Clinical Policy Title: Manipulation under anesthesia (MUA)

Clinical Policy Number: 14.02.10

Effective Date: October 1, 2016
Initial Review Date: July 20, 2016
Most Recent Review Date: July 19, 2017
Next Review Date: July 2018

Policy contains:
- Manipulation under anesthesia (MUA)
- Spinal manipulation under anesthesia
- Manipulation of a joint under anesthesia

ABOUT THIS POLICY: Select Health of South Carolina has developed clinical policies to assist with making coverage determinations. Select Health of South Carolina’s clinical policies are based on guidelines from established industry sources, such as the Centers for Medicare & Medicaid Services (CMS), state regulatory agencies, the American Medical Association (AMA), medical specialty professional societies, and peer-reviewed professional literature. These clinical policies along with other sources, such as plan benefits and state and federal laws and regulatory requirements, including any state or plan-specific definition of “medically necessary,” and the specific facts of the particular situation are considered by Select Health of South Carolina when making coverage determinations. In the event of conflict between this clinical policy and plan benefits and/or state or federal laws and/or regulatory requirements, the plan benefits and/or state and federal laws and/or regulatory requirements shall control. Select Health of South Carolina’s clinical policies are for informational purposes only and not intended as medical advice or to direct treatment. Physicians and other health care providers are solely responsible for the treatment decisions for their patients. Select Health of South Carolina’s clinical policies are reflective of evidence-based medicine at the time of review. As medical science evolves, Select Health of South Carolina will update its clinical policies as necessary. Select Health of South Carolina’s clinical policies are not guarantees of payment.

Coverage policy

Select Health of South Carolina considers the use of manipulation under anesthesia (MUA) for the treatment of reducing pain and improving range of motion (ROM) to be clinically proven and, therefore, medically necessary for the following conditions:

1. Arthrofibrosis of knee following total knee arthroplasty, knee surgery, or fracture (see table 1).
2. Chronic, refractory frozen shoulder (adhesive capsulitis [see Table 1]).
3. Reduction of a displaced fracture (e.g., vertebral, long bones).
4. Reduction of acute/traumatic dislocation (e.g., vertebral, perched cervical facet).

Table 1.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Medical Necessity Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knee arthrofibrosis</td>
<td>MUA is considered medically necessary arthrofibrosis of knee following total knee arthroplasty, knee surgery, or fracture in persons having less than 90 degrees ROM 4 weeks to 6 months after surgery or trauma.</td>
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<tr>
<td>Frozen shoulder (adhesive capsulitis) MUA is</td>
<td>Adhesive capsulitis should be documented by restricted active and passive glenohumeral and</td>
</tr>
<tr>
<td>considered medically necessary for chronic,</td>
<td>ROM</td>
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<tr>
<td>refractory frozen shoulder</td>
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</tbody>
</table>
(adhesive capsulitis) that meets the following criteria:

1. Scapulothoracic motion for at least 1-month duration which has either reached a plateau or worsened.
2. Significant reduction in ROM (at least a 50 percent reduction in both active and passive ROM compared with the unaffected shoulder).
3. Causing various degrees of impaired function, including limited reaching (e.g., overhead, across the chest) and limited rotation (e.g., unable to scratch the back, difficulty putting on a coat).
4. Persons have undergone at least 12 weeks of conservative management, and have failed to improve, including analgesics or corticosteroids, physical therapy or therapeutic exercises, and subacromial corticosteroid injection or hydrodilatation (arthrographic distension, hydrodilation, hydroplasty).
5. Conventional x-rays do not show bone pathology that can explain the loss of motion.

Limitations:

All other uses of MUA for the treatment of acute or chronic pain conditions, involving one or more of the following joints, are not medically necessary because they are considered experimental, investigational or unproven (this list may not be all inclusive):

- Anesthesia for manipulation of the spine or for closed procedures on the cervical, thoracic or lumbar spine.
- Manipulation of temporomandibular joint(s) (TMJ), therapeutic, requiring an anesthesia service (i.e., general or monitored anesthesia care).
- Manipulation of spine requiring anesthesia, any region.
- Manipulation under anesthesia, shoulder joint, including application of fixation apparatus (dislocation excluded).
- Manipulation of elbow, wrist, finger joint, hip joint under anesthesia.
- Manipulation of knee joint under general anesthesia (includes application of traction or other fixation devices).
- Closed treatment of pelvic ring fracture, dislocation, diastasis or subluxation; with manipulation, requiring more than local anesthesia.
- Manipulation of ankle under general anesthesia (includes application of traction or other fixation apparatus).

