

# FLEX CEUs



## Knee Injury Medical Treatment Guidelines



## **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).

### **Medical Care**

#### **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 and 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 should be considered and given relative weight when the pain has anatomic and physiologic correlation.

#### **A.4 RE-EVALUATE TREATMENT**

If a given treatment or modality is not producing positive results, 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. Recognizing that treatment failure is at times attributable to an incorrect diagnosis should prompt the clinician to reconsider the diagnosis in the event of an unexpected poor response to an otherwise rational intervention.

## **Education**

### **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 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.7 TREATMENT TIME FRAMES**

Treatment time frames for specific interventions commence once treatments have been initiated, not on the date of injury. Obviously, 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.8 DELAYED RECOVERY**

For those patients who are failing to make expected progress 6-12 weeks after an injury, reexamination in order to confirm the accuracy of the diagnosis and re-evaluation of the treatment program should be performed. Assessment for potential barriers to recovery (yellow flags/psychological issues) should be ongoing throughout the care of the patient. However, at 6-12 weeks, alternate treatment programs, including formal psychological or psychosocial evaluation, should be considered. Referrals to mental health providers (i.e.: psychology/psychiatry) 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.9 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.10 ACTIVE THERAPEUTIC EXERCISE PROGRAM**

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

### **A.11 DIAGNOSTIC IMAGING AND TESTING PROCEDURES**

Clinical information obtained by history taking and physical examination should be the basis for selection and interpretation of imaging procedure results. All diagnostic procedures have variable specificity and sensitivity for various diagnoses.

When a diagnostic procedure, in conjunction with clinical information, provides sufficient information to establish an accurate diagnosis, a second diagnostic procedure will be redundant if it is performed only for diagnostic purposes. At the same time, a subsequent diagnostic procedure (that may be a repeat of the same procedure, when the rehabilitation physician, radiologist or surgeon documents the study was of inadequate quality to make a diagnosis) can be a complementary diagnostic procedure if the first or preceding procedures, in conjunction with clinical information, cannot provide an accurate diagnosis, and is permissible under the MTG.

It is recognized that repeat imaging studies and other tests may be warranted by the clinical course and 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 therapeutic injections when warranted, and post-operatively to follow the healing process. Regarding CT examinations, it must be recognized that repeat procedures result in an increase in cumulative radiation dose and associated risks.

## **A.12 SURGICAL INTERVENTIONS**

Contemplation 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.13 PRE-AUTHORIZATION**

All diagnostic imaging, testing procedures, non-surgical and surgical therapeutic procedures 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 following procedures: Lumbar Fusion, Artificial Disc Replacements, Vertebroplasty, Kyphoplasty, Electrical Bone Growth Stimulators, Spinal Cord Stimulators, Intrathecal Drug Delivery (Pain Pumps), Osteochondral Autograft, Autologous Chondrocyte Implantation, Meniscal Allograft Transplantation and Knee Arthroplasty (Total or Partial Knee Joint Replacement). 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.14 PERSONALITY/PSYCHOLOGICAL/PSYCHOSOCIAL EVALUATIONS**

In select patients, diagnostic testing procedures may be useful when there is a discrepancy between diagnosis, signs, symptoms, clinical concerns or functional recovery. Psychological testing should provide differentiation between pre-existing depression versus injury-caused depression, as well as post-traumatic stress disorder, and other psychosocial issues that may include work or non-work-related issues when such conditions are identified in the patient.

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 should be made. Formal psychological or psychosocial evaluation may be considered.

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: One time visit for evaluation. If psychometric testing is indicated by findings in the initial evaluation, time for such testing should not exceed an additional two hours of professional time.

#### **A.15 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.

- Time to produce effect: 2 to 8 weeks.
- Optimum duration: 6 weeks to 3 months.
- Maximum duration: 3 to 6 months. Counseling is not intended to delay but to enhance functional recovery. For select patients, longer supervision may be required, and if further counseling 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 4 to 6 weeks during treatment.

### **Return to Work**

#### **A.16 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; (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.

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.

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.

#### **A.17 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, should be included in the treatment and rehabilitation plan, and 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.18 JOB SITE EVALUATION**

The treating physician may communicate with the employer or the employer's designee, either in person or by telephone, to obtain information regarding the demands of the patient's pre-injury job, including a description of the exertional demands of the job, the need for repetitive activities, load lifting, static or awkward postures, or any other factors that would pose a risk of re-injury or impedance of convalescence. When returning to work at the patient's previous job task/setting is not feasible, given the clinically determined restrictions on the patient's activities, inquiry should also be made about modified duty work settings, and a similar set of questions should be posed by the physician about work activities/demands in modified duty jobs.

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.

Frequency: 1 or 2 calls

- 1st call: Patient is in a functional state where the patient can perform some work.
- 2nd call: 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.19 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.20 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.21 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.22 SCOPE OF PRACTICE**

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

## **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, acute or chronic swelling, crepitating, pain while ascending or descending stairs, or popping;
- 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, gout, arthritis, and diabetes;
- B.1.b.ii Review of systems includes, but is not limited to, symptoms of rheumatologic, neurologic, endocrine, neoplastic, and other systemic diseases;
- B.1.b.iii Smoking history;
- B.1.b.iv Vocational 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;

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; and neurological or vascular compromise including compartment syndrome. 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)**

Radiographic imaging should not be routinely performed. The mechanism of injury and specific indications for the radiograph should be listed on the request form to aid the radiologist and x-ray technician. Indications include:

- B.2.a.i The inability to transfer weight for four steps at the time of the initial visit, regardless of limping;
- B.2.a.ii History of significant trauma, especially blunt trauma or fall from a height;
- B.2.a.iii Age over 55 years;
- B.2.a.iv 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.a.v History or exam suggestive of intravenous drug abuse or osteomyelitis; and
- B.2.a.vi Pain with swelling and/or range of motion (ROM) limitation localizing to an area of prior fracture, internal fixation, or joint prosthesis.

