assessment Battery (PAB)

What it measures – Collection of four separate measures that are administered together. Emphasis on the assessment of pain, coping strategies, degree and frequency of distress, health-related behaviors, coping success, beliefs about pain, quality of pain experience, stress symptoms analysis, and others.

Benefits – When used as a part of a comprehensive evaluation, can contribute substantially to the understanding of patient stress, pain reports and pain coping strategies, and help to design interventions. Serial administrations can track changes in measured variables during the course of treatment, and assess outcome.

ii. Comprehensive Psychological Inventories

These tests are designed for detecting various psychiatric syndromes, but in general are more prone to false positive findings when administered to medical patients.

A) Millon Clinical Multiaxial Inventory, 3rd Edition (MCMI-III)

What it measures – Has scales based on DSM diagnostic criteria for affective, personality, and psychotic disorders and somatization.

Benefits – When used as a part of a comprehensive evaluation, can screen for a broad range of DSM diagnoses.

B) Minnesota Multiphasic Personality Inventory, 2nd Edition (MMPI-2)

What it measures – Original scale constructs, such as hysteria and psychesthesia are archaic but continue to be useful. Newer content scales include depression, anxiety, health concerns, bizarre mentation, social discomfort, low self-esteem, and almost 100 others.

Benefits – When used as a part of a comprehensive evaluation, measure a number of factors that have been associated with poor treatment outcome.

C) Personality Assessment Inventory (PAI)

What it measures – A good measure of general psychopathology. Measures depression, anxiety, somatic complaints, stress, alcohol

and drug use reports, mania, paranoia, schizophrenia, borderline, antisocial, and suicidal ideation and more than 30 others.

Benefits – When used as a part of a comprehensive evaluation, can contribute substantially to the identification of a wide variety of risk factors that could potentially affect the medical patient.

iii. Brief Multidimensional Screens for Medical Patients.

Treating providers, to assess a variety of psychological and medical conditions, including depression, pain, disability and others, may use brief instruments. These instruments may also be employed as repeated measures to track progress in treatment, or as one test in a more comprehensive evaluation. Brief instruments are valuable in that the test may be administered in the office setting and hand scored by the physician. Results of these tests should help providers distinguish which patients should be referred for a specific type of comprehensive evaluation.

A) Brief Battery for Health Improvement, 2nd Edition (BBHI-2)

What it measures – Depression, anxiety, somatization, pain, function, and defensiveness.

Benefits – Can identify patients needing treatment for depression and anxiety, and identify patients prone to somatization, pain magnification and self-perception of disability. Can compare the level of factors above to other pain patients and community members. Serial administrations can track changes in measured variables during the course of treatment, and assess outcome.

B) Multidimensional Pain Inventory (MPI)

What it measures – Interference, support, pain severity, life-control, affective distress, response of significant other to pain, and self-perception of disability at home and work, and in social and other activities of daily living.

Benefits – Can identify patients with high levels of disability perceptions, affective distress, or those prone to pain magnification. Serial administrations can track changes in measured variables during the course of treatment, and assess outcome.

C) Pain Patient Profile (P3)

What it measures – Assesses depression, anxiety, and somatization.

Benefits – Can identify patients needing treatment for depression and anxiety, as well as identify patients prone to somatization. Can compare the level of depression, anxiety and somatization to other pain patients and community members. Serial administrations can track changes in measured variables during the course of treatment, and assess outcome.

D) SF-36®

What it measures – A survey of general health well-being and functional states.

Benefits – Assesses a broad spectrum of patient disability reports. Serial administrations could be used to track patient perceived

functional changes during the course of treatment, and assess outcome.

E) Sickness Impact Profile (SIP)

What it measures – Perceived disability in the areas of sleep, eating, home management, recreation, mobility, body care, social interaction, emotional behavior, and communication.

Benefits – Assesses a broad spectrum of patient disability reports. Serial administrations could be used to track patient perceived functional changes during the course of treatment, and assess outcome.

F) McGill Pain Questionnaire (MPQ)

What it measures – Cognitive, emotional and sensory aspects of pain.

Benefits – Can identify patients prone to pain magnification. Repeated administrations can track progress in treatment for pain.

G) McGill Pain Questionnaire – Short Form (MPQ-SF)

What it measures – Emotional and sensory aspects of pain.

Benefits – Can identify patients prone to pain magnification. Repeated administrations can track progress in treatment for pain.

H) Oswestry Disability Questionnaire

What it measures – Disability secondary to low back pain.

Benefits – Can measure patients' self-perceptions of disability. Serial administrations could be used to track changes in self-perceptions of functional ability during the course of treatment, and assess outcome.

I) Visual Analog Scales (VAS)

What it measures – Graphical measure of patient's pain report.

Benefits – Quantifies the patients' pain report. Serial administrations could be used to track changes in pain reports during the course of treatment and assess outcome.

iv. Brief Multidimensional Screens for Psychiatric Patients

These tests are designed for detecting various psychiatric syndromes, but in general are more prone to false positive findings when administered to medical patients.

A) Brief Symptom Inventory

What it measures: Somatization, obsessive-compulsive, depression, anxiety, phobic anxiety, hostility, paranoia, psychoticism, and interpersonal sensitivity.

Benefits: Can identify patients needing treatment for depression and anxiety, as well as identify patients prone to somatization. Can compare the level of depression, anxiety, and somatization to community members. Serial administrations could be used to track

changes in measured variables during the course of treatment, and assess outcome.

B) Brief Symptom Inventory – 18 (BSI-18)

What it Measures: Depression, anxiety, somatization.

Benefits: Can identify patients needing treatment for depression and anxiety, as well as identify patients prone to somatization. Can compare the level of depression, anxiety, and somatization to community members. Serial administrations could be used to track patient perceived functional changes during the course of treatment, and assess outcome.

C) Symptom Check List 90 (SCL 90)

What it measures: Somatization, obsessive-compulsive, depression, anxiety, phobic anxiety, hostility, paranoia, psychoticism, and interpersonal sensitivity.

Benefits: Can identify patients needing treatment for depression and anxiety, as well as identify patients prone to somatization. Can compare the level of depression, anxiety and somatization to community members. Serial administrations could be used to track changes in measured variables during the course of treatment, and assess outcome.

v. Brief Specialized Psychiatric Screening Measures

A) Beck Depression Inventory (BDI)

What it measures: Depression

Benefits: Can identify patients needing referral for further assessment and treatment for depression and anxiety, as well as identify patients prone to somatization. Repeated administrations can track progress in treatment for depression, anxiety, and somatic preoccupation.

B) Post Traumatic Stress Diagnostic Scale (PDS)

What it Measures: Post Traumatic Stress Disorder (PTSD)

Benefits: Helps confirm suspected PTSD diagnosis. Repeated administrations can track treatment progress of PTSD patients.

C) Center of Epidemiologic Studies – Depression Questionnaire

What it measures: Depression

Benefits: Brief self-administered screening test. Requires professional evaluation to verify diagnosis.

D) Brief Patient Health Questionnaire from PRIME - MD

What it measures: Depression, panic disorder

Benefits: Brief self-administered screening test. Requires professional evaluation to verify diagnosis.

E) Zung Questionnaire

What it measures: Depression

Benefits: Brief self-administered screening test. Requires professional evaluation to verify diagnosis.

3. **DIAGNOSTIC STUDIES** Imaging of the spine and/or extremities is a generally accepted, well-established, and widely used diagnostic procedure when specific indications, based on history and physical examination, are present. Physicians should refer to individual treatment guidelines for specific information about specific testing procedures.
 - a. Radiographic Imaging, MRI, CT, bone scan, radiography, and other special imaging studies may provide useful information for many musculoskeletal disorders causing chronic pain.
 - b. Electrodiagnostic studies may be useful in the evaluation of patients with suspected myopathic or neuropathic disease and may include Nerve Conduction Studies (NCS), Standard Needle Electromyography, or Somatosensory Evoked Potential (SSEP). The evaluation of electrical studies is difficult and should be relegated to specialists who are well trained in the use of this diagnostic procedure.
 - c. Special Testing Procedures may be considered when attempting to confirm the current diagnosis or reveal alternative diagnosis. In doing so, other special tests may be performed at the discretion of the physician.
4. **LABORATORY TESTING** is generally accepted. Well-established and widely used procedures can provide useful diagnostic and monitoring information. They may be used when there is suspicion of systemic illness, infection, neoplasia, or underlying rheumatologic disorder, connective tissue disorder, or based on history and/or physical examination. Tests include, but are not limited to:
 - a. Complete Blood Count (CBC) with differential can detect infection, blood dyscrasias, and medication side effects;
 - b. Erythrocyte sedimentation rate, rheumatoid factor, antinuclear antigen (ANA), human leukocyte antigen (HLA), and C-reactive protein can be used to detect evidence of a rheumatologic, infection, or connective tissue disorder;
 - c. Thyroid, glucose and other tests to detect endocrine disorders;
 - d. Serum calcium, phosphorous, uric acid, alkaline phosphatase, and acid phosphatase can detect metabolic bone disease;
 - e. Urinalysis to detect bacteria (usually with culture and sensitivity), calcium, phosphorus, hydroxyproline, or hematuria;
 - f. Liver and kidney function may be performed for baseline testing and monitoring of medications; and
 - g. Toxicology Screen and/or Blood Alcohol Level if suspected drug or alcohol abuse.
5. **INJECTIONS-DIAGNOSTIC** are frequently employed in assessing the type of pain a patient may be having. They also aid in ascertaining possible mechanisms and origins of the pain as well as the site of the pain source. Some diagnostic injections have therapeutic properties that may be used to both diagnose and treat chronic pain. In those cases, refer to Section F.5, Non-Operative Treatment – Therapeutic Injections for specific information regarding these injections.

Description — generally accepted, well-established procedures. These injections may be useful for localizing the source of pain, and may have added therapeutic value when combined with injection of therapeutic medication(s). Each diagnostic injection has inherent risks, and risk versus benefit should always be evaluated when considering injection therapy. Since these procedures are invasive, less invasive or non-invasive procedures should be considered first. Selection of patients, choice of procedure, and localization of the level for injection

should be determined by clinical information indicating strong suspicion for pathologic condition(s) and the source of pain symptoms.

The interpretation of the test result is primarily based upon pain response; the diagnostic significance of the test result should be evaluated in conjunction with clinical information and the results of other diagnostic procedures. Injections with local anesthetics of differing duration are required to confirm a diagnosis. In some cases, injections at multiple levels may be required to accurately diagnose pain. Refer to Section F.5, Therapeutic Injections for information on specific injections.

Special Requirements for Diagnostic Injections — Since fluoroscopic, arthrographic and/or CT guidance during procedures is required to document technique and needle placement an experienced physician should perform the procedure. The subspecialty disciplines of the physicians may be varied, including, but not limited to: anesthesiology, radiology, surgery, or physiatry. The practitioner should have experience in ongoing injection training workshops provided by organizations such as the International Spinal Injection Society (ISIS) and be knowledgeable in radiation safety. In addition, practitioners should obtain fluoroscopy training and radiation safety credentialing from their Departments of Radiology, as applicable.

Complications — General complications of diagnostic injections may include transient neurapraxia, nerve injury, infection, headache, vasovagal effects, as well as epidural hematoma, permanent neurologic damage, dural perforation and CSF leakage, and spinal meningeal abscess. Severe complications of cervical injections are remote but can include spinal cord damage, quadriplegia, and/or death.

Contraindications — Absolute contraindications of diagnostic injections include: (a) bacterial infection – systemic or localized to region of injection, (b) bleeding diatheses, (c) hematological conditions, and (d) possible pregnancy. Relative contraindications of diagnostic injections may include: (a) allergy to contrast or shellfish, (b) poorly controlled Diabetes Mellitus or hypertension, and (c) aspirin/NSAIDs/antiplatelet therapy (drug may be held for 3 days or more, depending on the medication, prior to injection).

Specific Diagnostic Injections ¶ In general, relief should last for at least the duration of the local anesthetic used and give significant relief of pain. Refer to Section F.5, Therapeutic Injections for information on other specific therapeutic injections. The following injections are used primarily for diagnosis:

- a. **Medial Branch Blocks:** are primarily diagnostic, used to confirm the diagnosis of cervical facet pain. When used for diagnosis, two injections at different times with different duration of local anesthetic are recommended.
- b. **Intra-Articular Facet Injections:** are principally diagnostic yet some patients may obtain therapeutic response. If the patient demonstrates definite short-term but not long-term response, confirmatory medial branch blocks and possible medial branch neurotomy should be considered.
- c. **Atlanto-Axial and Atlanto-Occipital Injections:** are for diagnosis and treatment but do not lend themselves to denervation techniques owing to variable neuroanatomy. Injection of this articulation is complicated by the proximity of the vertebral artery. The vertebral artery may be tortuous at the level of the C1 joint. Inadvertent injection of the vertebral artery may cause respiratory arrest, seizure, stroke, or permanent neurological sequelae. Only practitioners skilled in these injections should perform them.
- d. **Sympathetic Injections:** are diagnostic injections that may be used in suspected cases of CRPS-I.

- e. **Peripheral Nerve Blocks:** are diagnostic injections that may be used for specific nerve injury or entrapment syndromes. Refer to Injections – Therapeutic for detailed information about their use.
6. **SPECIAL TESTS** are generally well-accepted tests and are performed as part of a skilled assessment of the patients' capacity to return to work, his/her strength capacities, and/or physical work demand classifications and tolerance.
- a. **Computer-Enhanced Evaluations:** Computer-enhanced evaluations may include isotonic, isometric, isokinetic and/or isoinertial measurement of movement, range of motion, endurance, or strength. Values obtained can include degrees of motion, torque forces, pressures, or resistance. Indications include determining validity of effort, effectiveness of treatment and demonstrated motivation. These evaluations should not be used alone to determine return to work restrictions.
- Frequency: One time for evaluation. Can monitor improvements in strength every 3 to 4 weeks up to a total of 6 evaluations.
- b. **Functional Capacity Evaluation (FCE):** is a comprehensive or modified evaluation of the various aspects of function as they relate to the worker's ability to return-to-work. This test may also be known as Physical Capacity Evaluation, Functional Capacity Assessment, and Work Capacity Evaluation. Areas such as endurance, lifting (dynamic and static), postural tolerance, specific range of motion, coordination and strength, worker habits, employability and financial status, as well as psychosocial aspects of competitive employment may be evaluated. Components of this evaluation may include: (a) musculoskeletal screen; (b) cardiovascular profile/aerobic capacity; (c) coordination; (d) lift/carrying analysis; (e) job-specific activity tolerance; (f) maximum voluntary effort; (g) pain assessment/psychological screening; (h) non-material and material handling activities; and (i) validity of effort and reproducibility. Standardized national guidelines (such as National Institute for Occupational Safety and Health (NIOSH)) should be used as the basis for FCE recommendations.
- Frequency: Can be used initially to determine baseline status. Additional evaluations can be performed to monitor and assess progress and aid in determining the endpoint for treatment.
- c. **Job Site Evaluation:** is a comprehensive analysis of the physical, mental, and sensory components of a specific job. The goal of the Job Site evaluation is to identify any job modification needed to ensure the safety of the employee upon return to work. These components may include, but are not limited to: (a) postural tolerance (static and dynamic); (b) aerobic requirements; (c) range of motion; (d) torque/force; (e) lifting/carrying; (f) cognitive demands; (g) social interactions; (h) visual perceptual; (i) environmental requirements of a job; (j) repetitiveness; and (k) essential functions of a job; and (l) ergonomic set up. Job descriptions provided by the employer are helpful but should not be used as a substitute for direct observation.
- Frequency: One time with additional visits as needed for follow-up per Job Site.
- d. **Vocational Assessment:** Once an authorized practitioner has reasonably determined and objectively documented that a patient will not be able to return to his/her former employment and can reasonably prognosticate final restrictions, implementation of a timely vocational assessment can be performed. The vocational assessment should provide valuable guidance in the determination of future rehabilitation program goals. It should clarify rehabilitation goals, which optimize both patient motivation and utilization of rehabilitation resources. If prognosis for return to former

occupation is determined to be poor, except in the most extenuating circumstances, vocational assessment should be implemented within 3 to 12 months post-injury. Declaration of Maximum Medical Improvement should not be delayed solely due to lack of attainment of a vocational assessment.

