Cervical spinal fusion (arthrodesis) is a surgical technique that involves the fusion of 2 or more cervical vertebrae using local bone, autologous bone, allogeneic donor bone, or bone graft substitutes. There are numerous potential indications for cervical spinal fusion including vertebral instability and compression of the spinal cord/nerves. The procedure is performed with the goal of stabilizing the vertebrae and alleviating pain and/or weakness.

**Related Policies**

- Artificial Intervertebral Disc: Cervical Spine
- Lumbar Spinal Fusion

**Policy**

The determination of medical necessity for the use of cervical spinal fusion (arthrodesis) with or without instrumentation is always made on a case-by-case basis.

Cervical fusion (arthrodesis) may be considered medically necessary in patients who demonstrate unstable vertebral fractures, spinal dislocations, segmental instability secondary to traumatic injury, or where surgery is being performed for tumor, infection, or other disease processes that have led to cervical segmental instability.

Cervical fusion (arthrodesis) may be considered medically necessary in patients with severe chronic neck pain, with or without radiculopathy, which is aggravated by activity and fulfill all of the following criteria:

- Is performed as part of a cervical decompressive procedure
- Patient has received an adequate diagnostic evaluation to rule out all other potential causes of pain
- Patient has undergone an MRI or CT scan with or without myelography within the past 12 months which indicates spinal stenosis (central and/or lateral recess) with clear evidence of a neural compressive lesion/nerve root compromise and/or spinal cord compression which correlates with the clinical examination findings
- Patient has participated in a reasonable trial of an active rehabilitative exercise program with appropriate adjunctive care
- Patient does not have clinically significant co-morbid factors which could potentially increase the likelihood of a negative outcome of the surgical procedure while dramatically increasing patient risk. If a clinically significant co-morbid factor is present, evaluation by a physician with expertise in this co-
morbidity must indicate that proceeding with the planned procedure represents a reasonable risk for the patient.

- Patient does not have an active psychological diagnosis or disturbance or psychosocial issues that would substantially reduce the possibility of a successful outcome

Cervical fusion (arthrodesis) may be considered **medically necessary** in patients who demonstrate a pseudoarthrosis (non-union) from a prior fusion.

Cervical fusion (arthrodesis) using both an anterior and posterior approach (360° fusion) may be considered **medically necessary** in patients as an adjunct to an extensive anterior approach procedure or in certain cases of severe instability.

### Policy Guidelines

The following CPT codes are specific to cervical fusion:

- **22548**: Arthrodesis, anterior transoral or extraoral technique, clivus-C1-C2 (atlas-axis), with or without excision of odontoid process
- **22551**: Arthrodesis, anterior interbody, including disc space preparation, discectomy, osteophytectomy and decompression of spinal cord and/or nerve roots; cervical below C2
- **22552**: Arthrodesis, anterior interbody, including disc space preparation, discectomy, osteophytectomy and decompression of spinal cord and/or nerve roots; cervical below C2, each additional interspace (List separately in addition to code for separate procedure)
- **22554**: Arthrodesis, anterior interbody technique, including minimal discectomy to prepare interspace (other than for decompression); cervical below C2
- **22590**: Arthrodesis, posterior technique, craniocervical (occiput-C2)
- **22595**: Arthrodesis, posterior technique, atlas-axis (C1-C2)
- **22600**: Arthrodesis, posterior or posterolateral technique, single level; cervical below C2 segment

### 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)) prohibit 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

Background

Cervical spinal fusion is a surgical procedure in which 2 or more vertebrae are fused together using local bone, autologous bone taken from the iliac crest of the patient, allogeneic donor bone, or bone graft substitutes. Metal implants or plates may also be used for stabilization of the vertebral column until new bone growth can form between vertebrae. Cervical fusion can either be performed anteriorly or posteriorly and in conjunction with other spinal procedures, including but not limited to, discectomy, laminectomy, corpectomy, laminotomy, and laminoplasty. Cervical spinal fusion may be most beneficial in patients who are unresponsive to conservative management.