Limitations per CMS Local coverage determination

- MUA provided for the above indications/conditions consists of a SINGLE treatment session involving an isolated joint. Multiple joint MUAs on the same date of service should be rare. Repeat procedures during the global period would not be expected. (See Utilization Guidelines).
- Only M.D. /D.O. physicians who have training and competency in manipulation should perform this procedure. This procedure must be performed in an outpatient surgery facility or inpatient hospital setting. An office setting would not be appropriate for performing MUA.
- MUA performed by a Chiropractor is not a covered chiropractic service. Coverage for Doctors of Chiropractic
Limitations per CMS Local coverage determination

"extends only to treatment by means of manual manipulation of the spine to correct a subluxation demonstrated by X-ray, provided such treatment is legal in the state where performed. All other services furnished or ordered by chiropractors are not covered," see CMS Pub. 100-01, chapter 5, sections 70.6 and the FCSO Part B LCD for Chiropractic Services.

CPT code 27194 (closed treatment of pelvic ring fracture, dislocation, diastasis or subluxation; with manipulation, requiring more than local anesthesia) is not covered if performed with the MUA services addressed in this LCD.

Alternative covered services:

Conservative medical management including:

- Physical therapy.
- Occupational therapy.
- Pain management program.
- Standard chiropractic manipulation.
- Prescription drug therapy.

Background

Manipulation under anesthesia (MUA) is aimed at reducing pain and improving range of motion and is a treatment modality that consists of manipulation and stretching procedures performed while an individual receives anesthesia (e.g., conscious sedation, general anesthesia). A chiropractor, osteopathic physician or medical physician may perform this type of manipulation with an anesthesiologist in attendance. It is also used for treatment of fractures (e.g., vertebral, long bones) and dislocations. Although there is limited evidence in the peer-reviewed medical literature supporting safety and efficacy for the treatment of pain conditions, MUA has been recommended as a treatment modality for acute and chronic pain conditions, particularly of the spinal region, when standard chiropractic care and other conservative measures have proved unsuccessful.

An individual’s protective reflex mechanism is absent under anesthesia and proponents contend it is less difficult to separate and move the joint when the reflex is absent. During MUA, the chiropractor or physician performs a combination of short manipulations, passive stretches and maneuvers to break up fibrous and scar tissue around the spine and surrounding joint areas. This manipulation typically includes a high velocity thrust (i.e., a technique that adjusts the joints rapidly), which may be followed by a popping or snapping sound.

In a less frequently used technique, MUA may be accompanied by fluoroscopically-guided intra-articular injections with corticosteroid agents to reduce inflammation. This procedure is referred to as manipulation under joint anesthesia/analgesia (MUJA). Manipulation under epidural anesthesia (MUEA) employs an epidural, segmental anesthetic, often with simultaneous epidural steroid injections, followed by spinal manipulation therapy. Some therapies may combine manipulation with cortisone injections into paraspinal tissues and proliferant injections. Other forms of manipulation under
anesthesia include spinal manipulation under anesthesia (SMUA) performed with or without manipulation of other joints and total body joint manipulation.

MUA is considered safe and effective and is a well-established method of treatment for conditions such as adhesive capsulitis of the shoulder, arthrofibrosis of the knee, and some fractures, dislocations and contractures. When performed for these specific conditions, MUA generally requires a single session of treatment, most often performed unilaterally, involving a single joint. Data supporting the need for, and clinical efficacy of multiple, repeat MUA treatment sessions for these specific conditions, is lacking in the peer-reviewed published medical literature.

Manipulation under anesthesia of adhesive capsulitis, followed by a physical therapy program has been shown to increase ROM and decrease pain (Quraishi, 2007). If one shoulder meets criteria but the condition is bilateral, both shoulders may be manipulated at the same setting.

**Adhesive Capsulitis/Frozen Shoulder:** Adhesive capsulitis, also referred to as frozen shoulder, is used to describe a painful restriction (both passive and active) of shoulder motion in an individual whose radiographs are typically normal. It may also be referred to as pericapsulitis and occurs in approximately 2-5 percent of the general population. Some authors contend the condition results from synovial inflammation with subsequent reactive capsular fibrosis. Early stages are treated with steroid injections and home therapy. For refractory cases, more aggressive treatment involves manipulation of the shoulder joint under anesthesia or an arthroscopic capsular release. Manipulating the joint under anesthesia breaks up the adhesions surrounding the joint and stretches the fibrotic tissue thereby increasing joint motion and reducing pain. MUA is generally recommended for individuals who do not respond to or who demonstrate little improvement after conservative treatment.

