



# Medical Treatment Guidelines

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## Knee Injury

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# Contributors

The NYS Workers' Compensation Board would like to thank the members of the New York Workers' Compensation Board Medical Advisory Committee (MAC). The MAC served as the Board's advisory body to adapt the American College of Occupational and Environmental Medicine (ACOEM) Practice Guidelines to a New York version of the Medical Treatment Guidelines (MTG). In this capacity, the MAC provided valuable input and made recommendations to help guide the final version of these Guidelines. With full consensus reached on many topics, and a careful review of any dissenting opinions on others, the Board established the final product.

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## **A. General Guideline Principles**

The principles summarized in this section are key to the intended application of the New York State Medical Treatment Guidelines (MTG) and are applicable to all Workers' Compensation Medical Treatment Guidelines.

### **A.1 Medical Care**

Medical care and treatment required as a result of a work-related injury should be focused on restoring functional ability required to meet the patient's daily and work activities with a focus on a return to work, while striving to restore the patient's health to its pre-injury status in so far as is feasible.

### **A.2 Rendering Of Medical Services**

Any medical provider rendering services to a workers' compensation patient must utilize the Treatment Guidelines as provided for with respect to all work-related injuries and/or illnesses.

### **A.3 Positive Patient Response**

Positive results are defined primarily as functional gains which can be objectively measured. Objective functional gains include, but are not limited to, positional tolerances, range of motion, strength, endurance, activities of daily living (ADL), cognition, psychological behavior, and efficiency/velocity measures which can be quantified. Subjective reports of pain and function may be considered and given relative weight when the pain has anatomic and physiologic correlation in proportion to the injury.

### **A.4 Re-Evaluate Treatment**

If a given treatment or modality is not producing positive results within a well-defined timeframe, the provider should either modify or discontinue the treatment regime. The provider should evaluate the efficacy of the treatment or modality 2 to 3 weeks after the initial visit and 3 to 4 weeks thereafter. These timeframes may be slightly longer in the context of conditions that are inherently mental health issues, and shorter for other non-musculoskeletal medical conditions (e.g. pulmonary, dermatologic etc.). Recognition that treatment failure is at times attributable to an incorrect diagnosis a failure to respond should prompt the clinician to reconsider the diagnosis in the event of an unexpected poor response to an otherwise rational intervention.

### **A.5 Education**

Education of the patient and family, as well as the employer, insurer, policy makers and the community should be a primary emphasis in the treatment of work-related injury or illness. Practitioners should develop and implement effective educational strategies and skills. An education-based paradigm should always start with communication providing reassuring information to the patient. No treatment plan is complete without addressing issues of individual and/or group patient education as a means of facilitating self-management of symptoms and prevention of future injury.

## Time Frames

### A.6 Acuity

Acute, Subacute and Chronic are generally defined as timeframes for disease stages:

- Acute – Less than one month
- Subacute - One to three month, and
- Chronic - greater than three months.

### A.7 Initial Evaluation

Initial evaluation refers to the acute timeframe following an injury and is not used to define when a given physician first evaluates an injured worker (initial encounter) in an office or clinical setting.

### A.8 Diagnostic Time Frames

Diagnostic time frames for conducting diagnostic testing commence on the date of injury. Clinical judgment may substantiate the need to accelerate or decelerate the time frames discussed in this document.

### A.9 Treatment Time Frames

Treatment time frames for specific interventions commence once treatments have been initiated, not on the date of injury. It is recognized that treatment duration may be impacted by disease process and severity, 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.

### A.10 Delayed Recovery

For those patients who fail to make expected progress 6-12 weeks after an injury and whose subjective symptoms do not correlate with objective signs and tests, reexamination in order to confirm the accuracy of the diagnosis and re-evaluation of the treatment program should be performed. When addressing a clinical issue that is not inherently a mental health issue, assessment for potential barriers to recovery (yellow flags/psychological issues) should be ongoing throughout the care of the patient. At 6-12 weeks, alternate treatment programs, including formal psychological or psychosocial evaluation should be considered. Clinicians must be vigilant for any pre-existing mental health issues or subsequent, consequential mental health issues that may be impacting recovery. For issues that are clearly and inherently mental health issues from the outset (i.e. when it is evident that there is an underlying, work-related, mental health disorder as part of the claim at issue), referral to a mental health provider can and should occur much sooner. Referrals to mental health providers for the evaluation and management of delayed recovery do not indicate or require the establishment of a psychiatric or psychological condition. The evaluation and management of delayed recovery does not require the establishment of a psychiatric or psychological claim.

## Treatment Approaches

### A.11 Active Interventions

Active interventions emphasizing patient responsibility, such as therapeutic exercise and/or functional treatment, are generally emphasized over passive modalities, especially as treatment progresses. Generally, passive and palliative interventions are viewed as a means to facilitate progress in an active rehabilitation program with concomitant attainment of objective functional gains.

### A.12 Active Therapeutic Exercise Program

Active therapeutic exercise program goals should incorporate patient strength, endurance, flexibility, range of motion, sensory integration, coordination, cognition and behavior (when at issue) and education as clinically indicated. This includes functional application in vocational or community settings.

### A.13 Diagnostic Imaging And Testing Procedures

Clinical information obtained by history taking and physical examination should be the basis for selection of imaging procedures and interpretation of results. All diagnostic procedures have characteristic specificities and sensitivities for various diagnoses. Usually, selection of one procedure over others depends upon various factors, which may include: relative diagnostic value; risk/benefit profile of the procedure; availability of technology; a patient's tolerance; and/or the treating practitioner's familiarity with the procedure.

When a diagnostic procedure, in conjunction with clinical information, provides sufficient information to establish an accurate diagnosis, a second diagnostic procedure is not required. However, a subsequent diagnostic procedure including a repeat of the original (same) procedure can be performed, when the specialty physician (e.g., physiatrist, sports medicine physician or other appropriate specialist) radiologist or surgeon documents that the initial study was of inadequate quality to make a diagnosis. Therefore, in such circumstances, a repeat or complementary diagnostic procedure is permissible under the MTG.

It is recognized that repeat imaging studies and other tests may be warranted by the clinical course and/or to follow the progress of treatment in some cases. It may be of value to repeat diagnostic procedures (e.g., imaging studies) during the course of care to reassess or stage the pathology when there is progression of symptoms or findings, prior to surgical interventions and/or therapeutic injections when clinically indicated, and post-operatively to follow the healing process. Regarding serial imaging, (including x-rays, but particularly CT scans), it must be recognized that repeat procedures result in an increase in cumulative radiation dose and associated risks.

A given diagnostic imaging procedure may provide the same or distinctive information as obtained by other procedures. Therefore, prudent choice of procedure(s) for a single diagnostic procedure, a complementary procedure in combination with other procedure(s), or a proper sequential order in multiple procedures will ensure maximum diagnostic accuracy, minimize the likelihood of adverse effect on patients, and promote efficiency by avoiding duplication or redundancy.

## **A.14 Surgical Interventions**

Consideration of surgery should be within the context of expected functional outcome. 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 imaging and other diagnostic tests. A comprehensive assimilation of these factors must lead to a specific diagnosis with positive identification of pathologic condition(s). For surgery to be performed to treat pain, there must be clear correlation between the pain symptoms and objective evidence of its cause. In all cases, shared decision making with the patient is advised. The patient should be given the opportunity to understand the pros and cons of surgery, potential for rehabilitation as an alternative where applicable, evidence-based outcomes, and specific surgical experience.

## **A.15 Pre-Authorization**

All diagnostic imaging, testing procedures, non-surgical and surgical therapeutic procedures, and other therapeutics within the criteria of the Medical Treatment Guidelines and based on a correct application of the Medical Treatment Guidelines are considered authorized, with the exception of the procedures listed in section 324.3(1)(a) of Title 12 NYCRR. These are not included on the list of pre-authorized procedures. Providers who want to perform one of these procedures must request pre-authorization from the carrier before performing the procedure.

Second or subsequent procedures (the repeat performance of a surgical procedure due to failure of, or incomplete success from the same surgical procedure performed earlier, if the Medical Treatment Guidelines do not specifically address multiple procedures) also require pre-authorization.

## **A.16 Psychological/Psychiatric Evaluations**

In select patients, mental health evaluations are essential to make, secure or confirm a diagnosis. Of course, the extent and duration of evaluations and/or interventions by mental health professionals may vary, particularly based on whether: the underlying clinical issue in the claim is inherently a mental health issue; or there is a mental health issue that is secondary or consequential to the medical injury or illness that is at issue in the claim in question; or there is a pre-existing, unrelated mental health issue that has been made worse by, or is impeding the recovery from (or both) the medical injury or illness that is at issue in the claim in question.

Tests of psychological function or psychometric testing, when indicated, can be a valuable component of the psychological evaluation in identifying associated psychological, personality and psychosocial issues. Although these instruments may suggest a diagnosis, neither screening nor psychometric tests are capable of making a diagnosis. The diagnosis should only be made after careful analysis of all available data, including from a thorough history and clinical interview.

A professional fluent in the primary language of the patient is strongly preferred. When such a provider is not available, services of a professional language interpreter must be provided.



Frequency: When assessing for a pre-existing, unrelated mental health issue that has been made worse by, or is impeding the recovery from (or both) a work-related, medical injury or illness, then a one-time visit for initial psychiatric/psychological encounter should be sufficient, as care would normally be continued by the prior treating provider. If psychometric testing is indicated by findings in the initial encounter, time for such testing should not exceed an additional three hours of professional time. For conditions in which a mental health issue is a central part of the initial claim, or in which there is a mental health issue that is secondary or consequential to the work-related, medical injury or illness, that is part of the claim in question, then more extensive diagnostic and therapeutic interventions may be clinically indicated, and are discussed in detail in the Medical Treatment Guidelines for such mental health conditions.

### **A.17 Personality/Psychological/Psychosocial Intervention**

Following psychosocial evaluation, when intervention is recommended, such intervention should be implemented as soon as possible. This can be used alone or in conjunction with other treatment modalities. For all psychological/psychiatric interventions, there must be an assessment and treatment plan with measurable behavioral goals, time frames and specific interventions planned.

- Time to produce effect: two to eight weeks.
- Optimum duration: six weeks to three months.
- Maximum duration: three to six months.
- Counseling is not intended to delay but rather to enhance functional recovery.

For PTSD Psychological Intervention:

- Optimum duration three to six months.
- Maximum duration: nine to twelve months.

For select patients, longer supervision and treatment may be required, and if further treatment is indicated, documentation of the nature of the psychological factors, as well as projecting a realistic functional prognosis, should be provided by the authorized treating practitioner every four weeks during the first six months of treatment. For treatment expected to last six to twelve months, such documentation should be provided every four to eight weeks. For long-term treatment beyond twelve months, such documentation should be provided every eight to twelve weeks. All parties should strive for ongoing and continuous communications, in order to facilitate seamless, continuous and uninterrupted treatment.

