Manipulation under Anesthesia

Policy Number: 8.01.40  Last Review: 6/2019

Policy
Blue Cross and Blue Shield of Kansas City (Blue KC) will not provide coverage for manipulation under anesthesia. This is considered investigational.

When Policy Topic is covered
Not applicable.

When Policy Topic is not covered
Spinal manipulation and manipulation of other joints performed during the procedure (e.g., hip joint) with the patient under anesthesia, spinal manipulation under joint anesthesia, and spinal manipulation after epidural anesthesia and corticosteroid injection are considered investigational for treatment of chronic spinal (cranial, cervical, thoracic, lumbar) pain and chronic sacroiliac and pelvic pain.

Spinal manipulation and manipulation of other joints under anesthesia involving serial treatment sessions is considered investigational.

Manipulation under anesthesia involving multiple body joints is considered investigational for treatment of chronic pain.

Note: This policy statement does not address manipulation under anesthesia for fractures, completely dislocated joints, adhesive capsulitis (e.g., frozen shoulder), and/or fibrosis of a joint that may occur following total joint replacement (e.g., a total knee replacement).

Considerations
In the absence of a vertebral fracture or dislocation, spinal manipulation under anesthesia is considered investigational, regardless of whether it is administered by a physician (i.e., MD or osteopath), chiropractor, physical therapist, or other health provider.

Dislocation versus Subluxation
Spinal manipulation under anesthesia is frequently performed for chronic low back pain related to subluxation, considered investigational, according to the above
policy; therefore, a distinction must be made between subluxation and dislocation. According to the chiropractic literature, a subluxation can be defined as a restriction or loss of normal range of motion of the joint causing dysfunction of the spinal motion segment or peripheral joints. A dislocation can be defined as a disruption in the joint integrity. Typically, a subluxation cannot be detected with imaging studies, while a dislocation can.

### Description of Procedure or Service

<table>
<thead>
<tr>
<th>Populations</th>
<th>Interventions</th>
<th>Comparators</th>
<th>Outcomes</th>
</tr>
</thead>
</table>
| Individuals:  
  - With chronic spinal, sacroiliac, or pelvic pain | Interventions of interest are:  
  - Manipulation under anesthesia | Comparators of interest are:  
  - Conservative management | Relevant outcomes include:  
  - Symptoms  
  - Functional outcomes  
  - Quality of life  
  - Treatment-related morbidity |

Manipulation under anesthesia (MUA) consists of a series of mobilization, stretching, and traction procedures performed while the patient receives anesthesia (usually general anesthesia or moderate sedation).

For individuals who have chronic spinal, sacroiliac, or pelvic pain who receive MUA, the evidence includes case series and nonrandomized comparative studies. Relevant outcomes are symptoms, functional outcomes, quality of life, and treatment-related morbidity. Scientific evidence on spinal MUA, spinal manipulation with joint anesthesia, and spinal manipulation after epidural anesthesia and corticosteroid injection is very limited. No randomized controlled trials have been identified. Evidence on the efficacy of MUA over several sessions or for multiple joints is also lacking. The evidence is insufficient to determine the effects of the technology on health outcomes.

### Background

Manipulation is intended to break up fibrous and scar tissue to relieve pain and improve range of motion. Anesthesia or sedation is used to reduce pain, spasm, and reflex muscle guarding that may interfere with the delivery of therapies and to allow the therapist to break up joint and soft-tissue adhesions with less force than would be required to overcome patient resistance or apprehension. MUA is generally performed with an anesthesiologist in attendance. MUA is an accepted treatment for isolated joint conditions, such as arthrofibrosis of the knee and adhesive capsulitis. It is also used to treat (reduce) fractures (e.g., vertebral, long bones) and dislocations.