**Postoperative/Post-traumatic Arthrofibrosis of the Knee:** Arthrofibrosis of the knee is a condition that may occur following trauma, surgery or joint replacement and results from inflammation and proliferation of scar tissue. Physiologically, traumatic injury to the knee leads to the formation of internal scar tissue with shrinking and tightening of the joints knee capsule. Tendons outside the joint may also shrink and tighten, leading to a further decrease of joint mobility. Treatment of arthrofibrosis of the knee begins with physical therapy to improve motion, for refractory cases manipulation of the joint under anesthesia may be performed. However in some cases manipulation of the joint inadvertently results in femoral or tibial fracture, depending on the severity of adhesion formation and weak joints. As a result, some surgeons perform an arthroscopic internal resection of scar tissue prior to manipulating the joint in order to reduce the manipulation force and prevent fractures. MUA is indicated, with or without arthroscopy for arthrofibrosis of the knee, when there is < 90° range of motion following surgery or trauma despite physical therapy.

**Postoperative/Post-traumatic Arthrofibrosis of the Elbow:** Arthrofibrosis of the elbow often occurs following injury (e.g., operative, fracture). The elbow becomes stiff as a result of soft-tissue contracture of the ligaments, muscles and/or tendons. Early management generally involves bracing and splints (Araghi, 2010). Manipulation under anesthesia may be recommended when there is failure to progress.
improve and progress following the use of bracing. Operative release may be considered a treatment option depending on the cause of the contracture, the presence of pain or other symptoms, and decrease in functional level.

**Fracture and/or Dislocation:** MUA is also considered a well-established and successful treatment for some types of fractures (e.g., vertebral, long bones) and acute/traumatic dislocations (e.g., perched cervical facet). It is typically performed with surgical repair and other medically necessary procedures such as arthroscopy. When performed in this context, MUA is considered incidental to the base procedure.

**Chronic Contracture of Upper or Lower Extremity Joint:** A joint contracture is a limitation in the passive range of motion of a joint. Joint contractures prevent normal movement of the associated body part and can result from a variety of causes such as spasticity or prolonged immobilization. Intra-articular adhesions and peri-articular adhesions, as well as capsular, ligament and muscle shortening and tightness may develop. As a result, activities of daily living and other skills may be adversely affected due to the decreased mobility. In many cases, contractures can be successfully treated non-operatively with aggressive physical therapy or splinting with restoration of functional range of motion. When conservative treatment fails more aggressive treatment may necessary and includes anesthetic block, maximal stretching,

**Spine:** Theoretically, spinal manipulation as a method of treatment for subluxation stretches the joint capsules and resets the spinal cord and nerve position, allowing the nervous system to function optimally. In addition, anesthesia itself carries a small but clinically significant risk.

**Searches**

Select Health of South Carolina searched PubMed and the databases of:
- UK National Health Services Centre for Reviews and Dissemination.
- Agency for Healthcare Research and Quality’s National Guideline Clearinghouse and other evidence-based practice centers.
- The Centers for Medicare & Medicaid Services (CMS).

We conducted searches on May 30, 2017. Search terms were: “manipulation under anesthesia (MUA), spinal manipulation under anesthesia, manipulation of a joint under anesthesia.”

We included:
- **Systematic reviews**, which pool results from multiple studies to achieve larger sample sizes and greater precision of effect estimation than in smaller primary studies. Systematic reviews use predetermined transparent methods to minimize bias, effectively treating the review as a scientific endeavor, and are thus rated highest in evidence-grading hierarchies.
- **Guidelines based on systematic reviews.**
• Economic analyses, such as cost-effectiveness, and benefit or utility studies (but not simple cost studies), reporting both costs and outcomes — sometimes referred to as efficiency studies — which also rank near the top of evidence hierarchies.

Findings

According the American College of Occupational and Environmental Medicine (ACOEM) practice guidelines regarding physical methods of treatment for low back disorders (Hegmann, 2007; Hegmann, 2008), due to insufficient evidence manipulation under anesthesia (MUA) and medication-assisted spinal manipulation (MASM) for acute, subacute or chronic low back pain is not recommended.

In a guideline on the diagnosis and treatment of low back pain prepared by the Work Loss Data Institute (WLDI), manipulation under anesthesia is listed as a procedure that was evaluated and that is not recommended (WLDI, 2007).

