**California Shoulder Complaints**

California Medical Treatment Utilization Schedule   
§ 9792.23.2. Shoulder Complaints

American College of Occupational and Environmental Medicine, 2nd Edition   
Chapter 9 - Shoulder Complaints

**Full Text ACOEM: Chapter 9 – Shoulder Complaints**

General Approach and Basic Principles  
Occupational and primary care providers commonly see shoulder complaints that are potentially work related; they are among the five most common causes of reported work-related health complaints in workers’ compensation claims. These complaints account for about 3-5% of total lost workdays and 10-11% of claims and costs in workers’ compensation, ranking them in the top five for financial severity, although much of the total expense is incurred for surgical procedures.  
This clinical practice guideline presents recommendations on assessing and treating adults with potentially work-related shoulder complaints. Topics include the initial assessment and diagnosis of patients with acute and subacute shoulder complaints that are potentially work related, identification of red flags that may indicate the presence of a serious underlying medical condition, initial management, diagnostic considerations, and special studies for identifying clinical pathology, work-relatedness, return to work, modified duty and activity, and further management considerations, including the management of delayed recovery.  
Algorithms for patient management are included. This chapter’s master algorithm schematizes the manner in which primary care and occupational medicine practitioners generally can manage patients with acute and subacute shoulder problems. The following text, tables, and numbered algorithms expand upon the master algorithm.  
The principal recommendations for assessing and treating patients with shoulder complaints are as follows:  
The initial assessment focuses on detecting indications of potentially serious disease, termed red flags, and making an accurate diagnosis.  
In the absence of red flags, work-related shoulder complaints can be safely and effectively managed by occupational or primary care providers. The focus is on monitoring for complications, facilitating the healing process, and facilitating return to work in a modified- or full-duty capacity.  
Relief of discomfort can be accomplished most safely by activity modification and systemic nonprescription analgesics.  
Patients recovering from acute and subacute shoulder injury or infection are encouraged to return to modified work as their condition permits.  
If symptoms persist for more than 4-6 weeks, referral for specialty care may be indicated.  
Nonphysical factors (such as psychosocial, workplace, or socioeconomic problems) should be addressed in an effort to resolve delayed recovery.  
  
  
Initial Assessment  
Thorough medical and work histories and a focused physical examination (see Chapter 2) are sufficient for the initial assessment of the worker complaining of potentially work-related shoulder symptoms. The medical history and examination include evaluation for serious underlying conditions. This evaluation can consider the possibility of referred shoulder pain due to a disorder in another part of the body (most commonly from the cervical spine). Certain findings on the history and physical examination raise suspicion of serious underlying medical conditions, referred to as red flags (see Table 9-1). The absence of red flags rules out the need for special studies, referral, or inpatient care during the first four to six weeks, when spontaneous recovery is expected (provided any contributory workplace factors are mitigated). Shoulder complaints can then be classified into one of four working categories:  
Potentially serious bone conditions, including fractures, glenohumeral dislocation, infection, or serious nerve or circulation conditions, including referred neck, cardiac, or intraabdominal pain, thoracic outlet syndrome (TOS), or brachial plexus injury  
Mechanical disorders: derangements of the shoulder related to acute trauma, such as acute rotator cuff tear, acromioclavicular (AC) joint strain or separation, or a recently reduced dislocation  
Degenerative disorders: consequences of aging or repetitive use, such as impingement syndrome, rotator cuff tendinitis, degenerative rotator cuff tear, adhesive capsulitis (frozen shoulder), tendonopathy, bursitis, or recurrent dislocation  
Nonspecific shoulder disorders: suggesting neither internal derangement nor referred pain  
  
  
Medical history  
Asking the patient open-ended questions, such as those listed on pages 198- 199, allows the clinician to gauge the need for further discussion or specific inquiries to obtain more detailed information (see also Chapter 2):  
  
1. PREVIOUS SHOULDER PROBLEMS  
Have you had similar episodes previously (prior to the recent episode of this condition)?  
What investigations were conducted with prior episodes of this shoulder condition.  
What treatment did you have with prior episodes of this shoulder condition.  
2. SYMPTOM ONSET  
When did your current limitations begin?  
Do you recall a specific inciting event?  
Was there an acute event that triggered the pain or limitation of motion?  
How did it occur?  
How did the limitations develop?  
3. PROGRESS OF SHOULDER CONDITION  
Have your symptoms changed?  
How long have your activities been limited?  
What investigations and x-rays have you had?  
Have you had specialist consultations.  
What treatments have you had so far, including medication?  
4. PRESENT SYMPTOMS  
Are you experiencing pain, weakness, popping, or limited motion in your shoulder?  
Are your symptoms located primarily in the shoulder joint?  
Do you have pain or other symptoms elsewhere (e.g., neck, chest, or abdomen?  
Are your symptoms constant or intermittent?  
What makes the problem worse or better?  
Is your shoulder pain associated with pain, numbness, tingling, swelling, or color change in the hand or arm?  
5. PRESENT SHOULDER CAPABILITIES  
Can you do overhead work?  
For how long can you perform overhead work?  
How much weight can you lift?  
Can you move your shoulder without pain?  
Can you sleep on the affected shoulder?  
Do you have weakness in your hand, arm, or shoulder?  
Have you noticed any loss of muscle mass?  
6. JOB DEMANDS  
What are your specific job duties.  
Shoulder activities at work:  
What postures and activities are required at work.  
Are there job duties requiring shoulder activity.  
How often are shoulder activities required?  
7. OFF-THE-JOB ACTIVITIES (AVOCATIONAL ACTIVITIES)  
What other activities (hobbies, workouts, sports) do you do at home or elsewhere?  
Do you use your shoulder to perform these activities?  
Do you do any overhead arm actions? How? How Often?  
8. DO YOU HAVE OTHER MEDICAL PROBLEMS?  
Do you have heart disease?  
Do you have gallbladder disease or any other digestive or liver disorder?  
Do you have vaginal discharge (in women)?  
Do you have neck pain or trauma?  
Have you ever had cancer?  
Do you smoke?  
9. WHAT ARE YOUR GOALS IN RELATION TO THIS SHOULDER PROBLEM?  
  