Literature Review

The literature on cervical spinal fusion for various indications is limited to, for example systematic reviews, national consensus guidelines, and a small number of randomized controlled trials (not all inclusive). The literature found generally focuses on the comparison of cervical discectomy with or without fusion to conservative management (e.g., physical therapy) (Abd-Alrahman et al., 1999; Bambakidis et al., 2005; Fouyas et al., 2002; Jacobs et al., 2004; Kuhns et al., 2005).

In a 2010 Cochrane review by Nikolaidis et al., the authors investigated whether surgical treatment of cervical radiculopathy or myelopathy is associated with better outcomes versus conservative management and whether the timing of surgery has an impact on outcomes. Two small trials (n=81 and n=68) were identified and did not provide reliable evidence on the effects of surgery. The authors concluded,

> It is unclear whether the short-term risks of surgery are offset by long-term benefits. Further research is very likely to have an impact on the estimate of effect and our confidence in it. There is low quality evidence that surgery may provide pain relief faster than physiotherapy or hard collar immobilization in patients with cervical radiculopathy; but there is little or no difference in the long-term. There is very low quality evidence that patients with mild myelopathy feel subjectively better shortly after surgery, but there is little or no difference in the long-term.

The results from a systematic review by the Joint Guidelines Committee of the American Association of Neurological Surgeons/Congress of Neurological Surgeons (Matz et al., 2009a) concluded that anterior cervical discectomy, anterior cervical discectomy with fusion, and arthroplasty are effective techniques for the treatment of cervical radiculopathy. The quality of evidence summarization (Class I-III) are as follows:

Both anterior cervical discectomy (ACD) and anterior cervical discectomy with fusion (ACDF) are equivalent treatment strategies for 1-level disease with regard to functional outcome (Class II). Anterior cervical discectomy with fusion may achieve a more rapid reduction of neck and arm pain compared to ACD with a reduced risk of kyphosis, although functional outcomes may be similar. Anterior cervical discectomy with fusion is not a lasting means of increasing foraminar or disc height compared to ACD. Anterior cervical plating (ACDF with instrumentation) improves arm pain (but not other clinical parameters) better than ACDF in the treatment of 2-level disease (Class II). With respect to 1-level disease,
plating may reduce the risk of pseudarthrosis and graft problems (Class III) but does not necessarily improve clinical outcome alone (Class II). Cervical arthroplasty is recommended as an alternative to ACDF in selected patients for control of neck and arm pain (Class II).

In a separate review by Matz et al. (2009b) guidelines for the indications for anterior cervical decompression in the treatment of cervical degenerative radiculopathy were published. The results are as follows:

Anterior nerve root decompression via anterior cervical discectomy (ACD) with or without fusion for radiculopathy is associated with rapid relief (3-4 months) of arm/neck pain, weakness, and/or sensory loss compared with physical therapy (PT) or cervical collar immobilization. Anterior cervical discectomy and ACD with fusion (ACDF) are associated with longer term (12 months) improvement in certain motor functions compared to PT. Other rapid gains observed after anterior decompression (diminished pain, improved sensation, and improved strength in certain muscle groups) are also maintained over the course of 12 months. However, comparable clinical improvements with PT or cervical immobilization therapy are also present in these clinical modalities (Class I). Conflicting evidence exists as to the efficacy of anterior cervical foraminotomy with reported success rates of 52-99% but recurrent symptoms as high as 30% (Class III).

Summary

Cervical spinal fusion is performed for various indications in order to alleviate pain and weakness. Though there is limited research in the area of randomized controlled trials comparing cervical fusion against conservative management, there are evidence based practice guidelines from national societies that support the use of cervical spinal fusion in certain populations. Therefore, the use of cervical spinal fusion may be considered medically necessary for the indications listed in the policy statement above.