Adhesive Capsulitis/Frozen Shoulder: A systematic review of 22 studies (n=989) indicated that minimal differences were observed in changes in abduction, flexion, and external ROM for frozen shoulder patients given MUA or arthroscopic capsular release. One review documented that optimal results are obtained if the procedure is performed six to nine months after onset of symptoms (Vastamaki, 2015). Another study of 15 patients successfully treated with MUA documented that ROM was equivalent to the contralateral shoulder after 23 years (Vastamaki, 2013). One study of 51 frozen shoulders showed an adjusted Constant score of 22.8 pre-manipulation, which rose to 52.6 after three weeks and 70.1 after 82 weeks (Wang, 2007).

Post-operative/Post-traumatic arthrofibrosis of the knee. The average range of motion among 22 men with post-traumatic knee arthrofibrosis who underwent MUA from 59 to 110 degrees, with no complications reported. In addition, there was no difference between treatment immediately after and treatment 90 days after surgery (Sassoon, 2015). Among 56 persons with combat-related arthrofibrosis who underwent MUA or were managed operatively, the MUA group had a greater improvement in arc of motion after two years (106.3 versus 82.3 degrees), and had a lower rate of complication (12.2 versus 40.0 percent) (Evans, 2013).

A systematic review of persons with arthrofibrosis after total knee arthroplasty included 25 studies (n=798). Authors found that persons with MUA had a mean increase in range of motion of 38.4°, higher than those undergoing arthroscopic release (36.2°), revision total knee arthroplasty (24.7°), but lower than those undergoing open surgical release (43.4°) (Ghani, 2014). In another systematic review of patients who have arthrofibrosis after TKA, the gains in range of motion after MUA and arthroscopy (with or without MUA) are similar, and greater than those with open arthrolysis (Fitzsimmons, 2010).

In a study of 141,016 persons undergoing total knee arthroplasty, 4.3 percent required manipulation under anesthesia within six months; and these persons have a significantly higher rate of early revision
total knee arthroplasty (Werner, 2015). A Cochrane review of 684 studies found scarce information that continuous passive motion reduces risk of manipulation under anesthesia (Harvey, 2014).

**Reduction of Displaced Fracture.** A review of 1001 children who underwent MUA for displaced fracture of the distal forearm found fracture displacement rate of 10.6 percent at two-week follow-up. Three-fourths of patients had casting indices of > 0.8, and a displacement rate of just 5.58 percent (Kamat, 2012). A study of 143 pediatric patients treated with MUA for distal radius fractures found acceptable results in redisplacement rates and degrees of reangulation, both in residents and attending physicians (Abson, 2016).

**Reduction of acute/traumatic dislocation.** A review of 5904 patients showed that reoperation rate for complications for in stabilizing dislocated shoulders using MUA was just 0.15 percent (Wasserstein, 2013). In a study of 40 pediatric patients with Monteggia fractures treated over a 20 year period, 80 percent were managed with MUA and above-elbow plaster, while the other 20 percent had to undergo Open Reduction of Internal Fixation of the ulna. At five-year follow up, all MUA patients had excellent results, indicating emergency MUA is an effective treatment in most of Monteggia fractures (Leonidou, 2012).

**Spine.** Evidence in the published, peer-reviewed scientific literature has failed to demonstrate the safety and efficacy of MUA when used for the treatment of pain associated with the spine. A Cochrane study of 26 randomized controlled trials (RCTs) with 6070 participants reported that high quality evidence did not demonstrate any added clinically relevant effectiveness of spinal manipulation therapy compared to other interventions for chronic low back pain (Rubinstein, 2011). The same team produced another Cochrane review soon after, including 20 RCTs (n=2674), and found that for acute low back pain, spinal manipulation is no more effective than inert interventions, and other recommended therapies (Rubinstein, 2012).

**Policy updates:**

A total of seven guidelines/other and 13 peer-reviewed references were added to this policy in 2017.