  
  
Table 9-1. Red Flags for Potentially Serious Shoulder Conditions  
  
Disorder: Fractures  
Medical History: History of significant trauma (direct, deceleration)  
Physical Examination: Significant bruising or hemarthrosis, Deformity consistent with displaced fracture (with fracture, check for pulmonary injury and rib fracture as well), Significant swelling  
  
Disorder: Dislocation (glenohumeral joint)  
Medical History: Severe pain and inability to move the shoulder, History of significant trauma, History of prior dislocation, History of deformity, with spontaneous reduction or self-reduction  
Physical Examination: Deformity consistent with unreduced dislocation  
  
Disorder: Infection  
Medical History: Diabetes, Persistent, severe shoulder pain, History of systemic symptoms of infection, History of immunosuppression (transplant, chemotherapy, HIV)  
Physical Examination: Limited range of motion due to severe pain, Systemic signs of sepsis (elevated temperature, chills, hypotension, tachycardia)  
  
Disorder: Tumor  
Medical History: Pain at rest, History of smoking, History of cancer (especially lung), History of immunosuppression (transplant, chemotherapy, HIV)  
Physical Examination: Palpable mass, Tumor vessels  
  
Disorder: Progressive neurologic compromise  
Medical History: History of neurologic disease, History of diabetes, Degenerative disk disease, Trauma  
Physical Examination: Decreased upper extremity sensation, motor strength, and/or reflexes  
  
Disorder: Progressive vascular compromise  
Medical History: History of vascular disease, History of diabetes, History of atherosclerotic, History of syphilis, History of dislocation, fracture, etc., History of high-impact collision  
Physical Examination: Decreased pulses in the upper extremities, Cold, pulseless extremity, Pain-free full range of motion, Differential blood pressure in upper extremities, Bruit (with thoracic aortic aneurysm)  
  
Disorder: Cardiac condition  
Medical History: History of angina or coronary disease, History of cardiac risk factors (smoking, high cholesterorl, high blood pressure, obesity), Family history of heart disease  
Physical Examination: S3 or S4, Arrhythmia, Cold, clammy skin, Apprehension, Hypotension, Pain-free full ROM  
  
Disorder: Subdiaphragmatic conditions  
Medical History: History of subdiaphragmatic condition (gallbladder or liver disorder, perihepatitis, PID, or cervicitis)  
Physical Examination: Tender right upper quadrant, Palpable mass in right upper quadrant, Evidence of pelvic infection  
  
Disorder: Acute rotator cuff tear in a young worker  
Medical History: Heavy lifting, Sudden pull, Pain in shoulder with overhead work, Fall on outstretched arm  
Physical Examination: Weakness of abduction with thumbs down, Weakness of external rotation, Weakness on supra- and infraspinatus tests, Weakness on elevation and external rotation  
  
  
  
Physical Examination  
Based on the medical history, the physical examination includes:  
General observation of the patient  
General level of fitness and physical condition  
Regional examination of the neck and shoulder girdle  
Neurovascular screening  
  
The examination is mostly subjective, because the patient must exert voluntary effort or state a response to the sensory findings on the examination. In many cases of shoulder problems, there are no objective findings, but only painful range of motion (ROM), tenderness, or stiffness in the shoulder. Frozen shoulder or signs of infection or deformity due to fracture or dislocation may be present, but these causes are much less common than nonspecific pain, impingement syndrome, rotator cuff tendinitis, or rotator cuff tears (in that order). The clinician needs to be aware that a patient with a shoulder complaint but painless full range of motion of the shoulder may be experiencing referred pain.  
  
A. Regional Shoulder Examination  
A shoulder examination includes the neck region as well as the shoulder. Ask the patient to point to the area of discomfort with one finger. The range of motion of the shoulder should be determined actively and passively. The examiner may determine passive ROM by eliminating gravity in the pendulum position or by using the other arm to aid elevation. Atrophy of the deltoid or scapular muscles is an objective finding but arises only after weeks to months of symptoms. Deformities due to AC separations are visible, objective findings, as are signs of infection (elevated temperature, redness, heat, fluctuance) or gross tumor (visible vessels, palpable mass). The impingement sign of Neer and the modified impingement sign of Hawkins can be used to test for rotator cuff impingement. The apprehension test can be used to help detect dislocation (a positive test indicates glenohumeral instability, often due to previous dislocation). Strength of the supraspinatus and infraspinatus can be tested to diagnose rotator cuff tear or tendonopathy.  
  
