

**OKLAHOMA**

**Guidelines for Treatment of**

**The Upper Extremity**

*Developed and Adopted*  
*by the*  
**Physician Advisory Committee**

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

**Effective November 1, 2007**

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# **GUIDELINES FOR TREATMENT OF THE UPPER EXTREMITY**

*developed and adopted by the*

## **PHYSICIAN ADVISORY COMMITTEE**

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

*Effective November 1, 2007*

### **INTRODUCTION**

**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 recommend treatment guidelines for injured Oklahoma workers. 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, 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.

**DEVELOPMENT OF THE GUIDELINES:** The Committee received input from a wide variety of sources including employers, insurance carriers, and health care providers. Appropriate scientific literature has been reviewed. The Occupational Medicine Practice Guidelines promulgated by the American College of Occupational and Environmental Medicine and the Official Disability Guidelines published by the Work Loss Data Institute, and practice parameters of the American Academy of Orthopaedic Surgeons, Clinical Guidelines on Shoulder Pain and Carpal Tunnel Syndrome, were reviewed. Treatment protocols from Colorado, Minnesota, California, Washington, Rhode Island, and West Virginia were also utilized.

**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 is mandatory and an employer or insurer for an employer is not required to pay for treatment which is not in compliance with the treatment 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.

### **I. GENERAL GUIDELINE PRINCIPLES**

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

- A. Education:** Education of the patient as well as the employer, insurer, policy makers and the community should be the primary emphasis in the treatment of upper extremity 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.

- B. Treatment Parameter Duration:** Time frames 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 time frames discussed in this document.
- C. Active Interventions:** Interventions involving therapeutic exercise and emphasizing patient responsibility are generally emphasized over passive modalities, especially as treatment progresses. Generally, passive and palliative interventions are viewed as a means to facilitate progress in an active rehabilitation program with concomitant attainment of objective functional gains.
- D. Active Therapeutic Exercise Program:** An exercise program should contain elements of improving patient strength, endurance, flexibility and education.
- E. Positive Patient Response:** Positive results are defined primarily as functional and/or physiologic gains which can be objectively measured. Objective functional gains include, but are not limited to, positional tolerances, strength, endurance, range of motion, decreased muscle tension and efficiency/velocity measures which 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.
- F. Re-evaluate Treatment Every 2-4 Weeks:** If a given treatment is not producing positive results within 2-4 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.
- G. 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 condition(s).
- H. Six-month Time Frame:** Since 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 within a six-month time frame, whenever possible. It is important to note that time frames may not be pertinent to injuries which do not involve work-time loss or are not occupationally related.
- I. Return to Work:** Even if there is residual chronic pain, return-to-work is not necessarily contraindicated. Return-to-work may be therapeutic, assuming the work is not likely to aggravate the basic problem. The practitioner must write detailed restrictions when returning a patient to limited duty. At a minimum, the following functions should be considered and modified as recommended: lifting, pushing, pulling, squatting, stooping, walking, using stairs, 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. The patient should never be released to “light duty” without specific physical limitations. The practitioner should be provided with a job tasks definition such as the Occupational Titles by Department of Transportation by employer. Further clarification could be obtained from an occupational health nurse, occupational therapist, physical therapist, vocational rehabilitation specialist, or an industrial hygienist.  
  
The Physician Advisory Committee encourages employers to ensure an injured worker is given the opportunity to return to work in either a modified or full duty status once it is determined medically possible.
- J. Delayed Recovery:** A psychological screen should be considered, as well as initiating interdisciplinary rehabilitation treatment and vocational goal setting, for those patients who are failing to make expected

progress 6-12 weeks after an injury. The Physician Advisory Committee recognizes that 3-10% of all industrially injured patients will not recover within the time lines outlined in this document despite optimal care. Such individuals may require treatment 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.

The remainder of this document should be interpreted within the parameters of these guideline principles which will hopefully lead to more optimal medical and functional outcomes for injured workers.

## II. INITIAL DIAGNOSTIC PROCEDURES

Standard procedures which should be utilized when initially diagnosing a work-related upper extremity complaint are:

- A. History Taking and Physical Examination (Hx & PE)** are generally accepted, well-established and widely used procedures which establish the foundation/basis for and dictates all other following stages of diagnostic and therapeutic procedures. When findings of clinical evaluation and those of other diagnostic procedures are not complementing each other, the objective clinical findings should have preference.

The history and physical examination should include, but not be limited to, the following:

1. History of present injury including circumstances and alleged mechanism of injury.
2. Thorough systems review should be ascertained, looking for a history of rheumatologic, traumatic, endocrine and other injuries or illnesses and their current or previous treatment.
3. Physical examination should include the accepted tests and examination techniques applicable to the joint or area being examined including range of motion, strength testing and joint stability. Included also is the evaluation of locking, clicking, acute or chronic swelling, onset of swelling, crepitation, or pain with range of motion.
4. A complete neurologic examination should be performed, looking for neurological deficits and muscular atrophy.

- B. Radiographic Imaging** of the upper extremity is a generally accepted, well-established and widely used diagnostic procedure. Repeat radiographs for fracture follow-up and unexplained pain are acceptable with appropriate documentation. When indicated by the history and physical examination, adjacent joints may be evaluated radiographically. Radiographic stress testing may be useful in assessing joint laxity, particularly in younger patients and those with open epiphysis, or patients who are too anxious to tolerate the clinical examination. Indications for radiographs are:

1. History of serious trauma suspecting fracture, dislocation, or ligamentous injury.
2. Suspected lesions indicative of a systemic illness such as rheumatoid arthritis, osteoarthritis, gout, pseudogout and other systemic conditions.
3. History and physical examination suggesting a pre-existing condition such as previous fracture.
4. Unexplained or continued upper extremity pain of over two weeks duration.
5. Unexplained joint effusion.

- C. Laboratory Tests:** Various laboratory diagnostic tests are generally accepted, well established and widely used procedures. Laboratory tests are, however, occasionally indicated at the time of initial evaluation for a patient with upper extremity pain. When a patient's history and physical examination suggests infection, metabolic-endocrinologic disorders, tumorous conditions, systemic musculoskeletal disorders (e.g., rheumatoid arthritis or ankylosing spondylitis), or prolonged use of medications (e.g., non-steroidal anti-inflammatory medications), laboratory tests, including, but not limited to, the following can provide useful diagnostic information:

1. Sedimentation rate: non-specific, but elevated in infection, neoplastic conditions and systemic

arthritic conditions.

2. Rheumatoid work-up: serum rheumatoid factor, ANA, HLA-B27 titre.
3. Serum calcium, phosphorus, uric acid, alkaline and acid phosphatase for metabolic, endocrine and neoplastic conditions.
4. CBC, liver and kidney function profiles for metabolic or endocrine disorders or for adverse effects of various medications.
5. Endocrine work-up: diabetes mellitus, parathyroid or thyroid or thyroid disease.
6. Serum protein electrophoresis.
7. Urinalysis: bacteria, calcium, phosphorus or hydroxy-proline.
8. Bacteriological (microorganism) work-up: wound, blood and tissue.
9. Analysis of joint aspiration for bacteria, fat globules, crystalline birefringence and chemistry to evaluate joint effusion.

The Physician Advisory Committee recommends the above 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.

### III. FOLLOW-UP DIAGNOSTIC IMAGING AND TESTING PROCEDURES

A. **Imaging Studies** are generally accepted, well-established and widely used diagnostic procedures. In addition to routine radiographic and laboratory studies, the following imaging studies can be utilized for further evaluation of the upper extremity:

1. **Computerized Axial Tomography and Lineal Tomography (CT)** may be used to evaluate fractures and masses following the routine radiographic evaluation or bone scan. Occasionally 3-D reconstruction of the CT Scan may be helpful in complex fractures.
2. **Magnetic Resonance Imaging (MRI)**, with or without arthrography, may be used to investigate traumatic or degenerative injuries of the upper extremity.
3. **Technetium or Indium Scan** is useful for investigation of trauma, infection, stress fracture, reflex sympathetic dystrophy and suspected neoplastic conditions of the upper extremity.
4. **Arthrogram** may be useful in the evaluation of internal derangement of a joint or ligament injury.
5. **Doppler Ultrasonography/Plethysmography** is useful in establishing the diagnosis of arterial and venous disease in an extremity.
6. **Arteriography** may occasionally be useful in determining vascular insufficiency in appropriate patients.