Practice Guidelines and Position Statements

In 2010, the North American Spine Society issued an Evidence-Based Clinical Guidelines for Multidisciplinary Spine Care for the diagnosis and treatment of cervical radiculopathy from degenerative disorders (Bono et al., 2010). No updates to the guidelines were found. The following are the recommendations for surgical treatment:

- Surgical intervention is suggested for the rapid relief of symptoms of cervical radiculopathy from degenerative disorders when compared to medical/interventional treatment. Grade of Recommendation: B (Fair evidence)
- Both [anterior cervical discectomy] ACD and [anterior cervical discectomy/decompression and fusion] ACDF are suggested as comparable treatment strategies, producing similar clinical outcomes, in the treatment of single level cervical radiculopathy from degenerative disorders. Grade of Recommendation: B (Fair evidence)
- The addition of an interbody graft for fusion is suggested to improve sagittal alignment following ACD. Grade of Recommendation: B (Fair evidence)
- Both ACDF with and without a plate are suggested as comparable treatment strategies, producing similar clinical outcomes and fusion rates, in the treatment of single level cervical radiculopathy from degenerative disorders. Grade of Recommendation: B (Fair evidence)
The addition of a cervical plate is suggested to improve sagittal alignment following ACDF. Grade of Recommendation: B (Fair evidence)

While plate stabilization may be indicated in some patients undergoing multilevel ACDF, there is insufficient evidence that this practice results in significant improvement in clinical outcomes for degenerative cervical radiculopathy. Work Group Consensus Statement

Either ACDF or [posterior laminoforaminotomy] PLF are suggested for the treatment of single level degenerative cervical radiculopathy secondary to foraminal soft disc herniation to achieve comparable successful clinical outcomes. Grade of Recommendation: B (Fair evidence)

Compared to PLF, ACDF is suggested for the treatment of single level degenerative cervical radiculopathy from central and paracentral nerve root compression and spondylotic disease. Work Group Consensus Statement

ACDF and total disc arthroplasty (TDA) are suggested as comparable treatments, resulting in similarly successful short term outcomes, for single level degenerative cervical radiculopathy. Grade of Recommendation: B (Fair evidence)

Surgery is an option for the treatment of single level degenerative radiculopathy to produce and maintain favorable long term (greater than four year) outcomes. Grade of Recommendation: C (Poor quality evidence)

Medicare National Coverage
There is no national coverage determination (NCD). In the absence of an NCD, coverage decisions are left to the discretion of local Medicare carriers.

References

**Documentation Required for Clinical Review**

- History and physical and/or consultation notes including:
  - Activity limitations
  - Clinical findings
  - Comorbidities
  - Conservative treatments and duration
  - Duration of back pain
  - Reason for procedure
- Radiology report(s) (i.e., MRI, CT, discogram)

**Post Service**

- Procedure report(s)

**Coding**

This Policy relates only to the services or supplies described herein. Benefits may vary according to benefit design; therefore, contract language should be reviewed before applying the terms of the Policy. Inclusion or exclusion of a procedure, diagnosis or device code(s) does not constitute or imply member coverage or provider reimbursement.

**MN/NMN**

The following services may be considered medically necessary when policy criteria are met. Services are considered not medically necessary when policy criteria are not met.

<table>
<thead>
<tr>
<th>Type</th>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>CPT®</td>
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For dates of service on or after 10/01/2015

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Medical Policy

Cervical spinal fusion 2 or more joints, code range

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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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<tr>
<td>12/15/2014</td>
<td>Policy title change from Spinal Fusion Custom policy Policy revision without position change</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**

This service (or procedure) is considered **medically necessary** in certain instances and **investigational** in others (refer to policy for details).

For instances when the indication is **medically necessary**, clinical evidence is required to determine **medical necessity**.

For instances when the indication is **investigational**, you may submit additional information to the Prior Authorization Department.

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 also be directed to the Prior Authorization Department. Please call 1-800-541-6652 or visit the Provider Portal www.blueshieldca.com/provider.

The materials provided to you are guidelines used by this plan to authorize, modify, or deny care for persons with similar illness or conditions. Specific care and treatment may vary depending on individual need and the benefits covered under your contract. These Policies are subject to change as new information becomes available.