National Imaging Associates, Inc.*	
Clinical guidelines: **CERVICAL SPINE SURGERY**	**Original Date: July 2008**
CPT Codes:** - **Anterior Cervical Decompression with Fusion (ACDF) - Single Level: 22548, 22551, 22554** - **Anterior Cervical Decompression with Fusion (ACDF) - Multiple Levels: +22552, +22585** - **Cervical Posterior Decompression with Fusion - Single Level: 22590, 22595, 22600** - **Cervical Posterior Decompression with Fusion - Multiple Levels: 22595, +22614** - **Cervical Artificial Disc Replacement - Single Level: 22856, 22861, 22864** - **Cervical Artificial Disc Replacement - Two Levels: +22858, +0098T, +0095T** - **Cervical Posterior Decompression (without fusion): 63001, 63015, 63020, +63035, 63040, +63043, 63045, +63048, 63050, 63051** - **Cervical Anterior Decompression (without fusion): 63075, +63076** ***See Utilization Review Matrix for allowable billed groupings and additional covered codes*	**Last Revised Date: May 2022~~1~~**
Guideline Number: NIA_CG_307	**Implementation Date: January 2023~~2~~**

INDICATIONS FOR CERVICAL SPINE SURGERY

Anterior Cervical Decompression with Fusion (ACDF) - Single Level

The following criteria must be met*:

* National Imaging Associates, Inc. (NIA) is a subsidiary of Magellan Healthcare, Inc.

- Positive clinical findings of myelopathy with evidence of progressive neurologic deficits consistent with **spinal cord compression -** immediate surgical evaluation is indicated ~~(AAOS, 2013; Bono, 2011; Cunningham, 2010; Holly, 2009; Matz, 2009a; Matz, 2009b; Matz, 2009d; Matz, 2009e; Mummaneni, 2009; Tetreault, 2013; Yalamanchili, 2012; Zhu, 2013)~~.[1-12] Symptoms may include:
    - Upper extremity weakness
    - Unsteady gait related to myelopathy/balance or generalized lower extremity weakness
    - Disturbance with coordination
    - Hyperreflexia
    - Hoffmann sign
    - Positive Babinski sign and/or clonus; **OR**
- Progressive neurological deficit (motor deficit, bowel or bladder dysfunction) with evidence of spinal cord or nerve root compression on magnetic resonance imaging (MRI) or computed tomography (CT) imaging - immediate surgical evaluation is indicated (~~Bono, 2011; Matz, 2009b;~~ Tetreault, 2013)[2,6,10]; **OR**

When ALL of the following criteria are met[2,13] ~~(Bono, 2011; Nikolaidis, 2010)~~**:**

- Cervical radiculopathy or myelopathy from ruptured disc, spondylosis, spinal instability, or deformity
- Persistent or recurrent symptoms/pain with functional limitations that are unresponsive to **at least 6 weeks** of appropriate conservative treatment
- Documented failure of at least 6 consecutive weeks in the last 6 months of **any 2** of the following physician-directed conservative treatments:
    - Analgesics, steroids, and/or NSAIDs
    - Structured program of physical therapy
    - Structured home exercise program prescribed by a physical therapist, chiropractic provider or physician
    - Epidural steroid injections and or selective nerve root block
- Imaging studies confirm the presence of spinal cord or spinal nerve root compression (disc herniation or foraminal stenosis) at the level **corresponding with the clinical findings** ~~(Bono, 2011)~~.[2] Imaging studies may include:
    - MRI (preferred study for assessing cervical spine soft tissue); **OR**
    - CT with or without myelography— indicated in individuals in whom MRI is contraindicated; preferred for examining bony structures, or in individuals presenting with clinical symptoms or signs inconsistent with MRI findings (e.g., foraminal compression not seen on MRI).