#### B. Other Diagnostic Tests:

1. **Diagnostic Arthroscopic Examination** allows visualization of the interior of a joint, enabling the diagnosis of conditions within the joint, when other diagnostic tests have failed to reveal the accurate diagnosis. Diagnostic arthroscopy may also be employed in patients who fail a reasonable regimen of conservative treatment and whose condition would most appropriately benefit from arthroscopic intervention.
2. **Compartment Pressure Measurement** devices, such as Pressure Manometer, are useful in the evaluation of patients who present with symptoms consistent with a compartment syndrome.
3. **Electro-Diagnostic Studies (Needle EMG/NCS)** are generally accepted and well-established for the evaluation of neurologic disease, including the evaluation of muscle disease, nerve entrapment, radiculopathy and peripheral neuropathy. These studies should be performed by a physician that has formal training in electrodiagnostic evaluations.
4. **Psychometric Testing Evaluations** are generally accepted and well-established diagnostic

procedures with selected use in patients with upper extremity pain. These procedures may be useful in patients with delayed recovery or chronic pain syndromes, recurrent painful conditions, and for pre-operative evaluations, as well as possible predictive value for determining appropriate surgical candidate. The results of these evaluations may provide clinicians with a better understanding of the patient, allowing for more effective rehabilitation and should be considered if a patient is not improving within 4-8 weeks or as soon as problem is identified.

5. **Personality/Psychological/Psychosocial Evaluations** are generally accepted and well established diagnostic procedures with selected use in the acute upper extremity population, but have more wide-spread use in the sub-acute and chronic upper extremity population. These procedures may be useful for patients with delayed recovery, chronic pain, recurrent painful conditions, suspected concomitant closed head injury, disability problems and for pre-operative evaluation, as well as a possible predictive value for postoperative response. Results may provide clinicians with a better understanding of the patient, thus allowing for more effective rehabilitation. Formal psychological or psychosocial screening should be performed on patients not making expected progress within 6-12 weeks following injury and whose subjective symptoms do not correlate with objective signs and tests. This testing will determine the need for further psychosocial interventions. Evaluations should be performed by a licensed psychologist with PhD, PsyD, or EdD credentials, or a physician with psychiatric MD/DO credentials. Initial psychological screening is generally completed within one hour.

If psychometric testing is indicated as a portion of the initial screening process, the time for such testing should not exceed an additional two hours of professional time. 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.

6. **Sensory/motor evaluations** by a physician, registered occupational therapist or licensed physical therapist to include five station Jaymar grip strength testing, rapid exchange grip strength testing, determination of coefficient of variance and Semmes-Weinstein testing may be helpful in evaluation of patient.

#### IV. THERAPEUTIC PROCEDURES

It is understood that patients undergoing the following therapeutic procedures may return to modified or restricted duty during their rehabilitation at the earliest appropriate time. It is also understood that cessation and/or review of the following treatment procedures should be undertaken when no further significant subjective or objective improvement in the patient's condition is noted.

##### A. Non-surgical Treatment:

1. **Immobilization** usually involves splinting or casting. It can be used early as a generic treatment for most injuries to the joint as part of management pending referral to an appropriate specialist and/or the development of a formal diagnostic and treatment plan. Immobilization has inherent side effects including joint contracture, collagen tightness and rapid muscular deconditioning.

Initial immobilization is only temporary, should be re-evaluated within 1-3 weeks and should be applied as part of the treatment plan with specific goals recognizing its inherent side effects.

- a. **Specific Treatment:** duration from 2-16 weeks at the practitioner's discretion. May or may not be associated with therapy techniques depending upon the intensity of strict immobilization required. During immobilization, a portable neuromuscular electrical stimulator may be issued to the patient to minimize muscle atrophy and edema. As a result of expected side effects, the following course of physical therapy may be relatively long and extensive, spanning several months as range of motion, joint stability, conditioning and endurance are reestablished.

- (1) **Casting** is indicated for those injuries associated with fracture which can be reduced and maintained with casting techniques. This procedure should give a reasonable result considering the alternatives and natural history of casting techniques associated with this injury.



- (a) Optimal Duration: 3-16 weeks
  - (2) **Bracing** is considered when certain planes of motion should be restricted while still allowing other planes of motion.
    - (a) Optimal Duration: 4 weeks - permanent
  - (3) **Continuous Passive Motion (CPM)** is used in the post-operative treatment phase of arthroplasty, repairs of fractures, tendons and ligaments. CPM machines should be monitored weekly and discontinued when no further benefits are seen.
    - (a) Optimal Duration: 2-6 weeks
  - (4) **Bone Stimulator** may be useful for improving fracture union in delayed and non-union.
    - (a) Optimal Duration 2-6 months
2. **Medication** use in the treatment of upper extremity injuries is appropriate for controlling pain and inflammation. Non-steroidal anti-inflammatory drugs are appropriate in the treatment of injuries associated with degenerative joint disease and/or inflammation. These same medications can be used for mild pain control. Severe pain associated with fractures and other major joint derangements should be treated with narcotics pending a surgical evaluation. When required, a wide range of medications are available. The use of narcotic and habituating medications should be prescribed in compliance with the Guidelines for Prescription of Opioid Medications for Acute and Chronic Pain adopted by the Administrator of the Oklahoma Workers' Compensation Court.
- a. **Narcotics:** should be primarily reserved for the treatment of severe upper extremity pain. Amount, frequency and maximum duration of treatment should be evaluated by the physician for each patient's particular injury.
  - b. **Minor tranquilizer/Muscle Relaxants:** appropriate for muscle spasm, mild pain and sleep disorders.
    - (1) Time to produce effect: 1 day
    - (2) Frequency of treatment: 1-4 times/day, preferably just at bed time
    - (3) Optimal duration: 1 week
    - (4) Maximum duration: 4 weeks
  - c. **Antidepressant Agents:** can be useful for treatment of mild pain, dysesthesias and sleep disorders in low doses and depression in higher doses.
    - (1) Time to produce effect: 1-4 weeks
    - (2) Frequency of treatment: 1-4 times/day
    - (3) Optimal duration: 1-6 months
    - (4) Maximum duration 1 year, possibly longer, if indicated
  - d. **Non-steroidal Anti-Inflammatory Drugs (NSAID):** useful for mild-to-moderate upper extremity pain. In mild cases, they may be the only drug required for analgesia. There are several classes of NSAID, and the response of the individual injured worker to a specific medication is unpredictable. For this reason, a range of NSAID may be tried in each case with the most-effective preparation being continued.
    - (1) Time to produce effect: 1-7 days
    - (2) Frequency of treatment: 1-4 times daily
    - (3) Duration: As recommended by treating physician

The patient should be closely monitored for adverse reactions when prolonged use of NSAID is greater than three months. Appropriate intervals for metabolic screening are dependent upon the patient's age and general health status.

e. **Analgesics:** acetaminophen and aspirin are the most common choices for nonnarcotic analgesics.

- (1) Time to produce effect: Immediate
- (2) Frequency of treatment: 3-5 times/day
- (3) Optimal duration: 7 days
- (4) Maximum continuous duration: 8 weeks to possibly prolonged use

f. **Oral Steroids:** limited usefulness in carefully selected patients. A one-week regime of steroids may be considered in the treatment of patients who have arthritic flare-ups with significant inflammation of the joint. The physician must be fully aware of potential contraindications for the use of all steroids such as hypertension, diabetes, glaucoma, peptic ulcer disease, etc., which should be documented in the patient's medical chart.

