



## MEDICAL POLICY STATEMENT

Original Effective Date	Next Annual Review Date	Last Review / Revision Date
01/27/2015	01/27/2017	07/26/2016
Policy Name		Policy Number
Epidural Steroid Injections (Interlaminar, Transforaminal, or Caudal Epidural Injections)		MM-0007
Policy Type		
<input checked="" type="checkbox"/> Medical	<input type="checkbox"/> Administrative	<input type="checkbox"/> Payment

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**A. SUBJECT**

**Epidural Steroid Injections (Interlaminar, Transforaminal, or Caudal Epidural Injections)**

**B. BACKGROUND**

Interventional procedures for management of acute and chronic pain are part of a comprehensive pain management care plan that incorporates conservative treatment in a multimodality approach.[1] Multidisciplinary treatments include promoting patient self-management and aim to reduce the impact of pain on a patient's daily life, even if the pain cannot be relieved completely.[2, 3] Interventional procedures for the management of pain unresponsive to conservative treatment should be provided only by physicians qualified to deliver these health services.[4-6]

For pain relief, epidural steroid injections (ESIs) can be performed anatomically in the posterior midline between adjacent vertebral bodies (interlaminar [IL] epidural), laterally at the intervertebral foramen near the spinal nerve root ganglion complex of neuronal cell bodies (transforaminal [TF] epidural), or at the terminus of the epidural space near the sacrococcygeal area (caudal epidural injection) [7, 8]. Interlaminar and transforaminal ESI's should be used only in the presence of predominantly radiculopathy.[9, 10] Many systematic reviews evaluate available evidence for epidural injections to treat pain, with levels of evidence classified as good, fair, or limited (or poor) based on quality-of-evidence criteria developed by the AHRQ and USPSTF. [11-13] Imaging studies of the symptomatic region are performed to evaluate suspected specific causes of spinal pain, (for example herniated disc, spinal stenosis, or degenerative vertebral disease; and to rule out fracture or tumor). Evidence supports that



clinicians should not routinely obtain imaging or other diagnostic tests in patients with nonspecific low back pain.[1] However, clinicians should perform diagnostic imaging and testing for patients with low back pain when severe or progressive neurologic deficits are present or when serious underlying conditions are suspected on the basis of history and physical examination.[1]

Overall, current research continues to suggest that ESIs remain a treatment for radicular pain, with a limited duration of benefit.[14] This treatment approach appears to improve pain while natural healing occurs. There has been little evidence that this effect extends to improvement of function. Reports indicate that an average of 1 to 3 injections achieves significant improvement in pain. After initial injection, the need for a subsequent injection is generally based upon clinical response to the initial injection.[15, 16] There is limited evidence or consensus on timing and number of epidural steroid injections exists to identify safe and effective management. Reasons for repeat injections must be carefully documented and may include: 1) significant improvement, even if relapses, 2) technical reasons in the absence of an improvement, and 3) persistent pain with imaging findings identifying pathology that should respond to an ESI. In the absence of a compelling technical reason, it is not appropriate to repeat a procedure a third time if there has been no improvement from the two preceding injections. A neurology specialty society working group concluded that, while epidural steroids may result in transient improvement in radicular lumbosacral pain for 2 to 6 weeks post injection, there was no significant impact on function, long-term pain relief (beyond 3 months), or the need for surgery.[17] A published evidence-based review concluded that there is “limited evidence to suggest guidelines for frequency and timing of ESIs, and additional RCTs are required for adequate determination of this goal”.[18] “Before the introduction of fluoroscopic guidance for ESIs there was commonly a recommendation for a second injection. Repeat injection for partial response was generally suggested, although there was little evidence of why it was thought a second injection might be helpful. There are many possibilities for why a repeat injection might be necessary, but none of them has been fully investigated.”[18]

Manchikanti et al state that there is no consensus among interventional pain management specialists regarding the type, dosage, frequency, total number of injections, or other interventions. The authors recommend that administration be based solely on patient response, safety profile of the drug, and pharmacological and chemical properties, such as duration of action and suppression of adrenals. Manchikanti recommends that the suggested frequency of epidural injections should be 2 months or longer between each injection provided that at least 50% relief is obtained for 6 to 8 weeks. Injections should be limited to a maximum of 4 to 6 times per year.[19]

Typical causes of pain that may respond to epidural injection [6] include:

- degenerative vertebral changes
- spinal stenosis
- disc herniation
- post-laminectomy syndrome with radiculopathy
- post-traumatic neuropathy of the spinal roots
- Acute obstetric, post traumatic and postoperative pain
- Advanced cancer pain, primary or metastatic
- Acute/sub-acute and chronic pain syndrome including cervical, thoracic and lumbar pain with radiculopathy and intervertebral disc disease (with neuritis or radiculitis) with or without myelopathy that has failed to respond to adequate conservative management.
- Nerve root injuries and neuropathic pain and post traumatic including post laminectomy syndrome (failed back syndrome).
- Spinal cord myelopathy