B. Neurologic and Vascular Screening  
The neurologic and vascular status of the shoulder, proximal upper extremity, and neck can be assessed. Peripheral pulses in neutral and stress positions, edema and or color changes are assessed. The motor and sensory status of the shoulder and surrounding structures also can be assessed. Because C5 or C6 radiculopathy can present as shoulder pain or dysfunction, and soft tissue disorders of the neck also sometimes present as shoulder pain, examining the neck and cervical nerve root function is also required. Thoracic outlet syndrome (TOS) has signs and symptoms of scalene tenderness, positive Tinel’s sign over the brachial plexus, and positive maneuvers that provoke neurovascular signs and symptoms. Tests for TOS are of questionable value. Once all other diagnoses have been ruled out and TOS is suspected, referral to a specialist is recommended if invasive treatment is entertained as an option.  
  
C. Assessing Red Flags  
Physical examination evidence of septic arthritis, neurologic compromise, cardiac disease, or intra-abdominal pathology that correlates with the medical history and test results may indicate a need for immediate consultation. The consultations may further reinforce or reduce suspicions of tumor, infection, fracture, or dislocation. A medical history that suggests pathology originating in a part of the body other than the shoulder may warrant examining the cardiovascular and respiratory systems, abdomen, or other areas. Painless full ROM of the shoulder suggests referred pain.  
  
  
Diagnostic Criteria  
If no red flags for serious conditions are present, then determine which common musculoskeletal disorder is present. The criteria presented in Table 9-2 follow the clinical thought process, from the mechanism of illness or injury to unique symptoms and signs of a particular disorder, and to test results, if any tests are needed to guide treatment at this stage.  
  
  
  
Table 9-2. Diagnostic Criteria for Non-red-flag Shoulder Conditions that Can Be Managed by Primary Care Physicians  
  
Probable Diagnosis or Injury: Nonspecific shoulder pain (ICD-9 719.41, 719.51, 726.0, 729.89)  
Mechanism: No known specific mechanism, Overuse relative to physical conditioning  
Unique Symptoms: Pain in shoulder  
Unique Signs: None  
Test and Results: None indicated  
  
Probable Diagnosis or Injury: Rotator cuff tear (ICD-9 727.61 [chronic], 727.61 [acute])  
Mechanism: Heavy lifting, Sudden pull, Fall on outstretched arm especially in > 30-year-old workers with preexisting degenerative changes, Spontaneous in onset  
Unique Symptoms: Pain over the deltoid area with overhead work, Weakness on elevation and external rotation of shoulder  
Unique Signs: Weakness of shoulder in "thumbs down" abduction, Weak external rotation  
Test and Results: MRI positive for acute tears in younger workers (preoperatively only), Arthrography positive for full-thickness tears (preoperatively only if MRI unavailable), MRI may show partial-thickness tears  
  
Probable Diagnosis or Injury: Labral tear (ICD-9 718.01)  
Mechanism: Direct trauma laterally to shoulder  
Unique Symptoms: Pain with movement  
Unique Signs: Instability  
Test and Results: MRI positive for lateral tear  
  
Probable Diagnosis or Injury: Impingement (ICD-9 718.91, 726.10, 726.11, 726.12, 726.19, 726.2)  
Mechanism: Chronic rotator cuff degenerative changes, May be exacerbated by repeated overhead work, Acute irritation  
Unique Symptoms: Night pain in shoulder joint, Nonradiating pain in deltoid area  
Unique Signs: Positive impingement sign, Positive modified impingement sign  
Test and Results: None indicated  
  
Probable Diagnosis or Injury: Shoulder instability (ICD-9 718.81)  
Mechanism: Congenital anatomic problem, Trauma (rare)  
Unique Symptoms: Slipping, Popping, Feeling of instability, "Dead arm" syndrome  
Unique Signs: Positive apprehension test, Positive relocation test of Job  
Test and Results: Positive stress films (weight bearing)  
  
Probable Diagnosis or Injury: Recurrent dislocation (ICD-9 718.31 (nonacute))  
Mechanism: Previous dislocation due to a fall or direct impact  
Unique Symptoms: Recurrent dislocation, Fear or dislocation when shoulder is abducted in external rotation  
Unique Signs: Positive apprehension test  
Test and Results: Radiographic films positive for dislocation if acute  
  
Probable Diagnosis or Injury: AC joint strain (ICD-9 840.0)  
Mechanism: Fall on top of shoulder  
Unique Symptoms: Pain over AC joint  
Unique Signs: Tender over AC joint  
Test and Results: None indicated  
  
Probable Diagnosis or Injury: AC joint separation (ICD-9 831.04)  
Mechanism: Fall on top of shoulder  
Unique Symptoms: Severe pain over AC joint  
Unique Signs: Deformity over AC joint (i.e., high-riding distal clavicle)  
Test and Results: Weighted films show separation > 5 mm (typically not performed, because the disorder is clinically obvious and the test is painful)  
  
Probable Diagnosis or Injury: Adhesive capsulitis (ICD-9 726.0)  
Mechanism: Failed treatment or inactivity, Idiopathic  
Unique Symptoms: Night pain in shoulder joint, Lack of range of motion  
Unique Signs: Limited passive range of motion  
Test and Results: MRI if diagnosis unclear (frozen shoulder)  
  