- (1) Time to produce effect: 1-2 days
- (2) Frequency of treatment: Either one dose in the morning or multiple doses up to 4 times/day
- (3) Optimal duration: 1 week
- (4) Maximum duration: 2 weeks

### 3. **Therapeutic Injection:**

a. **Joint Injections** can be performed as analgesic (pain relieving) or anti-inflammatory procedures. All techniques should include sterile technique as appropriate. Soft tissue regions such as bursae may be injected utilizing the same criteria and medications. Care should be utilized to avoid tendon insertions which may result in rupture.

- (1) Frequency of treatment: Not more than 3-4 times/annually

b. **Trigger Point Injections** are appropriate in selected cases where there are a few defined points of muscular tenderness associated with pressure induced radiating pain. Injection of trigger points with a local anesthetic followed by physical therapy treatment may be appropriate.

- (1) Time to produce effect: Immediate
- (2) Frequency of treatment: 3-4 injections in same site assuming favorable results after each injection

c. **Sclero/Prolotherapy** has no proven value in the management of upper extremity injuries via well controlled double-blind studies and may have harmful effects. It has been advocated by some practitioners for the treatment of unstable ligaments or joint capsules to stabilize the knee.

4. **Manipulation Under Anesthesia** should be considered if routine non-operative therapeutic procedures, including physical therapy and/or dynamic bracing, do not restore the degree of motion which should be expected after a reasonable period of time, usually at least twelve weeks.

- a. Time to produce effect: Immediate
- b. Frequency of treatment: 1 time

### **B. Surgical Treatment** (including, but not limited to):

1. **Bursectomy** is indicated for recurrent symptomatic conditions of a bursa which are uncontrolled by conservative modalities.

- a. Time to produce effect: Immediate
- b. Frequency of treatment: 1 time

2. **Arthroscopy** is indicated when an injury suggests an associated intra-articular derangement confirmed by radiographic and/or physical examination. Arthroscopy would also be considered when resolution of signs and symptoms does not occur within an expected period of time with appropriate non-invasive techniques or if the injury is such that it is not expected to heal with conservative treatment.
3. **Ligament Repair or Reconstruction** should be considered when non-operative treatment such as immobilization, bracing and physical therapy do not yield a stable joint, and/or symptoms combined with clinical examination suggest severe instability which will not improve with non-operative techniques or could be progressive in nature. These techniques, may be done arthroscopically, but usually require an arthrotomy as a component of the procedure.
4. **Arthrotomy** involves open exposure of a joint for evaluation and treatment and is a standard of care for certain types of injuries. It should be considered for severe injuries, failure of conservative treatment and/or poor prognosis with conservative treatment. The treatment could include repair, internal fixation of ligamentous, bony or cartilaginous materials as well as removal of foreign bodies or retained hardware.
5. **Osteotomy** is a reconstructive procedure involving the surgical cutting of bone for realignment and is useful in patients to improve function and/or prevent further damage to joints. Indications for osteotomy should be supported by imaging studies and/or arthroscopic examination.
6. **Arthroplasty** is a reconstructive procedure which should be considered only after all other less aggressive treatments have failed. It is indicated in a patient who has severe pain with arthritic changes to joints.
7. **Partial or Complete Arthrodesis** is a reconstructive procedure considered for the severely damaged joint in selected individuals based on their activity level and the physical demands of their job.
8. **Amputation** is indicated only when a combination of vascular, neurological and soft tissue injury precludes a salvage and reconstructive procedure.
9. **Hardware removal** is performed to remove pins, screws, etc., used in stabilizing a fracture. It is usually done after fracture has healed or if hardware is felt to be causing discomfort.
10. **Synovectomy** is removing the lining of a joint and may be carried out when the joint does not respond to a non-surgical treatment, including anti-inflammatory medications, proper splinting, and physical therapy.
11. **Peripheral nerve decompression** is indicated when a patient does not respond to a sufficient period of non-surgical treatment and remains symptomatic with persistent dyesthesias, paresthesias and/or pain. It is urgently indicated when atrophy or profound weakness is present.
12. **Fasciotomy**
13. **Fracture Repair**
14. **Repair of lacerations**, of nerves, tendons or arteries

## V. PHYSICAL MEDICINE AND REHABILITATION

All of the following are generally accepted, well-established and widely used physical therapy modalities and procedures. The procedures and modalities listed in this section can be used as primary or adjunctive techniques in soft tissue treatment for the progressive development of strength and mobility and to improve functional outcomes.

**Primary use** of “Modalities” and “Procedures”, are for pain, inflammation and edema and to improve the rate of healing soft tissue injuries. They are generally beneficial in acute injuries for up to four weeks. Extended use should be supported by consistently measured significant objective changes. Protocols for specific diagnoses and post-surgical conditions may warrant durations of treatment beyond those listed as “optimal”, but should be defended by having specific goals with objectively measured functional improvement during treatment.

**Adjunctive use** of modalities is occasionally necessary to help control edema, pain or 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.

Documentation of functional and healing changes must support the use of all modalities and procedures beyond three months of active involvement. Patient compliance and use of home exercises and independent reactivation are essential along with patient education to facilitate self-management of symptoms. Prolonged continuation of passive treatment modalities without exercise may produce adverse effects of increased disability and deconditioning. Certain modalities may be shown on a case-by-case basis to be efficacious in maintaining objective measures of function. These interventions would be cost-effective via patient self-application and may be utilized beyond the duration of treatment recommended for supervised treatment procedures.

If a patient is not responding within the recommended duration periods, alternative treatment interventions, further diagnostic studies or further consultations should be pursued.

- A. Modalities** to be performed by or under the on-site supervision of a physician (M.D., D.O., D.C. or D.P.M.), licensed physical therapist or registered occupational therapist: Since all of the referenced modalities have the same basic effect, the Physician Advisory Committee recommends that the most cost-effective modalities be chosen as a primary means of treatment.

**1. Thermal Agents:** The use of one modality only is usually indicated per patient visit.

- a. **Microwave-Shortwave Diathermy** involves the use of equipment which exposes soft tissue to magnetic or electrical field. Indications include enhanced collagen extensibility before stretching, reduced muscle guarding, reduced inflammatory response and enhanced reabsorption of hemorrhage/hematoma or edema.

- (1) Time to produce effect: 2-4 treatments
- (2) Frequency of treatment: 2-3 times/week up to 3 weeks
- (3) Optimum duration: 3-5 weeks

- b. **Hot packs** are a conductive form of heat application. Indications include the need for symptomatic resolution of pain or elevation of pain threshold before exercise, and the alleviation of muscle spasm to promote increased movement.

- (1) Time to produce effect: 2-4 treatments
- (2) Frequency of treatment: 3-5 times/week
- (3) Optimum duration: 3 weeks as primary or intermittently as an adjunct to other therapeutic procedures up to 2 months

- c. **Whirlpool** is conductive exposure to water at temperatures which best elicits the desired effect (cold vs. heat). It generally includes massage by water propelled by a turbine or jet system and has the same thermal effects as hot packs if higher than tissue temperature. It has the same thermal effects as cold application if comparable temperature water used. Indications include the need for reducing joint stiffness, enhancing mechanical debridement, increased circulation or sterile technique required by presence of open wound or infectious condition, and facilitating and preparing for exercise.

- (1) Time to produce effect: 2-4 treatments
- (2) Frequency of treatment: 2-5 times/week
- (3) Optimum duration: 3 weeks as primary or intermittently as an adjunct to other therapeutic procedures up to 2 months

- d. **Cold Application** is a thermal agent applied in various manners which lowers the body tissue temperature for the reduction of inflammation, and/or effusion resulting from injury or

induced by exercise. It may be used acutely with compression and elevation. Indications include acute edema and hemorrhage, need to increase pain threshold, reduce muscle spasm and promote stretching/flexibility.