- Complex regional pain syndrome (CRPS)
- Epidural scarring from prior infection, hemorrhage and/or surgery
- Multiple rib fractures
- Vertebral compression fractures
- Post herpetic neuralgia and herpes zoster
- Phantom limb pain

### C. DEFINITIONS

- **Epidural steroid injections:** for persistent or chronic radicular pain involve injection of corticosteroid, local anesthetic, opioid, or combination medication into the epidural space, requiring fluoroscopic imaging and injection of an appropriate agent to achieve a selective reproducible blockage of a specific nerve root. Anatomic locations for epidural injections may involve the interlaminar space at the midline between vertebral bodies, caudal epidural injections, or transforaminal epidural injections. Epidural injections may be diagnostic for localizing and determining the cause of radiating pain and providing short term pain relief.
- **Diagnostic** interlaminar or caudal epidural steroid injections are seldom used. Although the medication injected can sometimes be confined to a limited area, bilateral effects and spread to adjacent levels often occur. When a diagnostic spinal nerve block is performed, post-block assessment of percentage pain relief must be documented. Diagnostic transforaminal epidural injections are appropriate for the following purposes:
  - To differentiate the level of radicular nerve root pain.
  - To differentiate radicular from non-radicular pain
  - To evaluate a discrepancy between imaging studies and clinical findings
  - To identify the source of pain in the presence of multi-level nerve root compression
  - To identify the level of pathology at a previous operative site
- **Therapeutic** interlaminar/transforaminal or caudal epidural injections and infusions of opioid, local anesthetic, or other medications may be used for the treatment of acute and chronic pain or cancer pain.
- **Conservative therapy** is a multimodality plan of care. Start and end dates in the medical record substantiate duration of treatment. **Multimodality care plans include BOTH of the following:**
  - **Active conservative therapies** such as physical therapy, occupational therapy, a physician supervised home exercise program (HEP), or chiropractic care
  - **Home Exercise Program (HEP):** includes two components that are both required to meet CareSource policy for completion of conservative therapy:
    - Information provided for an exercise prescription and/or plan documented in the medical record AND follow up documented in the medical record with member with information provided regarding completion of HEP (after suitable six (6) week period), or inability to complete HEP due to a stated physical reason- i.e. increased pain, inability to physically perform exercises. (Patient inconvenience or noncompliance without explanation does not constitute "inability to complete")
  - **Inactive conservative therapies** such as rest, ice, heat, medical devices, acupuncture, TENS unit, prescription medications.
    - If a TENS unit is part of the care plan, the frequency of use, and duration of use with dates must be documented in the medical record. General statements in the medical record such as "Patient has a TENS unit" do not document use, and will not suffice to meet this policy criterion.



- A **TENS unit is a Transcutaneous Electrical Nerve Stimulator**, a durable medical equipment device dispensed by prescription. Its use, frequency, duration, and start dates must be documented in the medical record to be considered part of conservative therapy during the period of prior authorization request.
- A **“successful” epidural steroid injection** in this policy is defined as an injection that achieves greater than 50% reduction in pain within the duration of effectiveness for the anesthetic used and at least 50% improvement in function accomplished by the first or second injection.
- An **“unsuccessful” epidural steroid injection** in this policy is defined as an injection that did not achieve greater than 50% reduction in pain within the duration of effectiveness for the anesthetic used nor at least 50% improvement in function accomplished by the first or second injection. This may occur because an epidural is not effective therapy for the patient's pain syndrome, or due to technical reasons which may or may not be clarified by radiologic images of the pain-generating pathology.

#### **D. POLICY**

##### **Criteria**

A prior authorization is required for each epidural injection for pain management, excluding labor and delivery in childbirth.

- I. Epidural corticosteroid injections may be indicated when **ALL of the following** are present:
  - A. Pain is located in either the cervical, thoracic, or lumbar spine and *is predominantly radiating or shooting* in nature.
  - B. The patient's epidural injection history in the past consecutive 12 months includes less than 6 epidural injections
    1. The patient has no epidural injections in the past consecutive 12 months
    2. The patient has at least 1 and no more than 6 epidural injections of any type in the past consecutive 12 months and meets **ONE of the following** criteria
      - 2.1. greater than 50% reduction in pain and at least 50% improvement in function by the first or second injection, even if pain relapsed
      - 2.2. Carefully documented technical reasons that it is appropriate to repeat the procedure even if no prior improvement
      - 2.3. Patients with persistent pain in whom the imaging findings suggest that the pathology should respond to corticosteroid injection
  - C. The patient has documentation addressing ACTIVE conservative therapy as part of a multimodality comprehensive plan of care in the medical record that includes **ONE of the following**:
    1. The patient has received ACTIVE conservative therapy lasting for six (6) weeks or within the past six (6) months with start and end dates in the medical record substantiating the duration of treatment including **ONE of the following**:
      - 1.1 Active therapies contain one of the following for a minimum duration of 6 weeks
        - a. physical therapy
        - b. occupational therapy
        - c. a physician supervised home exercise program (HEP) as defined in CareSource policy
        - d. chiropractic care
    2. Or, the medical record documents at least **ONE of the following** exceptions to the 6 weeks conservative therapy requirement in the past 6 months which may include:
      - 2.1 pain from Herpes Zoster as the indication for the procedure
      - 2.2 at least moderate pain with significant functional loss at work or home