- Frequency: One time with additional visits as needed for follow-up
- e. **Work Tolerance Screening:** is a determination of an individual's tolerance for performing a specific job based on a job activity or task. It may include a test or procedure to specifically identify and quantify work-relevant cardiovascular, physical fitness and postural tolerance. It may also address ergonomic issues affecting the patient's return-to-work potential. May be used when a full FCE is not indicated.
- Frequency: One time for evaluation. May monitor improvements in strength every 3 to 4 weeks up to a total of 6 evaluations.

F. THERAPEUTIC PROCEDURES – NON-OPERATIVE

Non-operative therapeutic rehabilitation is applied to patients with chronic and complex problems of de-conditioning and functional disability. Treatment modalities may be utilized sequentially or concomitantly depending on chronicity and complexity of the problem, and treatment plans should always be based on a diagnosis utilizing appropriate diagnostic procedures.

Before initiation of any therapeutic procedure, the authorized treating physician, employer, and insurer must consider these important issues in the care of the injured worker:

- a. Patients undergoing therapeutic procedure(s) should be released or returned to modified or restricted duty during their rehabilitation at the earliest appropriate time. Refer to F.12, Return-to-Work in this section for detailed information.
- b. Reassessment of the patient's status in terms of functional improvement should be documented after each treatment. If patients are not responding within the recommended time periods, alternative treatment interventions, further diagnostic studies or consultations should be pursued. Continued treatment should be monitored using objective measures such as:
 - Return-to-work or maintaining work status
 - Fewer restrictions at work or performing activities of daily living.
 - Decrease in usage of medications
 - Measurable functional gains, such as increased range of motion or documented increase in strength.
- c. Clinicians should provide and document education to the patient. No treatment plan is complete without addressing issues of individual and/or group patient education as a means of facilitating self-management of symptoms.
- d. Psychological or psychosocial screening should be performed on all chronic pain patients.

The following procedures are listed in alphabetical order.

1. **ACUPUNCTURE** is an accepted and widely used procedure for the relief of pain and inflammation and there is some scientific evidence to support its use. Credentialed practitioners must perform acupuncture evaluations, with experience in evaluation and treatment of chronic pain patients. The exact mode of action is only partially understood. Western medicine studies suggest that acupuncture stimulates the nervous system at the level of the brain, promotes deep relaxation, and affects the release of neurotransmitters. Acupuncture is commonly used as an alternative or in addition to traditional Western

pharmaceuticals. It is commonly used when pain medication is reduced or not tolerated. It may be used as an adjunct to physical rehabilitation, surgical intervention, and/or as part of multidisciplinary treatment to hasten the return of functional activity. Acupuncture should be performed by licensed practitioners.

- a. **Acupuncture:** is the insertion and removal of filiform needles to stimulate acupoints (acupuncture points). Needles may be inserted, manipulated, and retained for a period of time. Acupuncture can be used to reduce pain, reduce inflammation, increase blood flow, increase range of motion, decrease the side effect of medication-induced nausea, promote relaxation in an anxious patient, and reduce muscle spasm.

Indications include joint pain, joint stiffness, soft tissue pain and inflammation, paresthesia, post-surgical pain relief, muscle spasm, and scar tissue pain.

- Time to produce effect: 3 to 6 treatments
- Frequency: 1 to 3 times per week
- Optimum duration: 1 to 2 months
- Maximum duration: 14 treatments

- b. **Acupuncture with Electrical Stimulation:** is the use of electrical current (micro-amperage or milli-amperage) on the needles at the acupuncture site. It is used to increase effectiveness of the needles by continuous stimulation of the acupoint. Physiological effects (depending on location and settings) can include endorphin release for pain relief, reduction of inflammation, increased blood circulation, analgesia through interruption of pain stimulus, and muscle relaxation.

It is indicated to treat chronic pain conditions, radiating pain along a nerve pathway, muscle spasm, inflammation, scar tissue pain, and pain located in multiple sites.

- Time to produce effect: 3 to 6 treatments
- Frequency: 1 to 3 times per week
- Optimum duration: 1 to 2 months
- Maximum duration: 14 treatments

- c. **Other Acupuncture Modalities:** Acupuncture treatment is based on individual patient needs and therefore treatment may include a combination of procedures to enhance treatment effect. Other procedures may include the use of heat, soft tissue manipulation/massage, and exercise. Refer to sections G.13 and 14, Active Therapy (Therapeutic Exercise) and Passive Therapy sections (Massage and Superficial Heat and Cold Therapy) for a description of these adjunctive acupuncture modalities.

- Time to produce effect: 3 to 6 treatments
- Frequency: 1 to 3 times per week
- Optimum duration: 1 to 2 months
- Maximum duration: 14 treatments

Any of the above acupuncture treatments may extend longer if objective functional gains can be documented or when symptomatic benefits facilitate progression in the patient's treatment program. Treatment beyond 14 treatments must be documented with respect to need and ability to facilitate positive symptomatic or functional gains. Such care should be re-evaluated and documented with each series of treatments.

2. **BIOFEEDBACK** is a generally well-accepted form of behavioral medicine that helps patients learn self-awareness and self-regulation skills for the purpose of gaining greater control of

their physiology. Stress-related psychophysiological reactions may arise as a reaction to organic pain and in some cases may cause pain. Electronic instrumentation is used to monitor the targeted physiology and then displayed or fed back to the patient visually, auditorially, or tactilely with coaching by a biofeedback specialist.

Indications for biofeedback include individuals who are suffering from musculoskeletal injury where muscle dysfunction or other physiological indicators of excessive or prolonged stress response affects and/or delays recovery. Other applications include training to improve self-management of pain, anxiety, panic, anger or emotional distress, narcotic withdrawal, insomnia/ sleep disturbance, and other central and autonomic nervous system imbalances. Biofeedback is often utilized for relaxation training. Mental health professionals may also utilize it as a component of psychotherapy, where biofeedback and other behavioral techniques are integrated with psychotherapeutic interventions. Biofeedback is often used in conjunction with physical therapy or medical treatment.

Recognized types of biofeedback include the following:

- a. **Electromyogram (EMG):** Used for self-management of pain and stress reactions involving muscle tension.
- b. **Skin Temperature:** Used for self-management of pain and stress reactions, especially vascular headaches.
- c. **Respiration Feedback (RFB):** Used for self-management of pain and stress reactions via breathing control.
- d. **Respiratory Sinus Arrhythmia (RSA):** Used for self-management of pain and stress reactions via synchronous control of heart rate and respiration. Respiratory sinus arrhythmia is a benign phenomena which consists of a small rise in heart rate during inhalation, and a corresponding decrease during exhalation. This phenomenon has been observed in meditators and athletes, and is thought to be a psychophysiological indicator of health.
- e. **Heart Rate Variability (HRV):** Used for self-management of stress via managing cardiac reactivity.
- f. **Electrodermal Response (EDR):** Used for self-management of stress involving palmar sweating or galvanic skin response.
- g. **Electroencephalograph (EEG, QEEG):** Used for self-management of various psychological states by controlling brainwaves.

The goal in biofeedback treatment is normalizing the physiology to the pre-injury status to the extent possible and involves transfer of learned skills to the workplace and daily life. Candidates for biofeedback therapy or training must be motivated to learn and practice biofeedback and self-regulation techniques. In the course of biofeedback treatment, patient stressors are discussed and self-management strategies are devised. If the patient has not been previously evaluated, a psychological evaluation should be performed prior to beginning biofeedback treatment for chronic pain. The psychological evaluation may reveal cognitive difficulties, belief system conflicts, somatic delusions, secondary gain issues, hypochondriasis, and possible biases in patient self-reports, which can affect biofeedback. Home practice of skills is often helpful for mastery and may be facilitated by the use of home training tapes.

Psychologists or psychiatrists, who provide psychophysiological therapy which integrates biofeedback with psychotherapy, should be either Biofeedback Certification Institute of America (BCIA) certified or practicing within the scope of their training. All other providers of Biofeedback for chronic pain patients must be BCIA certified and shall have their biofeedback treatment plan approved by the authorized treating psychologist or psychiatrist. Biofeedback treatment must be done in conjunction with the patient's psychosocial intervention. Biofeedback may also be provided by unlicensed health care providers, who

follow a set treatment and educational protocol. Such treatment may utilize standardized material or relaxation tapes.

- Time to produce effect: 3 to 4 sessions
- Frequency: 1 to 2 times per week
- Optimum duration: 6 to 8 sessions
- Maximum duration: 10 to 12 sessions. Treatment beyond 12 sessions must be documented with respect to need, expectation, and ability to facilitate positive symptomatic or functional gains.

3. **COMPLEMENTARY ALTERNATIVE MEDICINE (CAM)** is a term used to describe a broad range of treatment modalities, a number of which are generally accepted and supported by some scientific evidence, and others which still remain outside the generally accepted practice of conventional Western Medicine. In many of these approaches, there is attention given to the relationship between physical, emotional, and spiritual well-being. While CAM may be performed by a myriad of both licensed and non-licensed health practitioners with training in one or more forms of therapy, credentialed practitioners should be used when available or applicable.

Although CAM practices are diverse and too numerous to list, they can be generally classified into five domains:

- Alternative Medical Systems:** These are defined as medical practices that have developed their own systems of theory, diagnosis and treatment and have evolved independent of and usually prior to conventional Western Medicine. Some examples are Traditional Chinese Medicine, Ayurvedic Medicine, Homeopathy, and Naturopathy.
- Mind-Body Interventions:** These include practices such as hypnosis, meditation, bioenergetics, and prayer.
- Biological-based Practices:** These include herbal and dietary therapy as well as the use of nutritional supplements. To avoid potential drug interactions, supplements should be used in consultation with the authorized treating physician.
- Body-Based Therapy:** Included in this category are the practices of Yoga and Rolfing bodywork.
- Energy-Based Practices:** Energy-based practices include a wide range of modalities that support physical as well as spiritual and/or emotional healing. Some of the more well-known energy practices include Qi Gong, Tai Chi, Healing Touch and Reiki. Practices such as Qi Gong and Tai Chi are taught to the patient and are based on exercises the patient can practice independently at home. Other energy-based practices such as Healing Touch and Reiki involve a practitioner/patient relationship.

Methods used to evaluate chronic pain patients for participation in CAM will differ with various approaches and with the training and experience of individual practitioners. A patient may be referred for CAM therapy when the patient's cultural background, religious beliefs, or personal concepts of health suggest that an unconventional medical approach might assist in the patient's recovery or when the physician's experience and clinical judgment support a CAM approach. The patient must demonstrate a high degree of motivation to return to work and improve their functional activity level while participating in therapy. Other more traditional conservative treatments should generally be attempted before referral to CAM. Treatment with CAM requires prior authorization.

- Frequency: Per CAM therapy selected

- Optimum duration: Should be based upon the physician's clinical judgment and demonstration by the patient of positive symptomatic and functional gains. Practitioner provided CAM therapy is generally not recommended on a maintenance basis.

4. **DISTURBANCES OF SLEEP** are common in chronic pain. Although primary insomnia may accompany pain as an independent co-morbid condition, it more commonly occurs secondary to the pain condition itself. Exacerbations of pain often are accompanied by exacerbations of insomnia; the reverse can also occur. Sleep laboratory studies have shown disturbances of sleep architecture in pain patients. Loss of deep slow-wave sleep and increase in light sleep occur and sleep efficiency, the proportion of time in bed spent asleep, is decreased. These changes are associated with patient reports of non-restorative sleep.

Many chronic pain patients develop behavioral habits that exacerbate and maintain sleep disturbances. Excessive time in bed, irregular sleep routine, napping, low activity, and worrying in bed are all maladaptive responses that can arise in the absence of any psychopathology. There is some evidence that behavioral modification, such as patient education and group or individual counseling, can be effective in reversing the effects of insomnia. Behavioral modifications are easily implemented and can include:

- Maintaining a regular sleep schedule, retiring and rising at approximately the same time on weekdays and weekends.
- Avoiding daytime napping.
- Avoiding caffeinated beverages after lunchtime
- Making the bedroom quiet and comfortable, eliminating disruptive lights, sounds, television sets, and keeping a bedroom temperature of about 65 °F.
- Avoiding alcohol or nicotine within two hours of bedtime.
- Avoiding large meals within two hours of bedtime.
- Exercising vigorously during the day, but not within two hours of bedtime, since this may raise core temperature and activate the nervous system.
- Associating the bed with sleep and sexual activity only, using other parts of the home for television, reading and talking on the telephone.
- Leaving the bedroom when unable to sleep for more than 20 minutes, returning to the bedroom when ready to sleep again.

These modifications should be undertaken before sleeping medication is prescribed for long term use.

5. **INJECTIONS—THERAPEUTIC** Injections may be diagnostic, prognostic, or therapeutic. Diagnostic injections are frequently employed in assessing the type of pain a patient may be having. It also aids in ascertaining possible mechanisms and origins of the pain as well as the site of the pain source. Prognostic injection may be done, before administration of a neurolytic agent or subjecting such patient to a neurosurgical procedure, to ensure that benefits achieved with the prognostic nerve block or injection may exhibit a similar sensation that the patient may experience with a more permanent procedure. Therapeutic injections are employed after diagnostic blocks or injections have determined the nature and location of a pain syndrome.

When considering the use of injections in chronic pain management, the treating physician must carefully consider the inherent risks and benefits. First, it is understood that these injections are seldom meant to be "curative" but may have diagnostic or prognostic qualities and when used for therapeutic purposes they are employed in conjunction with other treatment modalities for maximum benefit.

Second, education of the patient should include the proposed goals of the injections, expected gains, risks or complications, and alternative treatment.

Lastly, reassessment of the patient's status in terms of functional improvement should be documented after each injection and/or series of injections. Any continued use of injections should be monitored using objective measures such as:

- i. Return-to-work or maintaining work status.
- ii. Fewer restrictions at work or performing activities of daily living
- iii. Decrease in usage of medications
- iv. Measurable functional gains, such as increased range of motion for documented increase in strength.

Visual analog scales (VAS) provide important subjective data but are not an appropriate measure of function.

The physician must be aware of the possible placebo effect as well as the long-term effects of injections related to the patient's physical and mental status. Strict adherence to contraindications, both absolute and relative, may prevent potential complications. Subjecting the patient to potential risks, i.e., needle trauma, infection, nerve injury, or systemic effects of local anesthetics and corticosteroids, must be considered before the patient consents to such procedures.

General Description – Therapeutic injections are generally accepted, well-established procedures. They may be used after initial conservative treatment, such as physical and occupational therapy, medication, manual therapy, exercise, acupuncture etc., has been undertaken. Therapeutic injections should be used only after pathology has been demonstrated. Injections are invasive procedures that can cause serious complications; thus clinical indications and contraindications should be closely adhered to. Cervical Injections are invasive procedures that can cause catastrophic complications. It is recommended that all patients participate in an appropriate exercise program that may include a functionally directed rehabilitation program.

Special Considerations – For all injections (excluding trigger point, botox and occipital or peripheral nerve blocks) fluoroscopic, arthrographic and/or CT guidance during procedures is required to document technique and needle placement, and should be performed by a physician experienced in the procedure. The subspecialty disciplines of the physicians may be varied, including, but not limited to: anesthesiology, radiology, surgery, or physiatry. The practitioner should participate in ongoing injection training workshops such as those sponsored by International Society for Injection Studies (ISIS) and be knowledgeable in radiation safety. In addition, practitioners should obtain fluoroscopy training and radiation safety credentialing from their Departments of Radiology, as applicable.

Complications – General complications of these spinal injections may include (a) transient neurapraxia, local pain, nerve injury, infection, headache, urinary retention and vasovagal effects; (b) epidural hematoma, permanent neurologic damage, dural perforation and cerebral spinal fluid (CSF) leakage, spinal meningeal abscess; and/or (c) suppression of the hypothalamic pituitary adrenal axis, which may be steroid dose dependent. Permanent paresis, anaphylaxis and arachnoiditis have been rarely reported with the use of epidural steroids. For cervical injections, severe complications are remote but can include spinal cord damage, quadriplegia, and/or death.

