**Diagnostic Regional Sympathetic Blocks**

The performance of an initial diagnostic regional sympathetic block (stellate ganglion block [SGB] and lumbar sympathetic block [LSB]) to allow the attending physician to determine whether the patient has sympathetically mediated pain, may be considered medically necessary when all of the following criteria are met:

- Diagnosis of Complex Regional Pain Syndrome (CRPS)
- Conventional first-line pain management strategies (e.g., oral medications, physical therapy, or occupational therapy) have failed to diminish or eliminate the patient’s pain
- Patient is capable or actively involved in a rehabilitation program
- Performed using fluoroscopic guidance

May perform up to 3 additional blocks when performed within the first two weeks following the initial diagnostic injection.

*Note: Regional sympathetic blocks for the treatment of indications, other than CRPS (e.g., vascular or visceral pain) or the use of other techniques (e.g., intravenous, percutaneous) will be reviewed on a case-by-case basis for medical necessity. See Policy Guidelines for further information.

**Therapeutic Regional Sympathetic Blocks**

Therapeutic regional sympathetic blocks (stellate ganglion blocks [SGB] and lumbar sympathetic blocks [LSB]) may be considered medically necessary when all of the following criteria are met:

- Documented evidence of a positive response from the initial diagnostic block(s) indicating that the patient has sympathetically mediated pain when any of the following are met:
  - Pain reduction of at least 50% reduction in the patient’s pain and improvement in function
  - Decreased use of pain medication
  - Increased functional abilities
  - Increased tolerance to touch (decreased allodynia) during the rehabilitation program
- Patient is capable or actively involved in a rehabilitation program
- Performed using fluoroscopic guidance

May perform up to an additional 6 therapeutic blocks when performed at a frequency of one time per week.

A repeat series of therapeutic regional sympathetic blocks (stellate ganglion blocks [SGB] and lumbar sympathetic blocks [LSB]) will be reviewed on a case-by-case basis for medical necessity. See Policy Guidelines for further information.

*Note: Regional sympathetic blocks for the treatment of indications, other than CRPS (e.g., vascular or visceral pain) or the use of other techniques (e.g., intravenous, percutaneous) will be reviewed on a case-by-case basis for medical necessity. See Policy Guidelines for further information.

Regional sympathetic blocks** are considered not medically necessary for any of the following:
• If less than 50% improvement is noted for the duration of the local anesthetic when performing a diagnostic block
• Blocks which are performed in patients who are not capable or who are not actively involved in an active rehabilitation program
• Performance of regional sympathetic blocks without the use of fluoroscopic guidance

**Note:** If another spinal procedure (e.g., epidural steroid injection, facet joint injection or nerve block, SJI) is performed on the same day of service as a regional sympathetic block, both procedures will be reviewed for medical necessity based on applicable Blue Shield Medical Policy criteria. (See Related Policies).

**Policy Guidelines**

There are limited cases whereby regional sympathetic blocks may be requested for other pain diagnoses, other than CRPS, (e.g., migraines, neuralgia or neuropathic pain, cancers or non-cancer pain of the abdomen, rectum, thorax, head and neck, and lower limb pain) and performed in other than the cervical or lumbar regions (SGB and LSB). These types of blocks include, but are not limited to:

- Sphenopalatine ganglion blocks (see Blue Shield of California Medical Policy: Sphenopalatine Ganglion Block for Headache)
- Thoracic sympathetic chain blocks
- Celiac plexus (e.g., pancreatic cancer pain) region
- Superior hypogastric plexus
- Impar ganglion (e.g., perineal pain)

In rare and select cases where a patient requires a sympathetic block, and there is an absolute contraindication, other approaches including intravenous and percutaneous techniques may be used for diagnosis and treatment. Due to potential severe complications, these cases will be reviewed on a case to case basis for medical necessity.

**Coding**

The following CPT codes describe regional sympathetic blocks:

- **64510**: Injection, anesthetic agent; stellate ganglion (cervical sympathetic)
- **64520**: Injection, anesthetic agent; lumbar or thoracic (paravertebral sympathetic)

**Description**

A regional sympathetic block (Stellate Ganglion Block [SGB] and Lumbar Sympathetic Block [LSB]) refers to an injection of local anesthetic along the sympathetic ganglia of the anterolateral aspect of the spinal column under fluoroscopy to reduce sympathetic nervous system (SNS) activity related to the affected limb.