- 2.3 severe pain unresponsive to outpatient medical management
- 2.4 inability to tolerate non-surgical, non-injection care due to co-existing medical condition(s)
- 2.5 prior successful injections for same specific condition with relief of at least 3 months' duration (start and end dates are documented in the medical record).
- 3 PASSIVE conservative therapy as part of a multimodality comprehensive approach is addressed in the patient's care plan with documentation in the medical record lasting for six (6) weeks or more within the past six (6) months with start and end dates in the medical record substantiating the duration of treatment that includes at least **ONE of the following:**
  - 3.1 rest
  - 3.2 ice
  - 3.3 heat
  - 3.4 medical devices
  - 3.5 acupuncture
  - 3.6 TENS unit use as defined in CareSource policy
  - 3.7 prescription pain medications

**II. For Interlaminar or Caudal Epidural Injections (CPTs 62310-62311)**

- A. More than 1 epidural injection per treatment date will not be authorized.
- B. Bilateral injections and modifiers will not be recognized and coverage will be denied.
- C. Prior authorization will be required for each epidural injection by the same or any physician.
- D. Greater than 3 interlaminar epidural injections within a *rolling 12 month* period will not be covered.
- E. Repeat injections sooner than 3 weeks may not reach pharmacodynamic effect of the corticosteroid and will not be covered.
- F. Requests for repeat injections before 3 weeks without documentation of suitable pain score reduction and functional improvements, or other documented rationale as described in "Policy" section will not be covered.

**III. For Transforaminal Epidurals or Selective Nerve Root Blocks (SNRB's) (CPTs 64479-64484)**

- A. Transforaminal Epidurals provided to more than 2 vertebral levels per treatment date, whether unilateral or bilateral, will not be authorized and will not be covered.
- B. Bilateral injections require the appropriate modifier
- C. Prior authorization is required for treatment sessions per each spine region.
- D. Greater than 3 transforaminal epidural injections within a *rolling 12 months* will not be covered.
- E. Repeat injections sooner than 3 weeks may not reach pharmacodynamic effect of the corticosteroid and will not be covered.
- F. Requests for repeat injections before 3 weeks without documentation of suitable pain score reduction and functional improvements, or other documented rationale as described in "Policy" section will not be covered.

The maximum epidurals of all types of epidural injections a member can receive in a rolling 12 months is a total of 6, regardless of the number of levels involved.

Real-time image guidance and any injection of contrast are inclusive components of epidural injections and are not compensated for separately, or unbundled, for coverage. Ultrasound guidance for epidural injections is inappropriate. There are category III codes to be used (0230T



and 0231T) for lumbar transforaminal epidural injections with ultrasound guidance; these services are not covered.

Conscious sedation, if required for co-morbidities or patient/physician preference, may be provided without prior authorization but services will be considered part of the procedure and are not eligible for additional reimbursement if administered by a second provider. Coverage for monitored anesthesia will not be provided as not medically necessary. If anesthesia services are provided they must be delivered by CareSource credentialed providers, including anesthesiologists and/or CRNAs.

Patients with indwelling implanted spinal cord stimulators or pain pumps must have a device interrogation report and an interpretation submitted with medical records for a prior authorization request for proposed interventional pain injections. If a device is not functioning properly, an escalation in pain may warrant evaluation and management of the implanted device. [20] Clinical evaluations and care of candidate patients for epidural injections should also address, at the discretion of the physician, according to prevailing standards of medical care:

- G. No acute spinal cord compression
- H. No local spinal or paraspinal malignancy
- I. No coagulopathy
- J. No current use of anticoagulants or antiplatelet therapy
- K. No local or systemic infection
  - 1. Selected body imaging evaluations to evaluate the area of pain, particularly for acute pain, or to evaluate escalations in chronic baseline pain. Appropriate imaging to rule out red flag conditions may be indicated if potential issues of trauma, osteomyelitis or malignancy or other diagnoses are a concern.