**Summary of clinical evidence:**

<table>
<thead>
<tr>
<th>Citation</th>
<th>Content, Methods, Recommendations</th>
</tr>
</thead>
</table>
| Ghani (2014) Management of stiffness of total knee arthroplasty | **Key points:**
| | • Systematic review of 25 studies (n=798), comparing modalities of treatment of arthrofibrosis after total knee replacement
| | • Range of motion increase under manipulation under anesthesia (MUA) was 38.4 degrees, compared to arthroscopic release (36.2), open surgical release (43.4), and revision total knee arthroplasty (24.7)
<p>| Vastamaki (2013) | <strong>Key points:</strong> |</p>
<table>
<thead>
<tr>
<th>Citation</th>
<th>Content, Methods, Recommendations</th>
</tr>
</thead>
</table>
| Motion and pain relief for frozen shoulder long-term                    | • Study of 15 patients given manipulation under anesthesia (MUA) for frozen shoulder, and followed for 23 years  
  • After seven years, improvement occurred in forward flexion, abduction, external rotation, and internal rotation  
  • In the 16 years after, range of motion deteriorated slightly, but still equaled that of the contralateral shoulder  
  • 12 of the 15 patients reached the age- and sex-adjusted normal Constant-Murley score |
| Kamat AS (2012)                                                         | **Key points:**                                                                                     |
| Reduction redisplacement in pediatric distal forearm fractures          | • Study of 1001 children undergoing MUA for displaced fracture of the distal forearm  
  • Redisplacement defined as >15 degrees of angulation and/or > 80 percent of translational displacement on check radiographs at 2 weeks  
  • Fracture redisplacement was observed in 10.6 percent of cases after two weeks  
  • Fracture redisplacement was observed in 5.58 percent of cases with a cast index less than 0.80 |
| Fitzsimmons (2010)                                                      | **Key points:**                                                                                     |
| Comparison of modalities to treat stiff total knee arthroplasty         | • Systematic review of 20 articles, comparing MUA, arthroscopy, and open artholysis in patients who have arthrofibrosis after total knee arthroplasty  
  • Gains in range of motion are similar for MUA and arthroscopy (with or without MUA), after one year follow up |

**References**

**Professional society guidelines/other:**


Peer-reviewed references:


Grant JA, Schroeder N, Miller BS, Carpenter JE. Comparison of manipulation and arthroscopic capsular


CMS National Coverage Determinations (NCDs):

No NCDs identified as of the writing of this policy.

Local Coverage Determinations (LCDs):


Commonly submitted codes

Below are the most commonly submitted codes for the service(s)/item(s) subject to this policy. This is not an exhaustive list of codes. Providers are expected to consult the appropriate coding manuals and bill accordingly.

<table>
<thead>
<tr>
<th>CPT Code</th>
<th>Description</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>22315</td>
<td>Closed treatment of vertebral fracture(s) and/or dislocation(s) requiring casting or bracing, with and including casting and or bracing by manipulation or traction.</td>
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<tr>
<td>22505</td>
<td>Manipulation of spine requiring anesthesia, any region</td>
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<tr>
<td>23700</td>
<td>Manipulation under anesthesia, shoulder joint excluding dislocation and including fixation apparatus</td>
<td></td>
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<tr>
<td>24505</td>
<td>Closed treatment of humeral shaft fracture, with manipulation</td>
<td></td>
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<tr>
<td>25505</td>
<td>Closed treatment of radial shaft fracture, with manipulation</td>
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<tr>
<td>25535</td>
<td>Closed treatment of ulnar shaft fracture, with manipulation</td>
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<tr>
<td>27502</td>
<td>Closed treatment of femoral shaft fracture, with manipulation, with or with skel traction</td>
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<tr>
<td>27570</td>
<td>Manipulation of knee joint under general anesthesia</td>
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<td>27752</td>
<td>Closed treatment of tibial shaft fracture with or without fibular fracture, with manipulation</td>
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<tr>
<td>27781</td>
<td>Closed treatment of fibula shaft fracture, with manipulation</td>
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<table>
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<tr>
<th>ICD 10 Code</th>
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<td>M24.661</td>
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<td>M24.669</td>
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<td>M75.00</td>
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<td>M75.02</td>
<td>Adhesive capsulitis, left shoulder</td>
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<td>M72.301-M72.399</td>
<td>Fracture, femur shaft</td>
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<td>S12.000-S12.600</td>
<td>Fracture with dislocation, cervical vertebra</td>
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<td>S13.101-S13.181</td>
<td>Dislocation cervical vertebra</td>
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<tr>
<td>S22.000-S22.089</td>
<td>Fracture thoracic vertebra</td>
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<td>S23.101-S32.059</td>
<td>Dislocation thoracic vertebra</td>
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<td>S32.000-S32.059</td>
<td>Fracture lumbar vertebra</td>
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<td>S33.101-S33.141</td>
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<td>Fracture, humerus shaft</td>
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<td>S82.401-S82.499</td>
<td>Fracture, fibula shaft</td>
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<table>
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<tr>
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