MUA has been proposed as a treatment modality for acute and chronic pain conditions, particularly of the spinal region, when standard care, including manipulation, and other conservative measures have been unsuccessful. MUA of the spine has been used in various forms since the 1930s. Complications from general anesthesia and forceful long-lever, high-amplitude nonspecific manipulation procedures resulted in decreased use of the procedure in favor of other therapies. MUA was modified and revived in the 1990s. This revival is
attributed to increased interest in spinal manipulative therapy and the advent of safer, shorter-acting anesthesia agents used for conscious sedation.

MUA of the spine is described as follows: after sedation is achieved, a series of mobilization, stretching, and traction procedures to the spine and lower extremities is performed and may include passive stretching of the gluteal and hamstring muscles with straight-leg raise, hip capsule stretching and mobilization, lumbosacral traction, and stretching of the lateral abdominal and paraspinal muscles. After the stretching and traction procedures, spinal manipulative therapy (SMT) is delivered with high-velocity, short-amplitude thrust applied to a spinous process by hand while the upper torso and lower extremities are stabilized. SMT may also be applied to the thoracolumbar or cervical area if considered necessary to address the low back pain.

MUA takes 15 to 20 minutes, and after recovery from anesthesia, the patient is discharged with instructions to remain active and use heat or ice for short-term analgesic control. Some practitioners recommend performing the procedure on three or more consecutive days for best results. Care after MUA may include four to eight weeks of active rehabilitation with manual therapy, including spinal manipulative therapy and other modalities. Manipulation has also been performed after injection of local anesthetic into lumbar zygapophyseal (facet) and/or sacroiliac joints under fluoroscopic guidance (manipulation under joint anesthesia/analgesia) and after epidural injection of corticosteroid and local anesthetic (manipulation postepidural injection). Spinal MUA has also been combined with other joint manipulation during multiple sessions. Together, these therapies may be referred to as medicine-assisted manipulation.

This review does not address MUA for fractures, completely dislocated joints, adhesive capsulitis (eg, frozen shoulder), and/or fibrosis of a joint that may occur following total joint replacement.

**Regulatory Status**
Manipulative procedures are not subject to regulation by the U.S. Food and Drug Administration.

**Rationale**
The evidence review was created in May 2002 and has been updated regularly with searches of the MEDLINE database. The most recent literature update was performed through February 18, 2019.

Evidence reviews assess the clinical evidence to determine whether the use of technology improves the net health outcome. Broadly defined, health outcomes are the length of life, quality of life (QOL), and ability to function—including benefits and harms. Every clinical condition has specific outcomes that are important to patients and managing the course of that condition. Validated outcome measures are necessary to ascertain whether a condition improves or
worsens; and whether the magnitude of that change is clinically significant. The net health outcome is a balance of benefits and harms.

To assess whether the evidence is sufficient to draw conclusions about the net health outcome of technology, two domains are examined: the relevance, and quality and credibility. To be relevant, studies must represent one or more intended clinical use of the technology in the intended population and compare an effective and appropriate alternative at a comparable intensity. For some conditions, the alternative will be supportive care or surveillance. The quality and credibility of the evidence depend on study design and conduct, minimizing bias and confounding that can generate incorrect findings. The randomized controlled trial (RCT) is preferred to assess efficacy; however, in some circumstances, nonrandomized studies may be adequate. RCTs are rarely large enough or long enough to capture less common adverse events and long-term effects. Other types of studies can be used for these purposes and to assess generalizability to broader clinical populations and settings of clinical practice.

**Manipulation Under Anesthesia**

**Clinical Context and Therapy Purpose**
The purpose of MUA is to provide a treatment option that is an alternative to or an improvement on existing therapies, such as conservative management, in patients with chronic spinal, sacroiliac, or pelvic pain.

The question addressed in this evidence review is: does MUA improve the net health outcome in individuals with chronic spinal, sacroiliac, or pelvic pain?

The following PICOTS were used to select literature to inform this review.