### **A.18 Functional Capacity Evaluation (FCE)**

Functional capacity evaluation is a comprehensive or more restricted evaluation of the various aspects of function as they relate to the patient's ability to return to work. Areas such as endurance, lifting (dynamic and static), postural tolerance, specific range-of-motion, coordination and strength, worker habits, employability, as well as psychosocial, cognitive, and sensory perceptual aspects of

competitive employment may be evaluated. Components of this evaluation may include: (a) musculoskeletal screen; (b) cardiovascular profile/aerobic capacity; (c) coordination; (d) lift/carrying analysis; (e) job-specific activity tolerance; (f) maximum voluntary effort; (g) pain assessment/psychological screening; (h) non-material and material handling activities; (i) cognitive and behavioral; (j) visual; and (k) sensory perceptual factors.

In most cases, the question of whether a patient can return to work can be answered without an FCE.

An FCE may be considered at time of MMI, following reasonable prior attempts to return to full duty throughout course of treatment, when the treating physician is unable to make a clear determination on work status on case closure. An FCE is not indicated early during a treatment regime for any reason including one to support a therapeutic plan.

When an FCE is being used to determine return to a specific job site, the treating physician is responsible for understanding and considering the job duties. FCEs cannot be used in isolation to determine work restrictions. The authorized treating physician must interpret the FCE in light of the individual patient's presentation and medical and personal perceptions. FCEs should not be used as the sole criteria to diagnose malingering.

## **A.19 Return To Work**

For purposes of these guidelines, return to work is defined as any work or duty that the patient is able to perform safely. It may not be the patient's regular work. Ascertaining a return to work status is part of medical care, and should be included in the treatment and rehabilitation plan. It is normally addressed at every outpatient visit. A description of the patient's status and task limitations is part of any treatment plan and should provide the basis for restriction of work activities when warranted. Early return to work should be a prime goal in treating occupational injuries. The emphasis within these guidelines is to move patients along a continuum of care and return to work, since the prognosis of returning an injured worker to work drops progressively the longer the worker has been out of work.

## **A.20 Job Site Evaluation**

The treating physician may communicate with the employer or employer's designee, either in person, by video conference, or by telephone, to obtain information regarding the individual or specific demands of the patient's pre-injury job. This may include a description of the exertional demands of the job, the need for repetitive activities, load lifting, static or awkward postures, environmental exposures, psychological stressors and other factors that would pose a barrier to re-entry, risk of re-injury or disrupt convalescence. When returning to work at the patient's previous job tasks or setting is not feasible, given the clinically determined restrictions on the patient's activities, inquiry should be made about modified duty work settings that align with, the patient's condition in view of proposed work activities/demands in modified duty jobs. It should be noted, that under certain circumstances, more than one job site evaluation may be indicated.

Ideally, the physician would gain the most information from an on-site inspection of the job settings and activities; but it is recognized that this may not be feasible in most cases. If job videos/CDs/DVDs are available from the employer, these can contribute valuable information, as can video conferences, conducted from the worksite and ideally workstation or work area.

Frequency: One or two contacts

- 1st contact: Patient is in a functional state where the patient can perform some work.
- 2nd contact: Patient has advanced to state where the patient is capable of enhanced functional demands in a work environment.

The physician shall document the conversation.

## Other

### **A.21 Guideline Recommendations And Medical Evidence**

The Workers' Compensation Board and its Medical Advisory Committee have not independently evaluated or vetted the scientific medical literature used in support of the guidelines, but have relied on the methodology used by the developers of various guidelines utilized and referenced in these Guidelines.

### **A.22 Experimental/Investigational Treatment**

Medical treatment that is experimental/investigational and not approved for any purpose, application or indication by the FDA is not permitted under these Guidelines.

### **A.23 Injured Workers As Patients**

In these Guidelines, injured workers are referred to as patients recognizing that in certain circumstances there is no doctor-patient relationship.

### **A.24 Scope Of Practice**

These Guidelines do not address scope of practice or change the scope of practice.

# Knee Injury

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## B. Introduction to Knee Injury

### B.1 History Taking and Physical Examination

History taking and physical examination establish the foundation/basis for and dictate subsequent stages of diagnostic and therapeutic procedures.

When findings of clinical evaluations and those of other diagnostic procedures are not consistent with each other, the objective clinical findings should have preference. The medical records should reasonably document the following:

#### B.1.a History of Present Injury

- B.1.a.i Mechanism of injury: This includes details of symptom onset and progression, and symptoms that may arise from postural or functional accommodation to the knee injury;
- B.1.a.ii Relationship to work: This includes a statement of the probability that the illness or injury is work-related;
- B.1.a.iii Prior occupational and non-occupational injuries to the same area including specific prior treatment and any prior bracing devices;
- B.1.a.iv History of locking, clicking, giving way, crepitation, popping, swelling (is present description of onset and volume) and presence or absence of pain while ascending or descending stairs;
- B.1.a.v Ability to perform job duties and activities of daily living; and
- B.1.a.vi Exacerbating and alleviating factors for symptoms; not limited to the knee.

#### B.1.b Past History

- B.1.b.i Past medical history includes, but is not limited to, neoplasm (or recurrence), gout/pseudogout, infections, significant knee femur and/or leg trauma, arthritis, and diabetes;
- B.1.b.ii A review of systems should be conducted, the elements of which may include signs or symptoms related to the following systems: constitutional symptoms; eyes; ear, nose, mouth, and throat; cardiovascular; respiratory; gastrointestinal; genitourinary; musculoskeletal; integumentary/breast;

neurological; psychiatric; endocrine; hematologic/lymphatic; allergic/immunologic. Based on the underlying condition being addressed, and clinical judgement, the breadth and focus of the review of systems can be tailored on a case by case basis.

- B.1.b.iii Smoking history;
- B.1.b.iv Vocational, military service, and recreational pursuits;
- B.1.b.v Prior imaging studies; and
- B.1.b.vi Past surgical history.

### **B.1.c Physical Examination**

Examination of a joint should include the joint above and below the affected area. Physical examinations should include accepted tests and exam techniques applicable to the joint or area being examined, including:

- B.1.c.i Visual Inspection;
- B.1.c.ii Palpation
- B.1.c.iii Range of motion/quality of motion;
- B.1.c.iv Strength with attention given to evaluate for atrophy and muscle fasciculations;
- B.1.c.v Joint stability;
- B.1.c.vi Examination for a displaced or abnormally displaceable patella;
- B.1.c.vii If applicable to injury, integrity of distal circulation, sensory, and motor function; and
- B.1.c.viii If applicable, full neurological exam including muscle atrophy and gait abnormality.

### **B.1.d Red Flags**

Certain findings, “red flags”, raise suspicion of potentially serious medical conditions. Assessment (history and physical examination) should include evaluation for red flags. In the knee these findings or indicators may include: fracture, dislocations, and ligamentous tears; infection or inflammation; neurological or vascular compromise including compartment syndrome; and history of trauma, including but not necessarily limited to serious motor vehicle crashes, crush injuries, or falls from heights. Further evaluation/consultation or urgent/emergency intervention may be indicated, and the *New York Knee Injury Medical Treatment*

*Guidelines* incorporate changes in clinical management triggered by the presence of “red flags.”

## B.2 Radiographic Imaging (X-Ray)

**Recommended** - In select patients.

*Indications:*

- B.2.a Inability to transfer weight for four steps at the time of the initial visit, regardless of limping;
- B.2.b History of significant trauma, especially blunt trauma or fall from a height;
- B.2.c Age over 55 years;
- B.2.d Unexplained or persistent pain over two weeks. (Occult fractures, especially stress fractures, may not be visible on initial x-ray. A follow-up radiograph and/or bone scan may be required to make the diagnosis);
- B.2.e History or exam suggestive of intravenous drug abuse or osteomyelitis; and
- B.2.f Pain with swelling and/or range of motion (ROM) limitation localizing to an area of prior fracture, internal fixation, or joint prosthesis.

Presence of deformity at time of injury that may or may not have reduced with knee extension

## B.3 Laboratory Testing

Laboratory tests are rarely indicated at the time of initial evaluation, unless there is suspicion of systemic illness, infection, neoplasia, connective tissue disorder, or underlying arthritis or rheumatologic disorder based on history and/or physical examination. Laboratory tests can provide useful diagnostic information. Tests include, but are not limited to:

### **B.3.a Complete Blood Count (CBC) with Differential**

**Recommended** - for patients with suspicion of infection, blood dyscrasias, and medication side effects.

### **B.3.b Erythrocyte sedimentation rate (ESR), rheumatoid factor (RF), anti-nuclear antigen (ANA), human leukocyte antigen (HLA), C-reactive protein (CRP) and if indicated by activity history, Lyme serology.**

**Recommended** - To detect evidence of a rheumatologic, infection, or connective tissue disorder.

**B.3.c Serum calcium, phosphorous, uric acid, alkaline phosphatase, and acid phosphatase**

**Recommended** - In select patients with suspicion of metabolic bone disease.

**B.3.d Liver and Kidney Function**

**Recommended** - In select patients with prolonged anti-inflammatory use or other medications requiring monitoring.

**B.3.e Joint Aspiration**

**Recommended** - to evaluate joint effusion for bacteria, white cell count, red cell count, fat globules, crystalline birefringence and chemistry.

## **B.4 Diagnostic Testing and Procedures**

As outlined in detail in General Principles section A-13, the selection of diagnostic imaging studies depends on the case-specific clinical presentation, as well as clinical judgment. In addition, there may be instances where repeat or alternate diagnostic imaging may be clinically indicated. Such instances include, but are not necessarily limited to when: a prior test is of poor quality and/or nondiagnostic; the clinical situation changes (e.g., new or worsening symptoms, preparing for surgery or therapeutic injections, etc.); it is necessary to monitor clinical progress (e.g., post-operatively) or deterioration over time. Prudent choice of procedure(s) or a proper sequential order in multiple procedures will ensure maximum diagnostic accuracy, minimize adverse effect to patients and promote clinical efficiency. Repeat procedures result in an increase in cumulative radiation dose and associated risks.

Diagnostic imaging procedures have varying degrees of sensitivity and specificity for any diagnosis. Clinical history, physical examination and clinical judgment should be the basis for selection and interpretation of imaging studies.

Generally, plain X-rays are a useful starting point, but they are not always sufficient. Magnetic resonance imaging (MRI), arthrography, or computed axial tomography (CT) scanning following arthrography may provide useful information for many knee disorders. In certain circumstances as stated above, repeat or alternate imaging may be warranted. Usually, selection of one procedure over others depends upon multiple factors.

When indicated, the following additional imaging studies can be utilized for further evaluation of the lower extremity, based upon the mechanism of injury, symptoms, and patient history. The studies below are listed in frequency of use, not importance.

## B.4.a Imaging Studies

### B.4.a.i Magnetic Resonance Imaging (MRI)

**Recommended** – in select patients.

*Indications:* Magnetic Resonance Imaging (MRI) provides a more definitive visualization of soft tissue structures, including ligaments, tendons, joint capsule, menisci and joint cartilage structures, than x-ray or Computed Axial Tomography in the evaluation of traumatic or degenerative injuries. The addition of intravenous or intra-articular contrast can enhance definition of selected pathologies.

In general, the high field, conventional, MRI provides better resolution than that of a lower field scan (open field MRI). A lower field scan may be indicated when a patient cannot fit into a high field scanner or is too claustrophobic despite sedation. Inadequate resolution on a first scan may require a second MRI using a different technique. A subsequent diagnostic MRI may be a repeat of the same procedure, when the rehabilitation physician, radiologist or surgeon says the study was of inadequate quality to make a diagnosis. All questions in this regard should be discussed with the MRI center and/or radiologist.