***Cervical spine decompression with fusion as first-line treatment without conservative care measures in the following clinical cases[6,10,12,14]** ~~(Matz, 2009b; Tetreault, 2013; White, 1987; Zhu, 2013)~~

- As outlined above for myelopathy or progressive neurological deficit scenarios

- Significant spinal cord or nerve root compression due to tumor, infection, or trauma
- Fracture or instability on radiographic films measuring:
    - Sagittal plane angulation of greater than 11 degrees at a single interspace or greater than 3.5mm anterior subluxation in association with radicular/cord dysfunction; **OR**
    - Subluxation at the (C1) level of the atlantodental interval of more than 3 mm in an adult and 5 mm in a child

Not Recommended[13,15] ~~(Nikolaidis, 2010; Van Middelkoop, 2012)~~

- In asymptomatic or mildly symptomatic cases of cervical spinal stenosis
- In cases of neck pain alone, without neurological deficits, and no evidence of significant spinal nerve root or cord compression on MRI or CT. *See Cervical Fusion for Treatment of Axial Neck Pain Criteria*

Anterior Cervical Decompression with Fusion (ACDF) - Multiple Levels

The following criteria must be met*:

- Positive clinical findings of myelopathy with evidence of progressive neurologic deficits consistent with worsening **spinal cord compression -** immediate surgical evaluation is indicated.[1-12] ~~(AAOS, 2013; Bono, 2011; Cunningham, 2010; Holly, 2009; Matz, 2009a; Matz, 2009b; Matz, 2009d; Matz, 2009e; Mummaneni, 2009; Tetreault, 2013; Yalamanchili, 2012; Zhu, 2013).~~ Symptoms may include:
    - Upper extremity weakness
    - Unsteady gait related to myelopathy/balance or generalized lower extremity weakness
    - Disturbance with coordination
    - Hyperreflexia
    - Hoffmann sign
    - Positive Babinski sign and/or clonus; **OR**
- Progressive neurological deficit (motor deficit, bowel or bladder dysfunction) with corresponding evidence of spinal cord or nerve root compression on an MRI or CT scan images - immediate surgical evaluation is indicated[2,6,10] ~~(Bono, 2011; Matz, 2009b; Tetreault, 2013)~~; **OR**

When ALL of the following criteria are met[2,13] ~~(Bono, 2011; Nikolaidis, 2010)~~

- Cervical radiculopathy or myelopathy due to ruptured disc, spondylosis, spinal instability, or deformity
- Persistent or recurrent pain/symptoms with functional limitations that are unresponsive to at least **6 weeks of conservative treatment**
- Documented failure of at least 6 consecutive weeks in the last 6 months of **any 2** of the following physician-directed conservative treatments:
    - Analgesics, steroids, and/or NSAIDs

- Structured program of physical therapy
- Structured home exercise program prescribed by a physical therapist, chiropractic provider or physician
- Epidural steroid injections and or selective nerve root block

- Imaging studies confirm the presence of spinal cord or spinal nerve root compression (disc herniation or foraminal stenosis) at multiple levels corresponding with the clinical findings. Imaging studies may include any of the following[2] ~~(Bono, 2011)~~:
  - MRI (preferred study for assessing cervical spine soft tissue); **OR**
  - CT with or without myelography - indicated in individuals in whom MRI is contraindicated; preferred for examining bony structures, or in individuals presenting with clinical symptoms or signs inconsistent with MRI findings (e.g., foraminal compression not seen on MRI)

Cervical spine decompression with fusion performed as first-line treatment without conservative care measures in the following clinical cases[6,10,12,14] ~~(Matz, 2009b; Tetreault, 2013; White, 1987; Zhu, 2013)~~

- As outlined above for myelopathy or progressive neurological deficit scenarios
- Significant spinal cord or nerve root compression due to tumor, infection, or trauma
- Fracture or instability on radiographic films measuring:
  - Sagittal plane angulation of greater than 11 degrees at a single interspace or greater than 3.5mm anterior subluxation in association with radicular/cord dysfunction; **OR**
  - Subluxation at the (C1) level of the atlantodental interval of more than 3 mm in an adult and 5 mm in a child