- (1) Time to produce effect: 1-4 treatments
- (2) Frequency of treatment: 2-5 times/week
- (3) Optimum duration: 3 weeks as primary or intermittently as an adjunct to other therapeutic procedures up to 2 months

e. **Paraffin Baths** indications include the need to enhance collagen extensibility before stretching, reduce muscle guarding or reduce inflammatory response.

- (1) Time to produce effect: 1-4 treatments
- (2) Frequency of treatment: 1-3 times/week
- (3) Optimum duration: 4 weeks

f. **Fluidotherapy:**

- (1) Time to produce effect: 1-4 treatments
- (2) Frequency of treatment: 1-3 times/week
- (3) Optimum duration: 4 weeks

2. **Electrical Stimulation:** This modality includes all applications of electrical stimulation. It is used to reduce swelling and inflammation arising from various muscular conditions or as a precursor to more active therapy.

- a. Time to produce effect: 2-3 treatments
- b. Frequency of treatment: 3 times one week
- c. Optimum duration: ~~One~~ 1 month in conjunction with other therapies

3. **Vasopneumatic Devices** are compressive devices used to reduce edema. Indications include venostasis and peripheral edema.

- a. Time to produce effect: 1-3 treatments
- b. Frequency of treatment: 3-5 times/week
- c. Optimum duration: 1 month, if longer provide with home unit. Home unit should be considered if expected use is greater than two weeks

**B. Physical Therapy Procedures** are characterized by the level of the complexity of the task and the expertise required to perform them. The following procedures must be performed by or under the on-site supervision of a physician, registered physical therapist or registered occupational therapist. Treatment in the aggregate beyond 18 visits must be authorized.

1. **Iontophoresis/Phonophoresis** is the transfer of medication, including, but not limited to, steroidal anti-inflammatories and anesthetics, through the use of galvanic stimulation. Indications include pain, inflammation, edema, ischemia, muscle spasm, calcific deposits, scars and keloids.

- a. Time to produce effect: 4 treatments
- b. Frequency of treatment: 3 times/week
- c. Optimum duration: 2 weeks
- d. Maximum duration: 3 weeks

2. **Ultrasound** using sonic generators to deliver acoustic energy for therapeutic thermal and/or non-thermal soft tissue treatment. There may be a concurrent delivery of electrical energy. Indications

include scar tissue, adhesions, collagen fiber and muscle spasm, and the need to extend muscle tissue or accelerate the soft tissue healing.

- a. Time to produce effect: 6-15 treatments
  - b. Frequency of treatment: 3 times/week
  - c. Optimum duration: 2 months
3. **Manual Electrical Stimulation** is the application of electrical current to elicit involuntary or assisted contractions of atrophied and/or impaired muscles, peripheral nerve injuries or pain reduction, which requires continuous application or supervision or involves extensive patient teaching. Indications include muscle spasm, decreased circulation, osteogenic stimulation, inflammation and the need to facilitate muscle hypertrophy, muscle strengthening, muscle atrophy or weakness, decreased reaction times of sluggish muscle secondary to pain, injury or neuromuscular dysfunction or peripheral nerve lesion and/or neuropathies.
- a. Time to produce effect: Variable, depending upon use
  - b. Frequency of treatment: 3-5 times/week
  - c. Optimum duration: 5-6 weeks, if beneficial, provide with home unit
4. **Contrast Baths** can be used for alternating immersion of extremities in hot and cold water. Indications include edema in the subacute stage of healing, the need to improve peripheral circulation and decrease joint pain and stiffness.
- a. Time to produce effect: 3 treatments
  - b. Frequency of treatment: 3 times/week
  - c. Optimum duration: 4 weeks in conjunction with other procedures
5. **Massage** is manipulation of soft tissue to decrease muscle spasm and increase circulatory benefits. Indications include edema (peripheral or hard and non-pliable edema), muscle spasm, rigidity, adhesions or the need to improve peripheral circulation and range-of-motion.
- a. Time to produce effect: Immediate
  - b. Frequency of treatment: 1-3 times/week
  - c. Optimum duration: 4 weeks
6. **Activities of Daily Living (ADL)** are instruction, active-assisted training and/or adaptation of activities or equipment to improve a person's capacity in mobility and self-care.
- a. Time to produce effect: 4-5 treatments
  - b. Frequency of treatment: 3 times/week
  - c. Optimum duration: 4 weeks
7. **Therapeutic Activities** are procedures that require one-on-one patient contact by the provider with use of dynamic activities to improve functional performance. The injured worker is expected to be an active participant in this process attempting to reach a higher level of activity than was previously utilized during the disabling episode. The exercises must be individualized and tailored to the individual's deficits and requirements. The exercise program needs to be taught by the Physical Therapist or physician to ensure a home exercise program within one week of initiating care. This does not preclude an earlier implementation of an active, supervised reconditioning program.
- a. Time to produce effect: 2-4 treatments
  - b. Frequency of treatment: 2-3 times a week
  - c. Optimum duration: 1-4 months

8. **Therapeutic Exercise**, with or without mechanical assist or resistance, includes isotonic, isometric, isokinetic and Pilates. 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 and improved muscle recruitment, increased range-of-motion and normal improvement patterns. Every patient should have an exercise program taught by the Physical Therapist or physician within one week of initiating care. The home exercise program should be progressively upgraded as the patient's condition improves. Exercise must be progressed or reduced in accordance with the patient's clinical response and must be clearly and openly oriented toward the goal of returning the patient to work.
- Time to produce effect: 9 treatments
  - Frequency of treatment: 3 times a week, except after a manipulation under anesthesia or surgical procedure, then daily for 1 week
  - Optimum duration: 1-4 months
9. **Neuromuscular Re-education** is the skilled application of exercise with manual, mechanical or electrical facilitation. Indications include the need to enhance motor response with independent control, strength, skilled use of activities, proprioception, kinesthesia, 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.
- Time to produce effect: 6-9 treatments
  - Frequency of treatment: 2-3 times a week
  - Optimum duration: 3-8 weeks
10. **Sensory Re-education/Desensitization:** Sensory re-education is used to teach a patient how to interpret sensory messages that have been altered secondary to injured peripheral nerve pathways. The re-education program may include tasks, which require localization, discrimination, stereognosis, and integration of motor and sensory function.
- The purpose for desensitization is to decrease pain and discomfort experienced with touch. It is the repetitive use of a physical stimulus applied around or directly over an injured area. Desensitization programs should include structured simulated work activities and be systematic and sequential in nature. Physical modalities often used in treatment of hypersensitivity include vibration, fluidotherapy, graded textures, transcutaneous electrical nerve stimulation (TENS), ultrasound, percussion, massage, heat, compression and distraction.
- Time to produce effect: 4-6 treatments
  - Frequency of treatment: 2-5 times a week as indicated by severity of involvement and desired effect
  - Optimum duration: 4-8 weeks
11. **Work Hardening Programs:** Work hardening programs are generally more comprehensive than the work simulation and include education, reconditioning and specific work simulation with respect to task quality, quantity and intensity. Work hardening is generally initiated after reconditioning or functional restoration has been completed if 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. As discussed in this section, identification of realistic vocational goals is essential for the successful completion of a work hardening program. Generally, work hardening programs entail progressive increases in the number of hours per day that a patient complete work simulation tasks until the patient can tolerate a full work day.
- Time to produce effect: 2-4 weeks
  - Frequency of treatment: 2-5 times/week
  - Optimum duration: 4-6 weeks

