

## MEDICAL POLICY - 7.01.108

# **Artificial Intervertebral Disc: Cervical Spine**

BCBSA Ref. Policy: 7.01.108

Effective Date: July 1, 2024

Last Revised: June 10, 2024

Replaces: 7.01.537

**RELATED MEDICAL POLICIES:** 

7.01.87 Artificial Intervertebral Disc: Lumbar Spine

7.01.560 Cervical Spine Surgeries: Discectomy, Laminectomy, and Fusion in Adults

11.01.524 Site of Service: Select Surgical Procedures

## Select a hyperlink below to be directed to that section.

POLICY CRITERIA | DOCUMENTATION REQUIREMENTS | CODING RELATED INFORMATION | EVIDENCE REVIEW | REFERENCES | HISTORY

Clicking this icon returns you to the hyperlinks menu above.

### Introduction

The bones that make up the neck are called cervical vertebrae. Between each of the vertebra is a disc, which acts as a shock absorber and prevents the bones from rubbing together. As a person ages, these discs may break down and become thinner because they lose water and the gel-like substance that's inside each disc. This is known as degenerative disc disease. Studies show that most adults over the age of forty have some degenerative disc disease when x-rays are done. However, for many people no treatment is needed because the neck continues to move normally without pain. In some people who have pain and severe degenerative disc disease is present, treatment may be helpful. An artificial disc is one type of treatment. The artificial disc replaces the damaged natural disc, with the goal being to keep the normal space between the bones and preserve the motion of the neck. This treatment may be considered when there is significant pain that has not responded to other types of treatments. This policy describes when an artificial disc replacement in the neck may be considered medically necessary.

**Note:** The Introduction section is for your general knowledge and is not to be taken as policy coverage criteria. The rest of the policy uses specific words and concepts familiar to medical professionals. It is intended for providers. A provider can be a person, such as a doctor, nurse, psychologist, or dentist. A provider also can be a place where medical care is given, like a hospital, clinic, or lab. This policy informs them about when a service may be covered.

## **Policy Coverage Criteria**

We will review for medical necessity these elective surgical procedures.

We also will review the site of service for medical necessity. Site of service is defined as the location where the surgical procedure is performed, such as an off campus-outpatient hospital or medical center, an on campus-outpatient hospital or medical center, an ambulatory surgical center, or an inpatient hospital or medical center.

Site of Service for	Medical Necessity	
Elective Surgical		
Procedures		
Medically necessary sites of service: • Off campus-outpatient hospital/medical center • On campus-outpatient hospital/medical center • Ambulatory Surgical Center	Certain elective surgical procedures will be covered in the most appropriate, safe, and cost-effective site. These are the preferred medically necessary sites of service for certain elective surgical procedures.	
Inpatient hospital/medical	Certain elective surgical procedures will be covered in the most	
center	appropriate, safe, and cost-effective site. This site is	
	considered medically necessary only when the individual has a	
	clinical condition which puts him or her at increased risk for	
	complications including any of the following (this list may not	
	be all inclusive):	
	Anesthesia Risk	
	<ul> <li>ASA classification III or higher (see definition)</li> </ul>	
	<ul> <li>Personal history of complication of anesthesia</li> </ul>	
	<ul> <li>Documentation of alcohol dependence or history of cocaine use</li> </ul>	
	<ul> <li>Prolonged surgery (&gt;3 hours)</li> </ul>	
	Cardiovascular Risk	
	<ul> <li>Uncompensated chronic heart failure (NYHA class III or IV)</li> </ul>	
	<ul> <li>Recent history of myocardial infarction (MI) (&lt;3 months)</li> </ul>	
	<ul> <li>Poorly controlled, resistant hypertension*</li> </ul>	
	<ul> <li>Recent history of cerebrovascular accident (&lt; 3 months)</li> </ul>	



Site of Service for	Medical Necessity	
<b>Elective Surgical</b>		
Procedures		
	<ul> <li>Increased risk for cardiac ischemia (drug eluting stent placed &lt; 1 year or angioplasty &lt;90 days)</li> <li>Symptomatic cardiac arrhythmia despite medication</li> <li>Significant valvular heart disease</li> <li>Liver Risk</li> <li>Advance liver disease (MELD Score &gt; 8)**</li> <li>Pulmonary Risk</li> <li>Chronic obstructive pulmonary disease (COPD) (FEV1 &lt;50%)</li> <li>Poorly controlled asthma (FEV1 &lt;80% despite treatment)</li> <li>Moderate to severe obstructive sleep apnea (OSA)***</li> <li>Renal Risk</li> <li>End stage renal disease (on dialysis)</li> <li>Other</li> <li>Morbid obesity (BMI ≥ 50)</li> <li>Pregnancy</li> <li>Bleeding disorder (requiring replacement factor, blood products, or special infusion product [DDAVP**** does not meet this criterion])</li> <li>Anticipated need for transfusion(s)</li> <li>Note: *3 or more drugs to control blood pressure</li> <li>*****DDAVP-Deamino-Delta-D-Arginine Vasopressin (Desmopressin)</li> </ul>	
Inpatient hospital/medical	This site of service is considered NOT medically necessary for	
center	certain elective surgical procedures when the site of service	
	criteria listed above are not met.	