Ferrous material/metallic objects present in the tissues is a contraindication for the performance of an MRI.

### B.4.a.ii Computed Tomography (CT)

**Recommended** – in select patients.

*Indications:* Computed Axial Tomography (CT) provides excellent visualization of bone and is used to further evaluate bony masses and suspected fractures not clearly identified on radiographic window evaluation.

Instrument scatter-reduction software provides better resolution when metallic artifact is of concern. When ferrous/metallic materials are present in the tissues, CT should be ordered rather than MRI. CT examinations entail exposure to ionizing radiation, with associated radiation-related risks.



#### **B.4.a.iii Lineal Tomography**

**Not Recommended**

#### **B.4.a.iv Bone Scan (Radioisotope Bone Scanning)**

**Recommended** – in select patients.

*Indications:* <sup>99m</sup>Tc diphosphonate uptake reflects osteoblastic activity and may be useful in trauma, metastatic or primary bone tumors, stress fractures, occult fractures osteomyelitis, and inflammatory lesions, but cannot distinguish among these entities.

#### **B.4.a.v Other Radionuclide Scanning**

**Recommended** – in select patients.

*Indications:* Indium and gallium scans are procedures usually used to help diagnose lesions seen on other diagnostic imaging studies. <sup>67</sup>Ga citrate scans are used to localize tumor, infection, and abscesses. <sup>111</sup>In labeled leukocyte scanning is utilized for localization of infection or inflammation.

#### **B.4.a.vi Arthrograms**

**Recommended** – in select patients

*Indications:* Arthrograms may be useful in the evaluation of internal derangement of a joint, only when MRI or other tests are contraindicated, are not considered diagnostic or not available. This testing may be indicated in select patients for whom the clinical benefits outweigh the risks, and for whom MRI is either non-diagnostic, or not clinically indicated or clinically contraindicated.

Note: Potential complications of this more invasive technique include pain, infection, and allergic reactions.

#### **B.4.a.vii Diagnostic Arthroscopy**

Refer to Table 1.

Table 1.

IF the diagnosis is supported by			AND this has been done (if recommended)	The following may be appropriate
CLINICAL FINDINGS			CONSERVATIVE CARE	PROCEDURE
SUBJECTIVE	OBJECTIVE	IMAGING		
Pain and functional limitations continue despite conservative care		Imaging is inconclusive	Medications AND / OR Physical Therapy	Diagnostic Arthroscopy

### B.4.b Other Tests

The studies below are listed by frequency of use, not importance.

#### B.4.b.i Electromyography (EMG) and Nerve Conduction Velocity Studies (NCV)

**Recommended** – in select patients.

*Indications:* Electrodiagnostic studies have limited use with knee disorders. It is recommended and preferred that EDX in the out-patient setting be performed and interpreted by physicians board-certified in Neurology or Physical Medicine and Rehabilitation.

#### B.4.b.ii Somatosensory Evoked Potentials (SSEP)

**Not Recommended**

#### B.4.b.iii Doppler Ultrasonography/Plethysmography

**Recommended** – in select patients

*Indications:* Doppler Ultrasonography/Plethysmography is useful in establishing the diagnosis of arterial and venous disease in the lower extremity and should be considered prior to the more invasive venogram or arteriogram study. Doppler is less sensitive in detecting deep-vein thrombosis in the calf muscle area. If the test is initially negative, an ultrasound should be repeated 7 days post initial symptoms to rule out popliteal thrombosis. It is also useful for the diagnosis of popliteal mass when MRI is not available or contraindicated.

Note: A Doppler study is useful in the investigation of the popliteal space for masses. Ultrasound may be used by some physicians to guide diagnostic procedures and aspirations of loculated fluid collections.

#### **B.4.b.iv Venogram/Arteriogram**

**Recommended** – in select patients

*Indications:* Venogram/Arteriogram is useful for investigation of vascular injuries or disease, including deep-venous thrombosis. Potential complications may include pain, allergic reaction, and deep-vein thrombosis.

### **B.5 Other Procedures**

#### **B.5.a Joint Aspiration**

Joint Aspiration is a procedure used when specifically indicated and performed by individuals properly trained in these techniques.

**Recommended** - in select patients.

*Indications:* When history and/or physical examination are of concern for a septic joint, massive joint effusion or bursitis (even at the initial evaluation). Aspiration should not be performed through an infected area.

Aspiration of a large knee effusion can help to decrease pain and speed functional recovery. Persistent or unexplained effusions may be examined for evidence of infection, rheumatologic, or inflammatory processes. The presence of blood and fat globules in the effusion strongly suggests occult fracture. A large hemorrhagic effusion should prompt suspicion that a fracture or ligament tear may be present.

## **C. Specific Knee Injury Diagnoses, Testing and Treatment**

### **C.1 Chondral Defects (Cartilage or Cartilage and Bone Defects)**

#### **C.1.a Description/Definition**

Cartilage or cartilage and bone defect at the articular or meniscal surface of a joint.

#### **C.1.b Mechanism of Injury**

Usually caused by a traumatic knee injury, particularly as a result of

contusion.

**C.1.c Specific Physical Findings**  
Knee effusion, pain in joint.

**C.1.d Testing Procedures**

**MRI, Radiographs, CT**

**Recommended** – in select patients as clinically indicated.

*Indications:* MRI may show bone bruising, osteochondral lesion, or possibly articular cartilage injury. Radiographs and CT may also be used. Following an acute injury an MRI usually shows bone bruising.

**C.1.e Non-Operative Treatment**

**Recommended** - in select patients as clinically indicated.

Rest/restricted activity, off-loading with crutches or cane, ice, elevation, bracing, active and/or passive therapy, NSAIDs, APAP therapeutic injections, which may at a late date include hyaluronate therapy.

**C.1.f Surgical Indications / Operative Treatment**

Osteochondral Autograft and Autologous Chondrocyte Implantation (ACI) are not included on the list of pre-authorized procedures.

Providers who want to perform one of these procedures must request pre-authorization from the carrier before performing the procedure. Refer to Table 3 for criteria.

If a non-operative treatment approach is initially recommended, surgery may be indicated after the failure of conservative management. The patient must continue to exhibit the designated objective findings, subjective symptoms and (where applicable) imaging findings. Refer to Table 3.

**C.1.g Autologous Chondrocyte Implantation (ACI) Exclusion Criteria**

ACI is not a covered procedure in any of the following circumstances:

- i. Lesion that involves any portion of the patellofemoral articular cartilage, bone, or is due to osteochondritis dissecans.

- ii. A “kissing lesion” or Modified Outerbridge Grade II, III, or IV exists on the opposite tibial surface.
- iii. Mild to severe localized or diffuse arthritic condition that appears on standing x-ray as joint space narrowing, osteophytes, or changes in the underlying bone.
- iv. Unhealthy cartilage border; the synovial membrane in the joint may be used as a substitute border for up to ¼ of the total circumference.
- v. Prior total meniscectomy of either compartment in the affected knee. Must have at least 1/3 of the posterior meniscal rim.
- vi. History of anaphylaxis to gentamycin or sensitivity to materials of bovine origin.
- vii. Chondrocalcinosis is diagnosed during the cell culture process.

Table 2: Modified Outerbridge Classification

I	Articular cartilage softening
II	Chondral fissures or fibrillation < 1.25 cm in diameter
III	Chondral fibrillation > 1.25 cm in diameter (“crabmeat changes”)
IV	Exposed subchondral bone

### C.1.h Post-Operative Therapy

May include restricted weight-bearing, bracing, active and/or passive therapy. Continuous passive movement is suggested after microfracture.

Table 3: Chondral Defects

If the patient has	AND the diagnosis is supported by			AND this has been done (if recommended)	The following surgery may be appropriate
DIAGNOSIS	CLINICAL FINDINGS			CONSERVATIVE CARE	SURGICAL PROCEDURE
	SUBJECTIVE	OBJECTIVE	IMAGING		
Chondral Defects	Joint pain  AND Swelling	Effusion  OR Crepitus		Medication  AND/OR Physical therapy	Chondroplasty  (Shaving or debridement of an articular surface)

		OR Limited ROM			
Chondral Defects	Joint pain AND Swelling	Small full thickness chondral defect on the weight bearing portion of the medial or lateral femoral condyle  AND Knee is stable with intact, fully functional menisci and ligaments  AND Normal joint space  AND Ideal age 45 or younger	Chondral defect on the weight bearing portion of the medial or lateral femoral condyle on:  MRI  OR Diagnostic Arthroscopy	Medication  AND/OR Physical therapy	Subchondral drilling OR Micro-Fracture

Table 3: Chondral Defects (Cont'd)

If the patient has	AND the diagnosis is supported by	AND this has been done (if recommended)	The following surgery may be appropriate
DIAGNOSIS	CLINICAL FINDINGS SUBJECTIVE    OBJECTIVE    IMAGING	CONSERVATIVE CARE	SURGICAL PROCEDURE

Chondral Defects	Joint pain  AND  Swelling	Failure of previous subchondral drilling or microfracture  Large full thickness chondral defect that measures less than 3 cm in diameter and 1 cm in bone depth on the weight bearing portion of the medial or lateral femoral condyle  AND  Knee is stable with intact, fully functional menisci and ligaments  AND  Normal knee alignment  AND  Body mass index of less than 35	Chondral defect on the weight bearing portion of the medial or lateral femoral condyle on:  MRI  OR  Arthroscopy	Medication  AND/OR  Physical therapy	Osteochondral Autograft (Mosaicplasty or OATS Procedure)
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Body Mass Index (BMI): The equation for calculating the BMI = (Weight in pounds ÷ by height in inches divided ÷ by height in inches) x 703. For example, a person weighing 210 pounds and 6 feet tall would have a BMI of (210 pounds ÷ by 72 inches ÷ by 72 inches) x 703=28.5.

Table 3: Chondral Defects (Cont'd)

If the patient has	AND the diagnosis is supported by	AND this has been done (if recommended)	The following surgery may be appropriate
DIAGNOSIS	CLINICAL FINDINGS  SUBJECTIVE      OBJECTIVE      IMAGING	CONSERVATIVE CARE	SURGICAL PROCEDURE

Chondral Defects	Patient is capable and willing to follow the rehabilitation protocol.	<p>Failure of traditional surgical interventions (i. e., microfracture, drilling, abrasion, osteochondral graft). Debridement alone does not constitute a traditional surgical intervention for ACI.</p> <p>AND</p> <p>Single, clinically significant, lesion that measures between 1 to 10 sq. cm in area that affects a weight-bearing surface of the medial femoral condyle or the lateral femoral condyle.</p> <p>AND</p> <p>Full-thickness lesion (Modified Outerbridge Grade III-IV) that involves only cartilage</p> <p>AND</p>	<p>Chondral defect on the weight bearing surface of the medial or lateral femoral condyle on:</p> <p>MRI</p> <p>OR</p> <p>Diagnostic Arthroscopy</p>	Physical therapy for a minimum of 2 months	<p>Autologous Chondrocyte Implantation (ACI)</p> <p>See ACI exclusion criteria, Section D.1 .g</p>
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Body Mass Index (BMI): The equation for calculating the BMI = (Weight in pounds ÷ by height in inches divided ÷ by height in inches) x 703. For example, a person weighing 210 pounds and 6 feet tall would have a BMI of (210 pounds ÷ by 72 inches ÷ by 72 inches) x 703=28.5.

