National Imaging Associates, Inc.	
Clinical guideline: **SYMPATHETIC NERVE BLOCKS**	**Original Date: November 2020**
CPT Codes: 64510, 64517, 64520, 64530	**Last Revised Date: May 2022**
Guideline Number: NIA_CG_404	**Implementation Date: January 2023**

Note: Any injection performed at least two years from prior injections in the same region will be considered a new episode of care and the INITIAL injection requirements must be met for approval. Events such as surgery on the same spinal region or any new pathology would also prompt a new episode of care.

INDICATIONS FOR SYMPATHETIC NERVE BLOCK

For the treatment of Post-Traumatic Stress Disorder (PTSD)[1-6]

- **Stellate ganglion block can be performed for treatment of PTSD**

For the treatment of acute pain[7]

- **Duration of pain < 3 months[8]**
- **Failure to respond to non-operative conservative therapy for a minimum of 2 weeks unless the medical reason this treatment cannot be performed is clearly documented**
- **Pain causing functional disability or average pain levels of ≥ 6 on a scale of 0 to 10**

For the treatment of chronic pain[9-12]

- **Duration of pain ≥ 3 months**
- **Pain causing functional disability or average pain levels of ≥ 6 on a scale of 0 to 10**
- **Pain characterized by at least ONE of the following:**
  - **Pain in one upper extremity with or without associated pain on the same side in the upper trunk, head, or neck**
  - **Pain in one lower extremity with or without associated pain on the same side in the buttock, pelvis, or groin**
  - **Ischemic limb pain with at least one of the following:**
    - **Intractable pain at rest**
    - **Non-healing ulcers**
    - **Failed surgical revascularization**

- **At least THREE of the following must be present:**
  - **Allodynia or hyperalgesia**
  - **Trophic bone changes on imaging**
  - **Unilateral osteoporosis on imaging**
  - **Bone scan consistent with complex regional pain syndrome (CRPS)[13]**
  - **Unilateral vasomotor changes, including:**
    - **Changes in skin color (e.g., cyanotic, or mottled)**
    - **Changes in skin temperature**
  - **Unilateral edema**
  - **Unilateral sudomotor changes, including:**
    - **Skin is asymmetrically dry**
    - **Skin is asymmetrically moist**
  - **Unilateral trophic changes, including:**
    - **Skin is smooth or shiny**
    - **Soft issue atrophy**
    - **Joint stiffness, with decreased passive ROM**
    - **Nail changes**
    - **Hair growth change**
- **Failure to respond to non-operative conservative therapy* targeting the requested spinal region for a minimum of 6 weeks in the last 6 months unless the medical reason this treatment cannot be done is clearly documented; OR details of engagement in ongoing non-operative conservative therapy* if the individual has had prior spinal injections in the same region[14-16]**

NOTE: All procedures must be performed using fluoroscopic, US, or CT guidance[17-21]

FREQUENCY OF REPEAT INJECTIONS

Sympathetic nerve blocks may be repeated only as medically necessary. Each sympathetic nerve block requires an authorization, and the following must be met for repeat injections:

- **For the treatment of pain:**
  - **The previous sympathetic nerve block resulted in at least 50% pain relief or significant documented functional improvement for at least the duration of the local anesthetic**
  - **The individual continues to have pain causing functional disability or average pain levels ≥ 6 on a scale of 0 to 10**
  - **The individual is engaged in ongoing active conservative therapy* unless the medical reason this treatment cannot be done is clearly documented**
  - **It has been at least one week since the prior sympathetic nerve block**
  - **For acute pain, no more than 6 sympathetic block procedures per region**
  - **For chronic pain, no more than 4 sympathetic block procedures per region**
- **For the treatment of PTSD:**
  - **The previous stellate ganglion block resulted in at least 50% reduction in symptoms or significant documented functional improvement for at least the duration of the local anesthetic**

- **It has been at least one week since the prior sympathetic nerve block**
- **No more than three blocks in the first 12 weeks, with no more than 6 blocks per year**

NOTE: It is generally considered not medically necessary to perform multiple interventional pain procedures on the same date of service. Documentation of a medical reason to perform injections in different regions on the same day can be provided and will be considered on a case-by-case basis (i.e., holding anticoagulation therapy on two separate dates creates undue risk for the patient).