Not Recommended[13,15] ~~(Nikolaidis, 2010; Van Middelkoop, 2012)~~

- In asymptomatic or mildly symptomatic cases of cervical spinal stenosis.
- In cases of neck pain alone, without neurological deficits, and no evidence of significant spinal nerve root or cord compression on MRI or CT. *See Cervical Fusion for Treatment of Axial Neck Pain Criteria.*
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Cervical Posterior Decompression with Fusion - Single Level

The following criteria must be met*

- Positive clinical findings of myelopathy with evidence of progressive neurologic deficits consistent with worsening **spinal cord compression -** immediate surgical evaluation is indicated ~~(AAOS, 2013; Cunningham, 2010; Fehlings, 2013; Holly, 2009; Matz, 2009d; Mummaneni, 2009; Tetreault, 2013; Yalamanchili, 2012; Zhu, 2013)~~**.**[1,3,4,7,9-12,16] Symptoms may include:
  - Upper extremity weakness

- Unsteady gait related to myelopathy/balance or generalized lower extremity weakness
- Disturbance with coordination
- Hyperreflexia
- Hoffmann sign
- Positive Babinski sign and/or clonus; **OR**

- Progressive neurological deficit (motor deficit, bowel or bladder dysfunction) with corresponding evidence of spinal cord or nerve root compression on an MRI or CT scan images - immediate surgical evaluation is indicated[2,6,10] ~~(Bono, 2011; Matz, 2009b; Tetreault, 2013)~~; **OR**

When **ALL of the following** criteria are met[2,13] ~~(Bono, 2011; Nikolaidis, 2010)~~

- Cervical radiculopathy or myelopathy from ruptured disc, spondylosis, spinal instability, or deformity
- Persistent or recurrent symptoms/pain with functional limitations that are unresponsive to at least **6 weeks of conservative treatment**
- Documented failure of at least 6 consecutive weeks in the last 6 months of **any 2** of the following physician-directed conservative treatments:
  - Analgesics, steroids, and/or NSAIDs
  - Structured program of physical therapy
  - Structured home exercise program prescribed by a physical therapist, chiropractic provider or physician
  - Epidural steroid injections and or selective nerve root block
- Imaging studies confirm the presence of spinal cord or spinal nerve root compression (disc herniation or foraminal stenosis) at single level **corresponding with the clinical findings** ~~(Bono, 2011)~~.[2] Imaging studies may include:
  - MRI (preferred study for assessing cervical spine soft tissue); **OR**
  - CT with or without myelography - indicated in individuals in whom MRI is contraindicated; preferred for examining bony structures, or in individuals presenting with clinical symptoms or signs inconsistent with MRI findings (e.g., foraminal compression not seen on MRI); **AND**

Cervical spine decompression with fusion performed as first-line treatment without conservative care measures in the following clinical cases[10,12,14,16] ~~(Fehlings, 2013; Tetreault, 2013; White, 1987; Zhu, 2013)~~

- As outlined above for myelopathy or progressive neurological deficit scenarios
- Significant spinal cord or nerve root compression due to tumor, infection, or trauma.
- Fracture or instability on radiographic films measuring:
  - Sagittal plane angulation of greater than 11 degrees at a single interspace or greater than 3.5 mm anterior subluxation in association with radicular/cord dysfunction; **OR**

- Subluxation at the (C1) level of the atlantodental interval of more than 3 mm in an adult and 5 mm in a child

Not Recommended[13,17] ~~(Nikolaidis, 2010; Wang, 2011)~~:

- In asymptomatic or mildly symptomatic cases of cervical spinal stenosis.
- In cases of neck pain alone, without neurological deficits, and no evidence of significant spinal nerve root or cord compression on MRI or CT. *See Cervical Fusion for Treatment of Axial Neck Pain Criteria.*