Probable Diagnosis or Injury: Bursitis (ICD-9 727.3)  
Mechanism: Overuse  
Unique Symptoms: Night pain  
Unique Signs: Tenderness over subacromial bursa  
Test and Results: None indicated  
  
  
  
Work Relatedness  
A thorough work history is crucial to establishing work-relatedness. (See Chapter 2 for components of the work history.) Repetitive overhead work contributes to shoulder tendinitis or tendonopathy (see Table 9-1). Evidence of the work-relatedness of other entities discussed in this chapter, such as adhesive capsulitis, is not well delineated. Acute work-related trauma can be associated with rotator cuff tears, AC ligament strains, and AC separations.  
  
  
Initial Care  
Pain relief is often a patient’s first concern. Nonprescription analgesics may provide sufficient pain relief for most patients with acute and subacute symptoms. If treatment response is inadequate (i.e., if symptoms and activity limitations continue), prescribed pharmaceuticals or physical methods can be added. Comorbid conditions, side effects, cost, and provider and patient preferences guide the clinician’s choice of recommendations. Table 9-3 summarizes comfort options.  
  
Instruction in home exercise. Except in cases of unstable fractures, acute dislocations, instability or hypermobility, patients can be advised to do early pendulum or passive ROM exercises at home. Instruction in proper exercise technique is important, and a few visits to a good physical therapist can serve to educate the patient about an effective exercise program.  
  
Manipulation by a manual therapist has been described as effective for patients with frozen shoulders. The period of treatment is limited to a few weeks, because results decrease with time. Scalene-stretching and trapezius-strengthening exercises have been found effective in relieving thoracic outlet compression symptoms.  
  
Physical modalities, such as massage, diathermy, cutaneous laser treatment, ultrasound treatment, transcutaneous electrical neurostimulation (TENS) units, and biofeedback are not supported by high-quality medical studies, but they may be useful in the initial conservative treatment of acute shoulder symptoms, depending on the experience of local physical therapists available for referral. Some medium quality evidence supports manual physical therapy, ultrasound, and highenergy extracorporeal shock wave therapy for calcifying tendinitis of the shoulder. Patients’ at-home applications of heat or cold packs may be used before or after exercises and are as effective as those performed by a therapist. Initial use of less-invasive techniques provides an opportunity for the clinician to monitor progress before referral to a specialist.  
  
Invasive techniques have limited proven value. If pain with elevation significantly limits activities, a subacromial injection of local anesthetic and a corticosteroid preparation may be indicated after conservative therapy (i.e., strengthening exercises and nonsteroidal antiinflammatory drugs) for two to three weeks. The evidence supporting such an approach is not overwhelming. The total number of injections should be limited to three per episode, allowing for assessment of benefit between injections.  
  
Some small studies have supported using acupuncture, but referral is dependent on the availability of experienced providers with consistently good outcomes.  
  
If response to exercise is protracted, anterior scalene block has been reported to be efficacious in relieving acute thoracic outlet symptoms, and as an adjunct to diagnosis.  
  
Significant differences between traditional approaches and various alternative and multidisciplinary intervention programs for shoulder pain have not been demonstrated in the medical literature to date. Recommendations, prescription, or referral regarding such multidisciplinary programs or alternative care can be based on the practitioner’s professional judgment and the patient’s individual situation or condition. For example, the success of chiropractic manipulation is highly dependent on the patient’s previous successful experience with chiropractors.  
  
  
  
Table 9-3. Methods of Symptom Control for Patients with Shoulder Complaints  
RECOMMENDED  
Nonprescription Medications: Acetaminophen (safest), NSAIDs (aspirin, ibuprofen)  
Nonprescribed Physical Methods: Adjust or modify workstation after ergonomic assessment, job tasks, or work hours, Stretching, Specific shoulder exercises for ROM and strengthening, Home, local application of cold during first few days of acute complaint; thereafter, then heat application, Relaxation techniques  
Prescribed Pharmaceutical Methods: NSAIDs, Short course of narcotic analgesics for AC separation, if needed  
Prescribed Physical Methods: Initial and follow-up visits for education, counseling, and evaluation of home exercise  
OPTIONS  
Impingement Syndrome: Corticosteroid injection into subacromial bursa, Global shoulder strengthening  
Nonspecific Shoulder Pain: Global shoulder strengthening, Aerobic exercise  
Rotator Cuff Tear: Refer young workers with acute tears for surgical repair, Sling for acute pain  
Recurrent Dislocation: Rotator muscle strengthening  
Shoulder Instability: Global shoulder girdle strengthening  
AC Joint Strain or Separation: Sling for comfort  
  
  
  
Activity Modification  
Shoulder disorders may lead to joint stiffness more often than other joint disorders. Because patients with shoulder disorders tend to have stiffness followed by weakness and atrophy, careful advice regarding maximizing activities within the limits of symptoms is imperative, once red flags have been ruled out. If indicated, the joint can be kept at rest in a sling. Gentle exercise even during this time is desirable. Patients acutely should avoid activities that precipitate symptoms, but should continue general activities and motion. Therapeutic exercise, including strengthening, should start as soon as it can be done without aggravating symptoms. Patients usually can tolerate pendulum exercises even when discomfort is pronounced, and this method can preserve ROM.  
Activities and postures that increase stress on the shoulder and contribute to structural damage tend to aggravate symptoms. Lifting and working at 90 degrees forward or sideways, as well as overhead work, can be proscribed or restricted during the first few weeks after onset of problems due to acute rotator cuff tear, AC joint strain or separation, and impingement syndrome.  
  