**Patients**
The relevant population of interest are individuals with chronic spinal, sacroiliac, or pelvic pain.

**Interventions**
The therapy being considered is MUA.

MUA consists of a series of mobilization, stretching, and traction procedures performed while the patient is sedated (usually with general anesthesia or moderate sedation). MUA takes 15 to 20 minutes and after recovery from anesthesia, the patient is discharged with instructions to remain active and use heat or ice for short-term analgesic control.

**Comparators**
Comparators of interest include conservative management.

Conservative management includes steroid regimens, blood pressure medication, muscle relaxers, and physical therapy, and is managed by physical therapists and primary care providers in an outpatient clinical setting.
Outcomes
The general outcomes of interest are symptoms, functional outcomes, QOL, and treatment-related morbidity.

The most significant outcome of interest was improvement in QOL. At 2 weeks, 52% of the patients reported clinically relevant improvement (better or much better), with 45.5% improved at 4 weeks. There was also a statistically significant reduction in numeric rating scale scores for pain at four weeks after the procedure.

Table 1. Outcomes of Interest for Individuals with chronic spinal, sacroiliac, or pelvic pain

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional outcomes</td>
<td>Measures of range of motion, observation of mobility post-op</td>
</tr>
<tr>
<td>Quality of life</td>
<td>Measures of pain, measures of anxiety or depression</td>
</tr>
</tbody>
</table>

Timing
The existing literature evaluating MUA as a treatment for chronic spinal, sacroiliac, or pelvic pain has varying lengths of follow-up, ranging from two weeks to six months. While studies described below all reported at least one outcome of interest, longer follow-up was necessary to fully observe outcomes. Therefore, six months of follow-up is considered necessary to demonstrate efficacy.

Setting
Patients with chronic spinal, sacroiliac, or pelvic pain are actively managed by orthopedic surgeons and primary care providers in an outpatient clinical setting.

Study Selection Criteria
Methodologically credible studies were selected using the following principles:

a. To assess efficacy outcomes, comparative controlled prospective trials were sought, with a preference for RCTs;
b. In the absence of such trials, comparative observational studies were sought, with a preference for prospective studies.
c. To assess long-term outcomes and adverse events, single-arm studies that capture longer periods of follow-up and/or larger populations were sought.
d. Studies with duplicative or overlapping populations were excluded.

Dagenais et al (2008) conducted a comprehensive review of the history of MUA or medicine-assisted manipulation and the published experimental literature. They noted there was no research to confirm theories about a mechanism of action for these procedures and that the only RCT identified was published in 1971 when the techniques for spinal manipulation differed from those used presently.

Nonrandomized Comparative Studies
No high-quality RCTs have been identified. A comprehensive review of the literature by Digiorgi (2013) described studies by Kohlbeck et al (2005) and
Palmieri and Smoyak (2002) as being the best evidence available for medicine-assisted manipulation and MUA of the spine.

Kohlbeck et al (2005) reported on a nonrandomized comparative study that included 68 patients with chronic low back pain. All patients received an initial 4- to 6-week trial of spinal manipulation therapy, after which 42 patients received supplemental intervention with MUA and 26 continued with spinal manipulative therapy. Low back pain and disability measures favored the MUA group over the spinal manipulative therapy only group at 3 months (adjusted mean difference on a 100-point scale, 4.4 points; 95% confidence interval [CI], -2.2 to 11.0). This difference attenuated at 1 year (adjusted mean difference, 0.3 points; 95% CI, -8.6 to 9.2). The relative odds of experiencing a 10-point improvement in pain and disability favored the MUA group at 3 months (odds ratio, 4.1; 95% CI, 1.3 to 13.6) and 1 year (odds ratio, 1.9; 95% CI, 0.6 to 6.5).