A sympathetic nerve block involves injecting an anesthetic medication around the sympathetic nerves in the low back or neck. By doing this, the SNS in that area is temporarily 'switched' off in hopes of reducing or eliminating pain. If pain is substantially improved after the block, then a diagnosis of sympathetically mediated pain (SMP) is established. The therapeutic effects of the anesthetic can occur, at times, longer than would be normally expected. The goal is to reset the sympathetic tone to a normal state of regulation. If the initial block is successful, then additional blocks may be repeated if the pain continues to sequentially diminish.

**Related Policies**

- Diagnosis and Treatment of Sacroiliac Joint Pain
- Epidural Steroid Injections for Back Pain
- Facet Joint Injections and Facet Joint Nerve Blocks
Benefit Application

Benefit determinations should be based in all cases on the applicable contract language. To the extent there are any conflicts between these guidelines and the contract language, the contract language will control. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

Some state or federal mandates (e.g., Federal Employee Program [FEP]) prohibits plans from denying Food and Drug Administration (FDA)-approved technologies as investigational. In these instances, plans may have to consider the coverage eligibility of FDA-approved technologies on the basis of medical necessity alone.

Rationale

Literature Review
The sympathetic nervous system (SNS) is a part of the autonomic nervous system that controls the body's involuntary activities. Authors Boaz and Day define as:

The sympathetic nervous system has been implicated in neuropathic pain (NeP), vascular, and visceral pain. Sympathetic ganglia have been the target of local anesthetic block to assess the role of the SNS in transmission of pain. Despite the frequent use of minimally invasive sympathetic blocks by pain practitioners, their efficacy for providing analgesia has been sparsely reported. Many case reports and series have been published, but few placebo-controlled, blinded studies exist.

Nerve Blocks for Regional Sympathetic Block
Nerve blocks for regional sympathetic blocks (RSB) result in a temporary interruption of the conduction of impulses in nerves. This is accomplished by the injection of local anesthetic solutions. Since sympathetic fibers are the least myelinated, they are the first affected by local anesthetic.

Stellate Ganglion Blockade
A stellate ganglion blockade (SGB) is an injection of local anesthetic in the sympathetic nerve tissue of the neck. These nerves are a part of the SNS. The stellate ganglion is located at the level of the 7th cervical vertebrae. A SGB blocks the sympathetic nerves that go to the arms, and, to some degree, the sympathetic nerves that go to the face. This may in turn reduce pain, swelling, color and sweating changes in the upper extremity and may improve mobility. It is done as a part of the treatment of reflex sympathetic dystrophy (RSD), sympathetic maintained pain (SMP), complex regional pain syndrome (CRPS) and Herpes Zoster involving an arm or the head and face.

Ackerman and Zhang reported on a study to examine the efficacy of SGB in patients with CRPS type I of their hands. They reported on 25 subjects with a clinical diagnosis of CRPS type I of one hand as defined by the International Association for the Study of Pain (IASP) criteria, who had three SGBs performed at weekly interval. Pre- and post-SGB therapy, laser Doppler fluxmetric hand perfusion studies were performed on both the normal and CRPS type I hand. A large percentage of patients achieved complete (40%) or partial (36%) relief of their symptoms. Only 6 of 25 (24%) patients showed no relief. The authors stated SGB was not a totally benign procedure, and not all patients with CRPS of the hand respond to this treatment.

Lumbar Sympathetic Block
Lumbar sympathetic nerve blocks (LSB) are a procedure used to block or decrease pain in the lower extremities caused by injury or disease of the SNS. The LSN blocks are located on either side of the lumbar spine.
**Analgesic Response to Sympathetic Blockade in Complex Regional Syndrome**

Complex regional pain syndrome (CRPS) is a disorder of the extremities that is characterized by pain, swelling, limited range of motion, vasomotor instability, skin changes, and patchy bone demineralization. It frequently begins following an injury, surgery, or vascular event such as a myocardial infarction or stroke.

This syndrome is defined by the IASP as:

...a variety of painful conditions following injury which appear regionally having a distal predominance of abnormal findings, exceeding in both magnitude and duration the expected clinical course of the inciting event and often resulting in significant impairment of motor function, and showing variable progression over time.3

A further defining in 2008 by the Reflex Sympathetic Dystrophy Syndrome Association (RSDSA) describes CRPS "as an injury to a nerve or soft-tissue that does not follow the normal healing pattern." Development of CRPS does not appear to depend upon the magnitude of the original injury, and the SNS seems to assume an abnormal function in CRPS. The syndrome may be divided into CRPS type I (formerly known as RSD) where there is no recognized injury to a nerve, and CRPS type II (formerly known as causalgia) where a nerve injury is identified. Psychological factors may play a role in the etiology of CRPS, and psychological treatment is often used, although there is little evidence to support this treatment.14