<u>Cervical Posterior Decompression with Fusion - Multiple Levels</u>

The following criteria must be met*

- Positive clinical findings of myelopathy with evidence of progressive neurologic deficits consistent with worsening **spinal cord compression -** immediate surgical evaluation is indicated ~~(AA0S, 2013; Cunningham, 2010; Fehlings, 2013; Holly, 2009; Matz, 2009d; Mummaneni, 2009; Tetreault, 2013; Yalamanchili, 2012; Zhu, 2013)~~.[1,3,4,7,9-12,16] Symptoms may include:
  - Upper extremity weakness
  - Unsteady gait related to myelopathy/balance or generalized lower extremity weakness
  - Disturbance with coordination
  - Hyperreflexia
  - Hoffmann sign
  - Positive Babinski sign and/or clonus; **OR**
- Progressive neurological deficit (motor deficit, bowel or bladder dysfunction) with corresponding evidence of spinal cord or nerve root compression on an MRI or CT scan images - immediate surgical evaluation is indicated[2,6,10] ~~(Bono, 2011; Matz, 2009b; Tetreault, 2013)~~; **OR**

When <u>ALL</u> of the following criteria are met[2,13] ~~(Bono, 2011; Nikolaidis, 2010)~~

- Cervical radiculopathy or myelopathy from ruptured disc, spondylosis, spinal instability, or deformity
- Persistent or recurrent symptoms/pain with functional limitations that are unresponsive to at **least 6 weeks of conservative treatment**
- Documented failure of at least 6 consecutive weeks in the last 6 months of **any 2** of the following physician-directed conservative treatments:
  - Analgesics, steroids, and/or NSAIDs
  - Structured program of physical therapy
  - Structured home exercise program prescribed by a physical therapist, chiropractic provider or physician

- Epidural steroid injections and or facet injections/selective nerve root block; **AND**

- Imaging studies indicate significant spinal cord or spinal nerve root compression at multiple levels **corresponding with the clinical findings**. Imaging studies may include[2] ~~(Bono, 2011)~~:
  - MRI (preferred study for assessing cervical spine soft tissue); **OR**
  - CT with or without myelography - indicated in individuals in whom MRI is contraindicated; preferred for examining bony structures, or in individuals presenting with clinical symptoms or signs inconsistent with MRI findings (e.g., foraminal compression not seen on MRI); **AND**

***Cervical spine decompression with fusion performed as first-line treatment without conservative care measures in the following clinical cases[10,12,14,16]** ~~(Fehlings, 2013; Tetreault, 2013; White, 1987; Zhu, 2013)~~

- As outlined above for myelopathy or progressive neurological deficit scenarios
- Significant spinal cord or nerve root compression due to tumor, infection, or trauma
- Fracture or instability on radiographic films measuring:
  - Sagittal plane angulation of greater than 11 degrees at a single interspace or greater than 3.5mm anterior subluxation in association with radicular/cord dysfunction; **OR**
  - Subluxation at the (C1) level of the atlantodental interval of more than 3 mm in an adult and 5 mm in a child

Not Recommended[13,17] ~~(Nikolaidis, 2010; Wang, 2011)~~

- In asymptomatic or mildly symptomatic cases of cervical spinal stenosis.
- In cases of neck pain alone, without neurological deficits, and no evidence of significant spinal nerve root or cord compression on MRI or CT. *See: Cervical Fusion for Treatment of Axial Neck Pain Criteria.*

<u>Cervical Fusion for Treatment of Axial Neck Pain</u>

In individuals with non-radicular cervical pain for whom fusion is being considered, **ALL of the following criteria must be met[18]** ~~(Riew, 2010)~~

- Improvement of the symptoms has failed or plateaued, and the residual symptoms of pain and functional disability are unacceptable at the **end of 6 to 12 consecutive months of appropriate, active treatment**, or at the end of longer duration of non-operative programs for those debilitated with complex problems [NOTE: Mere passage of time with poorly guided treatment is not considered an active treatment program]
- All pain generators are adequately defined and treated
- All physical medicine and manual therapy interventions are completed
- X-ray, MRI, or CT demonstrating disc pathology or spinal instability
- Spine pathology limited to one or two levels unless other complicating factors are involved

- Psychosocial evaluation for confounding issues addressed

NOTE: The effectiveness of three-level or greater cervical fusion for non-radicular pain has not been established ~~(Van Middelkoop, 2012)~~.[15]