- d. Maximum duration: 2-3 months
12. **Joint Mobilization** techniques are passive movements applied to a joint in a specific manner to restore the full, free, painless range of motion of a joint in the extremities. Indications for the use of mobilization techniques include joints that are painful, hypomobile or involve mechanical motion dysfunctions. Gentle mobilization can also promote healing of injured tissues. A muscle cannot be fully rehabilitated if the underlying joints are not free to move, and conversely, a muscle cannot move a joint that is not free to move.
- a. Time to produce effect: 6-9 treatments
- b. Frequency of treatment: 3 times/week
- c. Optimum duration: 6 weeks
13. **Manipulation** is manual therapy that moves a joint beyond the physiologic range of motion but not beyond the anatomic range-of-motion. It is indicated for pain and adhesions.
- a. Time to produce effect: Immediate - 10 treatments
- b. Frequency of treatment: 1-5 times/week as indicated by the severity of involvement and the desired effect
- c. Optimum duration: 18 treatments
14. All **Orthotics** (static and dynamic) may be indicated to achieve improved motion, to limit motion within specific parameters, to protect the repair of structures within the upper extremity, stabilize a joint with insufficient muscle and proprioceptive/reflex competencies, and to reduce stress during functional activities.
- a. Time to produce effect: 1-3 treatments
- b. Frequency of treatment: As indicated to establish independent use (1-3 sessions)
- c. Optimum duration: 8-10 treatments
15. **Prosthetic Training** is the skilled instruction in the proper use of prosthetic limbs including stump preparation, donning and doffing limbs and prosthesis maintenance training. Indication for training is the need for prosthesis use.
- a. Time to produce effect: 9 sessions
- b. Frequency of treatment: 3 times/week
- c. Optimum duration: 2-4 months
16. **Myofascial Release/Soft Tissue Mobilization** Myofascial Release is a form of soft tissue mobilization based upon neuroreflexive responses that reduce tissue tension. The net result is a relaxation of tissue tension and subsequent decrease in myofascial tightness. It is a safe, effective method to normalize myofascial activity, regain tissue extensibility and reduce pain. Normalization of myofascial tissue allows for improved joint mobility.
- Soft tissue mobilization is aimed at enhancing muscle tone and/or extensibility in soft tissues. Restoration of soft tissue extensibility and/or inhibition of hyperactive musculature helps promote motion function which in turn leads to a reduction in pain. Soft tissue mobilization can be used during acute, sub-acute, and chronic musculoskeletal conditions. Soft tissue mobilization can be used as a preparatory procedure to decrease muscle guarding so that joint mobilization is effective in improving extremity and/or spinal joint mobility.
- a. Time to produce effect: 6-9 treatments
- b. Frequency of treatment: 3-5 times a week
- c. Optimum duration: 6-8 weeks
17. **Transcutaneous Electrical Nerve Stimulation (TENS)** should be prescribed within a supervised



setting in order to assure proper electrode placement and patient education. TENS can be used for muscle spasm, atrophy, decreased circulation and pain. If the response to three treatments is beneficial, it may be continued for 1-3 months and for intermittent unsupervised use thereafter **if** it facilitates objective functional gains. The Physician Advisory Committee recommends rental of a TENS with reassessment after 30 days.

- C. Return-to-work:** Given the poor return-to-work prognosis for the injured worker after having been out-of-work for more than six months, early return-to-work should be a prime goal in treating occupational injuries. When attempting to return a patient to work after a specific injury, it is understood that an accurate job description is essential to the physician in making return-to-work recommendations.

Due to the large spectrum of injuries of varying severity and varying physical demands in the work place, it is not possible to make specific return-to-work guidelines for each injury. Therefore, the Physician Advisory Committee recommends the following:

1. In most cases of musculoskeletal injury to the upper extremity the patient should be able to return to work in some capacity within two weeks unless there are extenuating circumstances. Injuries which require more than two weeks off-work are listed in the Section VI, "Specific Diagnoses".
2. Communication between the patient, employer and physician to determine appropriate restrictions and return-to-work dates. A work site evaluation may be necessary and should be performed by a qualified specialist, such as an occupational health nurse, occupational therapist, physical therapist, vocational rehabilitation specialist, or an industrial hygienist. The treating physician shall promptly notify the patient and the employer or the employer's insurer in writing of all return to work orders. If the patient is capable of returning to modified light duty work, the notification shall specify what restrictions, if any, must be followed by the employer in order to return the patient to work.

Working or attaining a return-to-work status should not interfere with necessary medical care or rehabilitation. See Section VI, "Specific Diagnoses", for specific diagnostics related to return-to-work situations.

- D. Special Tests** are performed as part of a skilled assessment of the patient's capacity to return to work or strength capacities, physical work demand classifications and tolerances. They include:

1. **Work Conditioning Assessments/Screens** are functional assessment and work tolerance assessment and/or any individualized evaluation test and/or procedure required to specifically identify and quantify the client's work-relevant cardiovascular and neuromuscular fitness as well as address ergonomic issues affecting the participant's return-to-work potential.
2. **Functional Capacity Evaluation (FCE)** is a series of tests performed to determine physical ability to perform work related tasks with consideration of pertinent medical and behavioral improvements. The data derived from this evaluation will determine the person's ability to match job demands. Components of this evaluation may include:
  - a. Musculoskeletal screen
  - b. Cardiovascular assessment
  - c. Coordination simulation
  - d. Assessment of fine motor tasks
  - e. Work simulated endurance testing
  - f. Reliability and validity of testing
  - g. Lift task analysis
3. **Lift Analysis** indications include the need to return-to-work or identify physical restrictions in a particular job.
4. **Mechanized/Computerized Strength Evaluation** are isotonic, isometric and/or isokinetic.

Indications include the need to measure upper extremity strength and monitor progress over time.

- a. Frequency of treatment: 1 time for evaluation, can monitor improvements in strength every 3-4 weeks up to a total of 6 evaluations

## **VI. SPECIFIC DIAGNOSES**

The diagnostic approach and treatment of upper extremity musculoskeletal conditions is similar in most of the joints. In order to avoid repetition, this section covers the joints individually and contains material which is applicable only to that specific joint. There are certain diagnoses or situations which may require extended periods off work and must be tailored to individual situations. The physician should provide the patient with applicable restrictions during the various stages of recovery and rehabilitation. These recommendations are to be viewed as general guidelines and may vary depending upon individual injury and job site.

### **A. Hand & Wrist: Duration of Treatment: 0-6 months**

1. Diagnoses:
  - Tendinitis
  - Stenosing Tenosynovitis
  - Musculotendinous Problems
2. Diagnostic Criteria (including, but not limited to):
  - a. History:
    - i. repetitive motion; force
    - ii. acute injury with early positive response to treatment
  - b. Physical:
    - i. no urgent surgical indicators
    - ii. no significant structural pathology suggesting surgical solutions
    - iii. swelling, pain and tenderness
  - c. Post acute or chronic patient with acute exacerbation
  - d. Bone Scan
  - e. Electromyogram (EMG/nerve conduction studies (NC) (confirmatory test)
  - f. Mental health evaluation/assessment
  - g. Physical examination
  - h. Plain x-rays
  - i. Magnetic Resonance Imaging (MRI) (confirmatory test)
4. Treatment Interventions (including, but not be limited to):
  - a. Mental health evaluation/assessment
  - b. Physical examination
  - c. Analgesics
  - d. Antibiotics (with secondary infection)
  - e. Concurrent home program
  - f. Durable medical equipment (DME)
  - g. Functional capacity evaluation (FCE)
  - h. Injections with corticosteroids and/or analgesics

- i. Job site analysis
- j. Limited oral corticosteroids
- k. Manipulation
- l. Modified activity of the extremity as indicated
- m. Non-steroidal anti-inflammatory drugs
- n. Orthotics/splints
- o. Outpatient evaluation and therapy
  - i. Attended modalities and procedures
  - ii. Unattended modalities
- p. Antidepressants
- q. Mental health treatment
- r. Single or interdisciplinary program
  - i. Work conditioning
  - ii. Work hardening

**B. Elbow:** Duration of Treatment: 0-6 months

1. Diagnoses:

Musculotendinitis/Tendinitis

Lateral Epicondylitis

Medial Epicondylitis

Musculotendinous and Periarticular problems of the elbow

2. Diagnostic Criteria (including, but not limited to):

a. History:

- i. insidious onset, but may be provoked by acute trauma
- ii. pain with radiation into forearm with extension, flexion, or supination
- iii. burning that may radiate
- iv. possible loss of grip strength due to pain with grip

b. Physical:

- i. point tenderness over epicondyles and associated tendons
- ii. reproduction of pain
- iii. reduced grip strength due to pain with normal elbow motion
- iv. swelling
- v. no urgent surgical indicators
- vi. no significant structural pathology suggesting surgical solutions
- c. Post acute or chronic patient with acute exacerbation
- d. Continued, persistent and intermittent symptoms
- e. Limited-to-good response to primary treatment
- f. Chronic, persistent, and recurring symptoms

- g. Documented history of persistent failure to respond to non-operative/operative treatment
3. Diagnosis Procedures (including, but not limited to):
    - a. Physical examination
    - b. Plain x-rays
    - c. Bone scan
    - d. Electromyogram (EMG)
    - e. Mental health evaluation/assessment
    - f. Magnetic resonance imaging (MRI)
  4. Treatment Interventions (including, but not limited to):
    - a. Analgesics
    - b. Antibiotics (with secondary infection)
    - c. Concurrent home program
    - d. Durable medical equipment (DME)
    - e. Functional capacity evaluation (FCE)
    - f. Injections with corticosteroids and/or analgesics
    - g. Job site analysis
    - h. Limited oral corticosteroids
    - i. Manipulation
    - j. Modified activity of the extremity as indicated
    - k. Non-steroidal anti-inflammatory drugs
    - l. Orthotics/splints
    - m. Outpatient evaluation and therapy
      - i. Attended modalities and procedures
      - ii. Unattended modalities
    - n. Mental health treatment
    - o. Single or interdisciplinary program
      - i. Work conditioning
      - ii. Work hardening

**C. Elbow:**

Duration of Treatment: 0-6 months

1. Diagnoses:
  - Olecranon Bursitis
  - Olecranon Impingement
2. Diagnosis Criteria (including, but not limited to):
  - a. History:
    - i. Generally insidious onset, but may be due to an episode of acute trauma
    - ii. pain over olecranon process
    - iii. Limitation or restriction of flexion/extension due to pain or swelling

- b. Physical:
    - i. Distended olecranon bursa
    - ii. Mild to severe pain over bursa
    - iii. With posttraumatic infection, redness and heat over bursa and a purulent tap
  - c. No urgent surgical indicators or physical examination
  - d. No significant structural pathology suggesting surgical solutions
  - e. Continued, persistent and intermittent symptoms
  - f. Limited-to-good response to primary treatment
  - g. Chronic, persistent and recurring symptoms
3. Diagnostic Procedures (including, but not limited to):
- a. Aspiration; culture
  - b. Physical examination
  - c. Plain x-rays
  - d. Mental health evaluation/assessment
4. Treatment Interventions (including, but not limited to):
- a. Analgesics
  - b. Antibiotics (with secondary infection)
  - c. Aspiration
  - d. Concurrent home program
  - e. Durable medical equipment (DME)
  - f. Functional capacity evaluation (FCE)
  - g. Injections with corticosteroids and/or analgesics
  - h. Job site analysis
  - i. Limited oral corticosteroids
  - j. Modified activity of the extremity as indicated
  - k. Non-steroidal anti-inflammatory drugs
  - l. Orthotics/splints
  - m. Outpatient evaluation and therapy
    - i. Attended modalities and procedures
    - ii. Unattended modalities
  - n. Antidepressants
  - o. Mental health treatment
  - p. Single or interdisciplinary program
    - i. Work conditioning
    - ii. Work hardening

**D. Shoulder:**

Duration of Treatment: 0-6 months

1. Diagnoses:

Tendinitis

Bicipital Tendinitis

Musculotendinous and

Periarticular Problems of the Shoulder

2. Diagnostic Criteria (including, but not limited to):
  - a. Pain with overhead activity
  - b. Pain with resisted supination, forward flexion and internal rotation or cross chest impingement test positive
  - c. Night pain
  - d. No evidence of cervical spine pathology
  - e. Continued, persistent, and intermittent symptoms
  - f. Limited-to-good response to primary treatment
  - g. Chronic, persistent and recurring symptoms
3. Diagnostic Procedures (including, but not limited to):
  - a. Arthrogram/MRI
  - b. Physical examination
  - c. Plain x-rays
  - d. Arthrogram
  - e. Behavioral pain management evaluation
  - f. Bone scan
  - g. Electromyogram (EMG)/nerve conduction studies
  - h. Mental health evaluation/assessment
4. Treatment Interventions (including, but not limited to):
  - a. Analgesics
  - b. Antibiotics (with secondary infection)
  - c. Concurrent home program
  - d. Durable medical equipment (DME)
  - e. Functional capacity evaluation (FCE)
  - f. Injection with corticosteroids
  - g. Job site analysis
  - h. Limited oral corticosteroids
  - i. Manipulation
  - j. Modified activity of the extremity as indicated
  - k. Non-steroidal anti-inflammatory drugs
  - l. Orthotics/splints post-surgical only
  - m. Outpatient evaluation and therapy
    - i. Attended modalities and procedures

- ii. Unattended modalities
- n. Antidepressants
- o. Mental health treatment
- p. Single or interdisciplinary program
  - i. Work conditioning
  - ii. Work hardening

**E. Shoulder:**

Duration of Treatment: 0-6 months

1. Diagnoses:

Rotator Cuff: Sprain, Strain, Tear

Shoulder Impingement Syndrome

2. Diagnostic Criteria (including, but not limited to):

- a. History/impingement syndrome and similar disorders
  - i. Symptoms may be gradual in onset or may be more immediate
  - ii. May be exacerbated by overhead motion
  - iii. Pain on abduction of the affected shoulder which may limit active abduction and rotation
  - iv. Difficulty abducting the affected shoulder
  - v. Pain in area of acromial process, typically without radiation
  - vi. Nocturnal pain of affected extremity
- b. History/Rotator cuff tear
  - i. May be acute or degenerative; onset commonly insidious
  - ii. Severe direct trauma to shoulder (acute)
  - iii. Pain on abduction of shoulder, with limited motion
  - iv. Inability to abduct the arm
  - v. Pain over the tip of the shoulder
  - vi. Abduction and rotation of shoulder may be limited
  - vii. Failure of conservative therapy of other shoulder disorders
- c. Physical Findings/Impingement syndrome and similar disorders
  - i. Tenderness over the humeral head or bicipital groove
  - ii. Tenderness on palpation of the coracoacromial joint
  - iii. Reproduction of symptoms with passive motion of the shoulder
  - iv. Decreased range of motion in cross body abduction and internal rotation
  - v. Crepitus or popping with extension and flexion
- d. Physical Findings/Rotator cuff tear
  - i. Reproduction of symptoms with passive motion of the shoulder
  - ii. Inability to initiate or maintain abduction
  - iii. Tenderness of anterior rotator cuff to palpation
  - iv. Atrophy of muscles of shoulder girdle if chronic and motion is painful or limited

- e. Continued, persistent, intermittent symptoms
  - f. Limited-to-good response to primary treatment
  - g. Chronic, persistent, recurring symptoms
  - h. Documented history of persistent failure to respond to non-operative/operative treatment
3. Diagnostic Procedures (including, but not limited to):
- a. Plain x-rays
  - b. Magnetic resonance imaging (MRI)
  - c. Physical examination
  - d. Arthrogram
  - e. Mental health evaluation/assessment
4. Treatment Interventions (including, but not limited to):
- a. Analgesics
  - b. Concurrent home program
  - c. Functional capacity evaluation (FCE)
  - d. Immobilizer/sling as needed
  - e. Injection with corticosteroids
  - f. Job site analysis
  - g. Limited oral corticosteroids
  - h. Manipulation
  - i. Modified activity of the extremity as indicated
  - j. Non-steroidal anti-inflammatory drugs
  - k. Orthotics/ splint post surgical only
  - l. Outpatient evaluation and therapy
    - i. Attended modalities and procedures
    - ii. Unattended modalities
  - m. Antidepressants
  - n. Mental health treatment
  - o. Single or interdisciplinary program
    - i. Work conditioning
    - ii. Work hardening