#### **IV. Frequency of repeat Therapeutic Injections**

Epidural injections may be repeated only as medically necessary and with proof that: prior injection had a positive response by significantly decreasing pain; the patient continues to have ongoing pain or documented functional disability ( $\geq 6$  on a scale of 0 to 10); and the patient is actively engaged in other forms of conservative non-operative treatment (*unless pain prevents the patient from participating in conservative therapy, which must be documented in the contemporaneous medical record*); and injections meet the following criteria:

- A. There must be at least 21 days between injections;
- B. No more than 3 procedures in a 12-week period of time per region;

#### **V. Anatomic considerations**

For chronic neck pain, evidence for cervical epidural injections varies, populations studied are heterogenous, and controlled trials are limited.[9, 21] For cervical axial or discogenic pain, spinal stenosis, and post-surgery syndrome, evidence was only fair for the use of local anesthetic with or without steroids.[5, 22] An interdisciplinary approach may provide more benefit than injections alone.[8] Despite a paucity of evidence, cervical epidural injections are one of the most commonly performed nonsurgical interventions in the management of chronic axial or disc-related neck pain.[21] A recent randomized trial for cervical interlaminar epidurals demonstrated safety and efficacy. [21]

*Cervical interlaminar (IL) ESIs* are associated with a rare risk of catastrophic neurologic injury. All cervical interlaminar (IL) epidural steroid injections should be performed using image-guidance, with appropriate antero-posterior, lateral or contra-lateral oblique views, and a test- dose of contrast medium.[23] Cervical interlaminar epidural steroid injections are recommended to be performed at C7-T1, but preferably not higher than the C6-C7 level.[23] No cervical interlaminar





epidural steroid injection should be undertaken, at any segmental level, prior to reviewing imaging studies to demonstrate adequate epidural space for needle placement at the intended level. Cervical and lumbar IL-ESIs can be performed without contrast in patients with documented contra-indication(s) (e.g. significant history of contrast allergy or anaphylactic reaction).

*Lumbar transforaminal* ESIs should be performed by injecting contrast medium under real-time fluoroscopy and/or digital subtraction angiography (DSA), in a frontal plane, prior to injecting any substance that may be hazardous to the patient. A non-particulate steroid (e.g. dexamethasone) should be used for the initial injection in lumbar transforaminal epidural injections [24, 25] however in some situations particulate steroids may also be used. All *lumbar interlaminar* ESIs should be performed using image-guidance, with appropriate AP, lateral or contralateral oblique views, and a test-dose of contrast medium.[26-28]

Evidence for the efficacy of *caudal epidurals* is good for short- and long-term relief of chronic pain due to disc herniation or radiculitis with local anesthetic and steroids. Systematic review also provided fair evidence for caudal epidural injections in managing chronic axial or discogenic pain, spinal stenosis, and post-surgery, or failed back, syndrome.[29]

For lumbar spine pain present for 6 months or more, an evidence-based guideline assessing the efficacy of caudal, lumbar interlaminar, and lumbar transforaminal epidural injections found good evidence in support of the interventions for radiculitis from disk herniation.[5] Lumbar ESIs may be more effective than caudal ESIs for treating low back pain.[30] A neurosurgery specialty society workgroup recommends epidural corticosteroid injections as a therapy to provide temporary symptomatic pain relief in selected patients. Their report conceded that studies show results for radicular pain are better than for isolated back pain.[31, 32]

#### **Inconclusive or Non-Supportive Evidence**

Evidence reported in the medical literature, however, is inconclusive as to the use of epidural injections for long term relief or treatment of chronic pain.

Cervical TFs are associated with a high risk but limited efficacy.[9, 33-35] In contrast, lumbar TFs are associated with moderate risk with some efficacy.[36-38] Cervical, thoracic, and lumbar IL epidurals, as well as caudal epidurals, are associated with low risk with some efficacy.[8, 9, 19, 30, 39-43] A systematic review for *thoracic* epidural injection in treating chronic thoracic pain considered the evidence for intervention fair and limited for post- thoracotomy pain.[44] Interventions in managing chronic thoracic pain are also less frequent, contributing to the paucity of literature for evidence-based practice. [45]

In April 2014, the U.S. Food and Drug Administration (FDA) regulatory branch, in a Drug Safety Communication, warned that “injection of corticosteroids into the epidural space of the spine may result in rare but serious adverse events, including loss of vision, stroke, paralysis, and death. The effectiveness and safety of epidural administration of corticosteroids have not been established, and the FDA has not approved corticosteroids for this use.” Off-label use of injectable corticosteroids (ICs) for epidural injections is a common practice in the U.S.[46]

The FDA launched the Safe Use Initiative in 2009[47] Subsequent workgroups provided evidence-based recommendations on interventional pain procedures. Modifications have occurred with attempts to adhere to The Institute of Medicine’s eight standards for the development of systematic guidelines,[48] though not without some controversy.[49-51] After the FDA’s warning in April, 2014, its affiliated Multi-society Pain Workgroup (MPW) later approved 17 recommendations for interventional pain,[52]; these were met with criticisms published by the



International Spine Intervention Society (ISIS) and the American Society for Interventional Pain Physicians (ASIPP).[46, 51]

In November, 2014, the Anesthetic and Analgesic Drug Products Advisory Committee (AADPAC) of the FDA reviewed the risk of serious neurologic adverse reactions associated with epidural steroid injections (ESI) for pain management administered to reduce inflammation. The committee supported, by a vote of 15-Yes to 7-No, with one abstention, the addition of a contraindication to the labeling of injectable corticosteroids for use in epidural administration.[35] The committee specifically supported a contraindication for the use of the transforaminal approach to the cervical spine for ICs that are suspensions (otherwise known as particulate ICs).