## **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.i Complete Blood Count (CBC) with differential can detect infection, blood dyscrasias, and medication side effects;
- B.3.a.ii Erythrocyte sedimentation rate (ESR), rheumatoid factor (RF), Antinuclear Antigen (ANA), Human Leukocyte Antigen (HLA), and C-reactive protein (CRP), among others, can be used to detect evidence of a rheumatologic, infection, or connective tissue disorder;
- B.3.a.iii Serum calcium, phosphorous, uric acid, alkaline phosphatase, and acid phosphatase can detect metabolic bone disease;

- B.3.a.iv Liver and kidney function may be performed for prolonged anti-inflammatory use or other medications requiring monitoring; and
- B.3.a.v Analysis of joint aspiration for bacteria, white cell count, red cell count, fat globules, crystalline birefringence and chemistry to evaluate joint effusion.

## **B.4 FOLLOW-UP DIAGNOSTIC IMAGING AND TESTING PROCEDURES**

One 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 procedures(s), or a proper sequential order in multiple procedures will ensure maximum diagnostic accuracy, minimize adverse effect to patients and promote cost effectiveness by avoiding duplication or redundancy.

All diagnostic imaging procedures have a significant percentage of specificity and sensitivity for various diagnoses. None is specifically characteristic of a certain diagnosis. Clinical information obtained by history taking and physical examination should be the basis for selection and interpretation of imaging procedure results.

Magnetic resonance imaging (MRI), myelography, or computed axial tomography (CT) scanning following myelography may provide useful information for many knee disorders. When a diagnostic procedure, in conjunction with clinical information, provides sufficient information to establish an accurate diagnosis, the second diagnostic procedure will be redundant if it is performed only for diagnostic purposes. At the same time, a subsequent diagnostic procedure (that may be a repeat of the same procedure, when the rehabilitation physician, radiologist or surgeon documents that the study was of inadequate quality to make a diagnosis) can be a complementary diagnostic procedure if the first or preceding procedures, in conjunction with clinical information, cannot provide an accurate diagnosis. Usually, preference of a procedure over others depends upon availability, a patient's tolerance, and/or the treating practitioner's familiarity with the procedure.

It is recognized that repeat imaging studies and other tests may be warranted by the clinical course and 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 therapeutic injections when warranted, and post-operatively to follow the healing process.

Regarding CT examinations, it must be recognized that repeat procedures result in an increase in cumulative radiation dose and associated risks.

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.

## **C DIAGNOSTIC STUDIES**

### **C.1 IMAGING STUDIES**

#### **C.1.a Magnetic Resonance Imaging (MRI)**

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. 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 the 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.

#### **C.1.b Computed Axial Tomography (CT)**

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.

**C.1.c Lineal Tomography**

Not recommended.

**C.1.d Bone Scan (Radioisotope Bone Scanning)**

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

It is useful for the investigation of trauma, infection, stress fracture, occult fracture, Charcot joint, Complex Regional Pain Syndrome, and suspected neoplastic conditions of the lower extremity.

**C.1.e Other Radionuclide Scanning**

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

**C.1.f Arthrograms**

Arthrograms may be useful in the evaluation of internal derangement of a joint, only when MRI or other tests are contraindicated or not available. Potential complications of this more invasive technique include pain, infection, and allergic reactions.

**C.1.g Diagnostic Arthroscopy**

Refer to Table 1.

**Table 1: Criteria for Diagnostic Arthroscopy**

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

## **C.2 OTHER TESTS**

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

### **C.2.a Electrodiagnostic Testing (EDX)**

Electrodiagnostic testing for the knee includes, but is not limited to, Electromyography (EMG) and Nerve Conduction Velocity Studies (NCV). Evaluation of Somatosensory Evoked Potentials (SSEP) is not recommended for conditions of the knee. 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.

### **C.2.b Doppler Ultrasonography/Plethysmography**

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.

### **C.2.c Venogram/Arteriogram**

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.

## **C.3 OTHER PROCEDURES**

### **C.3.a Joint Aspiration**

Joint Aspiration is a procedure used when specifically indicated and performed by individuals properly trained in these techniques. This is true at the initial evaluation when history and/or physical examination are of concern for a septic joint or bursitis. Aspiration should not be performed through an infected area.

Particularly at the knee, aspiration of a large 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 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.

## **D SPECIFIC KNEE INJURY DIAGNOSES, TESTING, AND TREATMENT**

### **D.1 CHONDRAL DEFECTS (Cartilage or Cartilage and Bone Defects)**

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

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

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

Usually caused by a traumatic knee injury.

#### **D.1.c Specific Physical Findings**

Knee effusion, pain in joint.

#### **D.1.d Diagnostic Testing Procedures**

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.

#### **D.1.e Non-Operative Treatment**

Limited indications. The size and extent of the injury should be determined first. This form of therapy is reserved for non-displaced, stable lesions. Immobilization (for acute injury), active and/or passive therapy.