Contraindications – Absolute contraindications of therapeutic injections include: (a) bacterial infection – systemic or localized to region of injection, (b) bleeding diatheses, (c) hematological conditions, and (d) possible pregnancy. Relative contraindications of diagnostic injections may include: (a) allergy to contrast or shellfish, (b) poorly controlled

Diabetes Mellitus or hypertension, and (c) aspirin/NSAIDs/antiplatelet therapy (drug may be held for 3 days or more, depending on the medication, prior to injection).

Specific Therapeutic Injections – The following injections are considered to be reasonable treatment for patients with chronic pain. Other injections not listed may be beneficial. Please refer to specific treatment guidelines for indications, complications, and contraindications of each.

a. Epidural Steroid Spinal Injections:

Description – Epidural steroid injections (ESI) deliver corticosteroid into the epidural space. The purpose of ESI is to reduce pain and inflammation, restoring range of motion and thereby facilitating progress in more active treatment programs. ESI uses three approaches: transforaminal, translaminar (midline), and caudal. There is good evidence to support a preference for a transforaminal approach. The evidence also suggests that the transforaminal approach can deliver medication to the target tissue with few complications and is therefore used to identify the specific site of pathology. This is also the preferred approach for post-surgical patients.

Needle Placement – Spinal imaging is required for all transforaminal epidural steroid injections. Since injections performed without radiographic guidance result in an increased risk of incorrect needle placement, spinal imaging is recommended for caudal and translaminar injections if available within 30 miles of the patient's home. Contrast epidurograms allow one to verify the flow of medication into the epidural space.

Indications – There is some evidence that epidural steroid injections are effective for patients with radicular pain or radiculopathy (sensory or motor loss in a specific dermatome or myotome). Although there is no evidence regarding the effectiveness of ESI for non-radicular pain, it is a generally accepted intervention. Selected cases of vertebral compression fracture may be helped by ESI.

- Time to produce effect: Local anesthetic, approximately 30 minutes; corticosteroid, 48 to 72 hours for 80% of patients and 2 weeks for 20%.
- Frequency: One or more divided levels can be injected in one session. Whether injections are repeated depends upon the patient's response to the previous injection session. Subsequent injection sessions may occur after 1 to 2 weeks if patient response has been favorable. Injections can be repeated after a hiatus of three months if the patient has demonstrated functional gain and pain returns or worsens. If ESIs are repeated in the future, there should be increasing duration of relief and continued functional gain.
- Optimum: Usually 1 up to 3 injection(s) in a series, depending upon each patient's response and functional gain. These should be performed in a 3 to 9 week period of time.
- Maximum: Up to 3 to 4 series of injections may be done based upon the patient's response to pain and function. Patients should be reassessed for measurable functional improvement after each injection session. The time between series should not be less than 4 to 6 months.

b. Zygoapophyseal (Facet) Injection:

Description – Intra-articular or pericapsular injection of local anesthetic and corticosteroid. Medial branch nerve blocks may be diagnostic only. There is conflicting evidence to support a long-term therapeutic effect using facet injections.

Indications – Facet injections may be considered in those patients whose history and examination are suggestive of a facet pain generator. Lumbar facet injections are primarily of diagnostic value. The therapeutic value of facet injections provides short-term pain relief for patients to progress through a functionally directed rehabilitation program. These injections are useful when used in conjunction with Manipulation Under Joint Anesthesia (MUJA). Facet injections determine level(s) of lumbar facet involvement and the degree of pain coming from the posterior elements. Facet injections may help determine the best therapeutic exercise approach (i.e., lumbar stabilization vs. sacroiliac stabilization).

- Time to produce effect: Approximately 30 minutes for local anesthetic; 48 to 72 hours for corticosteroid.
- Optimum: Usually 1 up to 3 injection(s) in a series, depending upon each patient's response and functional gain. These should be performed in a 3 to 9 week period of time.
- Maximum: Up to 3 to 4 series of injections may be done based upon the patient's response to pain and function. Patients should be reassessed for measurable functional improvement after each injection session. The time between series should not be less than 4 to 6 months.

c. Selective Nerve Root Blocks (SNRB):

Description – Diagnostic and therapeutic blocks for radiculopathy. Therapeutic SNRB's serve as selective epidural with contrast flowing proximally into the epidural space. These are frequently useful in postoperative patients. The volume of medication used may be higher than with the diagnostic SNRB.

Indications – When used for diagnosis, small amounts of local anesthetic (with or without steroid) up to a total volume of 1.0 to 1.5 cc should be used to determine the level of nerve root irritation. The relief should last for at least the duration of the local anesthetic used and give significant relief of pain.

Needle Placement – Selective placement for the needle is documented by neurogram under fluoroscopic or CT imaging. The transforaminal approach is useful and safer in patients with spinal stenosis in the cervical or thoracic areas where an interlaminar ESI may be contraindicated.

- Time to produce effect: 30 minutes for local anesthetic; 48 to 72 hours for 80% of patients and 2 weeks for 20% of patient when cortisone is used.
- Optimum: Usually 1 up to 3 injection(s) in a series, depending upon each patient's response and functional gain. These should be performed in a 3 to 9 week period of time.
- Maximum: Up to 3 to 4 series of injections may be done based upon the patient's response to pain and function. Patients should be reassessed for measurable functional improvement after each injection session. The time between series should not be less than 4 to 6 months.

d. Trigger Point Injections:

Description – Trigger point injection consists of dry needling or injection of local anesthetic with or without corticosteroid into highly localized, extremely sensitive bands of skeletal muscle fibers that produce local and referred pain when activated. Medication is injected in the area of maximum tenderness. Injection efficacy can be enhanced if injections are immediately followed by myofascial therapeutic interventions, such as vapo-coolant spray and stretch, ischemic pressure massage (myotherapy), specific soft tissue mobilization and physical modalities. The effectiveness of trigger point injection is uncertain, in part due to the difficulty of demonstrating advantages of active medication over injection of saline. Needling alone may be responsible for some of the therapeutic response.

Indications – Trigger point injections may be used to relieve myofascial pain and facilitate active therapy and stretching of the affected areas. They are to be used as an adjunctive treatment in combination with other active treatment modalities. Trigger point injections should be utilized primarily for the purpose of facilitating functional progress. Patients should continue in an aggressive aerobic and stretching therapeutic exercise program as tolerated throughout the time period they are undergoing intensive myofascial interventions. Trigger point injections are indicated in those patients where well-circumscribed trigger points have been consistently observed, demonstrating a local twitch response characteristic radiation of pain pattern and local autonomic reaction, such as persistent hyperemia following palpation. Generally, these injections are not necessary unless consistently observed trigger points are not responding to specific, noninvasive, myofascial interventions within approximately a 4-week timeframe.

Complications – Potential but rare complications of trigger point injections include infection, pneumothorax, anaphylaxis, penetration of viscera, neurapraxia and neuropathy. If corticosteroids are injected in addition to local anesthetic, there is a risk of local myopathy developing. Severe pain on injection suggests the possibility of an intraneural injection, and the needle should be immediately repositioned.

- Time to produce effect: Local anesthetic 30 minutes; 24 to 48 hours for no anesthesia.
- Frequency: Weekly. Suggest no more than 4 injection sites per session per week to avoid significant post-injection soreness.
- Optimum duration: 4 sessions.
- Maximum duration: 8 weeks. Some patients may require 2 to 4 repetitions of trigger point injection series over a 1 to 2 year period.

e. Botulinum Toxin (Botox) Injection:

Description – Used to temporarily weaken or paralyze muscles. May reduce muscle pain in conditions associated with spasticity, dystonia, or other types of painful muscle spasm. Neutralizing antibodies develop in at least 4% of patients treated with botulinum toxin type A, rendering it ineffective. Several antigenic types of botulinum toxin have been described. Botulinum toxin type B, first approved by the Food and Drug Administration (FDA) in 2001, is similar pharmacologically to botulinum toxin type A, and there is good evidence of its efficacy in improving function in cervical dystonia (torticollis). It appears to be effective in patients who have become resistant to the type A toxin. The immune responses to botulinum toxins type A and B are not cross-reactive, allowing type B toxin to be used when type A action is blocked by antibody. Experimental work with healthy human volunteers suggests that muscle

paralysis from type B toxin is not as complete or as long lasting as that resulting from type A. The duration of treatment effect of botulinum toxin type B for cervical dystonia has been estimated to be 12 to 16 weeks. EMG needle guidance may permit more precise delivery of botulinum toxin to the target area.

Indications – To improve range of motion and reduce painful muscle spasm. May be useful in musculoskeletal conditions associated with muscle spasm or headaches. There should be evidence of limited range of motion prior to the injection. May be useful in central neurologic conditions that produce spasticity or dystonia (e.g., brain injury, spinal cord injury, or stroke).

Complications – Over-weakening of injected muscles, allergic reaction to medications. Rare systemic effects include flu-like syndrome, weakening of distant muscle. There is an increased risk of systemic effects in patients with motor neuropathy or disorders of the neuromuscular junction.

- Time to produce effect: 24 to 72 hours post injection with peak effect by 4 to 6 weeks.
- Frequency: No less than 3 months between re-administration.
- Optimum duration: 3 to 4 months.
- Maximum duration: Currently unknown. Repeat injections should be based upon functional improvement and therefore used sparingly in order to avoid development of antibodies that might render future injections ineffective.

f. Sacroiliac Joint Injection:

Description – Injection of local anesthetic under radiographic guidance, which may include corticosteroids in an intra-articular fashion into the sacroiliac joint. Long-term therapeutic effect has not yet been established. Indications – Primarily diagnostic to rule out sacroiliac joint dysfunction vs. other pain generators. Intra-articular injection can be of value in diagnosing the pain generator. There should be documented relief from previously painful maneuvers (e.g., Patrick's test) on post-injection physical exam. Once diagnosis has been documented by intrajoint injection, posterior ligament block may be as effective as intra-joint injection for therapeutic value unless the primary pain is coming from an anterior capsular pain generator. Therapeutic responses to these injections vary but sacroiliac joint blocks may facilitate functionally directed rehabilitation programs.

- Time to produce effect: Approximately 30 minutes for local anesthetic; 48 to 72 hours for corticosteroid.
- Optimum: Usually 1 to 3 injection(s) in a series, depending upon each patient's response and functional gain. These should be performed in a 3-9 week period of time.
- Maximum: Up to 3 to 4 series of injections may be done based upon the patient's response to pain and function. Patients should be reassessed for measurable functional improvement after each injection session. The time between series should not be less than 4 to 6 months.

g. Peripheral Nerve Blocks:

Description – These injections are principally diagnostic for specific nerve injury or entrapment syndromes, yet some patients may obtain therapeutic response. Injections may include local anesthetic or corticosteroid.

Indications – Painful neuropathy occurring in a peripheral nerve distribution and documented by clinical correlation or specific testing (i.e., EMG).

Needle Placement – The nerve is located by anatomy. If during insertion, the patient encounters pain, the needle must be repositioned. This procedure should be performed by those trained in regional anesthesia techniques. Knowledge of anatomy and use of local anesthetic must be adhered to in order to prevent severe complications.

- Time to produce effect: 30 minutes for local anesthetic; 48 to 72 hours for 80% of patients and 2 weeks for 20% of patient when cortisone is used.
- Frequency: Usually 1 to 3 injection(s) in a series, depending upon each patient's response and the nerve involved.
- Optimum/maximum: Repeat injections should only be considered based on functional improvement.

6. **INTERDISCIPLINARY REHABILITATION PROGRAMS** are the gold standard of treatment for individuals with chronic pain who have not responded to less intensive modes of treatment. In addition, there are current studies to support the use of pain programs. There is strong evidence that interdisciplinary programs improve function in chronic pain and moderate evidence that these programs decrease pain in these patients.

These programs should assess the impact of pain and suffering on the patient's medical, physical, psychological, social, and/or vocational functioning. In general, interdisciplinary programs deal with irreversible, painful musculoskeletal, neurological, and other chronic painful disorders and psychological issues, including drug dependence, high levels of stress and anxiety, failed surgery and pre-existing or latent psychopathology. The number of professions involved in the team in a chronic pain program may vary due to the complexity of the needs of the person served. The PAC recommends consideration of referral to an interdisciplinary program within 6 months post-injury in patients with delayed recovery unless surgical interventions or other medical complications intervene.

Chronic pain patients need to be treated as outpatients within a continuum of treatment intensity. Outpatient chronic pain programs are available with services provided by a coordinated interdisciplinary team within the same facility (formal) or as coordinated by the authorized treating physician (informal). Formal programs are able to provide coordinated, high intensity level of services and are recommended for most chronic pain patients who have received multiple therapies during acute management. Informal programs offer a lesser intensity of service and may be considered for patients who are currently employed, those who cannot attend all day programs, those with language barriers, or those living in areas not offering formal programs. Before treatment has been initiated, the patient, physician, and insurer should agree on treatment approach, methods, and goals. Generally the type of outpatient program needed will depend on the degree of impact the pain has had on the patient's medical, physical, psychological, social and/or vocational functioning.

When referring a patient for formal outpatient interdisciplinary pain rehabilitation or Work Hardening programs, the PAC recommends the programs be Commission on Accreditation of Rehabilitation Facilities (CARF) eligible and/or certified. CARF eligibility or certification ensures that programs meet specific care standards of design and efficacy.

Inpatient Pain Rehabilitation Programs are rarely needed but may be necessary for patients with any of the following conditions: (a) High risk for medical instability; (b) Moderate to severe impairment of physical/functional status; (c) Moderate to severe pain behaviors; (d) Moderate impairment of cognitive and/or emotional status; (e) Dependence on medications from which he or she needs to be withdrawn; and (f) The need for 24-hour supervised nursing.

Outpatient interdisciplinary pain programs, whether formal or informal, should be comprised of the following dimensions:

- a. **Communication:** To ensure positive functional outcomes, communication between the patient, insurer and all professionals involved must be coordinated and consistent. Any exchange of information must be provided to all professionals, including the patient. Care decisions would be communicated to all.
- b. **Documentation:** Through documentation by all professionals involved and/or discussions with the patient, it should be clear that functional goals are being actively pursued and measured on a regular basis to determine their achievement or need for modification.
- c. **Treatment Modalities:** Use of modalities may be necessary early in the process to facilitate compliance with and tolerance to therapeutic exercise, physical conditioning, and increasing functional activities. Active treatments should be emphasized over passive treatments. Active treatments should encourage self-coping skills and management of pain, which can be continued independently at home or at work. Treatments that can foster a sense of dependency by the patient on the caregiver should be avoided. Treatment length should be decided based upon observed functional improvement. For a complete list of Active and Passive Therapies, refer to the Sections F.13 & 14, of this guideline. All treatment timeframes may be extended based upon the patient's positive functional improvement.
- d. **Therapeutic Exercise Programs:** There is strong evidence that these programs, including aerobic conditioning and strengthening, are superior to treatment programs that do not include exercise. There is no sufficient evidence to support the recommendation of any particular exercise regimen over any other exercise regimen. A therapeutic exercise program should be initiated at the start of any treatment rehabilitation. Such programs should emphasize education, independence, and the importance of an on-going exercise regime.
- e. **Return-to-work:** The authorized treating physician should continually evaluate the patient for their potential to return to work. When return-to-work is an option, it may be appropriate to implement a Work Hardening Program (as described in this section). For patients currently employed, efforts should be aimed at keeping them employed. For more specific information regarding return-to-work, refer to the Return-to-work section in this guideline.
- f. **Patient Education:** Patients with pain need to re-establish a healthy balance in lifestyle. All providers should educate patients on how to overcome barriers to resuming daily activity, including pain management, decreased energy levels, financial constraints, decreased physical ability, and change in family dynamics.
- g. **Psychosocial Evaluation and Treatment:** Psychosocial evaluation should be initiated, if not previously done. Providers of care should have a thorough understanding of the patient's personality profile; especially if dependency issues are involved. Psychosocial treatment may enhance the patient's ability to participate in pain treatment rehabilitation, manage stress, and increase their problem-solving and self-management skills.
- h. **Vocational Assistance:** Vocational assistance can define future employment opportunities or assist patients in obtaining future employment. Refer to Return-to-work section for detailed information.