Cervical Posterior Decompression

The following criteria must be met*

- Positive clinical findings of myelopathy with evidence of progressive neurologic deficits consistent with worsening **spinal cord compression -** immediate surgical evaluation is indicated ~~(AAOS, 2013; Bono, 2011; Heary, 2009; Mummaneni, 2009; Ryken, 2009; Tetreault, 2013; Wang, 2013; Yalamanchili, 2012; Zhu, 2013)~~.[1,2,9-12,19-21] Symptoms may include:
  - Upper extremity weakness
  - Unsteady gait related to myelopathy/balance or generalized lower extremity weakness
  - Disturbance with coordination
  - Hyperreflexia
  - Hoffmann sign
  - Positive Babinski sign and/or clonus; **OR**
- Progressive neurological deficit (motor deficit, bowel or bladder dysfunction) with corresponding evidence of spinal cord or nerve root compression on an MRI or CT scan images - immediate surgical evaluation is indicated[10,20] ~~(Tetreault, 2013; Wang, 2013)~~; **OR**

When **ALL of the following criteria are met**[2] ~~(Bono, 2011)~~

- Cervical radiculopathy from ruptured disc, spondylosis, or deformity
- Persistent or recurrent symptoms/pain with functional limitations that are unresponsive to at **least 6 weeks of appropriate conservative treatment**
- Documented failure of at least 6 consecutive weeks in the last 6 months of **any 2** of the following physician-directed conservative treatments:
  - Analgesics, steroids, and/or NSAIDs
  - Structured program of physical therapy
  - Structured home exercise program prescribed by a physical therapist, chiropractic provider or physician
  - Epidural steroid injections and or facet injections/selective nerve root block
- Imaging studies confirm the presence of spinal cord or spinal nerve root compression at the level(s) **corresponding with the clinical findings.**[2,22] ~~(Bono, 2011; Sahai, 2019).~~ Imaging studies may include **any** of the following:
  - MRI (preferred study for assessing cervical spine soft tissue); **OR**

- CT with or without myelography— indicated in individuals in whom MRI is contraindicated; preferred for examining bony structures, or in individuals presenting with clinical symptoms or signs inconsistent with MRI findings (e.g., foraminal compression not seen on MRI)

Cervical decompression performed as first-line treatment without conservative care in the following clinical cases[10,12,20,21] ~~(Ryken, 2009; Tetreault, 2013; Wang, 2013; Zhu, 2013)~~

- As outlined above for myelopathy or progressive neurological deficit scenarios.
- Spinal cord or nerve root compression due to tumor, infection, or trauma.

Not Recommended[13,17] ~~(Nikolaidis, 2010; Wang, 2011)~~

- In asymptomatic or mildly symptomatic cases.
- In cases of neck pain alone, without neurological deficits and abnormal imaging findings. *See Cervical Fusion for Treatment of Axial Neck Pain Criteria.*
- In individuals with kyphosis or at risk for development of postoperative kyphosis.

<u>Cervical Artificial Disc Replacement (Single or Two Level)</u>

Indications for cervical artificial disc replacement are as follows:[2,8,23-26] ~~(Bono, 2011; Cheng, 2009; Davis, 2015; Gornet, 2019; Lavelle, 2019; Matz, 2009e)~~

- Skeletally mature individual; **AND**
- Intractable radiculopathy caused by one-or-two-level disease (either herniated disc or spondolytic osteophyte) located at C3-C7; **AND**
- Persistent or recurrent symptoms/pain with functional limitations that are unresponsive to **at least 6 weeks** of appropriate conservative treatment; **AND**
- Documented failure of at least 6 consecutive weeks in the last 6 months of **any 2** of the following physician-directed conservative treatments:
    - Analgesics, steroids, and/or NSAIDs
    - Structured program of physical therapy
    - Structured home exercise program prescribed by a physical therapist, chiropractic provider or physician
    - Epidural steroid injections and or facet injections /selective nerve root block; **AND**
- Imaging studies confirm the presence of compression at the level**(s) corresponding with the clinical findings** (MRI or CT); **AND**
- Use of an FDA-approved prosthetic intervertebral discs.