According to Parilla, CRPS occurs after approximately 5% of all injuries such as fractures, sprains, and trivial soft-tissue injuries, although estimates range from 1% to 15% of cases involving peripheral nerve injury and up to 30% of cases involving contusions and fractures. This syndrome affects women more than men and is thought to affect between 200,000 and 1.2 million Americans.12

There seem to be differences in the presentation and response to treatment of CRPS in adults compared with children. Adults tend to have a precipitating trauma, greater incidence of CRPS in the upper versus lower extremities, and poorer response to therapy.15,9 Psychological factors may play a role in the etiology of CRPS, and psychological treatment is often used, although there is little evidence to support this treatment.13

In addition to injury, CRPS can also occur as a result of various medical disorders or illnesses. The diagnostic criterion for CRPS according to Harden and colleagues are as follows7:

- **Continuing pain that is disproportionate to any inciting event**
- **Must report at least one of the symptoms in the following categories:**
  - Sensory: reports of hyperesthesia
  - Vasomotor: reports of temperature asymmetry and/or skin color changes and/or skin color asymmetry
  - Sudomotor/edema: reports of edema and/or sweating changes and/or sweating asymmetry
  - Motor/trophic: reports of decreased range of motion and/or motor dysfunction (weakness, tremor, dystonia) and/or trophic changes (hair, nail, skin)
- **Must display at least one of the signs in two or more of the following categories:**
  - Sensory: evidence of hyperalgesia (to pinprick) and/or alldynia (to light touch)
  - Vasomotor: evidence of temperature asymmetry and/or skin color changes and/or asymmetry
  - Sudomotor/edema: evidence of edema and/or sweating changes and/or sweating asymmetry
  - Motor/trophic: evidence of decreased range of motion and/or motor dysfunction (weakness, tremor, dystonia) and/or trophic changes (hair, nail, skin)
- **There is no other diagnosis that better explains the signs and symptoms**
According to Cepeda and colleagues, there was growing controversy on the value of blocking the SNS for the treatment of CRPS. The authors sought to evaluate the efficacy of sympathetic blockade with local anesthetic in these syndromes. In addition, they performed a comprehensive review of the pathophysiology and other treatments for CRPS. The authors identified only three randomized controlled trials (RCTs) that evaluated sympathetic blockade with local anesthetic, but because of differences in study design they were unable to pool the study data. The authors therefore included nonrandomized studies and case series, which allowed inclusion if local anesthetic sympathetic blockade was used in at least 10 patients. Studies were excluded if continuous infusion techniques, somatic nerve blocks, or combined sympatholytic therapies were evaluated. The pain relief classification was assessed as full, partial, or absent. Twenty-nine studies were included and 1,144 patients were evaluated. Quality of the publications was poor. Twenty-nine percent of patients had full response, 41% had partial response, and 32% had absent response. It was not possible to estimate the duration of pain relief. The authors concluded this review raises questions as to the efficacy of local anesthetic sympathetic blockade as treatment of CRPS. With the efficacy based mainly on case series, less than one third of patients obtaining full pain relief, and absence of control groups in case series, all led to an overestimation of the treatment response that can explain the findings.5

In 2008, Day M. discussed multiple sympathetic blocks, and noted that thoracic sympathetic block were not recommended due to a lack of literature to support effectiveness. He further noted that “Despite the frequent use of minimally invasive sympathetic blocks by pain practitioners, their efficacy for providing analgesia has been sparsely reported. Many case reports and series have been published, but few placebo-controlled, blinded studies exist”.6

In 2010, Cepeda stated the efficacy of local anesthetic sympathetic blockade for CRPS was unknown. It was now conceptualized that the pathophysiology of the SNS ties together RSD and causalgia into one entity: CRPS. Therefore, blockade of the SNS is used to treat this pain syndrome. As the authors performed a review to evaluate the efficacy of sympathetic blockade with local anesthetic, they noted their evaluation revealed a scarcity of published evidence to support the use of local anesthetic sympathetic blockade as the “gold standard” for treating CRPS and stated it raised questions as to its usefulness.4 A systematic meta-analysis was published that had three objectives:

- To determines the likelihood of pain alleviation after sympathetic blockade with local anesthetic in the patient with CRPS
- To assess how long any benefit persists
- To evaluate the incidence of adverse effects of the procedure