  
Work Activities Occupational clinicians often are asked to make specific recommendations about work activities for patients with acute limitations due to acute shoulder problems. Table 9-4 provides a guide for recommendations about activity modification. These guidelines are intended for patients without comorbidity or complicating factors, including employment or legal issues. They are targets to provide a guide from the perspective of physiologic recovery. The clinician can make it clear to patients and employers that:  
Even moderately heavy (more than 20 pounds) unassisted lifting or repeated work at ‘‘shoulder level’’ (90 degrees forward or sideways) or overhead may aggravate shoulder symptoms due to rotator cuff tears, inflammatory conditions, ligament damage, and impingement syndrome.  
Any restrictions are intended to allow for spontaneous recovery or time to build activity tolerance through exercise. Assist the patient in avoiding aggravating activities by reviewing work activities and responsibilities to decide whether modifications can be accomplished and to determine whether modified activity is an option. To aid recovery, make every attempt to maintain the patient at sufficient levels of activity, including work, hobbies, and sports activities.  
  
  
  
Table 9-4. Guidelines for Modification of Work Activities and Disability Duration  
  
Disorder: Acute tears in rotator cuff in younger workers  
Activity Modifications and Accommodation: Refer for possible repair. Avoid work at a 90-degree forward or sideway position, pushing, pulling, and heavy lifting if patient wishes to avoid surgical repair.  
Recommended Target for Disability Duration With Modified Duty: 1-2 days  
Recommended Target for Disability Duration Without Modified Duty: 21 days  
NHIS Experience Data Median (cases with lost time): 27 days  
NHIS Experience Data Percent No Lost Time: 66%  
  
Disorder: Chronic tear in rotator cuff  
Activity Modifications and Accommodation: Avoid work at a 90-degree forward or sideway position, pushing, pulling, and heavy lifting.  
Recommended Target for Disability Duration With Modified Duty: 1-2 days  
Recommended Target for Disability Duration Without Modified Duty: 21 days  
NHIS Experience Data Median (cases with lost time): 27 days  
NHIS Experience Data Percent No Lost Time: 66%  
  
Disorder: Impingement syndrome  
Activity Modifications and Accommodation: Avoid overhead work, pushing, pulling, and heavy lifting  
Recommended Target for Disability Duration With Modified Duty: 1 day  
Recommended Target for Disability Duration Without Modified Duty: 3-7 days  
NHIS Experience Data Median (cases with lost time): 14 days  
NHIS Experience Data Percent No Lost Time: 65%  
  
Disorder: Shoulder instability  
Activity Modifications and Accommodation: Avoid pusing, pulling, and heavy lifting  
Recommended Target for Disability Duration With Modified Duty: 0 days  
Recommended Target for Disability Duration Without Modified Duty: 21 days  
NHIS Experience Data Median (cases with lost time): 9 days  
NHIS Experience Data Percent No Lost Time: 50%  
  
Disorder: Recurrent dislocation  
Activity Modifications and Accommodation: Avoid overhead work, pushing, and pulling  
Recommended Target for Disability Duration With Modified Duty: 0 days  
Recommended Target for Disability Duration Without Modified Duty: 21 days  
NHIS Experience Data Median (cases with lost time): 12 days  
NHIS Experience Data Percent No Lost Time: 35%  
  
Disorder: AC joint strain  
Activity Modifications and Accommodation: Avoid overhead work, pushing, and pulling  
Recommended Target for Disability Duration With Modified Duty: 1 day  
Recommended Target for Disability Duration Without Modified Duty: 3-7 days  
NHIS Experience Data Median (cases with lost time): 14 days  
NHIS Experience Data Percent No Lost Time: 23%  
  
Disorder: AC joint separation  
Activity Modifications and Accommodation: Allow activity as tolerated, with arm in immobilizer  
Recommended Target for Disability Duration With Modified Duty: 7 days  
Recommended Target for Disability Duration Without Modified Duty: 21 days  
NHIS Experience Data Median (cases with lost time): 14 days  
NHIS Experience Data Percent No Lost Time: 18%  
  
Disorder: Regional shoulder pain  
Activity Modifications and Accommodation: Allow all activities as toleratted; avoid those that aggravate symptoms but start range-of-motion exercises and conditioning  
Recommended Target for Disability Duration With Modified Duty: 0 days  
Recommended Target for Disability Duration Without Modified Duty: 3-7 days  
NHIS Experience Data Median (cases with lost time): 4 days  
NHIS Experience Data Percent No Lost Time: 49%  
  
  
  
Follow-up Visits  
Patients with shoulder complaints can have follow-up every three to five days by an appropriate health professional who can counsel them about avoiding static positions, medication use, activity modification, and other concerns. The practitioner should take care to answer questions and make these sessions interactive so that the patient is fully involved in his or her recovery. If the patient has returned to work, these interactions may be done on site or by telephone.  
Physician follow-up generally occurs when a release to modified, increased, or full activity is needed, or after appreciable healing or recovery can be expected, on average. Physician follow-up might be expected every four to seven days if the patient is off work and every seven to fourteen days if the patient is working.  
  