## C.2 Aggravated Osteoarthritis

### C.2.a Description/Definition

Swelling and/or pain in a joint due to an aggravation by an injury, or in the context of an aggravating activity in a patient with pre-existing degenerative change in a joint.



### **C.2.b Mechanism of Injury**

May be caused by local trauma such as a blow, repetitive activity, or from postural imbalance resulting from a constant malposition.

### **C.2.c Specific Physical Findings**

Increased pain and swelling in a joint

### **C.2.d Testing Procedures**

#### **Radiographs**

**Recommended** – as clinically indicated

### **C.2.e Non-Operative Treatment**

**Recommended** – in select patients as clinically indicated.

Rest/restricted activity, off-loading with crutches or cane, ice, elevation, bracing, active and/or passive therapy, NSAIDs, APAP therapeutic injections, which may at a late date include hyaluronate therapy.

### **C.2.f Surgical Indications / Operative Treatment**

**Recommended** – in select patients.

*Indications:* Symptoms with functional limitations not responsive to conservative therapy. Debridement with or without removal of loose bodies.

**Not Recommended** - Arthroscopic joint lavage.

Note: For symptoms not responsive to conservative measures, treatment may involve knee arthroplasty. Refer to Table 8.

### **C.2.g Post-Operative Therapy**

**Recommended** – as clinically indicated.

Rest/restricted activity, off-loading with crutches or cane, ice, elevation, bracing, active and/or passive therapy, NSAIDs, APAP therapeutic injections, which may at a late date include hyaluronate therapy.

## **C.3 Collateral Ligament Injury**

### **C.3.a Description / Definition**

Sprain/strain or rupture of the medial or lateral collateral ligament. Injury of the medial collateral ligament may also be associated with a concomitant medial meniscus injury.

### **C.3.b Mechanism of Injury**

Valgus or varus trauma force applied to the knee.

### **C.3.c Specific Physical Findings**

Medial-lateral instability (knee should be tested in slight flexion), tenderness over medial or lateral collateral ligament which increases with valgus or varus force applied to the knee.

### **C.3.d Diagnostic Testing Procedures**

#### **MRI**

**Recommended** – in select patients with suspected Grade II or Grade III tears.

### **C.3.e Non-Operative Treatment**

Isolated Grade I collateral ligament tears and many Grade II tears have been shown to heal with excellent results without surgical intervention. When accompanying cruciate or meniscus injuries are ruled out, the patient can be treated non-operatively.

**Recommended** - in select patients as clinically indicated.

Rest/restricted activity, off-loading with crutches or cane, ice, elevation, bracing, casting, orthotics, rehabilitation and active and/or passive therapy, NSAIDs, APAP and therapeutic injections.

### **C.3.f Surgical Indications / Operative Treatment**

**Recommended** - in select patient.

*Indications:* A complete Grade III collateral ligament tear should be referred to an orthopedic surgeon.

## **C.4 Anterior Cruciate Ligament (ACL) Injury**

### **C.4.a Description / Definition**

Rupture or partial rupture of the anterior cruciate ligament;

may be associated with other internal derangement of the knee.

#### **C.4.b Mechanism of Injury**

May be caused by virtually any traumatic force to the knee but most often caused by a twisting or a hyperextension force.

#### **C.4.c Specific Physical Findings**

Findings on physical exam include effusion or hemarthrosis, instability, Lachman's test, pivot shift test, and anterior drawer test.

#### **C.4.d Diagnostic Testing Procedures**

##### **MRI, Radiographs**

**Recommended** - in select patients.

*Indications:* May show avulsed portion of tibial spine but this is a rare finding.

#### **C.4.e Non-Operative Treatment**

**Recommended** - in select patients as clinically indicated.

Rest/restricted activity, off-loading with crutches or cane, ice, elevation, bracing, casting, orthotics, rehabilitation and active and/or passive therapy, NSAIDs, APAP and therapeutic injections.

#### **C.4.f Surgical Indications / Operative Treatment**

If a non-operative treatment approach is initially recommended, surgery may be indicated after the failure of conservative management. The patient must continue to exhibit the designated objective findings, subjective symptoms and (where applicable) imaging findings. Refer to Table 4.

**Recommended** - in select patients as clinically indicated

#### **C.4.g Post-Operative Therapy**

**Therapy, bracing.**

**Recommended** - in select patients as clinically indicated.

Table 4: Anterior Cruciate Ligament Injury

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If the patient has	AND the diagnosis is supported by			AND this has been done (if recommended)	The following surgery may be appropriate
DIAGNOSIS	CLINICAL FINDINGS			CONSERVATIVE CARE	SURGICAL PROCEDURE
	SUBJECTIVE	OBJECTIVE	IMAGING		
Anterior Cruciate Ligament Injury	<p>Pain alone is not an indication for surgery</p> <p>Instability of the knee, described as “buckling or giving way”</p> <p>OR</p> <p>Significant effusion at the time of injury</p> <p>OR</p> <p>Description of injury indicates rotary twisting or hyperextension incident</p>	<p>Positive Lachman’s sign</p> <p>OR</p> <p>Positive pivot shift</p> <p>OR</p> <p>Positive anterior drawer</p>	<p>(Not required if acute effusion, hemarthrosis, and instability; or documented history of effusion, hemarthrosis and instability)</p> <p>ACL disruption on:</p> <p>MRI</p> <p>OR</p> <p>Arthroscopy</p> <p>OR</p> <p>Arthrogram</p>	<p>In the presence of a complete tear in a patient for whom surgical repair is contemplated, a course of conservative treatment need not be completed prior to surgery.</p> <p>Physical therapy</p> <p>OR</p> <p>Brace</p>	Anterior Cruciate Ligament (ACL) Repair

## C.5 Posterior Cruciate Ligament (PCL) Injury

### C.5.a Description / Definition

Rupture of PCL; may have concurrent ACL rupture.

### C.5.b Mechanism of Injury

Most often caused by a posterior directed force to flexed knee.

### C.5.c Specific Physical Findings

Findings on physical exam include acute effusion, instability, reverse Lachman's test, reverse pivot shift, posterior drawer test.

#### **C.5.d Diagnostic Testing Procedures**

##### **MRI, Radiographs**

**Recommended** - in select patients as clinically indicated and/or with suspicion of avulsed bone.

#### **C.5.e Non-Operative Treatment**

**Recommended** - in select patients as clinically indicated.

Rest/restricted activity, off-loading with crutches or cane, ice, elevation, bracing, casting, orthotics, rehabilitation and active and/or passive therapy, NSAIDs, APAP and therapeutic injections.

#### **C.5.f Operative Treatment**

##### **Autograft or allograft reconstruction.**

**Recommended** - in select patients as clinically indicated.

*Indications:* Complaints of instability. Carefully consider the patients' normal daily activity level before initiation of surgical intervention. Most commonly done when the PCL rupture is accompanied by multiligament injury.

#### **C.5.g Post-Operative Therapy**

**Therapy, bracing.**

**Recommended** - in select patients as clinically indicated.

## **C.6 Meniscus Injury**

#### **C.6.a Description / Definition**

A tear, disruption, or avulsion of medial or lateral meniscus tissue.

#### **C.6.b Mechanism of Injury**

Trauma to the menisci from rotational, shearing, torsion, and/or impact injuries.

#### **C.6.c Specific Physical Findings**

Patient describes a popping, tearing, or catching sensation. Findings on physical exam may include joint line tenderness, locked joint, or occasionally, effusion. Pertinent elements on physical examination might include positive findings on McMurray, Apley, Steinman (parts 1 and 2) or Childress tests.

#### **C.6.d Diagnostic Testing Procedures**

##### **Radiographs, MRI**

**Recommended** - in select patients as clinically indicated.

*Indications:* Radiographs including standing Posterior/Anterior (PA), lateral, tunnel, and skyline views. MRI is the definitive imaging test. MRI is sensitive and specific for meniscal tear. However, meniscal MRI is frequently abnormal in asymptomatic injuries. Clinical correlation with history and physical exam findings specific for meniscus injury is critically important.

Providers planning treatment should therefore consider the patient's complaints and presence of arthritis on MRI carefully, knowing that not all meniscus tears in the middle aged and older population are related to the patients' complaints of pain.

Note: MRI arthrograms may be appropriate to diagnose recurrent meniscal tears, particularly after previous surgery.

#### **C.6.e Non-Operative Treatment**

**Rest/restricted activity, off-loading with crutches or cane, NSAIDs, APAP, that may be followed by active and/or passive therapy, bracing.**

**Recommended** - in select patients as clinically indicated.

Note: A trial of manipulation may be attempted for a locked knee. Clinical response should be seen within two to three treatments.

#### **C.6.f Surgical Indications / Operative Treatment**

##### **C.6.f.i Meniscal Allograft Transplantation**

**Recommended** – in rare patients, as clinically indicated.

Meniscal Allograft Transplantation is not included on the list of pre-authorized procedures. Providers who want to perform one of these procedures must request pre-authorization from the carrier before performing

the procedure. Refer to Table 5.

**C.6.f.ii Meniscectomy/Meniscus Repair**

**Recommended** – in select patients, as clinically indicated.

Meniscectomy/Meniscus Repair are not included on the list of pre- authorized procedures. Providers who want to perform one of these procedures must request pre-authorization from the carrier before performing the procedure. Refer to Table 5.

**C.6.g Post-Operative Therapy**

**Therapy, bracing.**

**Recommended** - in select patients as clinically indicated.

Table 5: Meniscus Injury

If the patient has	AND the diagnosis is supported by			AND this has been done (if recommended)	The following surgery may be appropriate
DIAGNOSIS	CLINICAL FINDINGS			CONSERVATIVE CARE	SURGICAL PROCEDURE
	SUBJECTIVE	OBJECTIVE	IMAGING		
Meniscus Injury	Joint pain OR Swelling OR Feeling of giving way OR Locking, clicking or popping	Positive Mc Murray's sign OR Jointline tenderness OR Effusion OR Limited range of motion OR Locking, clicking, or popping OR Crepitus	(Not required for locked knee)  Meniscal tear on MRI (Surgical Repair of Grade I tear is not indicated except in unusual circumstances)	In the presence of a locked knee, in a patient for whom surgical repair is contemplated, a course of conservative treatment need not be performed prior to surgery  Manipulation of the knee joint,  Physical therapy  OR Medication  OR Activity modification	Meniscectomy  OR Meniscus Repair

Table 5: Meniscus Injury (Cont'd)

If the patient has	AND the diagnosis is supported by			AND this has been done (if recommended)	The following surgery may be appropriate
DIAGNOSIS	CLINICAL FINDINGS			CONSERVATIVE CARE	SURGICAL PROCEDURE
	SUBJECTIVE	OBJECTIVE	IMAGING		



Meniscus Injury	<p>Capable and willing to follow the rehabilitation protocol</p> <p>AND</p> <p>Knee pain that has not responded to conservative treatment</p>	<p>Previous meniscectomy with at least two-thirds of the meniscus removed</p> <p>AND</p> <p>If Modified Outerbridge Scale Graft III then debridement must first produce an articular surface sufficiently free of irregularities to maintain the integrity of the transplanted meniscus. (See Table 6 for Modified Outerbridge Classification)</p> <p>AND</p> <p>Stable knee with intact ligaments, normal alignment, and normal joint space.</p> <p>AND Ideal age 20-45 years (too young for total knee)</p> <p>AND Body Mass Index of less than 35</p>	<p>Articular cartilage in the affected compartment demonstrates a chondrosis classified by the Modified Outerbridge Scale as Grade I, Grade II or Grade III</p>	<p>Physical therapy</p> <p>OR</p> <p>NSAID</p> <p>OR</p> <p>Activity modification</p>	<p>Meniscal Allograft Transplantation</p> <p>See meniscal allograft transplantation exclusion criteria next page</p>
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## C.7 Meniscal Allograft Transplantation Exclusion Criteria

### Meniscal Allograft Transplantation

**Not Recommended** - in any of the following circumstances:

- a) Mild to severe localized or diffuse arthritic condition that appears on standing

x-ray as joint space narrowing, osteophytes or changes in the underlying bone.