#### **D.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.

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

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

- Lesion that involves any portion of the patellofemoral articular cartilage, bone, or is due to osteochondritis dissecans.
- A “kissing lesion” or Modified Outerbridge Grade II, III, or IV exists on the opposite tibial surface.
- 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.
- Unhealthy cartilage border; the synovial membrane in the joint may be used as a substitute border for up to 1/4 of the total circumference.
- Prior total meniscectomy of either compartment in the affected knee. Must have at least 1/3 of the posterior meniscal rim.
- History of anaphylaxis to gentamycin or sensitivity to materials of bovine origin.
- 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

### **D.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 OR Limited ROM		Medication AND/OR Physical therapy	Chondroplasty  (Shaving or debridement of an articular surface)
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**

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	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)

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**

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	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>

		<p>Knee is stable with intact, fully functional menisci and ligaments</p> <p>AND</p> <p>Normal knee alignment</p> <p>AND</p> <p>Normal joint space</p> <p>AND</p> <p>Patient is less than 60 years old</p> <p>AND</p> <p>Body Mass Index of less than 35.</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.

## **D.2 AGGRAVATED OSTEOARTHRITIS**

### **D.2.a Description/Definition**

Swelling and/or pain in a joint due to an aggravating activity in a patient with pre-existing degenerative change in a joint.

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

May be caused by repetitive activity or constant position.

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

Increased pain and swelling in a joint.

### **D.2.d Diagnostic Testing Procedures**

Radiographs.

**D.2.e Non-Operative Treatment**

NSAIDs , ice, bracing, active and/or passive therapy, therapeutic injections, which may include hyaluronate therapy, restricted activity.

**D.2.f Surgical Indications/Operative Treatment**

Symptoms not responsive to conservative therapy.

Debridement with or without removal of loose bodies. Arthroscopic joint lavage is not recommended.

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

**D.2.g Post-Operative Therapy**

Active and/or passive therapy.

**D.3 COLLATERAL LIGAMENT INJURY**

**D.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.

**D.3.b Mechanism of Injury**

Valgus or varus trauma force applied to the knee.

**D.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.

**D.3.d Diagnostic Testing Procedures**

MRI may be indicated for suspected Grade II or Grade III tears.

**D.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. Conservative management with casting, orthotics and rehabilitation may be indicated.

**D.3.f Surgical Indications/Operative Treatment**

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

**D.4 ANTERIOR CRUCIATE LIGAMENT (ACL) INJURY**

**D.4.a Description/Definition**

Rupture or partial rupture of the anterior cruciate ligament; may be associated with other internal derangement of the knee.

**D.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.

**D.4.c Specific Physical Findings**

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

**D.4.d Diagnostic Testing Procedures**

MRI. Radiographs may show avulsed portion of tibial spine but this is a rare finding.

**D.4.e Non-Operative Treatment**

Active and/or passive therapy, bracing.

**D.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.

**D.4.g Post-Operative Therapy**

Active and/or passive therapy, bracing.

**Table 4: Anterior Cruciate Ligament 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
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

## **D.5 POSTERIOR CRUCIATE LIGAMENT (PCL) INJURY**

### **D.5.a Description/Definition**

Rupture of PCL; may have concurrent ACL rupture.

### **D.5.b Mechanism of Injury**

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

### **D.5.c Specific Physical Findings**

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

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

MRI, radiographs may reveal avulsed bone.

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

Active and/or passive therapy, bracing.

### **D.5.f Surgical 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.

### **D.5.g Operative Treatment**

Autograft or allograft reconstruction.

### **D.5.h Post-Operative Therapy**

Active and/or passive therapy, bracing.

## **D.6 MENISCUS INJURY**

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

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

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

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

**D.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.

**D.6.d Diagnostic Testing Procedures**

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.

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

**D.6.e Non-Operative Treatment**

Active and/or passive therapy, bracing. Trial of Manipulation may be attempted for a locked knee. Clinical response should be seen within 2-3 treatments.

**D.6.f Surgical Indications/ Operative Treatment  
Meniscectomy/Meniscus Repair and Meniscal Allograft Transplantation.**

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.

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

Active and/or passive therapy, bracing.

**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 Joint line 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 Physical therapy OR Medication OR Activity modification	Meniscectomy OR Meniscus Repair

**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	<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>

## D.7 MENISCAL ALLOGRAFT TRANSPLANTATION EXCLUSION CRITERIA

Meniscal Allograft Transplantation is not a covered procedure 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.

## D.8 PATELLAR SUBLUXATION

### D.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.

### D.8.b Mechanism of Injury

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

**D.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.

**D.8.d Diagnostic Testing Procedures**

Radiographs including Merchant views, Q-angle versus congruents.

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

Active and/or passive therapy, bracing, therapeutic injection.

**D.8.f Surgical Indications**

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

**D.8.g Operative Treatment**

Open reduction internal fixation with fracture. Following a patellar dislocation, surgical consultation no sooner than 4-6 months of conservative therapy. Retinacular release, quadriceps reefing, and patellar tendon transfer should only be considered after a minimum of 4 to 5 months of conservative therapy.

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

Active and/or passive therapy, bracing.

**D.9 RETROPATELLAR PAIN SYNDROME (CHONDROMALACIA PATELLA)**

**D.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.

**D.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.

**D.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.

**D.9.d Diagnostic Testing Procedures**

Radiographs including tunnel, Merchant, or Laurin views. MRI rarely identifies pathology. Occasionally CT or bone scan.