**F. Neuropathy:**

Duration of treatment: 0-6 months

- 1. Diagnoses:
  - Neuropathy
- 2. Diagnostic Criteria (including, but not limited to):
  - a. History
    - i. Repetitive motion/force
    - ii. Pain and paresthesia



- iii. Weakness
- iv. Exposure to vibrations
- v. Nocturnal dyesthesias/paresthesias
- vi. Relief by splinting
- b. Physical Findings:
  - i. Reproduction of symptoms with percussion, compression or other provocative maneuver
  - ii. Weakness and/or atrophy of affected muscles
  - iii. Continued, persistent and intermittent symptoms
  - iv. Limited-to-good response to primary treatment
  - v. Chronic, persistent and recurring symptoms
- 3. Diagnostic Procedures (including, but not limited to):
  - a. Mental health evaluation/assessment
  - b. Physical examination
  - c. Plain x-rays
  - d. EMG/NCV may be helpful to confirm but not required for diagnosis
  - e. Magnetic resonance imaging (MRI)
- 4. Treatment Intervention (including, but not limited to):
  - a. Analgesics
  - b. Behavioral pain management/relaxation training
  - c. Concurrent home program
  - d. Durable medical equipment (DME)
  - e. Functional capacity evaluation (FCE)
  - f. Injection with corticosteroids/steroids
  - g. Job site analysis
  - h. Limited oral corticosteroids
  - i. Manipulation
  - j. Mental health treatment
  - k. Modified activity of the extremity
  - l. Non-steroidal anti-inflammatory drugs
  - m. Nutritional supplements (Vitamins B1 and B6) in indicated doses
  - n. Orthotics/splints
  - o. Outpatient evaluation and therapy
    - i. Attended modalities and procedures
    - ii. Unattended modalities
  - p. Antidepressants
  - q. Medication modification
  - r. Single or interdisciplinary program



- i. Modified activity of the extremity as indicated
- j. Non-steroidal anti-inflammatory drugs
- k. Orthotics/splints
- l. Outpatient evaluation and therapy
  - i. Attended modalities and procedures
  - ii. Unattended modalities
- m. Antidepressants
- n. Behavioral management/relaxation training
- o. Mental health treatment
- p. Single or interdisciplinary program
  - i. Work conditioning
  - ii. Work hardening

**H. Fractures:**

Duration of treatment: 0-6 months

1. Diagnoses:
  - Fractures
2. Diagnostic Criteria (including, but not limited to):
  - a. Brief history of acute injury with early positive response to treatment
  - b. No urgent surgical indicators on physical examination
  - c. No significant structural pathology, suggesting surgical solutions
  - d. Post acute or chronic patient with acute exacerbation
  - e. Swelling, pain and tenderness
  - f. Limited range of motion
  - g. Continued, persistent and intermittent symptoms
  - h. Limited-to-good response to primary treatment
  - i. Chronic, persistent and recurring symptoms
  - j. Documented history of persistent failure to respond to non-operative/operative treatment
3. Diagnostic Procedures (including, but not limited to):
  - a. Bone scan
  - b. Computerized axial tomography (CAT)
  - c. Physical examination
  - d. Plain x-rays
  - e. Tomogram
  - f. Magnetic resonance imaging (MRI)
  - g. Mental health evaluation/assessment
4. Treatment Interventions (including, but not limited to):
  - a. Analgesics
  - b. Concurrent home program

- c. Durable medical equipment (DME)
- d. Functional capacity evaluation (FCE)
- e. Job site analysis
- f. Limited oral corticosteroids
- g. Modified activity of the extremity as indicated
- h. Non-steroidal anti-inflammatory drugs
- i. Orthotics/splints/casts
- j. Outpatient evaluation and therapy
  - i. Attended modalities and procedures
  - ii. Unattended modalities
- k. Antidepressants
- l. Mental health treatment
- m. Single or interdisciplinary program
  - i. Work conditioning
  - ii. Work hardening

**I. Intra-Articular Pathology / Traumatic Arthritis / Duration of treatment: 0-12 months**

- 1. Diagnoses:
  - Intra-Articular Pathology
  - Traumatic Arthritis
- 2. Diagnostic Criteria:
  - a. Limited range of motion
  - b. Pain with use of joint
  - c. Weakness of extremity
  - d. Swelling
  - e. Continued, persistent and intermittent symptoms
  - f. Limited-to-good response to primary treatment
- 3. Diagnostic Procedures (including, but not limited to):
  - a. Arthrogram
  - b. Aspiration (with joint fluid analysis and cultures)
  - c. Bone scan
  - d. Computerized axial tomography (CAT) scan
  - e. Laboratory analysis (including arthrodesis)
  - f. Magnetic resonance imaging (MRI)
  - g. Physical examination
  - h. Plain x-rays
  - i. Tomogram
  - j. Antidepressants

- k. Mental health treatment
- 4. Treatment Interventions (including, but not limited to):
  - a. Analgesics
  - b. Concurrent home program
  - c. Durable medical equipment (DME)
  - d. Functions capacity evaluation
  - e. Injection with corticosteroids
  - f. Job site analysis
  - g. Limited oral corticosteroids
  - h. Manipulation
  - i. Modified activity of the extremity as indicated
  - j. Non-steroidal anti-inflammatory drugs
  - k. Orthotics/splints
  - l. Outpatient evaluation and therapy
    - i. Attended modalities and procedures
    - ii. Unattended modalities

**J. Joint Instability**

Duration of treatment: 0-6 months

- 1. Diagnoses:
  - Joint instability
- 2. Clinical Criteria (including, but not limited to):
  - a. Pain with overhead activity or other provocative maneuver
  - b. History of subluxation or dislocation
  - c. Related episodes of subluxation or dislocation
  - d. Pain, tenderness
  - e. Joint catching or popping
  - f. Continued, persistent and intermittent symptoms
  - g. Limited-to-good response to primary treatment
  - h. Chronic, persistent and recurring symptoms
  - I. Documented history of persistent failure to respond to non-operative/operative treatment
- 3. Diagnostic Procedures (including, but not limited to):
  - a. Arthrogram
  - b. Computerized axial tomography (CAT)
  - c. Magnetic resonance imaging (MRI)
  - d. Physical examination
  - e. Plain x-rays
  - f. Tomogram
  - g. Bone scan

- h. Mental health examination/assessment
- 4. Treatment Interventions (including, but not limited to):
  - a. Analgesics
  - b. Concurrent home program
  - c. Functional capacity evaluation (FCE)
  - d. Injection with corticosteroids
  - e. Job site analysis
  - f. Limited oral corticosteroids
  - g. Manipulation
  - h. Modified activity of the extremity as indicated
  - i. Non-steroidal anti-inflammatory drugs
  - j. Orthotics/splints
  - k. Outpatient evaluation and therapy
    - i. Attended modalities and procedures
    - ii. Unattended modalities
  - l. Antidepressants
  - m. Mental health treatment
  - n. Single or interdisciplinary program
    - i. Work conditioning
    - ii. Work hardening
  - o. Interdisciplinary program
    - i. Chronic pain management
    - ii. Outpatient medical rehabilitation

**K. Crush Injuries**

Duration of Treatment: 0-6 months

- 1. Diagnoses:
  - Crush injuries
- 2. Diagnostic Criteria (including, but not limited to):
  - a. History of crushing injury
  - b. Swelling
  - c. Pain
  - d. Inflammation
  - e. Redness and swelling
  - f. Loss of function
  - g. Continued pain
  - h. Limited range of motion
  - i. Limited sensation
  - j. Chronic, persistent and recurring symptoms