The data collected and analyzed studied the number of patients who obtained at least 50% of pain relief shortly after sympathetic blockade (30 minutes to 2 hours) and 48 hours or later. There were two small randomized double blind crossover studies found that evaluated 23 subjects. The combined results of the two trials produced a relative risk (RR) to achieve at least 50% of pain relief in 30 minutes to 2 hours after the sympathetic blockade of 1.17 (95% confidence interval [CI: 0.80-1.72]). Because the authors of the two studies evaluated different outcomes, it was not possible to determine the effect of the sympathetic blockade on long-term pain relief. The author concluded that this systematic review revealed the scarcity of published evidence to support the use of local anesthetic sympathetic blockade as the “gold standard” treatment for CRPS. The two randomized studies that met inclusion criteria had very small sample sizes. Therefore, no conclusion concerning the effectiveness of this procedure could be drawn. The author also concluded there is a need to conduct RCT(s) to address the value of sympathetic blockade with local anesthetic for the treatment of CRPS.

A study was performed in 2009 by Yucel and colleagues to evaluate the treatment of CRPS type I with stellate ganglion blockade. Three blockades were performed at weekly intervals in 22 patients with CRPS type I in one hand. The patients were divided into two groups depending on the time between symptom onset and treatment initiation. Group 1 and 2 patients had short and long symptom-onset-to-treatment intervals, respectively. Measuring the pain intensity, using
a visual analog score (VAS), and using range of motion (ROM) for the wrist joint were assessed before and 2 weeks after treatments. They were then compared using nonparametric statistical analysis. The results of treatment produced a statistically significant difference in wrist ROM for all patients (P < 0.0001). Visual analog score values showed an overall decrease from 8 +/- 1 to 1 +/- 1 after treatment, and there was a significant difference in VAS value between groups 1 and 2 (P < 0.05). The authors of this study concluded that stellate ganglion blockade successfully decreased and increased ROM of wrist joints in patients with CRPS type I. They also concluded the duration between symptom onset and therapy initiation was a major factor affecting blockade success.18

In 2012, van Eijis and colleagues reported on a prospective observational study done with 49 patients with CRPS type I in one extremity only and for less than 1-year duration who had severe pain and persistent functional impairment with no response to standard treatment with medication and physical therapy. Fifteen (31%) patients had good to moderate response when sympathetic blockade for CRPS was used. In patient groups with cold or warm type CRPS type I or in those with +/- 1.5 differential increase in skin temperature after sympathetic blockade, the response rate was not different. In CRPS type I, allodynia and hypoesthesia were negative predictors for treatment success, and there were no other signs or symptoms that positively predicted treatment success. There were transient side effects such as headache, dysphagia, increased pain, backache, nausea, blurred vision, groin pain, hoarseness, and hematoma at the puncture site that were experienced by a majority of patients (84%). Major complications were not reported.16

In late 2012, Neil stated “Despite many advances in our understanding of the pathophysiology of this condition, CRPS remains a challenging clinical problem.” This author responded to van Eijis's report mentioned as the 2012 study above, stating there were a number of other important therapeutic options that were not considered as initial therapy. He continued on to describe pharmaceutical interventions (e.g., prednisolone), tricyclic antidepressants, alone or in combination with anticonvulsants, which were not used in this study. Neil stated10:

The use of short courses of steroids and the combinations of tricyclic antidepressants and anticonvulsants for a period of not less than 4 weeks at the maximum tolerated dose should be recommended in addition to physical therapy as standard initial management, and that sympathetic blockade should be reserved for all but the most refractory cases of CRPS.

The Washington State Department of Labor and Industries outlined conservative care guidelines that advocated17:
- Less than or equal to 5 sympathetic nerve blocks followed immediately by physical therapy (PT)/occupational therapy (OT) within the first 6 weeks.
- Thereafter, psychiatric or psychological consultation should be considered, if the disability was extended beyond 3 months and PT/OT continued, based on documented response in the first 6 weeks.
- If previous blocks were successful, sympathetic blocks could be continued every other week for <= 12 weeks.
- The protocol for PT/OT recommended active exercise programs featuring progressive weight bearing for affected lower extremities and progressive improvement of grip strength, pinch strength, and ROM for involved upper extremities in combination with a desensitization program.

In 2008, Oerlemans and colleagues provided preliminary evidence that rehabilitation therapy benefited adults who had CRPS. In adults, an RCT found that, compared with medical therapy and guidance from a social worker, PT provided a statistically significant improvement in a multi-component measure of impairment. Based on criteria provided by the investigators, this improvement reached the minimum level necessary to qualify as clinically significant. A shortcoming of the study was that it did not involve any follow-up after the post-treatment
assessment to evaluate the durability of improvements provided by PT. Moreover, it was difficult to compare outcomes of the available studies due to differences in treatment protocols.