  
Special Studies and Diagnostic and Treatment Considerations  
For most patients with shoulder problems, special studies are not needed unless a four- to six-week period of conservative care and observation fails to improve symptoms. Most patients improve quickly, provided red-flag conditions are ruled out. There are a few exceptions:  
Stress films of the AC joints (views of both shoulders, with and without patient holding 15-lb weights) may be indicated if the clinical diagnosis is AC joint separation. Care should be taken when selecting this test because the disorder is usually clinically obvious, and the test is painful and expensive relative to its yield.  
If an initial or recurrent shoulder dislocation presents in the dislocated position, shoulder films before and after reduction are indicated.  
Persistent shoulder pain, associated with neurovascular compression symptoms (particularly with abduction and external rotation), may indicate the need for an AP cervical spine radiograph to identify a cervical rib.  
  
Routine testing (laboratory tests, plain-film radiographs of the shoulder) and more specialized imaging studies are not recommended during the first month to six weeks of activity limitation due to shoulder symptoms, except when a red flag noted on history or examination raises suspicion of a serious shoulder condition or referred pain. Cases of impingement syndrome are managed the same regardless of whether radiographs show calcium in the rotator cuff or degenerative changes are seen in or around the glenohumeral joint or AC joint. Suspected acute tears of the rotator cuff in young workers may be surgically repaired acutely to restore function; in older workers, these tears are typically treated conservatively at first. Partial-thickness tears should be treated the same as impingement syndrome regardless of magnetic resonance imaging (MRI) findings. Shoulder instability can be treated with stabilization exercises; stress radiographs simply confirm the clinical diagnosis. For patients with limitations of activity after four weeks and unexplained physical findings, such as effusion or localized pain (especially following exercise), imaging may be indicated to clarify the diagnosis and assist reconditioning. Imaging findings can be correlated with physical findings.  
  
Primary criteria for ordering imaging studies are:  
Emergence of a red flag (e.g., indications of intra-abdominal or cardiac problems presenting as shoulder problems)  
Physiologic evidence of tissue insult or neurovascular dysfunction (e.g., cervical root problems presenting as shoulder pain, weakness from a massive rotator cuff tear, or the presence of edema, cyanosis or Raynaud’s phenomenon)  
Failure to progress in a strengthening program intended to avoid surgery.  
Clarification of the anatomy prior to an invasive procedure (e.g., a fullthickness rotator cuff tear not responding to conservative treatment)  
  
Laboratory studies, such as liver function tests, tests of gallbladder function, and tests for pelvic disease may be useful to determine if pain is being referred to the shoulder from a subdiaphragmatic source. Electrocardiography, and possibly cardiac enzyme studies, may be needed to clarify apparent referred cardiac pain. Chest radiographs may be needed to elucidate shoulder pain that could be the result of pneumothorax, apical lung tumor, or other apical disease such as tuberculosis. An erythrocyte sedimentation rate (ESR), complete blood count (CBC), and tests for autoimmune diseases (such as rheumatoid factor) can be useful to screen for inflammatory or autoimmune sources of joint pain. All of these tests can be used to confirm clinical impressions, rather than purely as screening tests in a ‘‘shotgun’’ attempt to clarify reasons for unexplained shoulder complaints.  
Anatomic definition by means of imaging is commonly required to guide surgery or other procedures. A discussion with a specialist on selecting the most clinically valuable study can often help the primary care physician avoid duplication. Table 9-5 compares the abilities of different imaging techniques to identify physiologic insult and define anatomic defects. Selecting an imaging test takes into consideration any patient allergies to contrast materials (used in arthrography or contrast computer tomography [CT]), or concerns about claustrophobia (sometimes a problem in patients undergoing MRI), and costs.  
Imaging may be considered for a patient whose limitations due to consistent symptoms have persisted for one month or more, i.e., in cases:  
When surgery is being considered for a specific anatomic defect (e.g., a full-thickness rotator cuff tear). Magnetic resonance imaging and arthrography have fairly similar diagnostic and therapeutic impact and comparable accuracy although MRI is more sensitive and less specific.  
To further evaluate the possibility of potentially serious pathology, such as a tumor.  
  
Selecting specific imaging equipment and procedures will depend on the availability and experience of local referrals.  
Relying only on imaging studies to evaluate the source of shoulder symptoms carries a significant risk of diagnostic confusion (false-positive test results) because of the possibility of identifying a finding that was present before symptoms began (for example, degenerative partial thickness rotator cuff tears), and therefore has no temporal association with the symptoms.  
  