Palmieri and Smoyak (2002) evaluated the efficacy of self-reported questionnaires to study MUA in a convenience sample of 87 subjects from 2 ambulatory surgery centers and 2 chiropractic clinics. Thirty-eight patients with low back pain received MUA and 49 received traditional chiropractic treatment. A numeric rating scale for pain and the Roland-Morris Disability Questionnaire were administered at baseline, after the procedure, and four weeks later. Average pain scale scores in the MUA group decreased by 50% and by 26% in the traditional treatment group; Roland-Morris Disability Questionnaire scores decreased by 51% and 38%, respectively. Although the authors concluded that the study supported the need for large-scale studies on MUA and that the assessments were easily administered and dependable, no large-scale studies comparing MUA with traditional chiropractic treatment have been identified.

Observational Studies
Peterson et al (2014) reported on a prospective study of 30 patients with chronic pain (17 low back, 13 neck) who underwent a single MUA session with follow-up at 2 and 4 weeks. The primary outcome measure was the Patient’s Global Impression of Change. At 2 weeks, 52% of the patients reported clinically relevant improvement (better or much better), with 45.5% improved at 4 weeks. There was a statistically significant reduction in numeric rating scale scores for pain at 4 weeks (p=0.01), from a mean baseline score of 4.0 to 3.5 at 2 weeks post-MUA. Bournemouth Questionnaire scores improved from 24.17 to 20.38 at 2 weeks (p=0.008) and 19.45 at 4 weeks (p=0.001). This study lacked a sham group to control for a potential placebo effect. Also, the clinical significance of improved numeric rating scale and Bournemouth Questionnaire scores is unclear.

West et al (1999) reported on a series of 177 patients with pain arising from the cranial, cervical, thoracic, and lumbar spine, as well as the sacroiliac and pelvic regions who had failed conservative and surgical treatment. Patients underwent three sequential manipulations with intravenous sedation followed by four to six weeks of spinal manipulation and therapeutic modalities; all had six months of follow-up. On average, visual analog scale scores improved by 62% in patients with cervical pain and by 60% in patients with lumbar pain. Dougherty et al (2004)
retrospectively reviewed outcomes of 20 cervical and 60 lumbar radiculopathy patients who underwent spinal manipulation after epidural injection. After epidural injection of lidocaine (guided fluoroscopically or with computed tomography), methylprednisolone acetate flexion distraction mobilization and then high-velocity, low-amplitude spinal manipulation were delivered to the affected spinal regions. Outcome criteria were empirically defined as a significant improvement, temporary improvement, or no change. Among lumbar spine patients, 22 (37%) noted significant improvement, 25 (42%) reported temporary improvement, and 13 (22%) no change. Among patients receiving a cervical epidural injection, 10 (50%) had significant improvement, 6 (30%) had temporary relief, and 4 (20%) had no change.

The only study on manipulation under joint anesthesia or analgesia found evaluated 4 subjects; it was reported by Dreyfuss et al (1995). Later, Michaelsen (2000) noted that joint-related MUA should be viewed with “guarded optimism because its success is based solely on anecdotal experience.”

Table 2. Summary of Characteristics of Key Observational Comparative Studies of Manipulation under Anesthesia

<table>
<thead>
<tr>
<th>Study Type</th>
<th>Country</th>
<th>Dates</th>
<th>Participants</th>
<th>Treatment1</th>
<th>Treatment2</th>
<th>Follow-Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prospective</td>
<td>Switzerland</td>
<td>NR</td>
<td>Patients (n=30) with chronic pain who underwent single MUA session</td>
<td>MUA for those with low back pain (n=17)</td>
<td>MUA for those with neck pain (n=13)</td>
<td>2 and 4 weeks</td>
</tr>
<tr>
<td>Case series</td>
<td>US</td>
<td>July 1995-Feb 1997</td>
<td>177 patients with pain arising from the cranial, cervical, thoracic, and lumbar spine, as well as the sacroiliac and pelvic regions who had failed conservative and surgical treatment</td>
<td>Patients underwent 3 sequential manipulations with intravenous sedation followed by 4 to 6 weeks of spinal manipulation and therapeutic modalities</td>
<td>NA</td>
<td>6 months</td>
</tr>
</tbody>
</table>
Dougherty (2004)

Retrosp ective

US

Nov 1996- Nov 2000

20 cervical and 60 lumbar radiculopathy patients who underwent spinal manipulation after epidural injection. The patients ranged in age from 21-76 years old with an average age of 43 ± 8.9 years. Forty-three percent of the patients were female patients and 57% were male patients.