- k. Documented history of persistent failure to respond to non-operative/operative treatment
- 3. Diagnostic Procedures (including, but not limited to):
  - a. Computerized axial tomography (CAT)
  - b. Magnetic resonance imaging (MRI)
  - c. Physical examination
  - d. Plain x-rays
  - e. Behavioral pain management evaluation
  - f. Bone scan
  - g. Electromyogram (EMG)
  - h. Mental health evaluation/assessment
- 4. Treatment Interventions (including, but not limited to):
  - a. Analgesics
  - b. Antibiotics
  - c. Concurrent home program
  - d. Durable medical equipment (DME)
  - e. Functional capacity evaluation (FCE)
  - f. Job site analysis
  - g. Manipulation (when injury confined to soft tissue)
  - h. Modified activity of the extremity as indicated
  - i. Non-steroidal anti-inflammatory drugs
  - j. Orthotics/splints/casts
  - k. Outpatient evaluation and therapy
    - i. Attended modalities and procedures
    - ii. Unattended modalities
  - l. Antidepressants
  - m. Injection with corticosteroids and/or analgesics
  - n. Mental health treatment
  - o. Single or interdisciplinary program
    - i. Work conditioning
    - ii. Work hardening
  - p. Interdisciplinary program
    - i. Chronic pain management
    - ii. Outpatient medical rehabilitation

**L. Reflex Sympathetic Dystrophy** Duration of Treatment: 0-6 months

- 1. Diagnoses:

Reflex Sympathetic Dystrophy

Recommend that an experienced hand or upper extremity surgeon be involved early in

the evaluation and treatment.

2. Diagnostic Criteria (including, but not limited to):
  - a. Pain (out of proportion to the degree of injury)
  - b. Edema/Swelling
  - c. Stiffness/Loss of function
  - d. Discoloration (may or may not be accompanied by temperature change in the affected area)
  - e. Joint contracture
  - f. Muscle weakness
  - g. Persistent pain, blanching, skin coolness
  - h. Progressive decrease in range of motion and restrictive limb use, muscle loss
  - i. Bony changes
  - j. Severely restricted use
  - k. Atrophy
  - l. Chronic pain
3. Diagnostic Procedures (including, but not limited to):
  - a. Behavioral pain management evaluation
  - b. Bone scan
  - c. Mental health evaluation/assessment
  - d. Nerve conduction studies/EMG
  - e. Physical examination
  - f. Plain x-rays
  - g. Plethysmography
  - h. Vascular/arterial doppler
  - i. Magnetic resonance imaging (MRI)
  - j. Sympathetic blocks
4. Treatment Interventions (including, but not limited to):
  - a. Medications
    - i. Analgesics
    - ii. Antidepressants
    - iii. Anticonvulsant
    - iv. Sympathetic alpha blockers
    - v. Non-steroidal anti-inflammatory
    - vi. Anti-smoking medication
    - vii. Behavioral pain management/relaxation training
    - viii. Concurrent home program
    - ix. Functional capacity evaluation (FCE)
    - x. Manipulation



- xi. Mental health treatment
- xii. Modified activity of the extremity as indicated
- xiii. Outpatient evaluation and therapy
  - (a). Attended modalities and procedures
  - (b). Unattended modalities
- b. Sympathetic blocks
  - i. Durable medical equipment (DME)
  - ii. Orthotics/splints
  - iii. Single or interdisciplinary program
    - (a). Work conditioning
    - (b). Work hardening
  - iv. Interdisciplinary program
    - (a). Chronic pain management
    - (b). Outpatient medical rehabilitation

## **VII. SURGICAL INDICATIONS**

Indications for surgery include, but are not limited to, the following list:

### **A. Hand and Wrist:**

Indications for surgery for Tendinitis/Stenosing Tenosynovitis/Musculotendinitis/Musculotendinous problems include, but are not limited to:

1. unresponsive to at least a 4-8 week trial of conservative treatment;
2. tendon is locked in position; and/or
3. severe pain is present in the finger, thumb or wrist which is unresponsive to conservative therapy.

### **B. Elbow:**

Indications for surgery for Musculotendinitis/Tendinitis (Lateral Epicondylitis, Medial Epicondylitis, Musculotendinous and Periarticular problems of the elbow) include, but are not limited to:

1. failure to respond to non-operative treatment program after 6-12 months;
2. no improvement after a total of 1-3 corticosteroid injections;
3. presence of atrophy or weakness of the forearm extensors; and/or
4. early surgical intervention (before 6 months), which may be considered if the patient is severely disabled.

### **B. Olecranon Bursitis:**

Indications for surgery include, but are not limited to:

1. infection is present; and/or
2. bursitis is recurrent despite aspiration.

### **C. Shoulder.**

Indications for surgery for the Rotator Cuff (sprain/strain, tear, shoulder impingement syndrome)-include, but are not limited to:

1. confirmed tear unresponsive to physical medicine; and/or

2. profound weakness.

#### **D. Upper Extremities.**

##### 1. Neuropathy.

- a. Indications for surgery in Carpal Tunnel Syndrome include, but are not limited to:
  - i. failure to respond to non-operative treatment;
  - ii. presence of thenar atrophy or weakness or significant hyperesthesia/dysesthesia (especially with objective impairment of sensibility as determined by Semmes Weinstein discrimination or by light touch);
  - iii. progressive symptoms;
  - iv. presence of space-occupying lesion in carpal canal; and/or
  - v. presence of compartment syndrome or extensive injury to forearm and wrist.
- b. General Indications for peripheral neuropathy are positive physical findings with provocative testing with symptoms that persist despite non-operative management. Muscle weakness or atrophy may be indicators for more urgent intervention. Electromyographic and nerve conduction studies are helpful to confirm diagnoses. The absence or presence of electrical changes are not indications for surgery without appropriate physical findings.

##### 2. Muscle/Ligament/Capsular Injuries (Acute/Chronic).

- a. Indications for surgery in Ulnar Collateral Ligament injury of the thumb (sprain/tear) include, but are not limited to:
  - i. any displaced or avulsed fracture with ligament attachment;
  - ii. complete ligament disruption;
  - iii. Stener's lesion (displacement of the ulnar collateral ligament superficial to the abductor tendon);
  - iv. open wound; and/or
  - v. open contaminated wound.
- b. Indications for surgery in DeQuervain's Stenosing Tenosynovitis include, but are not limited to:
  - i. no response or incomplete response to non-operative treatment after 6-12 weeks of treatment; and/or
  - ii. presence of a condition which is not amenable to nonsurgical treatment (e.g. separate abductor pollicis longus and extensor pollicis brevis tendon compartments).
- c. General Indications. Indications for surgery include, but are not limited to:
  - i. joint instability;
  - ii. joint malalignment; and/or
  - iii. pain impairing the functional use of the joint.

##### 3. Fractures.

- a. Indications for surgery in clavicle fracture include, but are not limited to displaced fractures;
- b. Indications for surgery in fracture surgical neck, humerus include, but are not limited to:
  - i. displaced or angulated fracture that needs closed reduction (with or without internal fixation);
  - ii. displaced or angulated fracture needing open reduction and internal fixation of the

fragments; and/or

iii. associated neurologic or vascular injury present.

c. Indications for surgery in distal radius fracture include, but are not limited to:

i. displaced fracture requiring reduction and immobilization;

ii. comminuted displaced fracture requiring reduction and fixation;

iii. open fracture;

iv. acute carpal tunnel syndrome;

v. associated complex soft-tissue injury (consideration of compartment syndrome);

vi. failure of closed reduction

d. General Indications for surgery include, but are not limited to:

i. displaced fracture requiring reduction and immobilization;

ii. comminuted displaced fracture requiring reduction and fixation;

iii. open fracture; and/or

iv. nonunion of the fracture.

4. Intra articular Pathology (Traumatic Arthritis).

Indications for surgery include, but are not limited to:

i. persistent synovitis;

ii. locking of the joint; and/or

iii. painful traumatic arthritis documented radiologically.

5. Joint Instability.

Indications for surgery include, but are not limited to repeated episodes of instability despite conservative therapy.

6. Lacerations (Tendons, Nerves).

Indications for surgery include, but are not limited to:

i. open wound; and/or

ii. open contaminated wound

7. Crush Injuries.