Interdisciplinary programs are characterized by a variety of disciplines that participate in the assessment, planning, and/or implementation of the treatment program. These programs are for patients with greater levels of perceived disability, dysfunction, de-conditioning and

psychological involvement. The following programs are listed in order of decreasing intensity.

a. Formal Rehabilitation Programs:

- i. Interdisciplinary Pain Rehabilitation: An Interdisciplinary Pain Rehabilitation Program provides outcomes-focused, coordinated, goal-oriented interdisciplinary team services to measure and improve the functioning of persons with pain and encourage their appropriate use of health care systems and services. The program can benefit persons who have limitations that interfere with their physical, psychological, social, and/or vocational functioning. The program shares information about the scope of the services and the outcomes achieved with patients, authorized providers, and insurers.

The interdisciplinary team maintains consistent integration and communication to ensure that all interdisciplinary team members are aware of the plan of care for the patient, are exchanging information, and implement the plan of care. The team members make interdisciplinary team decisions with the patient and then ensure that decisions are communicated to the entire care team.

The medical director of the pain program should be board certified in his or her specialty area, have at least two years full-time experience in an interdisciplinary pain rehabilitation program, and ideally be board certified in pain management. Individuals who assist in the accomplishment of functional, physical, psychological, social and vocational goals must include, at the least, a medical director, pain physician(s), psychologist, Biofeedback Therapist, Occupational Therapist, Physical Therapist, and Registered Nurse. Other disciplines on the team may include, but are not limited to, case manager, exercise physiologist, psychiatrist, and/or nutritionist.

- Time to produce effect: 3 to 4 weeks
- Frequency: No less than 5 hours/day, 5 days/week
- Optimum duration: 3 to 4 weeks 5 times a week, followed by 6 to 9 weeks of follow-up 1 to 3 times a week.
- Maximum duration: 4 months, including follow-up. Periodic review and monitoring thereafter on an as needed basis, is founded upon the documented maintenance of functional gains.

- ii. Work Hardening is an interdisciplinary program addressing a patient's employability and return-to-work. It includes a progressive increase in the number of hours per day that a patient completes work simulation tasks until the patient can tolerate a full workday. A full workday is case specific and is defined by the previous employment of the patient. This is accomplished by addressing the medical, psychological, behavioral, physical, functional, and vocational components of employability and return-to-work.

The interdisciplinary team should, at a minimum, be comprised of a qualified medical director who is board certified with documented training in occupational rehabilitation, team physicians having experience in occupational rehabilitation, occupational therapy, physical therapy, case manager, and psychologist. As appropriate, the team may also include: chiropractor, RN, or vocational specialist.

- Time to produce effect: 2 weeks
- Frequency: 2 to 5 visits per week, up to 8 hours/day.
- Optimum duration: 2 to 4 weeks
- Maximum duration: 6 weeks. Participation in a program beyond six weeks must be documented with respect to need and the ability to facilitate positive symptomatic or functional gains.

- b. **Informal Rehabilitation Program:** A Coordinated Interdisciplinary Pain Rehabilitation Program is one in which the authorized treating physician coordinates all aspects of care. This type of program is similar to the formal programs in that it is goal oriented and provides interdisciplinary rehabilitation services to manage the needs of the patient in the following areas: (a) functional, (b) medical, (c) physical, (d) psychological, (e) social, and (f) vocational.

This program is different from a formal program in that it involves lesser frequency and intensity of services/treatment. Informal rehabilitation is geared toward those patients who do not need the intensity of service offered in a formal program or who cannot attend an all-day program due to employment, daycare, language or other barriers.

Patients should be referred to professionals experienced in outpatient treatment of chronic pain. The PAC recommends the authorized treating physician consult with physicians experienced in the treatment of chronic pain to develop the plan of care.

- Time to produce effect: 3 to 8 weeks
- Frequency: 2 to 6 hours per day, 2 to 5 days each week.
- Optimum duration: 6 to 12 weeks, including follow-up.
- Maximum duration: 4 months, including follow-up. Periodic review and monitoring thereafter on an as needed basis, is founded upon the documented maintenance of functional gains.

7. **MEDICATIONS** There is no single formula for pharmacological treatment of patients with chronic nonmalignant pain. A thorough medication history, including use of alternative and over the counter medications, should be performed at the time of the initial visit and updated periodically. Appropriate application of pharmacological agents depends on the patient's age, past history (including history of substance abuse), drug allergies and the nature of all medical problems. It is incumbent upon the physician to thoroughly understand pharmacological principles when dealing with the different drug families and their respective side effects, bioavailability profiles, and primary reason for each medication's usage.

Control of chronic non-malignant pain is expected to involve the use of medication. Strategies for pharmacological control of pain cannot be precisely specified in advance. Rather, drug treatment requires close monitoring of the patient's response to therapy, flexibility on the part of the prescriber and a willingness to change treatment when circumstances change. Many of the drugs discussed in the medication section were licensed for indications other than analgesia, but are effective in the control of many types of chronic pain. Consensus regarding the use of opioids has generally been reached in the field of cancer pain, where nociceptive mechanisms are generally identifiable, expected survival may be short, and symptomatic relief is emphasized more than functional outcomes. In injured workers, by contrast, central and neuropathic mechanisms frequently overshadow nociceptive processes, expected survival is relatively long, and return to a high level of function is a major goal of treatment. Approaches to pain, which were developed in the context of malignant pain, therefore may not be transferable to chronic non-malignant pain.

All medications should be given an appropriate trial in order to test for therapeutic effect. Trials of medication requiring specific therapeutic drug levels may take several months to achieve, depending upon the half-life of the drug. It is recommended that patients with chronic nonmalignant pain be maintained on drugs that have the least serious side effects. For example, patients need to be tried or continued on acetaminophen and/or antidepressant medications whenever feasible as part of their overall treatment for chronic pain. It is recommended that use of opioid analgesic and sedative hypnotic medications in chronic pain patients be used in a very limited manner, with total elimination desirable whenever clinically feasible.

The preceding principles do not apply to chronic headache patients. These patients should be referred to a physician specializing in the diagnosis and treatment of headache and facial pain.

For the clinician to interpret the following material, it should be noted that: (1) drug profiles listed are not complete; (2) dosing of drugs will depend upon the specific drug, especially for off-label use; and (3) not all drugs within each class are listed, and other drugs within the class may be appropriate. Clinicians should refer to informational texts or consult a pharmacist before prescribing unfamiliar medications or when there is a concern for drug interactions.

The following drug classes are listed in alphabetical order, not in order of suggested use.

a. **Alpha-Acting Agents:** Noradrenergic pain-modulating systems are present in the central nervous system, and the alpha-2 adrenergic receptor may be involved in the functioning of these pathways. Alpha-2 agonists may act by stimulating receptors in the substantia gelatinosa of the dorsal horn of the spinal cord, inhibiting the transmission of nociceptive signals. Spasticity may be reduced by presynaptic inhibition of motor neurons. Given limited experience with their use, they cannot be considered first-line analgesics, but a trial of their use may be warranted in many cases of refractory pain.

i. Clonidine (Catapres)

- A) Description – Central alpha 2 agonist.
- B) Indications – Sympathetically mediated pain, treatment of withdrawal from opioids.
- C) Major Contraindications – Severe coronary insufficiency, renal impairment.
- D) Dosing and Time to Therapeutic Effect – Increase dosage weekly to therapeutic effect.
- E) Major Side Effects – Sedation, orthostatic hypotension, sexual dysfunction, thrombocytopenia, weight gain, agitation, rebound hypertension with cessation.
- F) Drug Interactions – Beta adrenergics, tricyclic antidepressants.
- G) Recommended Laboratory Monitoring – Renal function.

ii. Tizanidine (Zanaflex)

- A) Description – Alpha 2 adrenergic agonist.
- B) Indications – Spasticity, musculoskeletal disorders.
- C) Major Contraindications – Hepatic disease.
- D) Dosing and Time to Therapeutic Effect – As needed (PRN) or titrate to effective dose.

- E) Major Side Effects – Hypotension, sedation, hepatotoxicity, hallucinations and psychosis, dry mouth.
- F) Drug Interactions – Alcohol, oral contraceptives, and acetaminophen. Use with caution with other alpha agonists.
- G) Recommended Laboratory Monitoring – Hepatic and renal function.

b. Anticonvulsants: Although the mechanism of action of anticonvulsant drugs in neuropathic pain states remains to be fully defined, they appear to act as nonselective sodium channel blocking agents. A large variety of sodium channels are present in nervous tissue, and some of these are important mediators of nociception, as they are found primarily in unmyelinated fibers and their density increases following nerve injury. While the pharmacodynamic effects of the various anticonvulsant drugs are similar, the pharmacokinetic effects differ significantly. Carbamazepine has important effects as an inducer of hepatic enzymes and may influence the metabolism of other drugs enough to present problems in patients taking more than one drug. Gabapentin and oxcarbazepine, by contrast, are relatively non-significant enzyme inducers, creating fewer drug interactions. Because anticonvulsant drugs may have more problematic side-effect profiles, their use should usually be deferred until antidepressant drugs have failed to relieve pain.

i. Gabapentin (Neurontin)

- A) Description – Structurally related to gamma-aminobutyric acid (GABA) but does not interact with GABA receptors.
- B) Indications – Neuropathic pain.
- C) Relative Contraindications – Renal insufficiency.
- D) Dosing and Time to Therapeutic Effect – Dosage may be increased over several days.
- E) Major Side Effects – Confusion, sedation.
- F) Drug Interactions – Oral contraceptives, cimetidine, antacids.
- G) Recommended Laboratory Monitoring – Renal function.

ii. Oxcarbazepine (Trileptal)

- A) Description – The mechanism of action resembles that of carbamazepine, but has an advantage in being a less potent inducer of hepatic enzymes. Controlled trials of its effectiveness in chronic pain are lacking.
- B) Indications – Neuropathic pain.
- C) Major Contraindications – Hypersensitivity to carbamazepine.
- D) Dosing and Time to Therapeutic Effect – Dosage may be increased weekly.
- E) Major Side Effects – Sedation, visual disturbances.
- F) Drug Interactions – Oral contraceptives, valproic acid, carbamazepine.
- G) Recommended Laboratory Monitoring – Drug levels, renal and hepatic function.

iii. Carbamazepine (Tegretol)

- A) Description – Anticonvulsant structurally related to tricyclic antidepressants.
- B) Indications – Trigeminal neuralgia and other neuropathic pain.
- C) Major Contraindications – Bone marrow depression, hypersensitivity to tricyclic antidepressants.
- D) Dosing and Time to Therapeutic Effect – Dosage levels typically exceed those utilized for seizure prophylaxis. Titrate to desired effect.
- E) Major Side Effects – Aplastic anemia, agranulocytosis, nausea, diplopia, pulmonary sensitivity, inappropriate antidiuretic hormone, dysphoria, disequilibrium.
- F) Drug Interactions – Many interactions have been reported including, but not limited to, macrolide antibiotics, valproic acid, SSRI's, propoxyphene, doxycycline, bupropion, anticoagulants, and acetaminophen.
- G) Recommended Laboratory Monitoring – Drug levels, renal and hepatic function, complete blood count.

c. **Antidepressants:** are classified into a number of categories based on their chemical structure and their effects on neurotransmitter systems. Their effects on depression are attributed to their actions on disposition of norepinephrine and serotonin at the level of the synapse; although these synaptic actions are immediate, the symptomatic response in depression is delayed by several weeks. When used for chronic pain, the effects may in part arise from treatment of underlying depression, but may also involve additional neuromodulatory effects on endogenous opioid systems, raising pain thresholds at the level of the spinal cord.

Pain responses may occur at lower drug doses with shorter times to symptomatic response than are observed when the same compounds are used in the treatment of mood disorders. Neuropathic pain, diabetic neuropathy, post-herpetic neuralgia, and cancer-related pain may respond to antidepressant doses low enough to avoid adverse effects that often complicate the treatment of depression.

- i. Tricyclics (e.g., amitriptyline [Elavil], nortriptyline [Pamelor, Aventyl], doxepin [Sinequan, Adapin])
 - A) Description – Serotonergics, typically tricyclic antidepressants (TCAs), are utilized for their serotonergic properties as increasing CNS serotonergic tone can help decrease pain perception in non-antidepressant dosages. Amitriptyline is known for its ability to repair Stage 4 sleep architecture, a frequent problem found in chronic pain patients and to treat depression, frequently associated with chronic pain.
 - B) Indications – Chronic musculoskeletal and/or neuropathic pain, insomnia. Second line drug treatment for depression.
 - C) Major Contraindications – Cardiac disease or dysrhythmia, glaucoma, prostatic hypertrophy, seizures, suicide risk.
 - D) Dosing and Time to Therapeutic Effect – Varies by specific tricyclic. Low dosages are commonly used for chronic pain and/or insomnia.

- E) Major Side Effects – Anticholinergic side effects including, but not limited to, dry mouth, sedation, orthostatic hypotension, cardiac arrhythmia, weight gain.
 - F) Drug Interactions – Tramadol (may cause seizures), Clonidine, cimetidine, sympathomimetics, valproic acid, warfarin, carbamazepine, bupropion, anticholinergics, quinolones.
 - G) Recommended Laboratory Monitoring – Renal and hepatic function. EKG for those on high dosages or with cardiac risk.
- ii. Selective serotonin reuptake inhibitors (SSRIs) (e.g., citalopram [Celexa], fluoxetine [Prozac], paroxetine [Paxil], sertraline [Zoloft]).
- A) Description – SSRIs are characterized by the predominance of inhibition of serotonin reuptake at the pre-synaptic nerve terminal.
 - B) Indications – Depression, chronic pain with depression and/or anxiety. Less effective than tricyclic antidepressants for neuropathic pain.
 - C) Major Contraindications – Allergy to SSRIs.
 - D) Time to Produce Therapeutic Effect – 3 to 4 weeks.
 - E) Major Side Effects – Insomnia, gastrointestinal (GI) distress, sexual dysfunction.
 - F) Drug Interactions – Multiple drug interactions have been reported, including non-sedating antihistamine. May be used in combination with TCAs but therapeutic TCA levels (as used for depression) are known to increase when used in combination with SSRIs and may persist for at least 5 weeks after discontinuance. Tramadol should not be used with SSRIs due to potential for seizures.
 - G) Recommended Laboratory Monitoring – Renal and hepatic function.
- iii. Atypical Antidepressants/Other Agents
- A) Description – Venlafaxine, (Effexor), nefazadone (Serzone), trazodone (Deseryl), and mirtazapine (Remeron) share adjuvant analgesic effects with tricyclic antidepressants. They differ in their side effect and drug interaction profiles.
 - B) Indications – Venlafaxine is approved for generalized anxiety disorder, bupropion for smoking cessation.
 - C) Major Contraindications – Seizures, eating disorders.
 - D) Major Side Effects – Depends on the drug, but commonly include GI distress, drowsiness, sexual dysfunction less than other classes except trazadone, which may cause priapism. Hypertension (venlafaxine).
 - E) Drug Interactions – Drug specific. Prolongation of cardiac output (QT) interval with rare arrhythmias associated with nefazadone and non-sedating antihistamines.
 - F) Recommended Laboratory Monitoring – Drug specific.
- d. **Hypnotics and Sedatives:** Sedative and hypnotic drugs decrease activity, induce drowsiness, and moderate agitation. Many drugs produce these effects incidental to

their usual intended effects, similar to the side effects of many antihistamines and antidepressants. Due to the habit-forming potential of the benzodiazepines and other drugs found in this class, they are not routinely recommended but may be useful in some patients with chronic pain.

Most insomnia in chronic pain patients should be managed primarily through behavioral interventions with medications as secondary measures (refer to Section F.4, Disturbances of Sleep).