Following epidural injection of lidocaine (guided fluoroscopically or with computed tomography), methylprednisolone acetate flexion distraction mobilization and high-velocity, low-amplitude spinal manipulation were delivered to the affected spinal regions.

NA

1-year

MUA: manipulation under anesthesia; NR: not reported; NA: not available.

Table 3. Summary of Results of Key Observational Comparative Studies of Manipulation under Anesthesia

<table>
<thead>
<tr>
<th>Study</th>
<th>Improvement as reported by participant</th>
<th>Bournemouth Questionnaire scores</th>
<th>Patient’s Global Impression of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peterson (2014)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td></td>
<td>24.17</td>
<td></td>
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<tr>
<td>2-weeks post</td>
<td></td>
<td>20.38 (p=0.008)</td>
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<tr>
<td>4-weeks post</td>
<td></td>
<td>19.45 (p=0.001)</td>
<td></td>
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<tr>
<td>“better or much better” reported at 2 weeks post</td>
<td></td>
<td>52%</td>
<td></td>
</tr>
<tr>
<td>“better or much better” reported at 4 weeks post</td>
<td></td>
<td>45.5%</td>
<td></td>
</tr>
<tr>
<td>West (1999)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of cervical pts with improvement</td>
<td></td>
<td>62%</td>
<td></td>
</tr>
<tr>
<td>% of lumbar pts with improvement</td>
<td></td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>Dougherty (2004)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lumbar spine pts.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% noting significant improvement</td>
<td>22 (37%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% noting temporary improvement</td>
<td>25 (42%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% noting no improvement</td>
<td>13 (22%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pts. receiving cervical epidural injection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% noting significant improvement</td>
<td>10 (50%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% noting temporary improvement</td>
<td>6 (30%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% noting no improvement</td>
<td>4 (20%)</td>
<td></td>
<td></td>
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</tbody>
</table>

Summary of Evidence

For individuals who have chronic spinal, sacroiliac, or pelvic pain who receive MUA, the evidence includes case series and nonrandomized comparative studies. The relevant outcomes are symptoms, functional outcomes, QOL, and treatment-related morbidity. Scientific evidence on spinal MUA, spinal manipulation with joint anesthesia, and spinal manipulation after epidural anesthesia and corticosteroid
injection is very limited. No RCTs have been identified. Evidence on the efficacy of MUA over several sessions or for multiple joints is also lacking. The evidence is insufficient to determine the effects of the technology on health outcomes.

SUPPLEMENTAL INFORMATION

Clinical Input From Physician Specialty Societies and Academic Medical Centers
While the various physician specialty societies and academic medical centers may collaborate with and make recommendations during this process, through the provision of appropriate reviewers, input received does not represent an endorsement or position statement by the physician specialty societies or academic medical centers, unless otherwise noted.

In response to requests, input was received from 2 physician specialty societies and 4 academic medical centers while this policy was under review in 2009. Input from the seven reviewers agreed that manipulation under anesthesia for chronic spinal and pelvic pain is investigational.

Practice Guidelines and Position Statements

American Association of Manipulation Under Anesthesia Providers
The American Association of Manipulation Under Anesthesia Providers (2014) published consensus-based guidelines for the practice and performance of manipulation under anesthesia (MUA).9 The guidelines included patient selection criteria, establishing medical necessity, frequency and follow-up procedures, parameters for determining MUA progress, general post-MUA therapy, and safety. The guidelines recommended three consecutive days of treatment, based on the premise that serial procedures allow a gentler yet effective treatment plan with better control of biomechanical force. The guidelines also recommended follow-up therapy without anesthesia over eight weeks after MUA that includes all fibrosis release and manipulative procedures performed during the MUA procedure to help prevent re-adhesion.