- b) Articular cartilage in the affected compartment demonstrates a chondrosis classified by the Modified Outerbridge Scale as Grade III that has not undergone debridement; Grade III with debridement that has not produced an articular surface that can maintain the integrity of the transplanted meniscus; or Grade IV.

Table 6: Modified Outerbridge Classification

I	Articular cartilage softening
II	Chondral fissures or fibrillation < 1.25 cm in diameter
III	Chondral fibrillation > 1.25 cm in diameter (“crabmeat changes”)
IV	Exposed subchondral bone

Body Mass Index (BMI): The equation for calculating the BMI = (Weight in pounds ÷ by height in inches divided ÷ by height in inches) x 703. For example, a person weighing 210 pounds and 6 feet tall would have a BMI of (210 pounds ÷ by 72 inches ÷ by 72 inches) x 703=28.5.

## C.8 Patellar Subluxation

### C.8.a Description / Definition

An incomplete subluxation or dislocation of the patella. Recurrent episodes can lead to subluxation syndrome that can cause frank dislocation of the patella.

### C.8.b Mechanism of Injury

Primarily associated with contusion, lateral force direct contact. Secondary causes associated with shearing forces on the patella.

### C.8.c Specific Physical Findings

Patient may report buckling sensation. Findings on physical exam may include retinacular weakness, swelling, effusion, marked pain with patellofemoral tracking/compression and glides. In addition, other findings include atrophy of muscles, positive patellar apprehension test, patella alta.

### C.8.d Diagnostic Testing Procedures

#### Radiographs

**Recommended** - in select patients as clinically indicated and may include Merchant views, Q-angle versus congruents.

### **C.8.e Non-Operative Treatment**

**Rest/restricted activity, off-loading with crutches or cane, NSAIDs, APAP that may be followed by active and/or passive therapy, bracing, therapeutic injection.**

**Recommended** - in select patients as clinically indicated.

### **C.8.f Operative Treatment**

**Open reduction internal fixation with fracture.**

**Recommended** - in select patients as clinically indicated.

*Indications:* Fracture, recurrent subluxation or recurrent effusion, or symptoms not responsive to conservative therapy.

Note: Following a patellar dislocation, surgical consultation no sooner than two to three months of conservative therapy. Retinacular release, quadriceps reefing, and patellar tendon transfer should only be considered after a minimum of four to five months of conservative therapy.

### **C.8.g Post-Operative Therapy**

Therapy, bracing.

**Recommended** - in select patients as clinically indicated.

## **C.9 Retropatellar Pain Syndrome (Chondromalacia Patella)**

### **C.9.a Description / Definition**

A retropatellar pain syndrome lasting over three months. Retropatellar pathologies are associated with resultant weakening instability, and pain of the patellofemoral mechanism. Can include malalignment, persistent quadriceps tendinitis, distal patellar tendinitis, patellofemoral arthrosis, and symptomatic plica syndrome.

### **C.9.b Mechanism of Injury**

May be associated with contusion, repetitive patellar compressive forces, shearing articular injuries associated with subluxation or dislocation of patella, fractures, infection, and connective tissue disease.

### **C.9.c Specific Physical Findings**

Patient complains of pain, instability and tenderness that interfere with daily living and work functions. Findings on physical exam may include retinacular tenderness, pain with patellar compressive ranging, positive patellar glide test, atrophy of quadriceps muscles, positive patellar

apprehensive test. Associated anatomical findings may include increased Q angle; rotational lower extremity joints; ligament laxity, and effusion.

#### **C.9.d Diagnostic Testing Procedures**

##### **C.9.d.i Radiographs**

**Recommended** - in select patients as clinically indicated. May include tunnel, Merchant, or Laurin views.

##### **C.9.d.ii CT or Bone Scan**

**Recommended** - in very select patients.

##### **C.9.d.iii MRI**

**Not Recommended** - as it rarely identifies pathology.

#### **C.9.e Non-Operative Treatment**

Rest/restricted activity, off-loading with crutches or cane, NSAIDs, APAP that may be followed by active and/or passive therapy, functional electrical stimulation of the vastus medialis, bracing, orthotics, therapeutic injections.

**Recommended** - in select patients as clinically indicated.

#### **C.9.f Surgical Indications**

Patellar tendon disruption, quadriceps tendon rupture/avulsion, fracture, or symptoms not responsive to conservative therapy. There is very limited data on long term outcomes of surgical treatment for anterior knee pain. Surgical intervention should be considered after failure of a comprehensive rehabilitation program that has included quadriceps strengthening.

#### **C.9.g Operative Treatment**

Arthroscopic debridement of articular surface, plica, synovial tissue, loose bodies, arthrotomy, open reduction internal fixation with fracture, patellar button (prosthesis) with grade III-IV osteoarthritis (modified Outerbridge classification) and possible patellectomy.

**Recommended** - in select patients as clinically indicated.

*Indications:* Patellar tendon disruption, quadriceps tendon rupture/avulsion, fracture, or symptoms not responsive to conservative therapy. There is very limited data on long term outcomes of surgical

treatment for anterior knee pain. Surgical intervention should be considered after failure of a comprehensive rehabilitation program that has included quadriceps strengthening.

Note: Retinacular release, quadriceps reefing, and tibial transfer procedures should only be considered after four to six months of conservative therapy. Refer to Table 7.

### C.9.h Post-Operative Therapy

**Therapy; bracing.**

#### **Recommended**

Table 7: Retropatellar Pain Syndrome

If the patient has	AND the diagnosis is supported by			AND this has been done (if recommended)	The following surgery may be appropriate
DIAGNOSIS	CLINICAL FINDINGS			CONSERVATIVE CARE	SURGICAL PROCEDURE
	SUBJECTIVE	OBJECTIVE	IMAGING		
Retropatellar Pain Syndrome (Chondromalacia Patella)	Knee pain with sitting OR Pain with patellar/femoral movement OR Recurrent dislocations	Lateral tracking of the patella OR Recurrent effusion OR Patellar apprehension OR Synovitis with or without crepitus OR Increased Q angle > 15 degrees	Abnormal patellar tilt on: x-ray or MRI	Physical therapy (not required for acute patellar dislocation with associated intra-articular fracture) OR Medications	Lateral Retinacular Release OR Patellar Tendon Realignment OR Maquet Procedure

## C.10 Tendinitis / Tenosynovitis

### C.10.a Description / Definition

Inflammation of the lining of the tendon sheath or of the enclosed tendon. Usually occurs at the point of insertion into bone or a point of muscular origin. Can be associated with bursitis, or calcium deposits or systemic connective diseases.

### C.10.b Mechanism of Injury

May be caused by extreme or repetitive trauma, strain, or excessive unaccustomed exercise or work.

### C.10.c Specific Physical Findings

Involved tendons may be visibly swollen with possible fluid accumulation and inflammation; popping or crepitus; and decreased range of motion.

### C.10.d Diagnostic Testing Procedures

**Not Recommended** - diagnostic testing procedures for Tendinitis/Tenosynovitis are rarely indicated and thus is not recommended.

### C.10.e Non-Operative Treatment

Rest/restricted activity, off-loading with crutches or cane, NSAIDS, APAP, that may be followed by active and/or passive therapy, including ergonomic changes at workstation(s), NSAIDs, therapeutic injections.

**Recommended**- in select patients as clinically indicated.

### C.10.f Surgical Indications

Suspected avulsion fracture or severe functional impairment unresponsive to conservative therapy.

### C.10.g Operative Treatment

Rarely indicated and only after extensive conservative therapy.

**Recommended** - in very select patients.

*Indications:* Suspected avulsion fracture or severe functional impairment unresponsive to conservative therapy.

### C.10.h Post-Operative Therapy

**Recommended** - in select patients as clinically indicated.

## C.11 Bursitis

### C.11.a Description

Inflammation of bursa tissue. Can be precipitated by tendinitis, bone spurs, foreign bodies, gout, arthritis, muscle tears, or infection.

### C.11.b Mechanism of Injury

May be caused by sudden change in work habits, frequent repetitive motions in non-routine work profile, postural changes, contusion, frequent climbing, soft tissue trauma, fracture, continuous work on uneven surfaces, sustained compression force.

### C.11.c Specific Physical Findings

Palpable, tender and enlarged bursa, decreased range of motion, warmth. May have increased pain with range of motion.

### C.11.d Diagnostic Testing Procedures

#### Bursal Fluid Aspiration

**Recommended** - in select patients as clinically indicated.

*Indications:* May be obtained in patients with need for testing for connective tissue disorders, rheumatic disease, and infection.

### C.11.e Radiographs, CT, MRI

**Not Recommended**

### C.11.f Non-Operative Treatment

Rest/restricted activity, off-loading with crutches or cane, NSAIDs, APAP, that may be followed by active and/or passive therapy, ice, therapeutic injection, treatment of an underlying infection, if present.

**Recommended** - in select patients as clinically indicated.

### C.11.g Operative Treatment

#### Surgical Excision of the Bursa

**Recommended** - in select patients as clinically indicated.

*Indications:* bursa excision after failure of conservative therapy

### C.11.h Post-Operative Therapy

**Recommended** - in select patients as clinically indicated.

## D. Therapeutic Procedures: Non-Operative

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

First, patients undergoing therapeutic procedure(s) should be released or returned to modified, restricted, or full duty during their rehabilitation at the earliest appropriate time.

Second, cessation and/or review of treatment modalities should be undertaken when no further significant subjective or objective improvement in the patient's condition is noted. If patients are not responding within the recommended duration periods, alternative treatment interventions, further diagnostic studies or consultations should be pursued.

Third, providers should provide and document education to the patient. No treatment plan is complete without addressing issues of individual and/or group patient education as a means of facilitating self-management of symptoms.

In unusual cases where a patient is unable to attend an outpatient center, home therapy may be necessary. Home therapy may include active and passive therapeutic procedures as well as other modalities to assist in alleviating pain, swelling, and abnormal muscle tone. Home therapy is usually of short duration.