- i. Zaleplon (Sonata)
 - A) Description – A nonbenzodiazepine hypnotic.
 - B) Indications – Insomnia.
 - C) Dosing and Time to Therapeutic Effect – Time of onset is 30 to 60 minutes. Due to rapid elimination, may be taken as little as 4 hours before awakening.
 - D) Major Side Effects – Dizziness, dose-related amnesia.
 - E) Drug Interactions – Increases sedative effect of other central nervous system (CNS) depressant drugs. Use low dose if on cimetidine.
 - F) Recommended Laboratory Monitoring – Hepatic function.
- ii. Zolpidem (Ambien)
 - A) Description – A nonbenzodiazepine hypnotic, which does not appear to cause rebound insomnia. It has little respiratory depression and insignificant anxiolytic or muscle relaxant activity.
 - B) Indications – Short-term use for insomnia
 - C) Time to Therapeutic Effect – Onset of action is 30 to 60 minutes
 - D) Major Side Effects – Dizziness, dose-related amnesia.
 - E) Drug Interactions – Increases sedative effect of other CNS depressant drugs.
 - F) Recommended Laboratory Monitoring – Hepatic function.

e. **Skeletal Muscle Relaxants:** are most useful for acute musculoskeletal injury or exacerbation of injury. Chronic use of benzodiazepines is discouraged due to their habit-forming potential and due to seizure risk following abrupt withdrawal.

- i. Cyclobenzaprine (Flexeril)
 - A) Description – Structurally related to tricyclics.
 - B) Indications – Chronic pain associated with muscle spasm.
 - C) Major Contraindications – Cardiac dysrhythmias.
 - D) Dosing and Time to Therapeutic Effect – Variable, onset of action is 1 hour.
 - E) Major Side Effects – Sedation, anticholinergic, blurred vision.
 - F) Drug Interactions – Consider interactions similar to tricyclic antidepressants as listed under antidepressant class.

G) Recommended Laboratory Monitoring – Hepatic and renal function.

ii. Carisoprodol (Soma)

A) Description – Mode of action may be central; meprobamate is an active metabolite.

B) Indications – Chronic pain associated with muscle spasm.

C) Major Contraindications – Sensitivity to meprobamate, renal or hepatic disease.

D) Major Side Effects – Sedation, withdrawal symptoms, abuse potential.

E) Recommended Laboratory Monitoring – Renal and hepatic function.

iii. Metazalone (Skelaxin)

A) Description – Central acting muscle relaxant.

B) Indications – Muscle spasm.

C) Major Contraindications – Hepatic disease, pregnancy, and disposition to drug induced hemolytic anemia.

D) Dosing and Time to Therapeutic Effect – Onset of action 1 hour.

E) Recommended Laboratory Monitoring – Hepatic function.

f. **Opioids:** are the most powerful analgesics. Their use in acute pain and moderate to severe cancer pain is well accepted. Their use in chronic nonmalignant pain, however, is fraught with controversy and lack of scientific research.

Opioids include some of the oldest and most effective drugs used in the control of severe pain. The discovery of opioid receptors and their endogenous peptide ligands has led to an understanding of effects at the binding sites of these naturally occurring substances. Most of their analgesic effects have been attributed to their modification of activity in pain pathways within the central nervous system; however, it has become evident that they also are active in the peripheral nervous system. Activation of receptors on the peripheral terminals of primary afferent nerves can mediate antinociceptive effects, including inhibition of neuronal excitability and release of inflammatory peptides. Some of their undesirable effects on inhibiting gastrointestinal motility are peripherally mediated by receptors in the bowel wall.

The central nervous system actions of these drugs account for much of their analgesic effect and for many of their other actions, such as respiratory depression, drowsiness, mental clouding, reward effects, and habit formation. With respect to the latter, it is crucial to distinguish between three distinct phenomena: tolerance, dependence, and addiction.

- Tolerance refers to a state of adaptation in which exposure to a drug over time causes higher doses of that drug to be required in order to produce the same physiologic effect.
- Dependence refers to a set of disturbances in body homeostasis that leads to withdrawal symptoms, which can be produced with abrupt discontinuation, rapid reduction, decreasing blood levels, and/or by administration of an antagonist.

- Addiction is a primary, chronic, neurobiologic disease, with genetic, psychological, and environmental factors influencing its development and manifestations. It is a behavioral pattern of drug craving and seeking which leads to a preoccupation with drug procurement and use.

Tolerance and dependence are physiological phenomena, are expected with the continued administration of opioids, and should not deter physicians from their appropriate use. Before increasing the narcotic dose due to a presumption of physiologic tolerance, the physician should review other possible causes for the decline in analgesic effect. Consideration should be given to possible new psychologic stressors or an increase in the activity of the nociceptive pathways.

The use of opioids is well accepted in treating cancer pain, where nociceptive mechanisms are generally present due to ongoing tissue destruction, expected survival may be short, and symptomatic relief is emphasized more than functional outcomes. In chronic non-malignant pain, by contrast, tissue destruction has generally ceased, meaning that central and neuropathic mechanisms frequently overshadow nociceptive processes. Expected survival in chronic pain is relatively long and return to a high level of function is a major goal of treatment. Therefore, approaches to pain developed in the context of malignant pain may not be transferable to chronic non-malignant pain. Opioids are generally not the best choice of medication for controlling neuropathic pain. Tricyclics and anticonvulsants should be tried first.

In most cases, analgesic treatment should begin with acetaminophen, aspirin, and NSAIDs. While maximum efficacy is modest, they may reduce pain sufficiently to permit adequate function. When these drugs do not satisfactorily reduce pain, opioids for moderate to moderately severe pain may be added to (not substituted for) the less efficacious drugs.

Consultation or referral to a pain specialist should be considered when the pain persists but the underlying tissue pathology is minimal or absent and correlation between the original injury and the severity of impairment is not clear. Consider consultation if suffering and pain behaviors are present and the patient continues to request medication, or when standard treatment measures have not been successful or are not indicated.

- i. General Indications – There must be a clear understanding that opioids are to be used for a limited term in the first instance (see trial indications below), that their use is contingent upon certain obligations or goals being met by the patient, e.g., return-to-work, and the patient understands that there may be drug screening to ensure compliance.
- ii. Therapeutic Trial Indications – A therapeutic trial of opioids should not be employed unless the patient has begun or completed a full rehabilitation program. Once this criterion has been met, opioids would be indicated when a patient meets the following:
 - A) The failure of pain management alternatives, including active therapies, cognitive behavioral therapy, pain self-management techniques, and other appropriate medical techniques.
 - B) Physical and psychosocial assessment, performed by two specialists including the authorized treating physician and a specialist with expertise in chronic pain.
 - C) Informed, written, witnessed consent by the patient.

In addition, there should be documentation of sustained improvement of pain control and/or functional status, including return-to-work, with use of opioids. Frequent follow-up at least every 2 to 4 weeks may be necessary to titrate dosage and assess clinical efficacy.

- iii. On-Going, Long-Term Management – Actions should include:
 - A) Prescriptions from a single practitioner,
 - B) Ongoing review and documentation of pain relief, functional status, appropriate medication use, and side effects,
 - C) Ongoing effort to gain improvement of social and physical function as a result of pain relief,
 - D) Contract detailing reasons for termination of supply, with appropriate tapering of dose,
 - E) Use of random drug screening as deemed appropriate by the prescribing physician,
 - F) Use of more than two opioids: a long acting opioid for maintenance of pain relief and a short acting opioid for limited rescue use when pain exceeds the routine level. If more than two opioids are prescribed for long-term use, a second opinion from specialist who is Board Certified in Neurology, Physical Medicine and Rehabilitation, or Anesthesiology with recognized training and/or certification in pharmacological pain management is strongly recommended.
 - G) Use of acetaminophen-containing medications in patients with liver disease should be limited; and
 - H) Continuing review of overall situation with regard to nonopioid means of pain control.
 - I) Inpatient treatment in complex cases. Refer to Section F.6, Interdisciplinary Rehabilitation Programs, for detailed information on in-patient criteria.
- iv. Relative Contraindications – Extreme caution should be used in prescribing controlled substances for workers with one or more “relative contraindications”:
 - A) History of alcohol or other substance abuse, or a history of chronic, high-dose benzodiazepine use;
 - B) Off work for more than six months;
 - C) Severe personality disorder
- v. General Contraindications –
 - A) Active alcohol or other substance abuse.
 - B) Untreated mood or psychotic disorders (e.g., depression).
 - C) Decreased physical or mental function with continued opioid use.
 - D) Addictive behaviors. Warning signs include:
 - 1) Preoccupation with drugs;
 - 2) Refusal to participate in medication taper;

- 3) Reporting that nothing but a specific opioid works;
 - 4) Strong preference for short-acting over long-acting opioids;
 - 5) Use of multiple prescribers and pharmacies;
 - 6) Use of street drugs or other patients drugs;
 - 7) Not taking medications as prescribed;
 - 8) Loss of medications more than once; and/or
 - 9) Criminal behaviors to obtain drugs, i.e., forged prescriptions.
- vi. Dosing and Time to Therapeutic Effect – Oral route is the preferred route of analgesic administration because it is the most convenient and cost-effective method of administration. When patients cannot take medications orally, rectal and transdermal routes should be considered because they are also relatively noninvasive.
 - vii. Major Side Effects – There is great individual variation in susceptibility to opioid-induced side effects and clinicians should monitor for these potential side effects. Common initial side effects include nausea, vomiting, drowsiness, unsteadiness, and confusion. Occasional side effects include dry mouth, sweating, pruritus, hallucinations, and myoclonus. Rare side effects include respiratory depression and psychological dependence. Constipation and nausea/vomiting are common problems associated with long-term opioid administration and should be anticipated, treated prophylactically, and monitored constantly.
 - viii. Drug Interactions – Patients receiving opioid agonists should not be given a mixed agonist-antagonist (pentazocine [Talwin], butorphanol [Stadol]) because doing so may precipitate a withdrawal syndrome and increase pain.
 - ix. Recommended Laboratory Monitoring – Primary laboratory monitoring is recommended for acetaminophen/ aspirin/NSAIDs combinations (renal and liver function, blood dyscrasias). May perform urine and/or blood drug screen if suspect use of other narcotics or lack of compliance with full medication regimen.
 - x. Patient Physician Contracts – All patients on chronic opioids should have an informed, written, witnessed consent. The contract should discuss side effects of opioids, results of use in pregnancy, inability to refill lost or missing medication, withdrawal symptoms, requirement for drug testing, and necessity of tapering.
 - xi. Potentiating Agents – Some medications appear to potentiate the analgesic effects of opioids. Dextromethorphan is available as a nonopioid non-prescription antitussive agent in numerous cough and cold remedies. It antagonizes N-methyl-D-aspartate receptors involved in central sensitization of pain pathways. It may exert some morphine sparing effects in patients taking morphine, but its activity as an analgesic in neuropathic pain is likely to be weak. It is well tolerated in most patients. Because the patient profiles that might predict response to dextromethorphan are undefined, its use in chronic pain must be empirically tried on an individual basis. Diphenhydramine and hydroxyzine (Atarax, Vistaril) are antihistamines, which act at H1 receptors to alleviate allergic symptoms and produce somnolence. Diphenhydramine is a component of some non-prescription

sleeping preparations. Their use in potentiating the effects of analgesic drugs is not clearly defined, but it may be used empirically for this purpose.

- g. **Nonsteroidal Anti-Inflammatory Drugs:** There are several classes of NSAIDs and the response of the individual injured worker to a specific medication is unpredictable. For this reason a range of NSAIDs may be tried in each case with the most effective preparation being continued. COX-2 inhibitors differ in adverse side effect profiles from the traditional NSAIDs. The major advantage of COX-2 inhibitors over traditional NSAIDs is that they have less gastrointestinal toxicity and do not inhibit platelet aggregation.

i. Non-Selective NSAIDs

- A) Description – Inhibit cyclooxygenase (COX) enzymes, which are involved in several inflammatory processes.
- B) Indications – Pain and inflammation.
- C) Major Contraindications – Renal and liver failure.
- D) Major Side Effects – Serious GI toxicity, such as bleeding, perforation, and ulceration can occur at any time, with or without warning symptoms. Renal insufficiency. Anaphylactic reactions, interference with platelet function, fluid retention and edema has been observed in some patients. Exacerbation of hypertension.
- E) Drug Interactions – Varies with medication. Should not be used in aspirin-sensitive patients.
- F) Recommended Laboratory Monitoring – Renal function.

ii. Selective Cyclooxygenase-2 (COX-2) Inhibitors

- A) Description – Inhibit the COX-2 enzyme, allowing the COX-1 enzyme to continue its protective effects on the gastric mucosa. Differ in adverse side effect profiles from non-selective NSAIDs in that they have less GI toxicity and no platelet effect.
- B) Indications – Recommended in select patients whom traditional NSAIDs are not tolerated or in patients at high risk of peptic ulcer. Celecoxib is FDA approved for osteoarthritis and rheumatoid arthritis. Rofecoxib is FDA approved for acute pain and osteoarthritis.
- C) Major Contraindications – Celecoxib is contraindicated in sulfonamide allergic patients.
- D) Major Side Effects – COX-2 inhibitors can worsen renal function in patients with renal insufficiency.
- E) Drug Interactions – Varies with medication.
- F) Recommended Laboratory Monitoring – Renal function

h. **Topical Drug Delivery:**

- i. Description – Topical medications may be an alternative treatment for localized musculoskeletal disorders and is an acceptable form of treatment in selected patients although there is no scientific evidence to support its use in chronic pain.

- ii. Indications – Generalized musculoskeletal or joint pain. Patient selection must be rigorous to select those patients with the highest probability of compliance.
- iii. Dosing and Time to Therapeutic Effect – It is necessary that all topical agents be used with strict instructions for application as well as maximum number of applications per day to obtain the desired benefit and avoid potential toxicity.
- iv. Side Effects – Localized skin reactions may occur, depending on drug.

- i. **Herbal/Dietary Supplements:** Botanical preparations have been used for centuries to remedy human illnesses, but only recently have been subjected to systematic study. Many medications currently manufactured by pharmaceutical firms are derivatives of compounds originally isolated from plants.

Clinical trials of folk remedies have been few in number, and often flawed by methodological problems. The lack of reliable data on the clinical and biological effects of herbal remedies often leads to inappropriate use. Patients commonly use non-standard remedies without discussing them with their physicians; when pharmacological interactions exist between herbs and prescription drugs, adverse effects may follow. Quality control varies between manufacturers, and because herbs are classified as dietary supplements, they are exempt from regulations governing standardization of ingredients. Physicians should ask all patients about their use of herbal medications and dietary supplements.

Specific Drug Interactions – Current regulations prohibit herb manufacturers from claiming that their products treat or prevent disease, but allow them to make claims about the product's effect on body function. Because herbal products are biologically active, they may interact with prescription drugs and with one another. Much of what is known concerning drug interactions is based on case reports or case series, which commonly lack crucial documentation of concomitant medication use or positive identification of herbs involved.

- i) Physicians should be aware that patients on warfarin should have international normalized ratio (INR) measured a week after starting to take any herbal preparation.
- ii) Ginkgo, ginseng, and garlic are commonly used for reasons unrelated to relief of pain; they interfere with platelet function, and patients who take them should have bleeding times monitored.
- iii) St. John's Wort should not be combined with an SSRI, since a serotonin syndrome may result. St. John's Wort induces the CYP3A4 hepatic enzyme, lowering levels of drugs metabolized by this system; these drugs include anticonvulsants, oral contraceptives, antiretroviral, and calcium channel blockers.
- iv) Kava, often used to alleviate anxiety, may potentiate benzodiazepine anxiolytics and produce excess sedation.
- v) Herbal preparation usage during the perioperative period should be discouraged.