**D.9.e Non-Operative Treatment**

Active and/or passive therapy, bracing, orthotics, therapeutic injections.

**D.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.

**D.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. Retinacular release, quadriceps reefing, and tibial transfer procedures should only be considered after 6 to 9 months of conservative therapy. Refer to Table 7.

**D.9.h Post-Operative Therapy**

Active and/or passive therapy; bracing.

**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

**D.10 TENDINITIS/TENOSYNOVITIS**

**D.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.

**D.10.b Mechanism of Injury**

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

**D.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.

**D.10.d Diagnostic Testing Procedures**

Rarely indicated.

**D.10.e Non-Operative Treatment**

Active and/or passive therapy, including ergonomic changes at work station(s), NSAIDs, therapeutic injections.

**D.10.f Surgical Indications**

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

**D.10.g Operative Treatment**

Rarely indicated and only after extensive conservative therapy.

**D.10.h Post-Operative Therapy**

Active and/or passive therapy.

**D.11 BURSITIS**

**D.11.a Description/Definition**

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

**D.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.

**D.11.c Specific Physical Findings**

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

**D.11.d Diagnostic Testing Procedures**

Bursal fluid aspiration with testing for connective tissue, rheumatic disease, and infection. Radiographs, CT, MRI are rarely indicated.

**D.11.e Non-Operative Treatment**

Active and/or passive therapy, ice, therapeutic injection, treatment of an underlying infection, if present.

**D.11.f Surgical Indications**

Bursa excision after failure of conservative therapy.

**D.11.g Operative Treatment**

Surgical excision of the bursa.

**D.11.h Post-Operative Therapy**

Active and/or passive therapy.

**E 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.

## **E.1 ACUPUNCTURE**

Acupuncture is a procedure used for the relief of pain and inflammation and there is some scientific evidence to support its use. The exact mode of action is only partially understood. Western medicine studies suggest that acupuncture stimulates the nervous system at the level of the brain, promotes deep relaxation, and affects the release of neurotransmitters. Acupuncture is commonly used as an alternative or in addition to traditional Western pharmaceuticals. While it is commonly used when pain medication is reduced or not tolerated, it may be used as an adjunct to physical rehabilitation and/or surgical intervention to hasten the return of functional activity. Moxibustion and other complementary integrative medicine techniques are often combined with acupuncture, but have no demonstrated efficacy. No additional reimbursement should be provided for acupuncture combined with moxibustion or other similar adjunctive procedures. Acupuncture must be performed by a professional who is authorized under the Workers' Compensation Laws and duly certified in New York State to provide acupuncture services.

Acupuncture (with or without electrical stimulation) is the insertion and removal of filiform needles to stimulate acupoints (acupuncture points), with or without the use of electrical current (micro-amperage or milli-amperage) on the needles at the acupuncture site. Needles may be inserted, manipulated and retained for a period of time. Acupuncture can be used to reduce pain, reduce inflammation, increase blood flow, increase range of motion, decrease the side effect of medication-induced nausea, promote relaxation in an anxious patient, and reduce muscle spasm. Indications include joint pain, joint stiffness, soft tissue pain and inflammation, paresthesia, post-surgical pain relief, muscle spasm, and scar tissue pain.

- Time to produce effect: 3 to 6 treatments
- Frequency: 1 to 3 times per week
- Optimum duration: 1 month
- Maximum duration: 10 treatments
- 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.

## **E.2 BIOFEEDBACK**

Not recommended.

## **E.3 INJECTIONS: THERAPEUTIC**

Description: 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.

### **E.3.a Soft Tissue and Joint Injections**

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 2 to 3 times annually. Usually 1 or 2 injections adequate. A minimum of 3 weeks interval between injections is recommended.
- Time to produce effect: Immediate with local anesthetic, or within 3 days with corticosteroids.
- Optimum/maximum duration: Limited to 3 injections annually to the same site.

### **E.3.b Trigger Point Injections**

Not recommended.

### **E.3.c Prolotherapy (also known as sclerotherapy)**

Not recommended.

### **E.3.d Protein Rich Plasma (PRP)**

Not recommended.

### **E.3.e Intra-Capsular Acid Salts**

Intra-Capsular Acid Salts (also known as Viscosupplementation) is a form of treatment for osteoarthritis or degenerative changes in the knee joint. 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 6 months is not well known.

- Time to produce effect: One series of injections, per product instructions.
- Frequency: If the first use is associated with decreased symptoms and increased function, repeat use may be considered after 6 months if symptoms recur.
- Optimum/maximum duration: Varies. Efficacy beyond 6 months is not well known.

## **E.4 MEDICATIONS**

Medication use in the treatment of knee injuries is appropriate for controlling acute pain and inflammation. Use of medications will vary widely due to the spectrum of injuries.

All drugs should be used according to patient needs. A thorough medication history, including use of alternative and over-the-counter medications should be performed at the time of the initial visit and updated periodically. Treatment for pain control is initially accomplished with acetaminophen and/or NSAIDs. The patient should be educated regarding the interaction with prescription and over-the-counter medications as well as the contents of over-the-counter herbal products.

Please consult the *New York Non-Acute Pain Medical Treatment Guidelines* for additional recommendations on the use of medications in non-acute pain.

The following are listed in alphabetical order.