The following procedures are listed in alphabetical order.

### D.1 Acupuncture

**Recommended** - in select patients as an adjunct to physical rehabilitation and/or surgical intervention to hasten the return of functional activity.

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

*Frequency:* Typically, one to three times per week with three to six treatments needed to produce effect and a maximum of ten treatments as clinically indicated.



Note: Total Time Frames for Acupuncture and Acupuncture with Electrical Stimulation; time frames are not meant to be applied to each of the above sections separately. The time frames are to be applied to all acupuncture treatments regardless of the type or combination of therapies being provided.

## D.2 Biofeedback

**Not Recommended**

## D.3 Injections: Therapeutic

Therapeutic injections involve the delivery of anesthetic and/or anti-inflammatory medications to the painful structure. Therapeutic injections have many potential benefits. Ideally, a therapeutic injection will: (a) reduce inflammation in a specific target area; (b) relieve secondary muscle spasm; (c) allow a break from pain; and (d) support therapy directed to functional recovery. Diagnostic and therapeutic injections should be used early and selectively to establish a diagnosis and support rehabilitation. If injections are overused or used outside the context of a monitored rehabilitation program, they may be of significantly less value.

*Contraindications:* General contraindications include local or systemic infection, bleeding disorders, allergy to medications used and patient refusal. Specific contraindications may apply to individual injections.

### D.3.a Soft Tissue Joint Injections

**Recommended** - in select patients as clinically indicated.

*Indications:* Soft tissue and joint injections may be performed as analgesic or anti-inflammatory procedures. Injections into the tendon are not recommended.

*Frequency:* Not more than two to three times annually. Usually one or two injections adequate.

*Time to produce effect:* Immediate with local anesthetic, or within three days with corticosteroids.

*Optimum/maximum duration:* Limited to three injections annually to the same site

Note: A minimum of three weeks interval between injections is recommended.

### D.3.b Trigger Point Injections

**Not Recommended**

### D.3.c Prolotherapy (also known as sclerotherapy)

**Not Recommended**

### D.3.d Protein Rich Plasma (PRP)

**Not Recommended**

### D.3.e Intra-Capsular Acid Salts – Viscosupplementation

A form of treatment for osteoarthritis or degenerative changes in the knee joint.

**Recommended** - in select patients as clinically indicated.

*Indications:* It is recommended that these injections be considered a therapeutic alternative in patients who have failed non- pharmacological and analgesic treatment, and particularly, if non- steroidal anti-inflammatory drug treatment is contraindicated or surgery is not an option. The utility of viscosupplementation in severe osteoarthritis and its efficacy beyond six months is not well known.

*Frequency:* One series of injections, per product instructions. If the first use is associated with decreased symptoms and increased function, repeat use may be considered after six months if symptoms recur. Optimum duration varies. Efficacy beyond six months is not well known.

## D.4 Medications

For most patients, ibuprofen, naproxen, or other older generation NSAIDs are recommended as first-line medications. Acetaminophen (or the analog paracetamol) may be a reasonable alternative to NSAIDs for patients who are not candidates for NSAIDs, although most evidence suggests acetaminophen is modestly less effective. There is evidence that NSAIDs are as effective for relief of pain as opioids (including tramadol) and less impairing.

### D.4.a Non-Steroidal Anti-inflammatory Drugs (NSAIDs) for Treatment of Acute, Subacute, or Chronic Knee pain

**Recommended** - for treatment of acute, subacute, or chronic knee pain

*Indications:* For acute, subacute, or chronic knee pain, NSAIDs are recommended for treatment. Over-the-counter (OTC) agents may suffice and should be tried first.

*Frequency/Duration:* As needed use may be reasonable for many patients.

*Indications for Discontinuation:* Resolution of symptoms, lack of efficacy, or development of adverse effects, that necessitate discontinuation.

#### **D.4.b NSAIDs for Patients at High Risk of Gastrointestinal Bleeding**

**Recommended** – for concomitant use of cytoprotective classes of drugs: misoprostol, sucralfate, histamine Type 2 receptor blockers, and proton pump inhibitors for patients at high risk of gastrointestinal bleeding.

*Indications:* For patients with a high-risk factor profile who also have indications for NSAIDs, cytoprotective medications should be considered, particularly if longer term treatment is contemplated. At-risk patients include those with a history of prior gastrointestinal bleeding, elderly, diabetics, and cigarette smokers.

*Frequency/Dose/Duration:* Proton pump inhibitors, misoprostol, sucralfate, H2 blockers recommended. Dose and frequency per manufacturer. There is not generally believed to be substantial differences in efficacy for prevention of gastrointestinal bleeding.

*Indications for Discontinuation:* Intolerance, development of adverse effects, or discontinuation of NSAID.

#### **D.4.c NSAIDs for Patients at Risk for Cardiovascular Adverse Effects**

Patients with known cardiovascular disease or multiple risk factors for cardiovascular disease should have the risks and benefits of NSAID therapy for pain discussed.

**Recommended** - Acetaminophen or aspirin as the first-line therapy appear to be the safest regarding cardiovascular adverse effects.

**Recommended** - If needed, NSAIDs that are non-selective are preferred over COX-2 specific drugs. In patients receiving low-dose aspirin for primary or secondary cardiovascular disease prevention, to minimize the potential for the NSAID to counteract the beneficial effects of aspirin, the NSAID should be taken at least 30 minutes after or eight hours before the daily aspirin.

#### **D.4.d Acetaminophen**

**Recommended** - for treatment of knee pain, particularly in patients with contraindications for NSAIDs.

*Indications:* All patients with knee pain, including acute, subacute, chronic, and post-operative.

*Dose/Frequency:* Per manufacturer's recommendations; may be utilized on an as-needed basis. There is evidence of hepatic toxicity when exceeding four gm/day.

*Indications for Discontinuation:* Resolution of pain, adverse effects or intolerance.

*Rationale for Recommendations:* For most patients, generic ibuprofen, naproxen, or other older generation NSAIDs are recommended as first-line medications. Second-line medications should include one of the other generic medications. Acetaminophen (or the analog paracetamol) may be a reasonable alternative for these patients, although most evidence suggests acetaminophen is modestly less effective for arthrosis patients. There is evidence that NSAIDs are as effective for relief of pain as opioids (and tramadol) and less impairing.

#### **D.4.e Topical Medications**

**Recommended** – In select patients for treatment of pain associated with acute, subacute, or chronic knee pain, including topical creams, ointments, and lidocaine patches

*Rationale for Recommendation:* TOPICAL DRUG DELIVERY (e.g., capsaicin, topical lidocaine, topical NSAIDs and topical salicylates and nonsalicylates) may be an acceptable form of treatment in selected patients. A topical agent should be prescribed with strict instructions for application and maximum number of applications per day to obtain the desired benefit and avoid potential toxicity. For most patients, the effects of long-term use are unknown and thus may be better used episodically. These agents may be used in those patients who prefer topical treatments over oral medications. Localized skin reactions may occur, depending on the medication agent used. Prescribers should consider that topical medication can result in toxic blood levels.

**Capsaicin** offers a safe and effective alternative to systemic NSAIDs, although its use is limited by local stinging or burning sensation that typically disappears with regular use. Patients should be advised to apply the cream on the affected area with a plastic glove or cotton applicator to avoid inadvertent contact with eyes and mucous membranes. Long-term use of capsaicin is not recommended.

**Topical Lidocaine** is only indicated when there is documentation of a diagnosis of neuropathic pain. In this instance, a trial for a period of not greater than four weeks can be considered, with the need for documentation of functional gains as criteria for additional use.

**Topical NSAIDs** (e.g., diclofenac gel) may achieve tissue levels that are potentially therapeutic. Overall the low level of systemic absorption can be advantageous, allowing the topical use of these medications when systemic administration is relatively contraindicated (such as patients with hypertension, cardiac failure, peptic ulcer disease or renal insufficiency).

**Topical Salicylates or Nonsalicylates** (e.g., methyl salicylate) overall do not appear to be more effective than topical NSAIDs. May be used for a short-term course especially in patients with chronic conditions in whom

systemic medication is relatively contraindicated or as an adjuvant to systemic medication.

#### **D.4.f Opioids**

**Not Recommended** – for acute, subacute, or chronic knee pain.

**Recommended** – for limited use (not more than seven days) for post-operative pain management as adjunctive therapy to more effective treatments.

*Indications:* For post-operative pain management, a brief prescription of opioids as adjuncts to more efficacious treatments (especially NSAIDs, acetaminophen) is often required, especially nocturnally.

*Frequency/Duration:* Prescribed as needed throughout the day, then later only at night, before weaning off completely.

*Rationale for Recommendation:* Some patients have insufficient pain relief with NSAIDs, thus judicious use of opioids may be helpful, particularly for nocturnal use. Opioids are recommended for brief, select use in post-operative patients with primary use at night to achieve sleep post-operatively.

#### **D.4.g Minor Tranquilizer / Muscle Relaxants**

**Not Recommended**

### **D.5 Orthotics and Prosthetics**

#### **D.5.a Fabrication / Modification of Orthotics**

**Recommended** - in select patients as clinically indicated.

*Indications:* Used when there is need to normalize weight-bearing, facilitate better motion response, stabilize a joint with insufficient muscle or proprioceptive/reflex competencies, to protect subacute conditions as needed during movement, and correct biomechanical problems.

*Frequency:* Typically one to two times per week with one to three sessions needed to produce effect (includes wearing schedule evaluation).

*Optimum/maximum duration:* Four sessions of evaluation, casting, fitting, and re-evaluation.

### D.5.b Orthotic / Prosthetic Training

Orthotic/Prosthetic Training is the skilled instruction (preferably by qualified providers) in the proper use of orthotic devices and/or prosthetic limbs including stump preparation, donning and doffing limbs, instruction in wearing schedule and orthotic/prosthetic maintenance training. Training can include gait, mobility, transfer and self-care techniques.

**Recommended** - in select patients as clinically indicated.

*Frequency:* Three times per week with two to six sessions needed to produce effect.

*Optimum/maximum duration:* Two to four months.

### D.5.c Splints or Adaptive Equipment

**Recommended** - in select patients as clinically indicated.

*Indications:* Design, fabrication and/or modification indications include the need to control neurological and orthopedic injuries for reduced stress during functional activities and modify tasks through instruction in the use of a device or physical modification of a device, which reduces stress on the injury. Equipment should improve safety and reduce risk of re-injury. This includes high and low technology assistive options such as workplace modifications, computer interface or seating, crutch or walker training, and self-care aids.

*Frequency:* One to three sessions or as indicated to establish independent use.

*Optimum/maximum duration:* One to three sessions.

## D.6 Rehabilitation

Rehabilitation (supervised formal therapy) required as a result of a work-related injury should be focused on restoring functional ability required to meet the patient's daily and work activities and return to work; striving to restore the injured worker to pre-injury status in so far as is feasible.

Active therapy requires an internal effort by the patient to complete a specific exercise or task. Passive therapy are those interventions not requiring the exertion of effort on the part of the patient, but rather are dependent on modalities delivered by a therapist. Generally passive interventions are viewed as a means to facilitate progress in an active therapy program with concomitant attainment of objective functional gains. Active interventions should be emphasized over passive interventions.