Cervical Artificial Disc Replacement is **NOT** indicated when **any of the following** clinical scenarios exists[24] ~~(Davis, 2015)~~

- Symptomatic multiple level disease affecting 3 or more levels
- Infection (at site of implantation or systemic)
- Osteoporosis or osteopenia
- Instability
    - Translation greater than 3mm difference between lateral flexion-extension views at the symptomatic levels
    - 11 degrees of angular difference between lateral flexion-extension views at the symptomatic levels
- Sensitivity or allergy to implant materials
- Severe spondylosis defined as[24] ~~(Davis, 2015)~~:
    - > 50% disc-height loss compared to minimally or non-degenerated levels; **OR**
    - Bridging osteophytes; **OR**
    - Absence of motion on lateral flexion-extension views at the symptomatic site
- Severe facet arthropathy
- Ankylosing spondylitis
- Rheumatoid arthritis
- Previous fracture with anatomical deformity
- Ossification of the posterior longitudinal ligament (OPLL)
- Active cervical spine malignancy

Cervical Fusion without Decompression

Cervical fusion without decompression will be reviewed on a **case-by-case basis**. Atraumatic instability due to Down Syndrome-related spinal deformity, rheumatoid arthritis, or basilar invagination are uncommon, but may require cervical fusion ~~(Trumees, 2017)~~.[27]

Cervical Anterior Decompression (without fusion)

All requests for anterior decompression without fusion will be reviewed on a **case-by-case basis** ~~(Bono, 2011; Botelho, 2012; Gebremariam, 2012; Matz, 2009a; Matz, 2009e)~~.[2,5,8,28,29]

BACKGROUND

This guideline outlines the key surgical treatments and indications for common cervical spinal disorders and is a consensus document based upon the best available evidence. Spine surgery is a complex area of medicine, and this document breaks out the clinical indications by surgical type. Operative treatment is indicated only when the natural history of an operatively treatable problem is better than the natural history of the problem without operative treatment. Choice of surgical approach is based on anatomy, pathology, and the surgeon's experience and preference. All operative interventions must be based on a positive correlation

with clinical findings, the natural history of the disease, the clinical course, and diagnostic tests or imaging results.

OVERVIEW

***Conservative Therapy:** (Musculoskeletal) includes primarily physical therapy and /or injections; and a combination of modalities, such as rest, ice, heat, modified activities, medical devices (such as a cervical collar), medications, diathermy, chiropractic treatments, or physician supervised home exercise program.

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

- Information provided on exercise prescription/plan; **AND**
- Follow up with member with documentation provided regarding completion of HEP, (after 4-6 week period) or inability to complete HEP due to physical reason- i.e., increased pain, inability to physically perform exercises. (Inconvenience or noncompliance without explanation does not constitute "inability to complete" HEP).

A comprehensive assimilation of factors should lead to a specific diagnosis with positive identification of the pathologic condition(s).

- Early intervention may be required in acute incapacitating pain or in the presence of progressive neurological deficits.
- Operative treatment is indicated when the natural history of surgically treated lesions is better than the natural history for non-operatively treated lesions.
- Individuals may present with localized pain or severe pain in combination with numbness, extremity weakness, loss of coordination, gait issues, or bowel and bladder complaints. Nonoperative treatment continues to play an important role in the care of individuals with degenerative cervical spine disorders. If these symptoms progress to neurological deficits, from corresponding spinal cord or nerve root compression, then surgical intervention may be warranted.
- All individuals being considered for surgical intervention should first undergo a comprehensive neuromusculoskeletal examination to identify those pain generators that may either respond to non-surgical techniques or may be refractory to surgical intervention.
- Obesity is one of the most commonly identified risk factors for surgical site infection. For individuals undergoing posterior cervical decompression with or without fusion for a diagnosis other than myelopathy, BMI should be less than 40. These cases will be reviewed on a case-by-case basis and may be denied given the increased risk of infection.[30]
- If operative intervention is being considered, particularly those procedures that require a fusion, it is required that the person refrain from smoking/nicotine for **at least six weeks**

prior to surgery and during the time of healing ~~(Jackson, 2016; Kusin, 2015; Liang, 2017; Olsson, 2015; Rajaee, 2014; Tetreault, 2015)~~.[31-36]