### **E.4.a Acetaminophen**

Acetaminophen is an effective analgesic with antipyretic but not anti-inflammatory activity. Acetaminophen is generally well tolerated, causes little or no gastrointestinal irritation, and is not associated

with ulcer formation. Acetaminophen has been associated with liver toxicity when the recommended daily dose is exceeded or in patients who chronically use alcohol. Patients may not realize that many over-the-counter preparations may contain acetaminophen. In general, the total daily dose of acetaminophen should not exceed 3 grams per 24-hour period from all sources, including narcotic-acetaminophen combination preparations. Patients who consume three or more alcoholic drinks per day are at greater risk for liver toxicity, and consideration should be given to the use of other analgesics or limiting the acetaminophen dose to 2 grams per 24-hour period from all sources. Monitoring liver function via blood testing for use beyond 10 days is advisable.

Recommendations:

Acetaminophen is a reasonable alternative to NSAIDs, although evidence suggests it is modestly less efficacious.

Acetaminophen is recommended for treatment of knee pain, particularly for those with contraindications for NSAIDs.

- Optimum Duration: 7 to 10 days.
- Maximum Duration: Chronic use as indicated on a case-by-case basis. Please consult the *New York Non-Acute Pain Medical Treatment Guidelines* for further recommendations.

#### **E.4.b Compound Medications**

Topical, oral and/or systemic compound medications are not recommended.

#### **E.4.c Minor Tranquilizer/Muscle Relaxants**

Not recommended.

#### **E.4.d Narcotics**

Narcotics should be primarily reserved for the treatment of severe knee pain. In mild-to-moderate cases of knee pain, narcotic medication should be used cautiously on a case-by-case basis. Adverse effects include respiratory depression, the development of physical and psychological dependence, and impaired alertness. This medication has physically addictive properties and withdrawal symptoms may follow abrupt discontinuation.

Narcotic medications should be prescribed with strict time, quantity, and duration guidelines, and with definitive cessation parameters.

Pain is subjective in nature and should be evaluated using a scale to rate effectiveness of the narcotic prescribed. Any use beyond the maximum should be documented and justified based on the diagnosis and/or invasive procedure.

- Optimum Duration: 3 to 7 days.
- Maximum Duration: 2 weeks. Use beyond two weeks is acceptable in appropriate cases.

Any use beyond the maximum should be documented and justified based on the diagnosis and/or invasive procedures.

Please consult the *New York Non-Acute Pain Medical Treatment Guidelines* for detailed recommendations regarding the use of opioids.

#### **E.4.e Nonsteroidal Anti-Inflammatory Drugs (NSAIDs)**

NSAIDs are useful for pain and inflammation. In mild cases, they may be the only drugs required for analgesia. There are several classes of NSAIDs and the response of the individual patient to a specific medication is unpredictable. For this reason a range of orally administered NSAIDs may be tried in each case with the most effective preparation being continued. Patients should be closely monitored for adverse reactions.

The US Food and Drug Administration advises that all NSAIDs may cause an increased risk of serious cardiovascular thrombotic events, myocardial infarction, and stroke, which can be fatal. Prescribers should be aware of the most updated information on this topic. Some NSAIDs may have more favorable cardiovascular risk factors than others.

Administration of proton pump inhibitors, histamine 2 blockers, or misoprostol, a prostaglandin analog, along with these NSAIDs may reduce the risk of duodenal and gastric ulceration associated with NSAID use but do not impact possible cardiovascular complications. Due to the cross reactivity between aspirin and NSAIDs, NSAIDs should not be used in aspirin-sensitive patients, and should be used with caution in all asthma patients. NSAIDs are associated with abnormal renal function, including renal failure, as well as abnormal liver function. Certain NSAIDs may have interactions with various

other medications. Individuals may have adverse events not listed above. Intervals for metabolic screening are dependent upon the patient's age, general health status and should be within parameters

listed for each specific medication. Complete blood count (CBC), liver and renal function should be monitored in patients on chronic NSAIDs.

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, aspirin should be taken two hours before or at least eight hours after the NSAID.

Chronic use of NSAIDs is generally not recommended. Chronic NSAIDs may be used cautiously in selected cases with regular monitoring.

E.4.e.i **Non-selective Nonsteroidal Anti-Inflammatory Drugs:**

Non-selective NSAIDs are generally recommended as first-line medications.

Serious gastrointestinal toxicity, such as bleeding, perforation, and ulceration can occur at any time, with or without warning symptoms in patients treated with traditional NSAIDs. Patients at particularly high risk for GI bleeding include those with a history of prior GI bleed, diabetes, alcohol use, smoking, corticosteroid or anticoagulant use, patients older than 65 or those who have a longer duration of therapy.

Physicians should inform patients about the signs and/or symptoms of serious gastrointestinal toxicity and what steps to take if they occur.

Anaphylactic reactions may occur in patients taking NSAIDs.

NSAIDs may interfere with platelet function.

Fluid retention and edema, and renal toxicity in those with underlying reduction of renal function have been observed in some patients taking NSAIDs.

#### E.4.e.ii **Selective Cyclo-oxygenase-2 (COX-2) Inhibitors:**

COX-2 inhibitors should not be first-line for low risk patients who will be using an NSAID short-term but are indicated in select patients for whom traditional NSAIDs are not tolerated. Patients who receive COX-2 inhibitors should take the lowest effective dose for the shortest time necessary to control symptoms.

The major advantages of selective COX-2 inhibitors over traditional NSAIDs are that they have less GI toxicity and no platelet effects.

Serious upper GI adverse events can occur even in asymptomatic patients who are taking COX-2 inhibitors. Patients at a high risk include those with a history of prior GI bleed, diabetes, alcohol use, smoking, corticosteroid or anticoagulant use, patients older than 65 or those who have a longer duration of therapy.