The patient should be instructed to continue both active and passive therapies at home as an extension of the treatment process in order to maintain improvement levels.

Assistive devices may be included as an adjunctive measure incorporated into the rehabilitation plan to facilitate functional gains.

#### **D.6.a Physical / Occupational Therapy**

**Recommended** - to improve function, including range of motion and strength.

*Frequency/Dose/Duration:* Total numbers of visits may be as few as two to three for patients with mild functional deficits or up to 12 to 15 with more severe deficits with documentation of ongoing objective functional improvement.

When there are ongoing functional deficits, more than 12 to 15 visits may be indicated if there is documentation of functional improvement towards specific objective functional goals (e.g., range of motion, advancing ability to perform work activities). As part of the rehabilitation plan a home exercise program should be developed and performed in conjunction with the therapy.

*Indications for Discontinuation:* Resolution of Achilles tendinopathy pain, intolerance, lack of efficacy or noncompliance.

#### **D.6.b Activities of Daily Living (ADL)**

Activities of Daily Living are instruction, active-assisted training and/or adaptation of activities or equipment to improve a person's capacity in normal daily activities such as self-care, work re-integration training, homemaking and driving.

**Recommended** - in select patients as clinically indicated.

*Frequency:* Typically, two to three times per week with four to five treatments needed to produce effect and a maximum of three weeks as clinically indicated.

#### **D.6.c Functional Electrical Stimulation**

Functional Electrical Stimulation is the application of electrical current to elicit involuntary or assisted contractions of atrophied and/or impaired muscles.

**Recommended** - in select patients as clinically indicated.

*Indications:* Include muscle atrophy, weakness, and

sluggish muscle contraction secondary to pain, injury, neuromuscular dysfunction or peripheral nerve lesion or where the potential for atrophy exists. May be an appropriate treatment in conjunction with an active exercise program.

*Frequency:* Typically, three times per week with two to six treatments needed to produce effect and a maximum of eight weeks as clinically indicated.

#### **D.6.d Gait Training**

Gait Training is crutch walking, cane or walker instruction

**Recommended** - in select patients with lower extremity injury or surgery.

*Indications:* include the need to promote normal gait pattern with assistive devices; instruct in the safety and proper use of assistive devices; instruct in progressive use of more independent devices (i.e., platform-walker, to walker, to crutches, to cane); instruct in gait on uneven surfaces and steps (with and without railings) to reduce risk of fall, or loss of balance; and/or instruct in equipment to limit weight-bearing for the protection of a healing injury or surgery.

*Frequency:* Typically, two to three times per week with three to four treatments needed to produce effect and a maximum duration of two weeks as clinically indicated.

#### **D.6.e Neuromuscular Re-Education**

**Recommended** - in select patients as clinically indicated.

*Indications:* May be indicated for retropatellar and patella-femoral degenerative joint conditions.

*Frequency:* Two to three times per week with three to four treatments needed to produce effect.

*Optimum/Maximum Duration:* Two weeks.

#### **D.6.f Therapeutic Exercise**

Therapeutic Exercise, with or without mechanical assistance or resistance, may include isoinertial, isotonic, isometric and isokinetic types of exercises.

**Recommended** - in select patients as clinically indicated.

*Indications:* Include the need for cardiovascular fitness, reduced edema, improved muscle strength, improved connective tissue strength and



integrity, increased bone density, promotion of circulation to enhance soft tissue healing, improvement of muscle recruitment, increased range of motion, and promotion of normal movement patterns. Can also include complementary/ alternative exercise movement therapy.

*Frequency:* Typically, three to five times per week with two to six treatments needed to produce effect and a maximum of eight weeks as clinically indicated.

#### **D.6.g Wheelchair Management and Propulsion**

Wheelchair Management and Propulsion is the instruction and training of self-propulsion and proper use of a wheelchair. This includes transferring and safety instruction.

**Recommended** - in select patients as clinically indicated.

*Indications:* For patients who are not able to ambulate due to bilateral lower extremity injuries, inability to use ambulatory assistive devices, and in cases of multiple traumas.

*Frequency:* Typically, two to three times per week with two to six treatments needed to produce effect and a maximum duration of two weeks as clinically indicated.

#### **D.6.h Continuous Passive Movement (CPM)**

Continuous Passive Movement is a form of passive motion using specialized machinery that acts to move a joint and may also pump blood and edema fluid away from the joint and periarticular tissues.

**Recommended** - in select post-operative patients.

*Indications:* CPM is effective in preventing the development of joint stiffness if applied immediately following surgery. It should be continued until the swelling that limits motion of the joint no longer develops. Range of motion for the joint begins at the level of patient tolerance and is increased twice a day as tolerated. Use of this equipment may require home visits.

*Frequency:* Up to four times per day for up to three weeks post-surgery.

#### **D.6.i Contrast Baths**

**Not Recommended**

#### **D.6.j Electrical Stimulation (Physician or Therapist Applied)**

**Recommended** - as a component of a comprehensive treatment plan.

*Frequency:* Two to three times week for a maximum of up to two months.

**Not Recommended** - as a stand-alone treatment.

#### **D.6.k Fluidotherapy**

Fluidotherapy employs a stream of dry, heated air that passes over the injured body part. The injured body part can be exercised during the application of dry heat.

**Recommended** - in select patients as clinically indicated.

*Indications:* Include the need to enhance collagen extensibility before stretching, reduce muscle guarding, or reduce inflammatory response.

*Frequency:* Typically, one to three times per week with one to four treatments needed to produce effect and a maximum of one month as clinically indicated.

#### **D.6.l Infrared Therapy**

**Not Recommended**

#### **D.6.m Iontophoresis**

**Not Recommended**

#### **D.6.n Kinesiotaping, Taping or Strapping**

**Recommended** - in select patients.

*Indications:* Acute joint immobilization (for example, acute ankle sprain)

**Not Recommended** - for acute or non-acute pain.

#### **D.6.o Manipulation**

Manipulation is manual therapy that moves a joint beyond the physiologic range of motion but not beyond the anatomic range of motion.

**Recommended** - in select patients as clinically indicated.

*Indications:* Locked knee, contracture, or pain and loss of range of motion due to adhesions or contractures.

*Frequency:* Typically, one to five times per week (as indicated by the severity of involvement and the desired effect) with immediate effect and a maximum of ten treatments as clinically indicated.

#### **D.6.p Manual Electrical Stimulation**

Manual Electrical Stimulation is used for peripheral nerve injuries or pain reduction that requires continuous application, supervision, or involves extensive teaching.

**Recommended** - in select patients as clinically indicated.

*Indications:* include muscle spasm (including TENS), atrophy, decreased circulation, osteogenic stimulation, inflammation, and the need to facilitate muscle hypertrophy, muscle strengthening, muscle responsiveness in Spinal Cord Injury/Brain Injury (SCI/BI), and peripheral neuropathies.

*Frequency:* Typically, three to seven times per week and a maximum duration of two months as clinically indicated.

#### **D.6.q Massage: Manual or Mechanical**

**Not Recommended**

#### **D.6.r Mobilization (Joint)**

Mobilization is passive movement, which may include passive range of motion performed in such a manner (particularly in relation to the speed of the movement) that it is, at all times, within the ability of the patient to prevent the movement if they so choose. It may include skilled manual joint tissue stretching.

**Recommended** - in select patients as clinically indicated.

*Indications:* Include the need to improve joint play, improve intracapsular arthrokinematics, or reduce pain associated with tissue impingement/maltraction.

*Frequency:* Typically, three times per week with six to nine treatments needed to produce effect and a maximum of ten treatments as clinically indicated.

#### **D.6.s Mobilization (Soft Tissue)**

Mobilization (Soft Tissue) is the skilled application of manual techniques designed to normalize movement patterns through the reduction of soft tissue pain and restrictions.

**Recommended** - in select patients as clinically indicated.

*Indications:* Include muscle spasm around a joint, trigger points, adhesions, and neural compression.

*Frequency:* Typically, two to three times per week with two to three weeks

needed to produce effect and a maximum of ten treatments as clinically indicated.

**D.6.t Paraffin Bath**

**Not Recommended**

**D.6.u Superficial Heat and Cold Therapy**

Superficial heat and cold therapies are thermal agents applied in various manners that lower or raise the body tissue temperature for the reduction of pain, inflammation, and/or effusion resulting from injury or induced by exercise. It may be used acutely with compression and elevation.

**Recommended** - in select patients as clinically indicated.

*Indications:* Include acute pain, edema and hemorrhage, need to increase pain threshold, reduce muscle spasm and promote stretching/flexibility. Includes portable cryotherapy units and application of heat just above the surface of the skin at acupuncture points. May be performed in conjunction with other active therapy or may be self-administered by the patient.

*Frequency:* Typically, two to five times per week with immediate effect a maximum duration of two months.

*Optimum duration:* Three weeks as primary, or up to two months if used intermittently as an adjunct to other therapeutic procedures.

**D.6.v Short-Wave Diathermy**

**Not Recommended**

**D.6.w Traction**

**Not Recommended**

**D.6.x Transcutaneous Electrical Nerve Stimulation (TENS)**

Transcutaneous Electrical Nerve Stimulation (TENS) treatment should include at least one instructional session for proper application and use.

**Recommended** - in select patients as clinically indicated.

*Indications:* Include muscle spasm, atrophy and control of concomitant pain in the office setting. Minimal TENS unit parameters should include pulse rate, pulse width and amplitude modulation. Consistent, measurable, functional improvement must be documented and

determination of the likelihood of chronicity prior to the provision of a home unit. TENS treatment should be used in conjunction with active physical therapy.

- Time to produce effect: Immediate.
- Frequency: Variable.
- Optimum duration: Three sessions.
- Maximum duration: Three sessions. Purchase or provide with home unit if effective.

#### **D.6.y Ultrasound**

Ultrasound uses sonic generators to deliver acoustic energy for therapeutic thermal effects.

**Recommended** - in select patients as clinically indicated.

*Indications:* Include scar tissue, adhesions, contractures and muscle spasm, and the need to extend muscle tissue or accelerate the soft tissue healing.

*Frequency:* Typically, three times per week with six to 15 treatments needed to produce effect and a maximum of two months as clinically indicated.

#### **D.6.z Vasopneumatic Devices**

**Not Recommended**

#### **D.6.aa Whirlpool**

Whirlpool is conductive exposure to water at temperatures that best elicits the desired effect (cold vs. heat). It generally includes massage by water propelled by a turbine or Jacuzzi 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.

**Recommended** - in select patients as clinically indicated.

*Indications:* Include the need for analgesia, relaxing muscle spasm, reducing joint stiffness, enhancing mechanical debridement and facilitating and preparing for exercise.

*Frequency:* Typically, three to five times per week with two to four treatments needed to produce effect and a maximum of two months as clinically indicated.

*Optimum duration:* Three weeks as primary, or up to two months if used intermittently as an adjunct to other therapeutic procedures.

## D.7 Therapy: Ongoing Maintenance Care

**Recommended** - in select patients as clinically indicated.

*Indications:* A maintenance program of physical therapy or occupational therapy may be indicated in certain situations, after the determination of MMI, when tied to maintenance of functional status.