Authors stated additional controlled studies are needed to confirm that rehabilitation therapy provides clinically significant long-term benefits for adults and children who have CRPS.11

Although the interventional therapies in CRPS (such as nerve blockade, sympathetic block, spinal cord and peripheral nerve stimulation, implantable spinal medication pumps, and chemical and surgical sympathectomy) may offer more rapid response, yet it is still controversial with unpredictable outcome.8

Several clinical trials were found that have been completed but without posted study results. Others were terminated or are currently recruiting for participants.

**Summary**

By and large, regional sympathetic blocks are considered acceptable medical practice and may be medically necessary for treatment within a specific subset of patients who have not responded to standard therapies, or for whom standard therapies are contraindicated. Even with their poor evidence base, these blocks are still commonly used clinically. Further studies are needed, and in the meantime, patients with little or no relief from conservative management will probably continue to have sympathetic blocks to try to achieve symptom control. The balance of benefits and risks in each case is therefore crucial if the use of these techniques is to be justified.

**References**


**Documentation for Clinical Review**

Please provide the following documentation (if/when requested):

- History and physical and/or consultation notes including:
  - Conservative treatment(s), duration, and patient response
  - Functional limitation(s)
  - Prior procedures and response(s) (if applicable)
  - Electrodiagnostic studies (if applicable)

**Post Service**

- Procedure report(s)

**Coding**

This Policy relates only to the services or supplies described herein. Benefits may vary according to product design; therefore, contract language should be reviewed before applying the terms of the Policy. Inclusion or exclusion of codes does not constitute or imply member coverage or provider reimbursement.

**MN/IE**

The following services may be considered medically necessary in certain instances and investigational in others. Services may be considered medically necessary when policy criteria are met. Services may be considered investigational when the policy criteria are not met or when the code describes application of a product in the position statement that is investigational.

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<tr>
<th>Type</th>
<th>Code</th>
<th>Description</th>
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<td>CPT®</td>
<td>64510</td>
<td>Injection, anesthetic agent; stellate ganglion (cervical sympathetic)</td>
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<td>64520</td>
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<td>HCPCS</td>
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<td>ICD-10 Procedure</td>
<td>3E0T3BZ</td>
<td>Introduction of Local Anesthetic into Peripheral Nerves and Plexi, Percutaneous Approach</td>
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Policy History

This section provides a chronological history of the activities, updates and changes that have occurred with this Medical Policy.

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<td>05/08/2012</td>
<td>Administrative Update</td>
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<td>01/11/2013</td>
<td>Added Note to Position Statement for review</td>
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Definitions of Decision Determinations

**Medically Necessary:** A treatment, procedure, or drug is medically necessary only when it has been established as safe and effective for the particular symptoms or diagnosis, is not investigational or experimental, is not being provided primarily for the convenience of the patient or the provider, and is provided at the most appropriate level to treat the condition.

**Investigational/Experimental:** A treatment, procedure, or drug is investigational when it has not been recognized as safe and effective for use in treating the particular condition in accordance with generally accepted professional medical standards. This includes services where approval by the federal or state governmental is required prior to use, but has not yet been granted.

**Split Evaluation:** Blue Shield of California/Blue Shield of California Life & Health Insurance Company (Blue Shield) policy review can result in a split evaluation, where a treatment, procedure, or drug will be considered to be investigational for certain indications or conditions, but will be deemed safe and effective for other indications or conditions, and therefore potentially medically necessary in those instances.

Prior Authorization Requirements (as applicable to your plan)

Within five days before the actual date of service, the provider must confirm with Blue Shield that the member's health plan coverage is still in effect. Blue Shield reserves the right to revoke an authorization prior to services being rendered based on cancellation of the member's eligibility. Final determination of benefits will be made after review of the claim for limitations or exclusions.

Questions regarding the applicability of this policy should be directed to the Prior Authorization Department. Please call (800) 541-6652 or visit the provider portal at www.blueshieldca.com/provider.

Disclaimer: This medical policy is a guide in evaluating the medical necessity of a particular service or treatment. Blue Shield of California may consider published peer-reviewed scientific literature, national guidelines, and local standards of practice in developing its medical policy. Federal and state law, as well as contract language, including definitions and specific contract provisions/exclusions, take precedence over medical policy and must be considered first in determining covered services. Member contracts may differ in their benefits. Blue Shield reserves the right to review and update policies as appropriate.