COX-2 inhibitors can worsen renal function in patients with renal insufficiency; thus, renal function may need monitoring.

Selective COX-2 inhibitors should be used with great caution in patients with ischemic heart disease and/or stroke and avoided in patients with risk factors for coronary heart disease. In these patients it appears to be safest to use acetaminophen, aspirin or non-selective NSAIDs as first-line therapy.

Celecoxib is contraindicated in sulfonamide allergic patients.

#### E.4.f **Topical Drug Delivery**

Topical drug delivery (e.g., capsaicin, 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.

Physicians should consider that topical medication can result in toxic blood levels.

E.4.f.i **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.

- Optimal duration: 1-2 weeks to determine effectiveness.
- Discontinuation: Resolution of pain, or development of adverse effects that necessitate discontinuation.
- Long-term use of capsaicin is not recommended.

E.4.f.ii **Topical lidocaine** is only indicated when there is documentation 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.

E.4.f.iii **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).

E.4.f.iv **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.

#### E.4.g **Tramadol**

Tramadol is useful in relief of lower extremity pain and has been shown to provide pain relief equivalent to that of commonly prescribed NSAIDs. Although Tramadol may cause impaired

alertness, it is generally well tolerated, does not cause gastrointestinal ulceration, or exacerbate hypertension or congestive heart failure.

Tramadol should be used cautiously in patients who have a history of seizures or who are taking medication that may lower the seizure threshold, such as MAO inhibitors, SSRIs, and tricyclic antidepressants. This medication has physically addictive properties and withdrawal may follow abrupt discontinuation and is not recommended for patients with prior opioid addiction.

Maximum duration: 2 weeks. Use beyond 2 weeks is acceptable in appropriate cases.

## **E.5 ORTHOTICS AND PROSTHETICS**

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

Fabrication/Modification of Orthotics would be used when there is need to normalize weight-bearing, facilitate better motion response, stabilize a joint with insufficient muscle or proprioceptive/reflex competencies, to protect subacute conditions as needed during movement, and correct biomechanical problems.

- Time to produce effect: 1 to 3 sessions (includes wearing schedule evaluation).
- Frequency: 1 to 2 times per week.
- Optimum/maximum duration: 4 sessions of evaluation, casting, fitting, and re-evaluation.

### **E.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.

- Time to produce effect: 2 to 6 sessions.
- Frequency: 3 times per week.
- Optimum/maximum duration: 2 to 4 months.

### **E.5.c Splints or Adaptive Equipment**

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.

- Time to produce effect: Immediate.

- Frequency: 1 to 3 sessions or as indicated to establish independent use.
- Optimum/maximum duration: 1 to 3 sessions.

## **E.6 RETURN TO WORK**

Communication is essential between the patient, employer and physician to determine appropriate restrictions and return to work dates. It is the responsibility of the physician to provide clear, concise restrictions, and it is the employer's responsibility to determine if temporary duties can be provided within the restrictions.

### **E.6.a Establishment of Activity Level Restrictions**

For lower extremity injuries, the following should be addressed when describing the patient's activity level:

- Lower body postures such as squatting, kneeling, crawling, stooping, or climbing should include duration and frequency.
- Ambulatory level for distance, frequency and terrain should be specified.
- Standing duration and frequency with regard to balance issues.
- Use of adaptive devices or equipment for proper ergonomics to enhance capacities can be included.

### **E.6.b Compliance with Activity Restrictions**

In some cases, compliance with restriction of activity levels may require a complete jobsite evaluation, a functional capacity evaluation (FCE), or other special testing

## **E.7 THERAPY: ACTIVE**

Most of the following active therapies have some evidence and are based on the philosophy that therapeutic exercise and/or activity are beneficial for restoring flexibility, strength, endurance, function, range of motion, and can alleviate discomfort. Active therapy requires an internal effort by the individual to complete a specific exercise or task. This form of therapy requires supervision from a therapist or medical provider such as verbal, visual and/or tactile instruction(s). At times, the provider may help stabilize the patient or guide the movement pattern but the energy required to complete the task is predominately executed by the patient.

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

The following active therapies are listed in alphabetical order.

### **E.7.a 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.

- Time to produce effect: 4 to 5 treatments.
- Frequency: 2 to 3 times per week.
- Optimum duration: 2 to 3 weeks.
- Maximum duration: 3 weeks.

### **E.7.b Functional Electrical Stimulation**

Functional Electrical Stimulation is the application of electrical current to elicit involuntary or assisted contractions of atrophied and/or impaired muscles. Indications include muscle atrophy, weakness, and sluggish muscle contraction secondary to pain, injury, neuromuscular dysfunction or peripheral nerve lesion or where the potential for atrophy exists. May be an appropriate treatment in conjunction with an active exercise program.

- Time to produce effect: 2 to 6 treatments.
- Frequency: 3 times per week.
- Optimum duration: 8 weeks.
- Maximum duration: 8 weeks.

#### **E.7.c Gait Training**

Gait Training is crutch walking, cane or walker instruction to a person 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.

- Time to produce effect: 3 to 4 treatments.
- Frequency: 2 to 3 times per week.
- Optimum duration: 2 weeks.
- Maximum duration: 2 weeks.

#### **E.7.d Neuromuscular Re-education**

Not recommended.