In certain situations in order to maintain functional status, without which an objective deterioration of function has been previously observed and documented in the medical record.

- Specific objective goals should be identified and measured in order to support the need for ongoing maintenance care.
- Progressively longer trials of therapeutic withdrawal are to be attempted to ascertain whether therapeutic goals can be maintained in the absence of clinical interventions.
- Within a year and annually thereafter, a trial without maintenance treatment should be instituted.
- The care of chronic knee symptoms should include an ongoing patient self-management program performed by the patient regularly and a self-directed pain management program initiated as indicated:
  - An ongoing clinically appropriate self-management program, typically independent, home-based and self-directed, developed jointly by the provider and patient, should be implemented to encourage physical activity and/or work activities despite residual pain, with the goal of preserving function.
  - In addition to the self-management program, a self-directed pain management plan should be developed which can be initiated by the patient in the event that symptoms worsen and function decreases.
- If deterioration of ability to maintain function is documented, reinstatement restitution of ongoing maintenance may be acceptable.

*Frequency:* Maximum up to ten visits/year, after the determination MMI, according to objectively documented maintenance of functional status. No variance from the maximum frequency is permitted.

Ongoing Maintenance Care is a component of the Functional Maintenance Care recommendations detailed in the *New York Non-Acute Pain Medical Treatment Guidelines*. Please consult the *New York Non-Acute Pain Medical Treatment Guidelines* for additional information.

## D.8 Therapeutic Procedures: Operative

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). It is imperative to rule out non-physiologic modifiers of pain presentation or non-operative conditions mimicking radiculopathy or instability (e.g., peripheral neuropathy, piriformis syndrome, myofascial pain, scleratogenous or sympathetically mediated pain syndromes, sacroiliac dysfunction, psychological conditions, etc.) prior to consideration of elective surgical intervention.

In addition, operative treatment is indicated when the natural history of surgically treated lesions is better than the natural history for non-operatively treated lesions. All patients being considered for surgical intervention should first undergo a comprehensive neuromusculoskeletal examination to identify mechanical pain generators that may respond to non-surgical techniques or may be refractory to surgical intervention.

### D.8.a Knee Fusion

#### D.8.a.i Description / Definition

Surgical fusion of femur to tibia at the knee joint.

#### D.8.a.ii Diagnostic Testing Procedures

Radiographs, MRI, gallium scan (R/O infection). Lab work as indicated.

#### D.8.a.iii Non-Operative

**Therapy for weight-sharing braces; NSAIDs.**

**Recommended** - in select patients as clinically indicated.

#### D.8.a.iv Operative Treatment

**Recommended** - in select patients as clinically indicated.

Usually open reduction, grafting, and internal fixation. External fixation or intramedullary rodding may also be used.

*Indications:* All reasonable conservative measures have been exhausted and other reasonable surgical options have been seriously considered or implemented.

**D.8.a.v Post-Operative Therapy**  
**Rest/restricted activity, off-loading with crutches or cane, NSAIDs, APAP, that is to be followed by active therapy for protected weight-bearing and gait training.**

**Recommended** - in select patients as clinically indicated.

**D.8.b Knee Arthroplasty**

Knee Arthroplasty (Total or Partial Knee Joint Replacement) is not included on the list of pre-authorized procedures. Providers who want to perform one of these procedures must request pre-authorization from the carrier before performing the procedure. Refer to Table 8.

Table 8: Criteria for Knee Arthroplasty

IF the diagnosis is supported by			AND this has been done (if recommended)	The following surgery may be appropriate
CLINICAL FINDINGS			CONSERVATIVE CARE	SURGICAL PROCEDURE
SUBJECTIVE	OBJECTIVE	IMAGING		
Limited range of motion  OR  Night time joint pain  OR  No pain relief with conservative care	Over 50 years of age  AND  Body Mass Index of less than 35	Osteoarthritis on:  Standing x-ray  OR  Arthroscopy	Medications  OR  Viscosupplementation injections  OR  Steroid injection	Knee Joint Replacement  If only 1 compartment is affected, a unicompartamental or partial replacement if indicated  If 2 of the 3 compartments are affected, a total joint replacement is indicated



## **D.8.c Amputation**

### **D.8.c.i Description / Definition**

Surgical removal of a portion of the lower extremity.

### **D.8.c.ii Mechanism of Injury**

Usually secondary to post-traumatic bone, soft tissue, vascular or neurologic compromise of part of the extremity.

### **D.8.c.iii Specific Physical Findings**

Non-useful or non-viable portion of the lower extremity.

### **D.8.c.iv Diagnostic Testing Procedures**

**Radiographs, vascular studies.**

**Recommended** - as clinically indicated.

### **D.8.c.v Non-Operative Treatment**

**Not Recommended**

### **D.8.c.vi Operative Treatment Amputation**

**Recommended** - in select patients as clinically indicated.

*Indications:* Non-useful or non-viable portion of the extremity

### **D.8.c.vii Post-Operative Therapy**

Rest/restricted activity, off-loading with crutches or cane, NSAIDs, APAP, that is to be followed by active and/or passive therapy for prosthetic fitting, construction and training, protected weight-bearing.

**Recommended** - in select patients as clinically indicated.

## **D.8.d Manipulation Under Anesthesia (MUA)**

### **D.8.d.i Description / Definition**

Passive range of motion of a joint under anesthesia.

### **D.8.d.ii Mechanism of Injury**

Joint stiffness that usually results from a traumatic injury, compensation related surgery, or other

treatment.

**D.8.d.iii Specific Physical Findings**

Joint stiffness in both active and passive modes.

**D.8.d.iv Diagnostic Procedures**

Radiographs.

**D.8.d.v Non-Operative Treatment**

**Therapy for active and passive range of motion exercises.**

**Recommended** - in select patients as clinically indicated.

**D.8.d.vi Surgical Indications**

Is indicated in cases of intractable restriction and may be performed by a duly qualified surgeon. Consider if routine therapeutic modalities, including physical therapy and/or dynamic bracing, do not restore the degree of motion that should be expected after a reasonable period of time, usually at least 12 weeks.

**D.8.d.vii Operative Treatment**

**Not Recommended.**

**D.8.d.viii Post-Operative Therapy**

**Therapy for active and passive range of motion.**

**Recommended** - in select patients as clinically indicated.

**D.8.e Bursectomy**

**D.8.e.i Description / Definition**

Surgical removal of peri-articular bursa.

**D.8.e.ii Mechanism of Injury**

Usually a traumatic local injury or repetitive minor local irritation.

**D.8.e.iii Specific Physical Findings**

Swelling, tenderness over the bursa.

**D.8.e.iv Diagnostic Testing Procedures**

**Radiographs**

**Recommended** – as clinically indicated.

**D.8.e.v Non-Operative Treatment**

Therapy for splinting, rest, NSAIDs, steroid injection.

**Recommended** - in select patients as clinically indicated.

**D.8.e.vi Surgical Indications**

Persistent pain, swelling despite treatment.

**D.8.e.vii Operative Treatment**

Surgical removal of the bursa.

**D.8.e.viii Post-Operative Therapy**

Rest/restricted activity, off-loading with crutches or cane, APAP, NSAIDs, that may be followed by active and/or passive therapy for graduated range of motion exercises.

**Recommended** - in select patients as clinically indicated.

**D.8.f Osteotomy**

**D.8.f.i Description / Definition**

A reconstructive procedure involving the surgical cutting of bone for realignment and is useful in patients that would benefit from realignment in lieu of total joint replacement.

**D.8.f.ii Mechanism of Injury**

Post-traumatic arthritis or deformity.

**D.8.f.iii Specific Physical Findings**

Painful decreased range of motion and/or deformity.

**D.8.f.iv Diagnostic Testing Procedures**

**Radiographs, MRI, CT scan.**

**Recommended** - in select patients as clinically indicated.

**D.8.f.v Non-Operative Treatment**

Therapy for activity modification, bracing, NSAIDs.

**Recommended** - in select patients as clinically indicated.

**D.8.f.vi Operative Treatment**

Peri-articular opening or closing wedge of bone, usually with grafting and internal or external fixation.

**Recommended** - in select patients as clinically indicated.

*Indications:* Failure of non-surgical treatment. Avoidance of total joint arthroplasty desirable.

**D.8.f.vii Post-Operative Therapy**

**Rest/restricted activity, off-loading with crutches or cane, NSAIDs, APAP that is to be followed by active and/or passive therapy for protected weight-bearing, progressive range of motion.**

**Recommended** - in select patients as clinically indicated.

**D.8.g Hardware Removal**

**D.8.g.i Description / Definition**

Surgical removal of internal or external fixation device.

**D.8.g.ii Mechanism of Injury**

Usually following healing of a post-traumatic injury that required fixation or reconstruction using instrumentation.

**D.8.g.iii Specific Physical Findings**

Local pain to palpation, swelling, erythema.

**D.8.g.iv Diagnostic Testing Procedures**

**Radiographs, tomography, CT scan, MRI**

#### **D.8.g.v Non-Operative Treatment**

Active and/or passive therapy for local modalities, activity modification, NSAIDs

**Recommended** – in select patients as clinically indicated.

#### **D.8.g.vi Operative Treatment**

**Removal of instrumentation. Some instrumentation may be removed in the course of standard treatment without local irritation.**

**Recommended** – in select patients as clinically indicated.

#### **D.8.g.vii Post-Operative Therapy**

**Rest/restricted activity, off-loading with crutches or cane, NSAIDs, APAP that is to be followed by active and/or passive therapy for progressive weight-bearing, range of motion.**

**Recommended** – in select patients as clinically indicated.

### **D.8.h Release of Contracture**

#### **D.8.h.i Description / Definition**

Surgical incision or lengthening of contracted tendon or peri-articular soft tissue.

#### **D.8.h.ii Mechanism of Injury**

Usually following a post-traumatic injury.

#### **D.8.h.iii Specific Physical Findings**

Shortened tendon or stiff joint.

#### **D.8.h.iv Diagnostic Testing Procedures**

Radiographs, CT scan, MRI scan.

#### **D.8.h.v Non-Operative Treatment**

**Therapy for stretching range of motion exercises**

**Recommended** – in select patients as clinically indicated.

**D.8.h.vi Operative Treatment**

**Surgical incision or lengthening of involved soft tissue**

**Recommended** – in select patients as clinically indicated.

**D.8.h.vii Post-Operative Therapy**

**Rest/restricted activity, off-loading with crutches or cane, NSAIDs, APAP that is to be followed by active and/or passive therapy for stretching, range of motion exercises.**

**Recommended** – in select patients as clinically indicated.

**D.8.i Meniscectomy**

**D.8.i.i Description / Definition**

The surgical excision of a meniscus

**D.8.i.ii Evaluation and Management**

See Table 5.

**D.8.j Ligament Repair**

**D.8.j.i Description / Definition**

The surgical reattachment of torn anterior or posterior cruciate ligaments or medial or lateral collateral ligaments.

**D.8.j.ii Evaluation and Management**

See Table 4

Sources:

This Treatment Guideline is adopted, with modification, from the State of Colorado's Lower Extremity Medical Treatment Guideline, and the State of Washington's Medical and Surgical Treatment Guidelines.

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