CONTRAINDICATIONS FOR SYMPATHETIC NERVE BLOCKS

- **Active systemic or spinal infection**
- **Skin infection at the site of needle puncture**

BACKGROUND

The sympathetic autonomic nervous system (SANS) is involved in both acute and chronic pain. Selective interventional blockade of specific sympathetic pathways can be used to treat ischemic pain. Due to the anatomical separation of the sympathetic ganglia and plexi from somatic nerves in prevertebral and paravertebral regions, sympathetic blocks can be used to provide analgesic effects without somatic sensory deficits. These sympathetic nerve blocks may be used to treat visceral, vascular, and neuropathic pain, including pain associated with a wide range of conditions, such as cancer, post-traumatic stress disorder (PTSD), and complex regional pain syndrome (CRPS).[2, 22-25]

McLean (2015)[1] noted that multiple case series have been conducted evaluating the potential impact of stellate ganglion block (SGB) for PTSD symptom management as well as the safety of image-guided procedures. The author conducted a review of single center data on 250 SGBs performed over an 18-month period (November 2013 – April 2015). The goal of this study was to perform a quality assurance and performance improvement project on the safety and individual acceptability of the SGB procedure for the relief of symptoms related to chronic PTSD, including detection of any potential complications or unanticipated side effects. Post-procedural individual satisfaction survey results (n=110 individuals) show 100% "overall satisfied" with the procedure, and 95% of respondents indicated a willingness to repeat the procedure. The author concluded that in the study center "the SGB procedure for PTSD is a safe, well-tolerated, and acceptable treatment adjunct in the management of severe symptoms associated with chronic treatment-refractory PTSD."[1] The author also noted that further studies are necessary to determine the optimal treatment regimen and efficacy.

YaDeau et al (2018)[7] compared spinal and general anesthesia as supplements to nerve blocks in a randomized controlled trial to determine the effect on early patient release following foot and ankle surgery. Without using intraoperative opioids, all individuals received popliteal and adductor canal nerve blocks (bupivacaine and dexamethasone), but the individuals were randomized to either the spinal anesthesia group or general anesthesia group. Time until ready for discharge and pain scores at rest were both recorded. The individuals receiving general anesthesia were discharged earlier than the spinal anesthesia individuals (median of 39 minutes earlier; 95% CI, 2-75; P=0.0380); however, their pain scores at rest one hour post-procedure were higher (adjusted difference in means, 2.1; P < 0.001). The authors conclude, "The choice of spinal or general anesthesia as an adjunct to peripheral nerve blockade can reflect patient, clinician, and institutional preferences."[7]

Makharita et al (2012)[8] conducted a randomized, controlled, double-blind trial (n=64) to determine whether SGB, performed under fluoroscopy, can reduce postherpetic neuralgia (PHN). Individuals were divided into two groups: a control group receiving saline and an experimental group receiving bupivacaine and dexamethasone. The amounts of post-operative analgesic (acetaminophen) and pain (using a visual analog scale) were recorded at baseline, weekly (for six weeks), and after 2, 3, and 6 months. The experimental group recorded a significantly shorter duration of pain after both 3 and 6 months (P = 0.043 and 0.035, respectively) as well as a significant reduction in total doses of analgesics (P < 0.001). The authors conclude that SGB, in combination with an antiviral agent, is effective at treating PHN.[8]

Yoo et al (2011)[9] stated that the sympathetic nervous system has important roles in mediating many neuropathic pain conditions. They noted that thoracic sympathetic block (TSB) is a useful therapeutic procedure for neuropathic pain in the upper extremities and thorax, but that no studies have examined the factors related to an improved therapeutic effect of TSB. This study was designed to evaluate the influence of potential prognostic factors for a better TSB effect and identified clinically important prognostic factors in 51 individuals under fluoroscopic guidance. Regarding incorporation of TSB, only symptom duration was statistically relevant, with percutaneous TSB being more efficacious in individuals with symptom durations one year or less as compared to individuals with symptoms of more than one year (P = 0.006; odds ratio, 8.037; 95% confidence interval, 1.808-35.729). However, TSB effectiveness was not affected by either the individual's age, gender, BMI, diagnosis, or pre-procedural pain intensity. The authors concluded that these "results showed that an earlier TSB produced a better outcome for patients with chronic pain syndrome. Thus, early TSB should be performed in patients with chronic pain in the upper extremities."[9]

Cohen et al (2014)[13] conducted a randomized control trial (n=73) to study the effects of sedation during diagnostic injections since the use of sedation may be a potential cause of an inaccurate diagnostic block. 46 individuals within the study were considered good candidates

for a repeat injection within three months. All individuals maintained a pain diary. The individuals who had blocks performed with sedation reported statistically larger reduction in pain diary score and less procedure-related pain than individuals without sedation. However, no statistical difference in either increased satisfaction or in outcomes one month post-procedure were observed between the two groups.[13]

***Conservative Therapy - Non-operative treatment should include a multimodality approach consisting of a combination of active and inactive components. Inactive components can include rest, ice, heat, modified activities, medical devices, acupuncture, stimulators, medications, injections, and diathermy. Active modalities should be region-specific (targeting the cervical, thoracic, or lumbar spine) and consist of physical therapy, a physician-supervised home exercise program**, or chiropractic care.[15, 26, 27]**