#### **E.7.e Therapeutic Exercise**

Therapeutic Exercise, with or without mechanical assistance or resistance, may include isoinertial, isotonic, isometric and isokinetic types of exercises. Indications include the need for cardiovascular fitness, reduced edema, improved muscle strength, improved connective tissue strength and integrity, increased bone density, promotion of circulation to enhance soft tissue healing, improvement of muscle recruitment, increased range of motion, and promotion of normal movement patterns. Can also include complementary/alternative exercise movement therapy.

- Time to produce effect: 2 to 6 treatments.
- Frequency: 3 to 5 times per week.
- Optimum duration: 4 to 8 weeks.
- Maximum duration: 8 weeks.

#### **E.7.f 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. This is indicated in individuals who are not able to ambulate due to bilateral lower extremity injuries, inability to use ambulatory assistive devices, and in cases of multiple traumas.

- Time to produce effect: 2 to 6 treatments.
- Frequency: 2 to 3 times per week.
- Optimum duration: 2 weeks.
- Maximum duration: 2 weeks.

### **E.8 THERAPY: PASSIVE**

Passive therapies include those treatment modalities that do not require energy expenditure on the part of the patient. They are principally effective during the early phases of treatment and are directed at controlling symptoms such as pain, inflammation and swelling. They should be used adjunctively with active therapies to help control swelling, pain and inflammation during the rehabilitation process. They may be used intermittently as deemed appropriate or regularly if there are specific goals with objectively measured functional improvements during treatment.

While protocols for specific diagnoses and post-surgical conditions may warrant durations of treatment beyond those listed as "maximum," factors such as exacerbation of symptoms, re-injury, interrupted continuity of care, and co-morbidities may extend durations of care. Having specific goals with objectively measured functional improvement during treatment can support extended durations of care. It is recommended that if after 3 to 5 visits no treatment effect is observed, alternative treatment interventions, further diagnostic studies or further consultations should be pursued.

The following passive therapies and modalities are listed in alphabetical order.

**E.8.a 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. 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.

- Time to produce effect: Immediate.
- Frequency: Up to 4 times a day
- Optimum duration: Up to 3 weeks post surgical.
- Maximum duration: 3 weeks.

**E.8.b Contrast Baths**

Not recommended.

**E.8.c Electrical Stimulation (Physician or Therapist Applied)**

Electrical Stimulation (like other passive modalities) is not recommended as a stand-alone treatment, but may be a component of a comprehensive treatment plan.

- Frequency: 2-3 x week for a maximum of up to two months.

**E.8.d 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. Indications include the need to enhance collagen extensibility before stretching, reduce muscle guarding, or reduce inflammatory response.

- Time to produce effect: 1 to 4 treatments.
- Frequency: 1 to 3 times per week.

- Optimum duration: 4 weeks.
- Maximum duration: 1 month.

**E.8.e Infrared Therapy**

Not recommended.

**E.8.f Iontophoresis**

Not recommended.

**E.8.g Kinesiotaping, Taping or Strapping**

Other than for acute joint immobilization (for example, acute ankle sprain), kinesiotaping, taping or strapping are not recommended for acute or non-acute pain.

**E.8.h Manipulation**

Manipulation is manual therapy that moves a joint beyond the physiologic range of motion but not beyond the anatomic range of motion. It is indicated for locked knee, contracture, or pain and loss of range of motion due to adhesions or contractures.

- Time to produce effect: Immediate or up to 10 treatments.
- Frequency: 1 to 5 times per week as indicated by the severity of involvement and the desired effect.
- Optimum duration: 10 treatments.
- Maximum duration: 10 treatments.

**E.8.i Manual Electrical Stimulation**

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

- Time to produce effect: Variable, depending upon use.
- Frequency: 3 to 7 times per week.
- Optimum duration: 8 weeks.
- Maximum duration: 2 months.

**E.8.j Massage, Manual or Mechanical**

Not recommended.

**E.8.k 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. Indications include the need to improve joint play, improve intracapsular arthrokinematics, or reduce pain associated with tissue impingement/maltraction.

- Time to produce effect: 6 to 9 treatments.
- Frequency: 3 times per week.
- Optimum duration: 10 treatments.
- Maximum duration: 10 treatments.

**E.8.l 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. Indications include muscle spasm around a joint, trigger points, adhesions, and neural compression.

- Time to produce effect: 2 to 3 weeks.
- Frequency: 2 to 3 times per week.
- Optimum duration: 10 treatments.
- Maximum duration: 10 treatments.

**E.8.m Paraffin Bath**

Not recommended.

**E.8.n 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. 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.

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

**E.8.o Short-wave Diathermy**

Not recommended.

**E.8.p Traction**

Not recommended.

**E.8.q Transcutaneous Electrical Nerve Stimulation (TENS)**

Transcutaneous Electrical Nerve Stimulation (TENS) treatment should include at least one instructional session for proper application and use. 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: 3 sessions.
- Maximum duration: 3 sessions. Purchase or provide with home unit if effective.

**E.8.r Ultrasound**

Ultrasound uses sonic generators to deliver acoustic energy for therapeutic thermal effects. Indications include scar tissue, adhesions, contractures and muscle spasm, and the need to extend muscle tissue or accelerate the soft tissue healing.

- Time to produce effect: 6 to 15 treatments.
- Frequency: 3 times per week.
- Optimum duration: 4 to 8 weeks.
- Maximum duration: 2 months.

**E.8.s Vasopneumatic Devices**

Not recommended.

**E.8.t 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. Indications include the need for analgesia, relaxing muscle spasm, reducing joint stiffness, enhancing mechanical debridement and facilitating and preparing for exercise.