*For both cervical and lumbar transforaminal ESIs*, using particulate steroid is associated with a rare risk of catastrophic neurovascular complications such as stroke or death.[35] Cervical transforaminal injections are risky because arterial supply may be densely concentrated in and around the intervertebral foramen.[53] TF ESIs can be performed without contrast in patients with documented contraindication to its use. In these circumstances particulate steroids are contraindicated and only the preservative free, particulate free steroids which are available [46] should be used.

*Cervical transforaminal ESIs* have sparse literature for cervical radicular pain,[9] and if performed should be performed by injecting contrast medium under real-time fluoroscopy and/or (DSA) in a frontal plane, before injecting any substance potentially hazardous to the patient. Particulate steroids should not be used for cervical TF injections as per the contraindication established by the FDA warning.[34, 46, 54]

Cervical interlaminar epidural is permitted (CPT 62310), BUT NOT transforaminal epidurals in the cervical or thoracic spine (CPTs 64479 and 64480), as cervical TF's are contraindicated per the FDA, and thoracic TF's have little or no published evidence to support their use for chronic pain.

## **CONDITIONS OF COVERAGE**

**CPT 62310, 62311, 64479, 64480, 64483, 64484, 0228T, 0229T, 0230T, 0231T**

## **AUTHORIZATION PERIOD**

### **D. REVIEW/REVISION HISTORY**

Date Issued: 05/01/2015  
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Date Revised: 07/1/2016

### **E. REFERENCES**

- [1] R. Chou, A. Qaseem, V. Snow, D. Casey, J. T. Cross, Jr., P. Shekelle, *et al.*, "Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society," *Ann Intern Med*, vol. 147, pp. 478-91, Oct 2 2007.
- [2] R. Chou, L. H. Huffman, S. American Pain, and P. American College of, "Nonpharmacologic therapies for acute and chronic low back pain: a review of the evidence for an American Pain Society/American College of Physicians clinical practice guideline," *Ann Intern Med*, vol. 147, pp. 492-504, Oct 2 2007.
- [3] R. Chou, L. H. Huffman, S. American Pain, and P. American College of, "Medications for acute and chronic low back pain: a review of the evidence for an American Pain