  
  
Table 9-5. Ability of Various Techniques to Identify and Define Shoulder Pathology  
  
Technique: History  
Impingement Syndrome: ++  
Rotator Cuff Tear: +  
Instability: ++  
Recurrent Dislocation: +++  
Regional Pain: +  
Tumor: 0  
Infection: ++  
  
Technique: Physical examination  
Impingement Syndrome: +++  
Rotator Cuff Tear: ++  
Instability: +++  
Recurrent Dislocation: ++  
Regional Pain: +  
Tumor: 0  
Infection: +++  
  
Technique: Laboratory studies  
Impingement Syndrome: 0  
Rotator Cuff Tear: 0  
Instability: 0  
Recurrent Dislocation: 0  
Regional Pain: 0  
Tumor: ++  
Infection: +++  
  
Technique: Imaging studies - Radiography  
Impingement Syndrome: +  
Rotator Cuff Tear: +  
Instability: +  
Recurrent Dislocation: ++  
Regional Pain: 0  
Tumor: ++  
Infection: ++  
  
Technique: Imaging studies - Bone scan  
Impingement Syndrome: 0  
Rotator Cuff Tear: 0  
Instability: 0  
Recurrent Dislocation: 0  
Regional Pain: 0  
Tumor: ++++  
Infection: +++  
  
Technique: Imaging studies - Arthrography  
Impingement Syndrome: 0  
Rotator Cuff Tear: ++++  
Instability: 0  
Recurrent Dislocation: +  
Regional Pain: 0  
Tumor: 0  
Infection: +  
  
Technique: Imaging studies - Computed tomography (CT)  
Impingement Syndrome: 0  
Rotator Cuff Tear: 0  
Instability: 0  
Recurrent Dislocation: ++  
Regional Pain: 0  
Tumor: ++  
Infection: ++  
  
Technique: Imaging studies - Magnetic resonance imaging (MRI)  
Impingement Syndrome: +  
Rotator Cuff Tear: ++++  
Instability: 0  
Recurrent Dislocation: ++  
Regional Pain: 0  
Tumor: +++  
Infection: +++  
  
  
  
Surgical Considerations  
Referral for surgical consultation may be indicated for patients who have:  
Red-flag conditions (e.g., acute rotator cuff tear in a young worker, glenohumeral joint dislocation, etc.)  
Activity limitation for more than four months, plus existence of a surgical lesion  
Failure to increase ROM and strength of the musculature around the shoulder even after exercise programs, plus existence of a surgical lesion  
Clear clinical and imaging evidence of a lesion that has been shown to benefit, in both the short and long term, from surgical repair  
  
Surgical considerations depend on the working or imaging-confirmed diagnosis of the presenting shoulder complaint. If surgery is a consideration, counseling regarding likely outcomes, risks and benefits, and expectations, in particular, is very important. If there is no clear indication for surgery, referring the patient to a physical medicine practitioner may help resolve the symptoms.  
For postsurgical rehabilitation, key indicators for further assessment and treatment include:  
Prolonged course  
Multiple surgical procedures  
Use of narcotic medications  
  
A. Acromioclavicular (AC) Joint Separation  
Patients with AC joint separation may be treated conservatively. The expected period of pain is three weeks, with the pain gradually decreasing. If pain persists after recovery and return to activities, resection of the outer clavicle may be indicated after six months to one year, although local cortisone injections can be tried. The initial deformity decreases as healing and scar contracture take place. In one series, 79% of patients with moderate-to-severe AC separations had good-to-excellent late results with nonoperative treatment, and of the remainder, 90% had good-to-excellent results with simple excision of the outer clavicle.  
  
B. Rotator Cuff Tear  
Rotator cuff repair is indicated for significant tears that impair activities by causing weakness of arm elevation or rotation, particularly acutely in younger workers. Rotator cuff tears are frequently partial-thickness or smaller fullthickness tears. For partial-thickness rotator cuff tears and small full-thickness tears presenting primarily as impingement, surgery is reserved for cases failing conservative therapy for three months. The preferred procedure is usually arthroscopic decompression, which involves debridement of inflamed tissue, burring of the anterior acromion, lysis and, sometimes, removal of the coracoacromial ligament, and possibly removal of the outer clavicle. Surgery is not indicated for patients with mild symptoms or those whose activities are not limited.  
Lesions of the rotator cuff are a continuum, from mild supraspinatus tendon degeneration to complete ruptures. Studies of normal subjects document the universal presence of degenerative changes and conditions, including full avulsions without symptoms. Conservative treatment has results similar to surgical treatment but without surgical risks. Studies evaluating results of conservative treatment of full-thickness rotator cuff tears have shown an 82- 86% success rate for patients presenting within three months of injury. The efficacy of arthroscopic decompression for full-thickness tears depends on the size of the tear; one study reported satisfactory results in 90% of patients with small tears. A prior study by the same group reported satisfactory results in 86% of patients who underwent open repair for larger tears. Surgical outcomes of rotator cuff tears are much better in younger patients than in older patients who may be suffering from degenerative changes in the rotator cuff.  
  
C. Shoulder Dislocation  
Multiple traumatic shoulder dislocations indicate the need for surgery if the shoulder has limited functional ability and if muscle strengthening fails. In the acute phase, shoulder dislocations can be immobilized for up to three weeks although recommendations for immobilization for a period as short as three days have appeared in the literature. If shoulder instability is present only with violent forceful overhead activity, activity modification is recommended. Surgery can be considered for patients who are symptomatic with all overhead activities and patients who have had two or three episodes of dislocation and instability that limited their activity between episodes. Rates of instability recurrence after surgery have been reported as 8% after open repair for anterior instability and 10% after arthroscopic anterior repair. A high incidence of rotator cuff tears accompanying anterior shoulder dislocations occurs in patients 40 years old or older. Although the dislocation recurrence rate is very low, persistent weakness several weeks after a primary dislocation dictates further study to define the anatomy of the rotator cuff.  
  