****Home Exercise Program (HEP) - The following two elements are required to meet guidelines for completion of conservative therapy:**

- **Documentation of an exercise prescription/plan provided by a physician, physical therapist, or chiropractor[26, 28, 29] ; AND**
- **Follow-up documentation regarding completion of HEP after the required 6-week timeframe or inability to complete HEP due to a documented medical reason (i.e., increased pain or inability to physically perform exercises). Closure of medical offices, closure of therapy offices, patient inconvenience, or noncompliance without explanation does not constitute "inability to complete" HEP.[15, 26]**

POLICY HISTORY

Date	Summary
May 2022	• Added note to clarify when INITIAL injection requirements must be met for approval • Reorganized and reworded indications for clarity and uniformity • Under treatment for chronic pain, updated non-operative conservative therapy • Clarified frequency of injections for treatment of PTSD versus other indications • Clarified lack of medical necessity of performing multiple pain procedures on same DOS • Added Contraindications section • Added region-specific wording to conservative treatment requirement (e.g., conservative therapy targeting the requested spinal region)
November 2020	• Original research and writing completed

REFERENCES

1. McLean B. Safety and Patient Acceptability of Stellate Ganglion Blockade as a Treatment Adjunct for Combat-Related Post-Traumatic Stress Disorder: A Quality Assurance Initiative. *Cureus*. Sep 10 2015;7(9):e320. doi:10.7759/cureus.320

2. Lynch JH, Muench PD, Okiishi JC, Means GE, Mulvaney SW. Behavioral health clinicians endorse stellate ganglion block as a valuable intervention in the treatment of trauma-related disorders. *J Investig Med*. Jun 2021;69(5):989-993. doi:10.1136/jim-2020-001693

3. Lynch JH, Mulvaney SW, Kim EH, de Leeuw JB, Schroeder MJ, Kane SF. Effect of Stellate Ganglion Block on Specific Symptom Clusters for Treatment of Post-Traumatic Stress Disorder. *Mil Med*. Sep 2016;181(9):1135-41. doi:10.7205/milmed-d-15-00518

4. Hanling SR, Hickey A, Lesnik I, et al. Stellate Ganglion Block for the Treatment of Posttraumatic Stress Disorder: A Randomized, Double-Blind, Controlled Trial. *Reg Anesth Pain Med*. Jul-Aug 2016;41(4):494-500. doi:10.1097/aap.0000000000000402

5. Rae Olmsted KL, Bartoszek M, Mulvaney S, et al. Effect of Stellate Ganglion Block Treatment on Posttraumatic Stress Disorder Symptoms: A Randomized Clinical Trial. *JAMA Psychiatry*. Feb 1 2020;77(2):130-138. doi:10.1001/jamapsychiatry.2019.3474

6. Lipov EG, Navaie M, Brown PR, Hickey AH, Stedje-Larsen ET, McLay RN. Stellate ganglion block improves refractory post-traumatic stress disorder and associated memory dysfunction: a case report and systematic literature review. *Mil Med*. Feb 2013;178(2):e260-4. doi:10.7205/milmed-d-12-00290

7. YaDeau JT, Fields KG, Kahn RL, et al. Readiness for Discharge After Foot and Ankle Surgery Using Peripheral Nerve Blocks: A Randomized Controlled Trial Comparing Spinal and General Anesthesia as Supplements to Nerve Blocks. *Anesth Analg*. Sep 2018;127(3):759-766. doi:10.1213/ane.0000000000003456

8. Makharita MY, Amr YM, El-Bayoumy Y. Effect of early stellate ganglion blockade for facial pain from acute herpes zoster and incidence of postherpetic neuralgia. *Pain Physician*. Nov-Dec 2012;15(6):467-74.

9. Yoo HS, Nahm FS, Lee PB, Lee CJ. Early thoracic sympathetic block improves the treatment effect for upper extremity neuropathic pain. *Anesth Analg*. Sep 2011;113(3):605-9. doi:10.1213/ANE.0b013e3182274803

10. Bagaphou TC, Santonastaso D, Gargaglia E, et al. Ultrasound Guided Continuous Sciatic Nerve Block for Acute Herpetic Neuralgia. *Case Rep Anesthesiol*. 2019;2019:7948282. doi:10.1155/2019/7948282

11. Rocha Rde O, Teixeira MJ, Yeng LT, et al. Thoracic sympathetic block for the treatment of complex regional pain syndrome type I: a double-blind randomized controlled study. *Pain*. Nov 2014;155(11):2274-81. doi:10.1016/j.pain.2014.08.015