- Society/American College of Physicians clinical practice guideline," *Ann Intern Med*, vol. 147, pp. 505-14, Oct 2 2007.
- [4] R. Chou, J. D. Loeser, D. K. Owens, R. W. Rosenquist, S. J. Atlas, J. Baisden, *et al.*, "Interventional therapies, surgery, and interdisciplinary rehabilitation for low back pain: an evidence-based clinical practice guideline from the American Pain Society," *Spine*, vol. 34, pp. 1066-1077, 2009.
- [5] L. Manchikanti, S. Abdi, S. Atluri, R. M. Benyamin, M. V. Boswell, R. M. Buenaventura, *et al.*, "An update of comprehensive evidence-based guidelines for interventional techniques in chronic spinal pain. Part II: guidance and recommendations," *Pain Physician*, vol. 16, pp. S49-283, Apr 2013.
- [6] L. Manchikanti, F. J. Falco, V. Singh, R. M. Benyamin, G. B. Racz, S. Helm, 2nd, *et al.*, "An update of comprehensive evidence-based guidelines for interventional techniques in chronic spinal pain. Part I: introduction and general considerations," *Pain Physician*, vol. 16, pp. S1-48, Apr 2013.
- [7] J. B. Staal, R. A. de Bie, H. C. de Vet, J. Hildebrandt, and P. Nelemans, "Injection therapy for subacute and chronic low back pain: an updated Cochrane review," *Spine (Phila Pa 1976)*, vol. 34, pp. 49-59, Jan 1 2009.
- [8] S. P. Cohen, S. Hayek, Y. Semenov, P. F. Pasquina, R. L. White, E. Veizi, *et al.*, "Epidural steroid injections, conservative treatment, or combination treatment for cervical radicular pain: a multicenter, randomized, comparative-effectiveness study," *Anesthesiology*, vol. 121, pp. 1045-55, Nov 2014.
- [9] L. Manchikanti, F. J. Falco, S. Diwan, J. A. Hirsch, and H. S. Smith, "Cervical radicular pain: the role of interlaminar and transforaminal epidural injections," *Curr Pain Headache Rep*, vol. 18, p. 389, Jan 2014.
- [10] L. Manchikanti, S. Helm, V. Singh, R. M. Benyamin, S. Datta, S. M. Hayek, *et al.*, "An algorithmic approach for clinical management of chronic spinal pain," *Pain Physician*, vol. 12, pp. E225-64, Jul-Aug 2009.
- [11] R. P. Harris, M. Helfand, S. H. Woolf, K. N. Lohr, C. D. Mulrow, S. M. Teutsch, *et al.*, "Current methods of the US Preventive Services Task Force: a review of the process," *Am J Prev Med*, vol. 20, pp. 21-35, Apr 2001.
- [12] L. Manchikanti, F. J. Falco, M. V. Boswell, and J. A. Hirsch, "Facts, fallacies, and politics of comparative effectiveness research: Part 2 - implications for interventional pain management," *Pain physician*, vol. 13, pp. E55-79, Jan-Feb 2010.
- [13] S. West, V. King, T. S. Carey, K. N. Lohr, N. McKoy, S. F. Sutton, *et al.*, "Systems to rate the strength of scientific evidence," *Evid Rep Technol Assess (Summ)*, pp. 1-11, Mar 2002.
- [14] L. Manchikanti, N. N. Knezevic, M. V. Boswell, A. D. Kaye, and J. A. Hirsch, "Epidural Injections for Lumbar Radiculopathy and Spinal Stenosis: A Comparative Systematic Review and Meta-Analysis," *Pain Physician*, vol. 19, pp. E365-410, Mar 2016.
- [15] D. V. Colonno, M. A. Harrast, and S. A. Herring, "Overview of spinal interventions," *Clin Sports Med*, vol. 31, pp. 409-22, Jul 2012.
- [16] J. M. Friedrich and M. A. Harrast, "Lumbar epidural steroid injections: indications, contraindications, risks, and benefits," *Curr Sports Med Rep*, vol. 9, pp. 43-9, Jan-Feb 2010.
- [17] W. M. Landau, D. A. Nelson, C. Armon, C. E. Argoff, J. Samuels, and M. M. Backonja, "Assessment: use of epidural steroid injections to treat radicular lumbosacral pain: report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology," *Neurology*, vol. 69, pp. 614; author reply 614-5, Aug 7 2007.
- [18] S. Novak and W. C. Nemeth, "The basis for recommending repeating epidural steroid injections for radicular low back pain: a literature review," *Arch Phys Med Rehabil*, vol. 89, pp. 543-52, Mar 2008.