D. Impingement Syndrome  
Surgery for impingement syndrome is usually arthroscopic decompression. This procedure is not indicated for patients with mild symptoms or those who have no activity limitations. Conservative care, including cortisone injections, can be carried out for at least three to six months before considering surgery. Because this diagnosis is on a continuum with other rotator cuff conditions, including rotator cuff syndrome and rotator cuff tendinitis, also refer to the previous discussion of rotator cuff tears.  
  
E. Ruptured Biceps Tendon  
Ruptures of the proximal (long head) of the biceps tendon are usually due to degenerative changes in the tendon. It can almost always be managed conservatively because there is no accompanying functional disability. Surgery may be desired for cosmetic reasons, especially by young bodybuilders, but is not necessary for function.  
  
F. Thoracic Outlet Compression Syndrome  
Most patients with acute thoracic outlet compression symptoms will respond to a conservative program of global shoulder strengthening (with specific exercises) and ergonomic changes. While not well supported by high-grade scientific studies, cases with progressive weakness, atrophy, and neurologic dysfunction are sometimes considered for surgical decompression. A confirmatory response to electromyography (EMG)-guided scalene block, confirmatory electrophysiologic testing and/or magnetic resonance angiography with flow studies is advisable before considering surgery.

**Summary Table ACOEM Shoulder**

California Medical Treatment Utilization Schedule  
§ 9792.23.2. Shoulder Complaints

American College of Occupational and Environmental Medicine, 2nd Edition  
Chapter 9 - Shoulder Complaints  
Table 9-6 Summary of Recommendation for Evaluating and Managing Shoulder Complaints  
  
  
Clinical Measure: Physical treatment methods, activities and exercise  
Recommended: Maintain activities of other parts of the body while recovering (D)  
Maintain passive range of motion of the shoulder with pendulum exercise and wall crawl (D), Treat initially with strengthening or stabilization exercises for impingement syndrome, rotator cuff tear, instability, and recurrent dislocation (C, D)  
Optional: At-home applications of heat or cold packs to aid exercise (D), Short course of supervised exercise instruction by a therapist (D)  
Not Recommended: Passive modalities by a therapist (unless accompanied by teaching the patient exercises to carried out at home) (D)  
  
Clinical Measure: Medication  
Recommended: Acetaminophen (C), NSAIDs (B)  
Optional: Opioids, short course (C)  
Not Recommended: Use of opioids for more than 2 weeks (C), Muscle relaxants (D)  
  
Clinical Measure: Injections  
Recommended: Two or three sub-acromial injections of local anesthetic and cortisone preparation over an extended period as part of an exercise rehabilitation program to treat rotator cuff inflammation, syndrome, or small tears (C,D), Diagnostic lidocaine injections to distinguish pain sources in the shoulder area (e.g., impingement) (D)  
Not Recommended: Prolonged or frequent use of cortisone injections into the sub-acromial space or the shoulder joint (D)  
  
Clinical Measure: Rest and immobilization  
Recommended: Brief use of a sling for severe shoulder pain (1 to 2 days), with pendulum exercises to prevent stiffness in cases of rotator cuff conditions (D), Three weeks use, or less, of a sling after an initial shoulder dislocation and reduction (C), Same for AC separations or severe sprains (D)  
Not Recommended: Prolonged use of a sling only for symptom control (D)  
  
Clinical Measure: Detection of physiologic abnormalities  
Recommended: Rarely, nerve conduction time of the suprascapular nerve for cases of severe cuff weakness unaccompanied by signs of a rotator cuff tear (D)  
Not Recommended: EMG or NCV studies as part of a shoulder evaluation for usual diagnoses (D)  
  
Clinical Measure: Radiography  
Optional: For acute AC joint separations, stress films (views of both shoulders, with and without patient holding 15-lb weights) (D)  
Not Recommended: Routine radiographs for shoulder complaints before 4 to 6 weeks of conservative treatment (D), Stress films for instability (D)  
  
Clinical Measure: Other imaging procedures  
Recommended: MRI for preoperative evaluation of partial-thickness or large full-thickness rotator cuff tears (C, D)  
Optional: Arthrography for preoperative evaluation of small full-thickness tears (C), Bone scan for detection of an AC joint arthritis (D)  
Not Recommended: Routine MRI or arthrography for evaluation without surgical indications (D), Ultrasonography for evaluation of rotator cuff (C)  
  
Clinical Measure: Surgical considerations  
Recommended: Anterior repair for recurrent dislocation after 2 to 3 dislocations (D), Resection of outer clavicle for chronic disabling AC joint pain after conservative care of acute separation (C), Rotator cuff repair after firm diagnosis is made and rehabilitation efforts have failed (D), Capsular shift surgery for disabling instability (D), Subacromial decompression after failure of non-operative care (C)  
Not Recommended: Anterior repair for initial shoulder dislocation (C), Acute repair of AC separation (C), Acute repair of rotator cuff tears, except for massive acute tears (C), Surgery for recurrent dislocation of instability before rehabilitation efforts (C)