- j. **Other Agents:**

- i. Tramadol (Ultram)

- A) Description – An opioid partial agonist that is generally well tolerated, does not cause GI ulceration, or exacerbate hypertension or congestive heart failure.
 - B) Indications – Mild to moderate pain relief. This drug has been shown to provide pain relief equivalent to that of commonly prescribed NSAIDs.
 - C) Contraindications – Use cautiously in patients who have a history of seizures or who are taking medication that may lower the seizure threshold, such as MAO inhibitors, SSRIs, and TCAs. Not recommended in those with prior opioid addiction.
 - D) Side Effects – May cause impaired alertness or nausea. This medication has physically addictive properties and withdrawal may follow abrupt discontinuation.
 - E) Drug Interactions – Narcotics, sedating medications.
 - F) Recommended Laboratory Monitoring – Renal and hepatic function.
- ii. Baclofen (Lioresal)
- A) Description – May be effective due to stimulation of Gamma Aminobutyric Acid (GABA) receptors.
 - B) Indications – Pain from muscle rigidity.
 - C) Side Effects – Development of ovarian cysts, exacerbation of psychotic disorders, may precipitate seizures in epileptics, dry mouth, sexual dysfunction.
 - D) Recommended Laboratory Monitoring – Renal function.
- iii. Mexilitene (Mexitil)
- A) Description – An antiarrhythmic drug, which, like some anticonvulsive agents, may act on ion channels in neuronal tissue and reduce its pathological activity to a more stable level. Low concentrations may suffice to abolish impulses in damaged nerves, and mexilitene has been used successfully to treat neuropathic pain.
 - B) Indications – Neuropathic pain.
 - C) Major Contraindications – Heart disease (may depress ventricular function).
 - D) Dosing and Time to Therapeutic Effect – Titrate to therapeutic effect.
 - E) Major Side Effects – Tremor, light-headedness, coordination difficulties, and nausea are common dose-related adverse effects that may be reduced by taking with food.
 - F) Drug Interactions – Lidocaine.
 - G) Recommended Laboratory Monitoring – Hepatic function, CBC. Plasma levels may also be necessary.

8. **ORTHOTICS/PROSTHETICS/EQUIPMENT** Devices and adaptive equipment may be necessary in order to reduce impairment and disability, to facilitate medical recovery, to avoid

re-aggravation of the injury, and to maintain maximum medical improvement. Indications would be to provide relief of the industrial injury or prevent further injury and include the need to control neurological and orthopedic injuries for reduced stress during functional activities. In addition, they may be used to modify tasks through instruction in the use of a device or physical modification of a device. Equipment needs may need to be reassessed periodically. Refer to F.12, Return-to-work for more detailed information.

Equipment may include high and low technology assistive devices, computer interface or seating, crutch or walker training, and self-care aids. It should improve safety and reduce risk of re-injury. Standard equipment to alleviate the effects of the injury on the performance of activities of daily living may vary from simple to complex adaptive devices to enhance independence and safety. Certain equipment related to cognitive impairments may also be required.

Ergonomic modifications may be necessary to facilitate medical recovery, to avoid re-aggravation of the injury, and to maintain maximum medical improvement. Ergonomic evaluations with subsequent recommendations may assist with the patients return-to-work. (Refer to Section E.6.c, Job Site Evaluation for further information.)

For chronic pain disorders, equipment such as foot orthoses or lumbar support devices may be helpful. The injured worker should be educated as to the potential harm from using a lumbar support for a period of time greater than which is prescribed. Harmful effects include de-conditioning of the trunk musculature, skin irritation, and general discomfort. Use of cervical collars is not recommended for chronic cervical myofascial pain. Special cervical orthosis and/or equipment may have a role in the rehabilitation of a cervical injury such as those injuries to a cervical nerve root resulting in upper extremity weakness or a spinal cord injury with some degree of paraparesis or tetraparesis. Use of such devices would be in a structured rehabilitation setting as part of a comprehensive rehabilitation program.

Fabrication/modification of orthotics, including splints, would be used when there is need to normalize weight-bearing, facilitate better motion response, stabilize a joint with insufficient muscle or proprioceptive/reflex competencies, to protect subacute conditions as needed during movement, and correct biomechanical problems. Orthotic/prosthetic training is the skilled instruction (preferably by qualified providers) in the proper use of orthotic devices and/or prosthetic limbs.

For information regarding specific types of orthotics/prosthetics/equipment, refer to individual medical treatment guidelines.

9. **PATIENT EDUCATION** Patients should be educated on their specific injury, assessment findings, and plan of treatment and encouraged to take an active role in establishing functional outcome goals. No treatment plan is complete without addressing issues of individual and/or group patient education as a means of prolonging the beneficial effects of rehabilitation, as well as facilitating self-management of symptoms and prevention of secondary disability. There is good evidence that patient education in self-management of asthma, anticoagulation, and other diseases improves appropriate use of medications, increases patient satisfaction with care, and reduces unscheduled physician visits for dealing with complications of treatment.

Patient education is an interactive process that provides an environment where the patient not only acquires knowledge but also gains an understanding of the application of that knowledge. Therefore, patients should be able to describe and/or will need to be educated on:

- a. The treatment plan;
- b. Indications for and potential side effects of medications;
- c. Their home exercise program;
- d. Expected results of treatment;

- e. Tests to be performed, the reasons for them and their results;
- f. Activity restrictions and return-to-work status;
- g. Home management for exacerbations of pain;
- h. Procedures for seeking care for exacerbations after office hours;
- i. Home self-maintenance program;
- j. Patient responsibility to communicate with all medical providers and the employer; and
- k. Patient responsibility to keep appointments.

Educational efforts should also target family and other support persons, the case manager, the insurer, and the employer as indicated to optimize the understanding of the patient and the outcome. Professional translators should be provided for non-English speaking patients to assure optimum communication. All education, teaching, and instruction given to the patient should be documented in the medical record.

Effects of education weaken over time; continuing patient education sessions will be required to maximize the patient's function. The effectiveness of educational efforts can be enhanced through attention to the learning style and receptivity of the patient. Written educational materials may reinforce and prolong the impact of verbal educational efforts. Overall, patient education should emphasize health and wellness, return-to-work and return to a productive life.

- Time to produce effect: Varies with individual patient
- Frequency: At each visit

10. **PERSONALITY/PSYCHOLOGICAL/PSYCHOSOCIAL INTERVENTION**

Psychosocial treatment is a generally accepted, well-established therapeutic and diagnostic procedure with selected use in acute pain problems, but with more widespread use in sub-acute and chronic pain populations. Psychosocial treatment is recommended as an important component in the total management of a patient with chronic pain and should be implemented as soon as the problem is identified.

Once a diagnosis consistent with the standards of the American Psychiatric Association-Diagnostic Statistical Manual of Mental Disorders has been determined, the patient should be evaluated for the potential need for psychiatric medications. Use of any medication to treat a diagnosed condition may be ordered by the authorized treating physician or by the consulting psychiatrist. Visits for management of psychiatric medications are medical in nature and are not a component of psychosocial treatment. Therefore, separate visits for medication management may be necessary, depending upon the patient and medications selected.

The screening or diagnostic workup should have clarified and distinguished between pre-existing, aggravated, and/or purely causative psychological conditions. Therapeutic and diagnostic modalities include, but are not limited to, individual counseling, and group therapy. Treatment can occur within an individualized model, a multi-disciplinary model, or within a structured pain management program.

A psychologist with a PhD, PsyD, EdD credentials, or a Psychiatric MD/DO may perform psychosocial treatments. Other licensed mental health providers working in consultation with a PhD, PsyD, EdD, or Psychiatric MD/DO, and with experience in treating chronic pain disorders in injured workers may also perform treatment.

A status report must be provided to the authorized treating physician within two weeks of each visit to facilitate the patient's care. The report should provide documentation of progress towards functional recovery and discussion of the psychosocial issues affecting the patient's

ability to participate in treatment. The report should also address pertinent issues such as pre-existing, aggravated, and/or causative, as well as project realistic functional prognosis.

- Time to produce effect: 2 to 4 weeks
- Frequency: 1 to 5 times weekly for the first 4 weeks (excluding hospitalization, if required), decreasing to 1 to 2 times per week for the second month. Thereafter, 2 to 4 times monthly with the exception of exacerbations which may require increased frequency of visits. Not to include visits for medication management.
- Optimum duration: 2 to 6 months
- Maximum duration: 6 to 12 months, not to include visits for medication management. For select patients, longer supervised treatment may be required and, if further counseling beyond 6 months is indicated, functional progress must be documented.

11. **RESTRICTION OF ACTIVITIES** Continuation of normal daily activities is the recommendation for chronic pain patients since immobility will negatively affect rehabilitation. Prolonged immobility results in a wide range of deleterious effects, such as a reduction in aerobic capacity and conditioning, loss of muscle strength and flexibility, increased segmental stiffness, promotion of bone demineralization, impaired disc nutrition, and the facilitation of the illness role.

Immobility may range from bed rest to the continued use of orthoses, such as cervical collars and lumbar support braces. While these interventions may have been ordered in the acute phase, the provider should be aware of their impact on the patient's ability to adequately comply with and successfully complete rehabilitation.

Patients should be educated to the detrimental effects of immobility versus the efficacious use of rest periods. Adequate rest allows the patient to comply with active treatment and benefit from the rehabilitation program. In addition complete work cessation should be avoided, if possible, since it often further aggravates the pain presentation and promotes disability. Modified return-to-work is almost always more efficacious and rarely contraindicated in the vast majority of injured workers with chronic pain.

12. **RETURN-TO-WORK** is one of the major components in chronic pain management. Return-to-work is a subject that should be addressed by each workers' compensation provider at the first meeting with the injured employee, and be updated at each additional visit. A return-to-work format should be part of a company's health plan, knowing that return-to-work can decrease anxiety, reduce the possibility of depression, and reconnect the worker with society.

Because a prolonged period of time off work will decrease the likelihood of return to work, the first weeks of treatment are crucial in preventing and/or reversing chronicity and disability mindset. In complex cases, experienced nurse case managers may be required to assist in return-to-work. Other services, including psychological evaluation and/or treatment and vocational assistance should be employed.

The following should be considered when attempting to return an injured worker with chronic pain to work.

- a. **Job History Interview:** The authorized treating physician should perform a job history interview at the time of the initial evaluation and before any plan of treatment is established. Documentation should include the worker's' job demands, stressors, duties of current job, and duties of job at the time of the initial injury. In addition, cognitive and social issues should be identified and treatment of these issues should be incorporated into the plan of care.

- b. **Coordination of Care:** Management of the case is a significant part of return-to-work and may be the responsibility of the authorized treating physician, occupational health nurse, risk manager, or others. Case management is a method of communication between the primary provider, referral providers, insurer, employer, and employee. Because case management may be coordinated by a variety of professionals, the case manager should be identified in the medical record.
- c. **Communication:** is essential between the patient, authorized treating physician, employer, and insurer. Employers should be contacted to verify employment status, job duties and demands, and policies regarding injured workers. In addition, availability of temporary and permanent restrictions, for what duration, as well as other placement options should be discussed and documented.
- d. **Establishment of a Return-To-Work Status:** Return-to-work for persons with chronic pain should be thought of as therapeutic, assuming that work is not likely to aggravate the basic problem or increase the discomfort. In most cases of chronic pain, the worker may not be currently working or even employed. The goal of return-to-work would be to implement a plan of care to return the worker to any level of employment with the current employer or to return them to any type of new employment.
- e. **Establishment of Activity Level Restrictions:** A formal job description for the injured/ill employee who is employed is necessary to identify physical demands at work and assist in the creation of modified duty. A Job Site Evaluation may be utilized to identify tasks such as pushing, pulling, lifting, reaching above shoulder level, grasping, pinching, sitting, standing, posture, ambulatory distance and terrain, and if applicable, environment for temperature, air flow, noise and the number of hours that may be worked per day. Work restriction assigned by the authorized treating physician may be temporary or permanent. The case manager should continue to seek out modified work until restrictions become less cumbersome or as the worker's condition improves or deteriorates.
- f. **Rehabilitation and Return-to-work:** As part of rehabilitation, every attempt should be made to simulate work activities so that the authorized treating physician may promote adequate job performance. The use of ergonomic or adaptive equipment, therapeutic breaks, and interventional modalities at work may be necessary to maintain employment.
- g. **Vocational Assistance:** Formal vocational rehabilitation is a generally accepted intervention and can assist disabled persons to return to viable employment. Assisting patients to identify vocational goals will facilitate medical recovery and aid in the maintenance of MMI by 1) increasing motivation towards treatment and 2) alleviating the patient's emotional distress. Chronic pain patients will benefit most if vocational assistance is provided during the interdisciplinary rehabilitation phase of treatment. To assess the patient's vocational capacity, a vocational assessment may be utilized to identify rehabilitation program goals, as well as optimize both patient motivation and utilization of rehabilitation resources.

Recommendations to Employers and Employees of Small Businesses – Employees of small businesses who are diagnosed with chronic pain may not be able to perform any jobs for which openings exist. Temporary employees may fill those slots while the employee functionally improves. Some small businesses hire other workers and if the injured employee returns to the job, the supervisor/owner may have an extra employee. To avoid this, it is suggested that case managers be accessed through their insurer or third party insurers. Case managers may assist with resolution of these problems, as well as assist in finding modified job tasks, or find jobs with reduced hours, etc., depending upon company philosophy and employee needs.

Recommendations to Employers and Employees of Mid-Sized and Large Businesses – Employers are encouraged to identify modified work within the company that may be available to injured workers with chronic pain who are returning to work with temporary or permanent restrictions. To assist with temporary or permanent placement of the injured worker, it is suggested that a program be implemented that allows the case manager to access descriptions of all jobs within the organization.

13. **THERAPY—ACTIVE** The following active therapies have some evidence to support their use and are widely used and accepted methods of care for a variety of work-related injuries. Active therapy is based on the philosophy that therapeutic exercise and/or activity are beneficial for restoring flexibility, strength, endurance, function, range of motion, and can alleviate discomfort.

Active therapy requires an internal effort by the individual to complete a specific exercise or task. This form of therapy requires supervision from a therapist or medical provider such as verbal, visual, and/or tactile instruction(s). Active therapy is intended to promote independence and self-reliance in managing the physical pain as well as to improve the functional status in regard to the specific diagnosis and general conditioning and well-being. At times, a provider may help stabilize the patient or guide the movement pattern but the energy required to complete the task is predominately executed by the patient.

Patients should be instructed to continue active therapies at home as an extension of the treatment process in order to maintain improvement levels. Home exercise can include exercise with or without mechanical assistance or resistance and functional activities with assistive devices.