- Time to produce effect: 2 to 4 treatments.
- Frequency: 3 to 5 times per week.

- Optimum duration: 3 weeks as primary, or up to 2 months if used intermittently as an adjunct to other therapeutic procedures.
- Maximum duration: 2 months.

## **E.9 THERAPY: ONGOING MAINTENANCE CARE**

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.

- Although the current body of scientific evidence as reviewed does not support the routine use of this intervention, maintenance therapy modalities may be indicated 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 10 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.

## **F 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.

Structured rehabilitation interventions should be strongly considered post-operative in any patient not making expected functional progress within three weeks post-operative.

### **F.1 KNEE FUSION**

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

Surgical fusion of femur to tibia at the knee joint.

**F.1.b Diagnostic Testing Procedures**

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

**F.1.c Non-Operative Treatment**

Active and/or passive therapy for weight-sharing braces; NSAIDs.

**F.1.d Surgical Indications**

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

**F.1.e Operative Treatment**

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

**F.1.f Post-Operative Therapy**

Active for protected weight-bearing and gait training.

## F.2 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 unicompartmental or partial replacement if indicated  If 2 of the 3 compartments are affected, a total joint replacement is indicated

## **F.3 AMPUTATION**

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

Surgical removal of a portion of the lower extremity.

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

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

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

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

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

Radiographs, vascular studies.

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

None.

### **F.3.f Surgical Indications**

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

### **F.3.g Operative Treatment**

Amputation.

### **F.3.h Post-Operative Therapy**

Active and/or passive therapy for prosthetic fitting, construction and training, protected weight-bearing.

## **F.4 MANIPULATION UNDER ANESTHESIA (MUA)**

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

Passive range of motion of a joint under anesthesia.

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

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

**F.4.c Specific Physical Findings**

Joint stiffness in both active and passive modes.

**F.4.d Diagnostic Testing Procedures**

Radiographs.

**F.4.e Non-Operative Treatment**

Active and/or passive therapy for active and passive range of motion exercises.

**F.4.f 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.

**F.4.g Operative Treatment**

Not applicable.

**F.4.h Post-Operative Therapy**

Active and/or passive therapy for active and passive range of motion.

**F.5 BURSECTOMY**

**F.5.a Description/Definition**

Surgical removal of peri-articular bursa.

**F.5.b Mechanism of Injury**

Usually a traumatic local injury or repetitive minor local irritation.

**F.5.c Specific Physical Findings**

Swelling, tenderness over the bursa.

**F.5.d Diagnostic Testing Procedures**

Radiographs.

**F.5.e Non-Operative Treatment**

Active and/or passive therapy for splinting, rest, NSAIDs, steroid injection.

**F.5.f Surgical Indications**

Persistent pain, swelling despite treatment.

**F.5.g Operative Treatment**

Surgical removal of the bursa.

**F.5.h Post-Operative Therapy**

Active and/or passive therapy for graduated range of motion exercises.

**F.6 OSTEOTOMY**

**F.6.a 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.

**F.6.b Mechanism of Injury**

Post-traumatic arthritis or deformity.

**F.6.c Specific Physical Findings**

Painful decreased range of motion and/or deformity.

**F.6.d Diagnostic Testing Procedures**

Radiographs, MRI scan, CT scan.

**F.6.e Non-Operative Treatment**

Active and/or passive therapy for activity modification, bracing, NSAIDs.

**F.6.f Surgical Indications**

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

**F.6.g Operative Treatment**

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

**F.6.h Post-Operative Therapy**

Active and/or passive therapy for protected weight-bearing, progressive range of motion.

**F.7 HARDWARE REMOVAL**

**F.7.a Description/Definition**

Surgical removal of internal or external fixation device.

**F.7.b Mechanism of Injury**

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

**F.7.c Specific Physical Findings**

Local pain to palpation, swelling, erythema.

**F.7.d Diagnostic Testing Procedures**

Radiographs, tomography, CT scan, MRI.

**F.7.e Non-Operative Treatment**

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

**F.7.f Surgical Indications**

Persistent local pain, irritation around hardware.

**F.7.g Operative Treatment**

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

**F.7.h Post-Operative Therapy**

Active and/or passive therapy for progressive weight-bearing, range of motion.

## **F.8 RELEASE OF CONTRACTURE**

### **F.8.a Description/Definition**

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

### **F.8.b Mechanism of Injury**

Usually following a post-traumatic injury.

### **F.8.c Specific Physical Findings**

Shortened tendon or stiff joint.

### **F.8.d Diagnostic Testing Procedures**

Radiographs, CT scan, MRI scan.

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

Active and/or passive therapy for stretching, range of motion exercises.

### **F.8.f Surgical Indications**

Persistent shortening or stiffness associated with pain and/or altered function.

### **F.8.g Operative Treatment**

Surgical incision or lengthening of involved soft tissue.

### **F.8.h Post-Operative Therapy**

Active and/or passive therapy for stretching, range of motion exercises.

## **F.9 MENISCECTOMY**

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

The surgical excision of a meniscus.

### **F.9.b Evaluation and Management**

See Table 5.

## **F.10 LIGAMENT REPAIR**

### **F.10.a Description/Definition**

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

### **F.10.b Evaluation and Management**

See Table 4.



“This course was developed from the public domain document: New York Knee Injury Medical Treatment Guidelines (3<sup>rd</sup> Edition) - New York State Workers’ Compensation Board.”