- In situations requiring the possible need for operation, a second opinion may be necessary. Psychological evaluation is strongly encouraged when surgery is being performed for isolated axial pain to determine if the individual will likely benefit from the treatment.
- It is imperative for the clinician to rule out non-physiologic modifiers of pain presentation, or non-operative conditions mimicking radiculopathy, myelopathy or spinal instability (peripheral compressive neuropathy, chronic soft tissue injuries, and psychological conditions), prior to consideration of elective surgical intervention.

Degenerative cervical spine disorders, while often benign and episodic in nature, can become debilitating, resulting in axial pain and neurological damage to the spinal cord or roots. Compression on the nerve root and / or spinal cord may be caused by (1) a herniated disc with or without extrusion of disc fragments and/or (2) degenerative cervical spondylosis.

Anterior Approaches:

Anterior surgical approaches to cervical spine decompression emerged in the 1950s in response to technical limitations experienced with posterior approaches, including restricted access to and exposure of midline bony spurs and disc fragments.

The first reports in the literature describe anterior cervical discectomy combined with a spinal fusion procedure (ACDF). Fusion was added to address concerns about potential for loss of spinal stability and disc space height, leading to late postoperative complications such as kyphosis and radicular pain ~~(Sonntag, 1996; Dowd, 1999; Matz, 2009a; Matz, 2009b; Denaro, 2011; Botelho, 2012; Van Middelkoop, 2012)~~.[5,6,15,28,37-39]

Anterior cervical fusion (ACF) accounted for approximately 80% of cervical spine procedures performed in the United States between 2002 and 2009, while posterior cervical fusion (PCF) accounted for 8.5% of these procedures.[40]

Anterior Cervical Discectomy and Fusion (ACDF) – removal of all or part of a herniated or ruptured disc or spondolytic bony spur to alleviate pressure on the nerve roots or on the spinal cord in individuals with symptomatic radiculopathy. Discectomy is most often combined with fusion to stabilize the spine.

Cervical Artificial Disc Replacement - This involves the insertion of a prosthetic device into the cervical intervertebral space with the goal of maintaining physiologic motion at the treated cervical segment. The use of artificial discs in motion-preserving technology is based on the surgeon's preference and training. Only FDA-approved artificial discs are appropriate.

Posterior Approaches

Laminectomy – removal of the bone between the spinal process and facet pedicle junction to expose the neural elements of the spine. This allows for the inspection of the spinal canal, identification and removal of pathological tissue, and decompression of the cord and roots.

Laminoplasty – the opening of the lamina to enlarge the spinal canal. There are several laminoplasty techniques; all aim to alleviate cord compression by reconstructing the spinal canal. Laminoplasty is commonly performed to decompress the spinal cord in individuals with multilevel degenerative spinal stenosis and neutral or lordotic alignment.

Laminoforaminotomy (also known as posterior discectomy) – the creation of a small window in the lamina to facilitate removal of arthritic bone spurs and herniated disc material pressing on the nerve root as it exits through the foramen. The procedure widens the opening of the foramen so that the nerve exits without being compressed.

POLICY HISTORY

Date	Summary
May 2022	• Reference added • Background updated (added obesity as a risk factor)
June 2021	• No changes
November 2020	• Added CPT code 22864 to ACDF Single Level and ACDF Multiple Level
October 2020	• No significant change
October 2019	• "in the last 6 months" added to further define the conservative care requirement • New references added
September 2019	• Codes 22856, 22861, 22864 added to -Cervical Artificial Disc - Two Levels
November 2018	• "Cervical Artificial Disc Replacement": Removed "no prior neck surgery" requirement • Changed smoking/nicotine cessation from 'recommended' to 'required' • Added and updated references

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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.~~

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ADDITIONAL RESOURCES

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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.