The following active therapies are listed in alphabetical order:

- a. **Activities of Daily Living (ADL):** are instruction, active-assisted training, and/or adaptation of activities or equipment to improve a person's capacity in normal daily activities such as self-care, work re-integration training, homemaking, and driving.
- Time to produce effect: 4 to 5 treatments
 - Frequency: 3 to 5 times per week
 - Optimum duration: 4 to 6 weeks
 - Maximum duration: 6 weeks
- b. **Aquatic Therapy:** is the implementation of active therapeutic procedures in a swimming or therapeutic pool. The water provides a buoyancy force that lessens the amount of force of gravity applied to the body, and the pool should be large enough to allow full extremity range of motion and full erect posture. The decreased gravity effect allows the patient to have a mechanical advantage and more likely have a successful trial of therapeutic exercise. Indications are for individuals who may not tolerate active land-based or full weight bearing therapeutic procedures or who require augmentation of other therapy. Aquatic vests, belts and other devices can be used to provide stability, balance, buoyancy, and resistance.
- Time to produce effect: 4 to 5 treatments
 - Frequency: 3 to 5 times per week
 - Optimum duration: 4 to 6 weeks
 - Maximum duration: 6 weeks
- c. **Functional Activities:** are the use of therapeutic activity to enhance mobility, body mechanics, employability, coordination, and sensory motor integration.
- Time to produce effect: 4 to 5 treatments

- Frequency: 3 to 5 times per week
 - Optimum duration: 4 to 6 weeks
 - Maximum duration: 6 weeks
- d. **Functional Electrical Stimulation:** is the application of electrical current to elicit involuntary or assisted contractions of atrophied and/or impaired muscles. Indications include muscle atrophy, weakness, and sluggish muscle contraction secondary to pain, injury, neuromuscular dysfunction, peripheral nerve lesion, or radicular symptoms. This modality may be prescribed for use at home when patients have demonstrated knowledge of how to self-administer and are in an independent exercise program.
- Time to produce effect: 2 to 6 treatments
 - Frequency: 3 times per week
 - Optimum duration: 8 weeks
 - Maximum duration: 8 weeks. If beneficial, provide with home unit.
- e. **Lumbar Stabilization:** is a therapeutic program whose goal is to strengthen the spine in its neutral and anatomic position. The stabilization is dynamic which allows whole body movements while maintaining a stabilized spine. It is the ability to move and function normally through postures and activities without creating undue vertebral stress. Lumbar stabilization programs can be performed with or without increase in spinal axial loading, on land or in a pool. Indications include lumbar instability, lumbar mechanical pain, lumbar segmental hypermobility, spondylolisthesis, discogenic injury or pain, facet joint injury, or pain after lumbar surgery.
- Time to produce effect: 4 to 8 treatments
 - Frequency: 3 to 5 times per week
 - Optimum duration: 4 to 8 weeks
 - Maximum duration: 8 weeks.
- f. **Neuromuscular Re-education:** is the skilled application of exercise with manual, mechanical, or electrical facilitation to enhance strength, movement patterns, neuromuscular response, proprioception, kinesthetic sense, coordination, education of movement, balance and posture. Indications include the need to promote neuromuscular responses through carefully timed proprioceptive stimuli, to elicit and improve motor activity in patterns similar to normal neurologically developed sequences, and improve neuromotor response with independent control.
- Time to produce effect: 2 to 6 treatments
 - Frequency: 3 times per week
 - Optimum duration: 4 to 8 weeks
 - Maximum duration: 8 weeks
- g. **Therapeutic Exercise:** with or without mechanical assistance or resistance, may include isoinertial, isotonic, isometric and isokinetic types of exercises. Indications include the need for cardiovascular fitness, reduced edema, improved muscle strength, improved connective tissue strength and integrity, increased bone density, promotion of circulation to enhance soft tissue healing, improvement of muscle

recruitment, and increased range of motion are used to promote normal movement patterns. Can also include, alternative/complementary exercise movement therapy. Therapeutic exercise programs should be tissue specific to the injury and address general functional deficits as identified in the diagnosis and clinical assessment. Patients should be instructed in and receive a home exercise program that is progressed as their functional status improves. Upon discharge, the patient would be independent in the performance of the home exercise program and would have been educated in the importance of continuing such a program. Educational goals would be to maintain or further improve function and to minimize the risk for aggravation of symptoms in the future.

- Time to produce effect: 2 to 6 treatments
- Frequency: 3 to 5 times per week
- Optimum duration: 4 to 8 weeks and concurrent with an active daily home exercise program.
- Maximum duration: 8 to 12 weeks of therapist oversight. Home exercise should continue indefinitely.

h. Work Conditioning: These programs are work-related, outcome-focused, individualized treatment programs. Objectives of the program includes, but are not limited to, improvement of cardiopulmonary and neuromusculoskeletal functions (strength, endurance, movement, flexibility, stability, and motor control functions), patient education, and symptom relief. The goal is for patients to gain full or optimal function and return to work. The service may include the time-limited use of modalities, both active and passive, in conjunction with therapeutic exercise, functional activities, general conditioning body mechanics and lifting techniques re-training.

These programs are usually initiated once re-conditioning has been completed but may be offered at any time throughout the recovery phase. It should be initiated when imminent return of a patient to modified or full duty is not an option, but the prognosis for returning the patient to work at completion of the program is at least fair to good.

- Length of visit: 1 to 2 hours per day
- Frequency: 2 to 5 visits per week
- Optimum duration: 2 to 4 weeks
- Maximum duration: 6 weeks. Participation in a program beyond six weeks must be documented with respect to need and the ability to facilitate positive symptomatic or functional gains.

i. Work Simulation: is a program where an individual completes specific work-related tasks for a particular job and return to work. Use of this program is appropriate when modified duty can only be partially accommodated in the work place, when modified duty in the work place is unavailable, or when the patient requires more structured supervision. The need for work place simulation should be based upon the results of a Functional Capacity Evaluation-and/or Job Site Analysis.

- Length of visit: 2 to 6 hours per day
- Frequency: 2 to 5 visits per week
- Optimum duration: 2 to 4 weeks

- Maximum duration: 6 weeks. Participation in a program beyond six weeks must be documented with respect to need and the ability to facilitate positive symptomatic or functional gains.

14. **THERAPY—PASSIVE** Most of the following passive therapies and modalities are generally accepted methods of care for a variety of work-related injuries. Passive therapy includes those treatment modalities that do not require energy expenditure on the part of the patient. They are principally effective during the early phases of treatment and are directed at controlling symptoms such as pain, inflammation and swelling and to improve the rate of healing soft tissue injuries. They should be used adjunctively with active therapies to help control swelling, pain and inflammation during the rehabilitation process. They may be used intermittently as a therapist deems appropriate, or regularly if there are specific goals with objectively measured functional improvements during treatment.

Factors such as exacerbation of symptoms, re-injury, interrupted continuity of care and co-morbidities may extend durations of care. Having specific goals with objectively measured functional improvement during treatment can support extended durations of care. It is recommended that if after 6 to 8 visits no treatment effect is observed, alternative treatment interventions, further diagnostic studies or further consultations should be pursued.

The following passive therapies are listed in alphabetical order:

a. **Electrical Stimulation (Unattended)**: Electrical stimulation, once applied, requires minimal on-site supervision by the physical or nonphysical provider. Indications include pain, inflammation, muscle spasm, atrophy, decreased circulation, and the need for osteogenic stimulation.

- Time to produce effect: 2 to 4 treatments
- Frequency: Varies, depending upon indication, between 2 to 3 times per day to 1 time week.
- Optimum duration: 1 to 3 months
- Maximum duration: 3 months. Provide home unit if intended for frequent use.

b. **Infrared Therapy**: is a radiant form of heat application. Indications include the need to elevate the pain threshold before exercise and to alleviate muscle spasm to promote increased movement.

- Time to produce effect: 2 to 4 treatments
- Frequency: 3 to 5 times per week
- Optimum duration: 3 weeks as primary, or intermittently as an adjunct to other therapeutic procedures up to 2 months
- Maximum duration: 2 months

c. **Iontophoresis**: is the transfer of medication, including, but not limited to, steroidal anti-inflammatories and anesthetics, through the use of electrical stimulation. Indications include pain (Lidocaine), inflammation (hydrocortisone, salicylate), edema (mecholy, hyaluronidase, salicylate), ischemia (magnesium, mecholy, iodine), muscle spasm (magnesium, calcium), calcific deposits (acetate), scars and keloids (chlorine, iodine, acetate).

- Time to produce effect: 2 to 6 treatments

- Frequency: 3 times per week with at least 48 hours between treatments
- Optimum duration: 4 to 6 weeks
- Maximum duration: 6 weeks

d. **Manipulation:** is a generally accepted, well-established and widely used therapeutic intervention for pain. Manipulation may include, but is not limited to, high velocity, low amplitude technique (adjustment, grade V mobilization, mobilization with impulse), chiropractic manipulation, osteopathic manipulation, muscle energy techniques, and non-force techniques. It is performed by taking a joint to its end range of motion and moving the articulation into the zone of accessory joint movement, well within the limits of anatomical integrity.

The purpose of manipulation in the treatment of chronic pain is to assess the structure and function of the patient and to identify areas of musculoskeletal dysfunction that may be causing, or contributing to, the patient's symptoms.

Evaluations for manipulation in the chronic pain patient should be comprehensive, taking into consideration the entire musculoskeletal system and identifying both local and remote factors in the generation of pain and dysfunction. The evaluation should be designed to isolate the presence of dysfunctional entities that will be responsive to manual medicine interventions. Results of the evaluation should assist in the differentiation of biomechanical dysfunction from anatomic pathology, as well as the clinical significance of both as possible pain generators. It is important to consider visceral causes of somatic pain and to rule out organic disease.

The physical evaluation involves a direct palpatory examination to assess asymmetries of form and function; alterations in range of motion, including hypermobility and hypomobility; tissue-texture abnormalities, particularly muscular, fascial, and ligamentous structures. Special attention should be given to the presence of restrictions within the expected range of motion (hypomobility) in vertebral segments and the muscular responses to these restrictions. Extremities should also be considered in the physical evaluation. The evaluation may include use of other assessment tools such as Surface EMG, postural analysis, radiographic imaging, and imaging studies.

Manipulation may be indicated in patients who have not had an evaluation for manual medicine, or have not progressed adequately in an exercise program. Manipulation should be considered when there is evidence of suspicion of scoliosis, apparent leg length inequality, pelvic imbalance, facet restriction, sacroiliac dysfunction, myofascial dysfunction, gait disturbances, or postural dysfunction.

Indications for manipulation include joint pain, decreased joint motion and joint adhesions. Contraindications may include joint instability, fractures, severe osteoporosis, infection, metastatic cancer, active inflammatory arthritides, aortic aneurysm, and signs of new or progressive neurologic deficits.

Response to treatment will depend on the appropriate application of procedures used for the clinical condition, the number of body regions involved, the chronicity of the condition, the age and general health of the patient, invasiveness of previous therapeutic interventions, and psychological factors. For chronic pain patients who have not had manipulation previously, providers should refer to the current medical treatment guidelines of the original injury for treatment and timeframe parameters. Daily treatment is usually not indicated unless they have not had any prior manipulation or they have had a recent exacerbation.

- Time to produce effect: 4 to 6 treatments.

- Frequency: 1 to 2 times per week for the first 2 weeks as indicated by the severity of the condition. Treatment may continue at 1 treatment per week for the next 6 weeks.
 - Optimum duration: 8 weeks.
 - Maximum duration: 8 weeks. At week 8, patients should be reevaluated. Care beyond 8 weeks may be indicated for certain chronic pain patients in whom manipulation is helpful in improving function, decreasing pain and improving quality of life. In these cases, treatment may be continued at 1 treatment every other week until the patient has reached MMI and maintenance treatments have been determined. Extended durations of care beyond what is considered “maximum” may be necessary in cases of re-injury, interrupted continuity of care, exacerbation of symptoms, and in those patients with comorbidities. Such care should be re-evaluated and documented on a monthly basis.
- e. **Massage—Manual or Mechanical:** Massage is manipulation of soft tissue with broad ranging relaxation and circulatory benefits. This may include stimulation of acupuncture points and acupuncture channels (acupressure), application of suction cups and techniques that include pressing, lifting, rubbing, pinching of soft tissues by or with the practitioners hands. Indications include edema (peripheral or hard and non-pliable edema), muscle spasm, adhesions, the need to improve peripheral circulation and range of motion, or to increase muscle relaxation and flexibility prior to exercise.
- Time to produce effect: Immediate
 - Frequency: 1 to 2 times per week
 - Optimum duration: 6 weeks
 - Maximum duration: 2 months
- f. **Mobilization (Joint):** Mobilization is passive movement involving oscillatory motions to the vertebral segment(s). The passive mobility is performed in a graded manner (I, II, III, IV, or V), which depicts the speed of the maneuver. It may include skilled manual joint tissue stretching. Indications include the need to improve joint play, segmental alignment, improve intracapsular arthrokinematics, or reduce pain associated with tissue impingement. Contraindications include joint instability, fractures, severe osteoporosis, infection, metastatic cancer, active inflammatory arthritides, aortic aneurysm, and signs of progressive neurologic deficits.
- Time to produce effect: 6 to 9 treatments
 - Frequency: 3 times per week
 - Optimum duration: 4 to 6 weeks
 - Maximum duration: 6 weeks
- g. **Mobilization (Soft Tissue):** Mobilization of soft tissue is the skilled application of manual techniques designed to normalize movement patterns through the reduction of soft tissue pain and restrictions. Indications include muscle spasm, voluntary or involuntary muscle guarding, adaptive shortening, trigger points, adhesions, and neural compression.
- Time to produce effect: 2 to 3 weeks
 - Frequency: 2 to 3 times per week

- Optimum duration: 4 to 6 weeks
 - Maximum duration: 6 weeks
- h. Superficial Heat and Cold Therapy:** Superficial heat and cold are thermal agents applied in various manners that lowers or raises the body tissue temperature for the reduction of pain, inflammation, and/or effusion resulting from injury or induced by exercise. Includes application of heat just above the surface of the skin at acupuncture points. Indications include acute pain, edema and hemorrhage, need to increase pain threshold, reduce muscle spasm and promote stretching/flexibility. Cold and heat packs can be used at home as an extension of therapy in the clinic setting.
- Time to produce effect: Immediate
 - Frequency: 2 to 5 times per week
 - Optimum duration: 3 weeks as primary or intermittently as an adjunct to other therapeutic procedures up to 2 months
 - Maximum duration: 2 months
- i. Traction—Manual:** Manual traction is an integral part of manual manipulation or joint mobilization. Indications include decreased joint space, muscle spasm around joints, and the need for increased synovial nutrition and response. Manual traction is contraindicated in patients with tumor, infection, fracture, or fracture dislocation.
- Time to produce effect: 1 to 3 sessions
 - Frequency: 2 to 3 times per week
 - Optimum duration: 4 weeks
 - Maximum duration: 1 month
- j. Traction—Mechanical:** Mechanical traction is indicated for decreased joint space, muscle spasm around joints, and the need for increased synovial nutrition and response. Traction modalities are contraindicated in patients with tumor, infections, fracture, or fracture dislocation. Nonoscillating inversion traction methods are contraindicated in patients with glaucoma or hypertension.
- Time to produce effect: 1 to 3 sessions up to 30 minutes. If response is negative after 3 treatments, discontinue this modality.
 - Frequency: 2 to 3 times per week
 - Optimum duration: 4 weeks
 - Maximum duration: 1 month
- k. Transcutaneous Electrical Nerve Stimulation (TENS):** should include at least one instructional session for proper application and use. Indications include muscle spasm, atrophy, and decreased circulation and pain control. Minimal TENS unit parameters should include pulse rate, pulse width and amplitude modulation.
- Time to produce effect: Immediate
 - Frequency: Variable
 - Optimum duration: 3 sessions. If beneficial, provide with home unit.
 - Maximum duration: 3 sessions. Purchase if effective.

- I. **Ultrasound:** uses sonic generators to deliver acoustic energy for therapeutic thermal and/or nonthermal soft tissue effects. Indications include scar tissue, adhesions, collagen fiber and muscle spasm, and the need to extend muscle tissue or accelerate the soft tissue healing. Ultrasound with electrical stimulation is concurrent delivery of electrical energy that involves dispersive electrode placement. Indications include muscle spasm, scar tissue, pain modulation and muscle facilitation. Phonophoresis is the transfer of medication through the use of sonic generators to the target tissue to control inflammation and pain. These topical medications include, but are not limited to, steroidal anti-inflammatory and anesthetics.
 - Time to produce effect: 6 to 15 treatments
 - Frequency: 3 times per week
 - Optimum duration: 4 to 8 weeks
 - Maximum duration: 2 months

G. THERAPEUTIC PROCEDURES – OPERATIVE

When considering operative intervention in chronic pain management, the treating physician must carefully consider the inherent risk and benefit of the procedure. All operative intervention should be based on a positive correlation with clinical findings, the clinical course, and diagnostic tests. A comprehensive assessment of these factors should have led to a specific diagnosis with positive identification of the pathologic condition.

Surgical procedures are seldom meant to be curative and would be employed in conjunction with other treatment modalities for maximum functional benefit. Functional benefit should be objectively measured and includes the following:

- a. Return-to-work or maintaining work status.
- b. Fewer restrictions at work or performing activities of daily living.
- c. Decrease in usage of medications.
- d. Measurable functional gains, such as increased range of motion or documented increase in strength.
- e. Education of the patient should include the proposed goals of the surgery, expected gains, risks or complications, and alternative treatment.