American Academy of Osteopathy
The American Academy of Osteopathy (2005) published a consensus statement on osteopathic manipulation of somatic dysfunction under anesthesia and conscious sedation.10 The Academy stated that MUA "may be appropriate in cases of restrictions and abnormalities of function. These include recurrent muscle spasm, range of motion restrictions, persistent pain secondary to injury and/or repetitive motion trauma.... In general, MUA is limited to patients who have somatic dysfunction which:

1. has failed to respond to conservative treatment in the office or hospital that has included the use of OMT [osteopathic manipulative therapy], physical therapy and medication, and/or
2. is so severe that muscle relaxant medication, anti-inflammatory medication or analgesic medications are of little benefit, and/or
3. results in biomechanical impairment which may be alleviated with use of the procedure.”

**U.S. Preventive Services Task Force Recommendations**
Not applicable.

**Medicare National Coverage**
There is no national coverage determination. In the absence of a national coverage determination, coverage decisions are left to the discretion of local Medicare carriers.

**Ongoing and Unpublished Clinical Trials**
A search of ClinicalTrials.gov in March 2019 did not identify any ongoing or unpublished trials that would likely influence this review.

**REFERENCES**

**Billing Coding/Physician Documentation Information**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00640</td>
<td>Anesthesia for manipulation of the spine or for closed procedures on the cervical, thoracic or lumbar spine</td>
</tr>
<tr>
<td>22505</td>
<td>Manipulation of spine requiring anesthesia, any region</td>
</tr>
</tbody>
</table>

**ICD-10 Codes**

M47.011- Spondylosis code range
M47.9
Dorsalgia code range

This policy does not address manipulation under anesthesia for fractures, completely dislocated joints, adhesive capsulitis (eg, frozen shoulder), and/or fibrosis of a joint that may occur following total joint replacement.

CPT code 22505 specifically identifies manipulation of the spine under anesthesia:

22505: Manipulation of spine requiring anesthesia, any region.

Anesthesia administration for spinal manipulation would be coded using:

00640: Anesthesia for manipulation of the spine or for closed procedures on the cervical, thoracic, or lumbar spine

Additional Policy Key Words
N/A

Policy Implementation/Update Information

<table>
<thead>
<tr>
<th>Date</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/15/07</td>
<td>New policy. This policy was implemented 8/15/2007.</td>
</tr>
<tr>
<td>6/1/08</td>
<td>No policy statement changes.</td>
</tr>
<tr>
<td>6/1/09</td>
<td>Policy statement clarified; remains investigational. Policy title changed to Manipulation Under Anesthesia for the Treatment of Chronic Spinal or Pelvic Pain (previously was: Spinal Manipulation Under Anesthesia)</td>
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<tr>
<td>6/1/10</td>
<td>No policy statement changes.</td>
</tr>
<tr>
<td>6/1/11</td>
<td>Title changed to “Manipulation under Anesthesia” to include joints other than the spine; statements added that MUA over multiple sessions or for multiple joints is considered investigational.</td>
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<tr>
<td>6/1/12</td>
<td>No policy statement changes.</td>
</tr>
<tr>
<td>6/1/13</td>
<td>No policy statement changes.</td>
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<td>6/1/14</td>
<td>No policy statement changes.</td>
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<td>6/1/15</td>
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<td>6/1/16</td>
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<td>6/1/17</td>
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<td>6/1/18</td>
<td>No policy statement changes.</td>
</tr>
<tr>
<td>6/1/19</td>
<td>No policy statement changes.</td>
</tr>
</tbody>
</table>

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