- [19] L. Manchikanti, M. V. Boswell, V. Singh, R. M. Benyamin, B. Fellows, S. Abdi, *et al.*, "Comprehensive evidence-based guidelines for interventional techniques in the management of chronic spinal pain," *Pain physician*, vol. 12, pp. 699-802, Jul-Aug 2009.
- [20] I. Medtronic, *Medtronic Patient Programmer 37746. Pain therapy user manual for neurostimulation system models 37702, 37711, 37713, 37701, 37712, 37714, 37703, 37704, 37022*. Minneapolis, MN: Medtronic, 2012.
- [21] L. Manchikanti, K. A. Cash, V. Pampati, and Y. Malla, "Two-year follow-up results of fluoroscopic cervical epidural injections in chronic axial or discogenic neck pain: a randomized, double-blind, controlled trial," *Int J Med Sci*, vol. 11, pp. 309-20, 2014.
- [22] C. M. Bono, G. Ghiselli, T. J. Gilbert, D. S. Kreiner, C. Reitman, J. T. Summers, *et al.*, "An evidence-based clinical guideline for the diagnosis and treatment of cervical radiculopathy from degenerative disorders," *Spine J*, vol. 11, pp. 64-72, 2011.
- [23] L. Manchikanti, K. A. Cash, V. Pampati, B. W. Wargo, and Y. Malla, "A randomized, double-blind, active control trial of fluoroscopic cervical interlaminar epidural injections in chronic pain of cervical disc herniation: results of a 2-year follow-up," *Pain Physician*, vol. 16, pp. 465-78, Sep-Oct 2013.
- [24] N. Collighan, S. Gupta, J. Richardson, and S. Cheema, "Re: Comparison of the effectiveness of lumbar transforaminal epidural injection with the particulate and nonparticulate corticosteroids in lumbar radiating pain," *Pain Med*, vol. 12, pp. 1290-1; author reply 1292, Aug 2011.
- [25] D. J. Kennedy, C. Plastaras, E. Casey, C. J. Visco, J. D. Rittenberg, B. Conrad, *et al.*, "Comparative effectiveness of lumbar transforaminal epidural steroid injections with particulate versus nonparticulate corticosteroids for lumbar radicular pain due to intervertebral disc herniation: a prospective, randomized, double-blind trial," *Pain Med*, vol. 15, pp. 548-55, Apr 2014.
- [26] J. H. Hong, B. Huh, and H. H. Shin, "Comparison between digital subtraction angiography and real-time fluoroscopy to detect intravascular injection during lumbar transforaminal epidural injections," *Reg Anesth Pain Med*, vol. 39, pp. 329-32, Jul-Aug 2014.
- [27] R. M. Benyamin, L. Manchikanti, A. T. Parr, S. Diwan, V. Singh, F. J. Falco, *et al.*, "The effectiveness of lumbar interlaminar epidural injections in managing chronic low back and lower extremity pain," *Pain Physician*, vol. 15, pp. E363-404, Jul-Aug 2012.
- [28] L. Manchikanti, R. M. Benyamin, F. J. Falco, A. D. Kaye, and J. A. Hirsch, "Do Epidural Injections Provide Short- and Long-term Relief for Lumbar Disc Herniation? A Systematic Review," *Clin Orthop Relat Res*, Feb 11 2014.
- [29] A. T. Parr, L. Manchikanti, H. Hameed, A. Conn, K. N. Manchikanti, R. M. Benyamin, *et al.*, "Caudal epidural injections in the management of chronic low back pain: a systematic appraisal of the literature," *Pain Physician*, vol. 15, pp. E159-98, May-Jun 2012.
- [30] L. Manchikanti, F. J. Falco, V. Pampati, and J. A. Hirsch, "Lumbar interlaminar epidural injections are superior to caudal epidural injections in managing lumbar central spinal stenosis," *Pain Physician*, vol. 17, pp. E691-702, Dec 2014.
- [31] W. C. Watters, 3rd, D. K. Resnick, J. C. Eck, Z. Ghogawala, P. V. Mummaneni, A. T. Dailey, *et al.*, "Guideline update for the performance of fusion procedures for degenerative disease of the lumbar spine. Part 13: injection therapies, low-back pain, and lumbar fusion," *J Neurosurg Spine*, vol. 21, pp. 79-90, Jul 2014.
- [32] D. K. Resnick, T. F. Choudhri, A. T. Dailey, M. W. Groff, L. Khoo, P. G. Matz, *et al.*, "Guidelines for the performance of fusion procedures for degenerative disease of the lumbar spine. Part 13: injection therapies, low-back pain, and lumbar fusion," *J Neurosurg Spine*, vol. 2, pp. 707-15, Jun 2005.
- [33] I. Nishio, "Cervical transforaminal epidural steroid injections: a proposal for optimizing the preprocedural evaluation with available imaging," *Reg Anesth Pain Med*, vol. 39, pp. 546-9, Nov-Dec 2014.