12. Yucel I, Demiraran Y, Ozturan K, Degirmenci E. Complex regional pain syndrome type I: efficacy of stellate ganglion blockade. *J Orthop Traumatol*. Dec 2009;10(4):179-83. doi:10.1007/s10195-009-0071-5

13. Cohen SP, Hameed H, Kurihara C, et al. The effect of sedation on the accuracy and treatment outcomes for diagnostic injections: a randomized, controlled, crossover study. *Pain Med*. Apr 2014;15(4):588-602. doi:10.1111/pme.12389

14. Manchikanti L, Abdi S, Atluri S, et al. An update of comprehensive evidence-based guidelines for interventional techniques in chronic spinal pain. Part II: guidance and recommendations. *Pain Physician*. Apr 2013;16(2 Suppl):S49-283.
15. Summers J. International Spine Intervention Society Recommendations for treatment of Cervical and Lumbar Spine Pain. 2013.
16. Hurley RW, Adams MCB, Barad M, et al. Consensus practice guidelines on interventions for cervical spine (facet) joint pain from a multispecialty international working group. *Pain Med*. Nov 26 2021;22(11):2443-2524. doi:10.1093/pm/pnab281
17. Li J, Szabova A. Ultrasound-Guided Nerve Blocks in the Head and Neck for Chronic Pain Management: The Anatomy, Sonoanatomy, and Procedure. *Pain Physician*. Dec 2021;24(8):533-548.
18. Ryu JH, Lee CS, Kim YC, Lee SC, Shankar H, Moon JY. Ultrasound-Assisted Versus Fluoroscopic-Guided Lumbar Sympathetic Ganglion Block: A Prospective and Randomized Study. *Anesth Analg*. Apr 2018;126(4):1362-1368. doi:10.1213/ane.0000000000002640
19. Hughey S, Schafer J, Cole J, Booth G, Tuttle R, Stedje-Larsen E. Ultrasound Versus Fluoroscopy for Stellate Ganglion Block: A Cadaveric Study. *Pain Med*. Oct 8 2021;22(10):2307-2310. doi:10.1093/pm/pnab182
20. Huang B, Sun K, Zhu Z, et al. Oximetry-derived perfusion index as an early indicator of CT-guided thoracic sympathetic blockade in palmar hyperhidrosis. *Clin Radiol*. Dec 2013;68(12):1227-32. doi:10.1016/j.crad.2013.07.003
21. Moon S, Ko M, Kim S, Kim H, Oh D. Superior cervical sympathetic ganglion block under ultrasound guidance promotes recovery of abducens nerve palsy caused by microvascular ischemia. *Scand J Pain*. Dec 18 2019;20(1):211-214. doi:10.1515/sjpain-2019-0096
22. Doroshenko M, Turkot O, Horn DB. Sympathetic Nerve Block. StatPearls Publishing LLC. Updated August 16, 2021. Accessed April 26, 2022. https://www.ncbi.nlm.nih.gov/books/NBK557637/
23. Mercadante S, Klepstad P, Kurita GP, Sjøgren P, Giarratano A. Sympathetic blocks for visceral cancer pain management: A systematic review and EAPC recommendations. *Crit Rev Oncol Hematol*. Dec 2015;96(3):577-83. doi:10.1016/j.critrevonc.2015.07.014
24. Mulvaney SW, Lynch JH, Kotwal RS. Clinical Guidelines for Stellate Ganglion Block to Treat Anxiety Associated With Posttraumatic Stress Disorder. *J Spec Oper Med*. Summer 2015;15(2):79-85.
25. Kim YH, Kim SY, Lee YJ, Kim ED. A Prospective, Randomized Cross-Over Trial of T2 Paravertebral Block as a Sympathetic Block in Complex Regional Pain Syndrome. *Pain Physician*. Sep 2019;22(5):E417-e424.
26. Qaseem A, Wilt TJ, McLean RM, et al. Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians. *Ann Intern Med*. Apr 4 2017;166(7):514-530. doi:10.7326/m16-2367
27. American College of Radiology. ACR Appropriateness Criteria® Low Back Pain. American College of Radiology (ACR). Updated 2021. Accessed November 10, 2021. https://acsearch.acr.org/docs/69483/Narrative/
28. Sculco AD, Paup DC, Fernhall B, Sculco MJ. Effects of aerobic exercise on low back pain patients in treatment. *Spine J*. Mar-Apr 2001;1(2):95-101. doi:10.1016/s1529-9430(01)00026-2

29. Durmus D, Unal M, Kuru O. How effective is a modified exercise program on its own or with back school in chronic low back pain? A randomized-controlled clinical trial. *J Back Musculoskelet Rehabil*. 2014;27(4):553-61. doi:10.3233/bmr-140481

Reviewed / Approved by NIA Clinical Guideline Committee

GENERAL INFORMATION

It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.