1. NEUROSTIMULATION

- a. Description — Neurostimulation is the delivery of low-voltage electrical stimulation to the spinal cord or peripheral nerves to inhibit or block the sensation of pain. This is a generally accepted procedure that has limited use. May be most effective in patients with chronic, intractable limb pain who have not achieved relief with oral medications, rehabilitation therapy, or therapeutic nerve blocks, and in whom the pain has persisted for longer than 6 months.

Particular technical expertise is required to perform this procedure and is available in some neurosurgical, rehabilitation, and anesthesiology training programs and fellowships. Physicians performing this procedure must be trained in neurostimulation implantation and participate in ongoing injection training workshops, such as those sponsored by the Internal Society for Injection Studies or as sponsored by implant manufacturers.

- b. Complications — May include paraplegia, epidural hematoma, epidural hemorrhage, undesirable change in stimulation, seroma, CSF leakage, infection, erosion, allergic

response, hardware malfunction or equipment migration, pain at implantation site, loss of pain relief, chest wall stimulation, and other surgical risks.

- c. Surgical Indications — Failure of conservative therapy including active and/or passive therapy, medication management, or therapeutic injections. Preauthorization is required. Habituation to narcotic analgesics in the absence of a history of addictive behavior does not preclude the use of neurostimulation. Only patients who meet the following criteria should be considered candidates for neurostimulation:
- i. A diagnosis of a specific physical condition known to be chronically painful has been made on the basis of objective findings; and
 - ii. All reasonable surgical and non-surgical treatment has been exhausted; and
 - iii. Pre-surgical psychiatric or psychological evaluation has been performed and has demonstrated motivation and long-term commitment without issues of secondary gain; and
 - iv. There is no evidence of addictive behavior. (Tolerance and dependence to narcotic analgesics are not addictive behaviors and do not preclude implantation.); and
 - v. The topography of pain and its underlying pathophysiology are amenable to stimulation coverage (the entire painful area has been covered); and
 - vi. A successful neurostimulation screening test of 2-3 days. A screening test is considered successful if the patient (a) experiences a 50% decrease in pain, which may be confirmed by visual analogue scale (VAS), and (b) demonstrates objective functional gains or decreased utilization of pain medications. Functional gains may be evaluated by an occupational therapist and/or physical therapist prior to and before discontinuation of the trial.
 - vii. For spinal cord stimulation, a temporary lead is implanted at the level of pain and attached to an external source to validate therapy effectiveness. (For peripheral nerve screening, a nerve block is performed to define the specific nerve branch but if multiple branches are involved, a screening test for spinal cord stimulation may be indicated.) Long-term functional improvement is anticipated when objective functional improvement has been observed during time of neurostimulation screen exam.
- d. Contraindications — Unsuccessful neurostimulation test – either inability to obtain functional improvement or reduction of pain, those with cardiac pacemakers, patient unable to properly operate the system. It should not be used if future MRI is planned.
- e. Operative Treatment – Implantation of stimulating leads connected by extensions to either an implanted neurostimulator or an implanted receiver powered by an external transmitter. The procedure may be performed either as an open or a percutaneous procedure, depending on the presence of epidural fibrosis and the anatomical placement required for optimal efficacy.
- f. Post-Operative Considerations – MRI is contraindicated after placement of neurostimulators.
- g. Post-Operative Therapy – Active and/or passive therapy should be employed to improve function. Implantable stimulators will require frequent monitoring such as adjustment of the unit and replacement of batteries.

2. INTRATHECAL DRUG DELIVERY

- a. Description - This mode of therapy delivers small doses of medications directly into the cerebrospinal fluid. Clinical studies are conflicting regarding long-term, effective pain relief in patients with non-malignant pain. As with other routes of drug administration, escalation of dose may be required. Typically, pump refills are needed every 2-3 months.
 - b. Complications - Intrathecal delivery is associated with significant complications, such as infection, catheter disconnects, CSF leak, arachnoiditis, pump failure, nerve injury, and paralysis.
 - c. General Indications – The PAC does not routinely recommend the use of Intrathecal Drug Delivery systems in injured workers with chronic pain. It may be considered only in rare cases where all other commonly used methods to control pain have failed and must be based on preauthorization and the recommendation of at least one physician experienced in chronic pain management in consultation with the primary treating physician. Patients should only be selected for intrathecal drug delivery if they have opioid-responsive pain but cannot tolerate the effects of systemic administration. The patient must have good to excellent pain relief with a test dose using a temporary catheter prior to pump implantation. The patient must be motivated for the procedure, and must understand the potential for complications and requirements of treatment maintenance.
 - d. Surgical Indications – Failure of conservative therapy including active and/or passive therapy, medication management, or therapeutic injections. Only patients who meet the following criteria should be considered candidates for intraspinal analgesic infusions:
 - i. A diagnosis of a specific physical condition known to be chronically painful has been made on the basis of objective findings; and
 - ii. All reasonable surgical and non-surgical treatment has been exhausted; and
 - iii. Pre-surgical psychiatric or psychological evaluation has been performed and has demonstrated motivation and long-term commitment without issues of secondary gain;
 - iv. There is no evidence of addictive behavior. (Tolerance and dependence to narcotic analgesics are not addictive behaviors and do not preclude implantation.); and
 - v. A successful trial of continuous infusion by a percutaneous spinal infusion pump for a minimum of 24 hours. A screening test is considered successful if the patient (a) experiences a 50% decrease in pain, which may be confirmed by VAS, and (b) demonstrates objective functional gains or decreased utilization of pain medications. Functional gains may be evaluated by an occupational therapist and/or physical therapist prior to and before discontinuation of the trial.
 - e. Contraindications – Infection, body size insufficient to support the size and weight of the implanted device. Patients with other implanted programmable devices should not be given these pumps, since interference between devices may cause unintended changes in infusion rates.
3. **NEUROABLATION WITH RHIZOTOMY AS THE EXCEPTION** Neuroablation or neuro-destructive procedures are not commonly used in the management of non-malignant pain. These techniques require specific expertise to perform, have erratic results, and high rates of complication. Therefore, the PAC does not recommend the use of neuroablative procedures, excepting rhizotomy, for injured workers with chronic pain.
4. **FACET RHIZOTOMY**

- a. Description – A procedure designed to denervate the facet joint by ablating the periarticular facet nerve branches. There is good evidence to support this procedure for the cervical spine and some evidence in lumbar spine but benefits beyond one year are not yet established. Therefore, the patient should be committed to active therapy during the first post-surgical year.
- b. Complications – Bleeding, infection, neural injury. There is a risk of developing a deafferentation centralized pain syndrome as a complication of this and other neuroablative procedures.
- c. Surgical Indications – Pain of well-documented facet origin, unresponsive to active and/or passive therapy, unresponsive to manual therapy, and in whom a psychosocial evaluation has been performed. This procedure is commonly used to provide a window of pain relief allowing for participation in active therapy. All patients must have a successful response to diagnostic medial nerve branch blocks. A successful response is considered to be a 70% or greater relief of pain for the length of time appropriate to the local anesthetic used (i.e., bupivacaine greater than lidocaine).
- d. Contraindications – Failure to obtain 70% or greater relief of pain with diagnostic medial branch block as well as bacterial infection – systemic or localized to region of implantation, bleeding diatheses, hematological conditions, and possible pregnancy.
- e. Operative Treatment – Percutaneous radio-frequency rhizotomy is the procedure of choice over alcohol, phenol, or cryoablation. Position of the probe using fluoroscopic guidance is recommended since the maximum effective radius of the device is 2 millimeters.
- f. Post-Operative Therapy – Active and/or passive therapy, implementation of a gentle aerobic re-conditioning program (e.g., walking) and back education within the first post-procedure week, barring complications. Instruction and participation in a long-term home-based program of ROM, strengthening, endurance and stability exercises should be done 1 to 2 weeks post procedure.

H. MAINTENANCE MANAGEMENT

Successful management of chronic pain conditions results in fewer relapses requiring intense medical care. Failure to address long-term management as part of the overall treatment program may lead to higher costs and greater dependence on the health care system. Management of CRPS and CPD continues after the patient has met the definition of maximum medical improvement (MMI). MMI is declared when a patient's condition has plateaued and the authorized treating physician believes no further medical intervention is likely to result in improved function. When the patient has reached MMI, a physician must describe in detail the maintenance treatment.

Maintenance care in CRPS and CPD requires a close working relationship between the carrier, the providers, and the patient. Providers and patients have an obligation to design a cost-effective, medically appropriate program that is predictable and allows the carrier to set aside appropriate reserves. Carriers and adjusters have an obligation to assure that medical providers can design medically appropriate programs. A designated primary physician for maintenance team management is recommended.

Maintenance care will be based on principles of patient self-management. When developing a maintenance plan of care, the patient, physician and insurer should attempt to meet the following goals:

- a. Maximal independence will be achieved through the use of home exercise programs or exercise programs requiring special facilities (e.g., pool, health club) and educational programs;
- b. Modalities will emphasize self-management and self-applied treatment;

- c. Management of pain or injury exacerbations will emphasize initiation of active therapy techniques and may occasionally require anesthetic injection blocks.
- d. Dependence on treatment provided by practitioners other than the authorized treating physician will be minimized;
- e. Periodic reassessment of the patient's condition will occur as appropriate.
- f. Patients will understand that failure to comply with the elements of the self-management program or therapeutic plan of care may affect consideration of other interventions.

The following are Specific Maintenance Interventions and Parameters:

1. **HOME EXERCISE PROGRAMS AND EXERCISE EQUIPMENT** Most patients have the ability to participate in a home exercise program after completion of a supervised exercise rehabilitation program. Programs should incorporate an exercise prescription including the continuation of an age-adjusted and diagnosis-specific program for aerobic conditioning, flexibility, stabilization, and strength. Some patients may benefit from the purchase or rental of equipment to maintain a home exercise program. Determination for the need of home equipment should be based on medical necessity to maintain MMI, compliance with an independent exercise program, and reasonable cost. Before the purchase or long-term rental of equipment, the patient should be able to demonstrate the proper use and effectiveness of the equipment. Effectiveness of equipment should be evaluated on its ability to improve or maintain functional areas related to activities of daily living or work activity. Occasionally, compliance evaluations may be made through a 4-week membership at a facility offering similar equipment. Home exercise programs are most effective when done 3 to 5 times a week.
2. **EXERCISE PROGRAMS REQUIRING SPECIAL FACILITIES** Some patients may have higher compliance with an independent exercise program at a health club versus participation in a home program. All exercise programs completed through a health club facility should focus on the same parameters of an age-adjusted and diagnosis-specific program for aerobic conditioning, flexibility, stabilization, and strength. Selection of health club facilities should be limited to those able to track attendance and utilization, and provide records available for physician and insurer review. Prior to purchasing a membership, a therapist and/or exercise specialist who has treated the patient may visit the facility with the patient to assure proper use of the equipment.
 - Frequency: 2 to 3 times per week.
 - Optimal duration: 1 to 3 months.
 - Maximum maintenance duration: 3 months. Continuation beyond 3 months should be based on functional benefit and patient compliance. Health club membership should not extend beyond 3 months if attendance drops below 2 times per week on a regular basis.
3. **PATIENT EDUCATION MANAGEMENT** Educational classes, sessions, or programs may be necessary to reinforce self-management techniques. This may be performed as formal or informal programs, either group or individual.
 - Maintenance duration: 2 to 6 educational sessions during one 12-month period.
4. **PSYCHOLOGICAL MANAGEMENT** An ideal maintenance program will emphasize management options implemented in the following order: (a) individual self-management (pain control, relaxation and stress management, etc.), (b) group counseling, (c) individual counseling by a psychologist or psychiatrist, and (d) in-patient treatment. Aggravation of the injury may require psychological treatment to restore the patient to baseline. In those cases,

use treatments and timeframe parameters listed in the Biofeedback and Psychological Evaluation or Intervention sections.

- Maintenance duration: 6 to 10 visits during one 12-month period.

5. **NON-NARCOTIC MEDICATION MANAGEMENT** In some cases, self-management of pain and injury exacerbations can be handled with medications, such as those listed in the Medication section. Physicians must follow patients who are on any chronic medication or prescription regimen for efficacy and side effects. Laboratory or other testing may be appropriate to monitor medication effects on organ function.

- Maintenance duration: Usually, four medication reviews within a 12-month period. Frequency depends on the medications prescribed. Laboratory and other monitoring as appropriate.

6. **NARCOTIC MEDICATION MANAGEMENT** As compared with other pain syndromes, there may be a role for chronic augmentation of the maintenance program with narcotic medications. In selected cases, scheduled medications may prove to be the most cost effective means of insuring the highest function and quality of life; however, inappropriate selection of these patients may result in a high degree of iatrogenic illness. A patient should have met the criteria in the opioids section of these guidelines before beginning maintenance narcotics. Laboratory or other testing may be appropriate to monitor medication effects on organ function. The following management is suggested for maintenance narcotics:

- a. The medications should be clearly linked to improvement of function, not just pain control. All follow up visits should document the patient's ability to perform routine functions satisfactorily. Examples include the abilities to: perform work tasks, drive safely, pay bills or perform basic math operations, remain alert for 10 hours, or participate in normal family and social activities. If the patient is not maintaining reasonable levels of activity the patient should usually be tapered from the narcotic and tried on a different long acting opioid.
- b. A low dose narcotic medication regimen should be defined, which may minimally increase or decrease over time. Dosages will need to be adjusted based on side effects of the medication and objective function of the patient. A patient may frequently be maintained on additional non-narcotic medications to control side effects, treat mood disorders, or control neuropathic pain; however, only one long-acting narcotic and one short acting narcotic for rescue use should be prescribed in most cases.
- c. All patients on chronic narcotic medication dosages need to sign an appropriate narcotic contract with their physician for prescribing the narcotics.
- d. The patient must understand that continuation of the medication is contingent on their cooperation with the maintenance program. Use of non-prescribed drugs may result in tapering of the medication. The clinician may order random drug testing when deemed appropriate to monitor medication compliance.
- e. Patients on chronic narcotic medication dosages must receive them through one prescribing physician.
 - Maintenance duration: Up to 12 visits within a 12-month period to review the narcotic plan. Laboratory and other monitoring as appropriate.

7. **THERAPY MANAGEMENT** Some treatment may be helpful on a continued basis during maintenance care if the therapy maintains objective function and decreases medication use. Aggravation of the injury may require intensive treatment to get the patient back to baseline.

In those cases, treatments and timeframe parameters listed in the Active and Passive Therapy sections apply.

- Active Therapy, Acupuncture, and Manipulation maintenance duration: 10 visits in a 12-month period.

8. INJECTION THERAPY

- a. Sympathetic Blocks - These injections are considered appropriate if they maintain or increase function for a minimum of 4 to 8 weeks. Maintenance blocks are usually combined with and enhanced by the appropriate neuropharmacological medication(s) and other care. It is anticipated that the frequency of the maintenance blocks may increase in the cold winter months or with stress.
 - Maintenance duration: Not to exceed 6 to 8 blocks in a 12-month period for a single extremity and to be separated by no less than 4 week intervals. Increased frequency may need to be considered for multiple extremity involvement or for acute recurrences of pain and symptoms. For treatment of acute exacerbations, consider 2 to 6 blocks with a short time interval between blocks.
- b. Trigger Point Injections - These injections may occasionally be necessary to maintain function in those with myofascial problems.
 - Maintenance duration: Not more than 4 injections per session not to exceed 3 to 6 sessions per 12-month period.
- c. Epidural and Selective Nerve Root Injections - Patients who have experienced functional benefits from these injections in the past may require injection for exacerbations of the condition.
 - Maintenance duration: 2 to 4 injections per 12-month period.

9. PURCHASE OR RENTAL OF DURABLE MEDICAL EQUIPMENT It is recognized that some patients may require ongoing use of self-directed modalities for the purpose of maintaining function and/or analgesic effect. Purchase or rental of modality based equipment should be done only if the assessment by the physician and/or therapist has determined the effectiveness, compliance, and improved or maintained function by its application. It is generally felt that large expense purchases such as spas, whirlpools, and special mattresses are not necessary to maintain function beyond the areas listed above.

- Maintenance duration: Not to exceed 3 months for rental equipment. Purchase if effective.