- [34] S. H. Lee, K. T. Kim, D. H. Kim, B. J. Lee, E. S. Son, and Y. H. Kwack, "Clinical outcomes of cervical radiculopathy following epidural steroid injection: a prospective study with follow-up for more than 2 years," *Spine (Phila Pa 1976)*, vol. 37, pp. 1041-7, May 20 2012.
- [35] FDA AADPAC. (2014). *Food and Drug Administration Center for Drug Evaluation and Research Summary Minutes of the Anesthetic and Analgesic Drug Products Advisory Committee Meeting November 24-25 2014*. Available: [www.fda.gov/downloads/AdvisoryCommittees/CommitteesMeetingMaterials/Drugs/AnestheticAndAnalgesicDrugProductsAdvisoryCommittee/UCM429414.pdf](http://www.fda.gov/downloads/AdvisoryCommittees/CommitteesMeetingMaterials/Drugs/AnestheticAndAnalgesicDrugProductsAdvisoryCommittee/UCM429414.pdf)
- [36] M. A. Taskaynatan, K. Tezel, F. Yavuz, and A. K. Tan, "The effectiveness of transforaminal epidural steroid injection in patients with radicular low back pain due to lumbar disc herniation two years after treatment," *J Back Musculoskelet Rehabil*, Oct 15 2014.
- [37] L. Manchikanti, K. A. Cash, V. Pampati, and F. J. Falco, "Transforaminal epidural injections in chronic lumbar disc herniation: a randomized, double-blind, active-control trial," *Pain Physician*, vol. 17, pp. E489-501, Jul-Aug 2014.
- [38] L. Manchikanti, R. M. Buenaventura, K. N. Manchikanti, X. Ruan, S. Gupta, H. S. Smith, *et al.*, "Effectiveness of therapeutic lumbar transforaminal epidural steroid injections in managing lumbar spinal pain," *Pain Physician*, vol. 15, pp. E199-245, May-Jun 2012.
- [39] L. Manchikanti, K. A. Cash, V. Pampati, B. W. Wargo, and Y. Malla, "Cervical epidural injections in chronic discogenic neck pain without disc herniation or radiculitis: preliminary results of a randomized, double-blind, controlled trial," *Pain Physician*, vol. 13, pp. E265-78, Jul-Aug 2010.
- [40] L. Manchikanti, K. A. Cash, V. Pampati, B. W. Wargo, and Y. Malla, "The effectiveness of fluoroscopic cervical interlaminar epidural injections in managing chronic cervical disc herniation and radiculitis: preliminary results of a randomized, double-blind, controlled trial," *Pain Physician*, vol. 13, pp. 223-36, May-Jun 2010.
- [41] L. Manchikanti, K. A. Cash, C. D. McManus, V. Pampati, and R. M. Benyamin, "A preliminary report of a randomized double-blind, active controlled trial of fluoroscopic thoracic interlaminar epidural injections in managing chronic thoracic pain," *Pain Physician*, vol. 13, pp. E357-69, Nov-Dec 2010.
- [42] S. Diwan, L. Manchikanti, R. M. Benyamin, D. A. Bryce, S. Geffert, H. Hameed, *et al.*, "Effectiveness of cervical epidural injections in the management of chronic neck and upper extremity pain," *Pain Physician*, vol. 15, pp. E405-34, Jul-Aug 2012.
- [43] L. Manchikanti, K. A. Cash, C. D. McManus, V. Pampati, and R. M. Benyamin, "A randomized, double-blind, active-controlled trial of fluoroscopic lumbar interlaminar epidural injections in chronic axial or discogenic low back pain: results of 2-year follow-up," *Pain Physician*, vol. 16, pp. E491-504, Sep-Oct 2013.
- [44] R. M. Benyamin, V. C. Wang, R. Vallejo, V. Singh, and S. Helm li, "A systematic evaluation of thoracic interlaminar epidural injections," *Pain Physician*, vol. 15, pp. E497-514, Jul-Aug 2012.
- [45] L. Manchikanti, K. A. Cash, C. D. McManus, V. Pampati, and R. M. Benyamin, "Thoracic interlaminar epidural injections in managing chronic thoracic pain: a randomized, double-blind, controlled trial with a 2-year follow-up," *Pain Physician*, vol. 17, pp. E327-38, May-Jun 2014.
- [46] L. Manchikanti, K. D. Candido, V. Singh, C. G. Gharibo, M. V. Boswell, R. M. Benyamin, *et al.*, "Epidural steroid warning controversy still dogging FDA," *Pain Physician*, vol. 17, pp. E451-74, Jul-Aug 2014.
- [47] US Food and Drug Administration. (2009, [Accessed December 20, 2014]). *FDA Safe Use Initiative*. Available: [www.fda.gov/Drugs/DrugSafety/SafeUseInitiative/ucm2024031.htm](http://www.fda.gov/Drugs/DrugSafety/SafeUseInitiative/ucm2024031.htm)



- [48] R. Graham and Institute of Medicine (U.S.). Committee on Standards for Developing Trustworthy Clinical Practice Guidelines. (2011). *Clinical practice guidelines we can trust*. Available: [http://www.nap.edu/openbook.php?record\\_id=13058](http://www.nap.edu/openbook.php?record_id=13058)
- [49] S. Datta and L. Manchikanti, "Re: Chou R, Loeser JD, Owens DK, et al. Interventional therapies, surgery, and interdisciplinary rehabilitation for low back pain: an evidence-based clinical practice guideline from the American Pain Society. *Spine* 2009; 34:1066-77," *Spine (Phila Pa 1976)*, vol. 35, pp. 1826; author reply 1826-7, Sep 1 2010.
- [50] L. Manchikanti, R. M. Benyamin, F. J. Falco, D. L. Caraway, S. Datta, and J. A. Hirsch, "Guidelines warfare over interventional techniques: is there a lack of discourse or straw man?," *Pain physician*, vol. 15, pp. E1-E26, Jan-Feb 2012.
- [51] F. D. A. E. S. I. R. T. F. On behalf of International Spine Intervention Society, D. J. Kennedy, J. Levin, R. Rosenquist, V. Singh, C. Smith, *et al.*, "Epidural Steroid Injections are Safe and Effective: Multisociety Letter in Support of the Safety and Effectiveness of Epidural Steroid Injections," *Pain Med*, Jan 13 2015.
- [52] Multi-Society Pain Workgroup. (2014, {Accessed January 24, 2015}). *ESI FINAL RECOMMENDATIONS* Available at: [1515docs.org/pdfs/ESIs\\_Final\\_Recommendations.pdf](http://1515docs.org/pdfs/ESIs_Final_Recommendations.pdf)
- [53] A. I. Gitkind, T. R. Olson, and S. A. Downie, "Vertebral artery anatomical variations as they relate to cervical transforaminal epidural steroid injections," *Pain Med*, vol. 15, pp. 1109-14, Jul 2014.
- [54] J. H. Woo and H. S. Park, "Cervical transforaminal epidural block using low-dose local anesthetic: a prospective, randomized, double-blind study," *Pain Med*, vol. 16, pp. 61-7, Jan 2015.

**The Medical Policy Statement detailed above has received due consideration as defined in the Medical Policy Statement Policy and is approved.**