Surgery	Medical Necessity	
Artificial cervical	Cervical artificial intervertebral disc implantation may be	
intervertebral disc	considered medically necessary when ALL of the following	
implantation	criteria are met:	
	The device is approved by the US Food and Drug	
	Administration (FDA): (Examples, list may not be all inclusive)	
	o For <u>one level</u> :	
	<ul> <li>Bryan Cervical Disc (Medtronic)</li> </ul>	
	<ul> <li>M6-C Artificial Cervical Disc (Orthofix)</li> </ul>	
	<ul> <li>Mobi-C Cervical Disc (Zimmer Biomet)</li> </ul>	
	<ul> <li>PCM (porous-coated motion) Cervical Disc (NuVasive)</li> </ul>	
	<ul> <li>PrestigeLP Cervical Disc (Medtronic)</li> </ul>	
	<ul> <li>Prestige Cervical Disc System (Medtronic)</li> </ul>	
	<ul> <li>ProDisc-C Total Disc Replacement (Centinel Spine)</li> </ul>	
	<ul> <li>SECURE-C Cervical Artificial Disc (Globus Medical)</li> </ul>	
	<ul> <li>Simplify Cervical Artificial Disc (NuVasive)</li> </ul>	
	<ul> <li>For two contiguous levels:</li> </ul>	
	<ul> <li>Mobi-C Cervical Disc (Zimmer Biomet)</li> </ul>	
	<ul> <li>Prestige LP Cervical Disc (Medtronic)</li> </ul>	
	<ul> <li>SimplifyCervical Artificial Disc (NuVasive)</li> </ul>	
	The individual is skeletally mature	
	The individual has intractable cervical radicular pain or	
	myelopathy	
	a. Which has failed at least 6 weeks of conservative non-	
	operative treatment including physical therapy and at least	
	one of the following:	
	<ul> <li>Acupuncture</li> </ul>	
	<ul> <li>Cervical collar</li> </ul>	
	<ul><li>Corticosteroids</li></ul>	
	<ul><li>Exercise program</li></ul>	
	<ul> <li>Medical treatment with NSAIDs or other analgesics</li> </ul>	
	OR	
	b. The individual has severe or rapidly progressive symptoms	
	of nerve root or spinal cord compression requiring	
	hospitalization or immediate surgical treatment.	

Surgery	Medical Necessity		
	<ul> <li>Degeneration is documented by imaging within the prior 12 months (magnetic resonance imaging, computed tomography or myelography)</li> <li>Cervical degenerative disc disease is from C3 through C7</li> <li>The individual is free from contraindication to artificial cervical intervertebral disc implantation</li> </ul>		
Subsequent artificial	Subsequent implantation of a second artificial cervical		
cervical intervertebral disc	intervertebral disc at an adjacent level (contiguous to a		
implantation	previous placed artificial disc) may be considered medically necessary if the above criteria are met for each disc level, and the device is FDA-approved for 2 levels (e.g., Mobi-C, Prestige LP) and the initial cervical artificial disc implantation is fully healed.		

Surgery	Investigational	
Artificial cervical	Cervical artificial intervertebral disc implantation is considered	
intervertebral disc	investigational for all other indications, including the	
implantation	following:	
	Active infection	
	<ul> <li>Anatomical deformity (e.g., ankylosing spondylitis)</li> </ul>	
	Cervical artificial disc at one level combined simultaneously	
	with cervical spinal fusion at another level (adjacent or	
	nonadjacent; aka hybrid surgery)	
	Disc implantation at more than 2 levels	
	Malignancy	
	Metabolic bone disease (e.g., osteoporosis, osteopenia,	
	osteomalacia)	
	Presence of facet arthritis	
	Previous fusion at another cervical level	
	Prior surgery at the treated level	
	Rheumatoid arthritis or other autoimmune disease	
	Translational instability	

#### **Documentation Requirements**

The following information must be submitted to ensure an accurate, expeditious, and complete review for artificial intervertebral disc implantation:

- Specific procedures requested with related procedure/diagnosis codes and identification of disc level(s) for surgery and device to be implanted
- Clinical notes that include a current history and physical exam
- Detailed documentation of extent and response to non-operative conservative therapy, if applicable, including outcomes of any procedural interventions, medications used and physical therapy/physiatrist notes
- Copy of radiologist's report(s) for diagnostic imaging (MRIs, CTs, etc.) completed within the past 12 months.

## Coding

Code	Description
СРТ	
0098T	Revision including replacement of total disc arthroplasty (artificial disc), anterior approach, each additional interspace; cervical
22856	Total disc arthroplasty (artificial disc), anterior approach, including discectomy with end plate preparation (includes osteophytectomy for nerve root or spinal cord decompression and microdissection); single interspace, cervical
22858	Total disc arthroplasty (artificial disc), anterior approach, including discectomy with end plate preparation (includes osteophytectomy for nerve root or spinal cord decompression and microdissection; second level, cervical
22861	Revision including replacement of total disc arthroplasty (artificial disc), anterior approach, single interspace; cervical

**Note**: CPT codes, descriptions and materials are copyrighted by the American Medical Association (AMA). HCPCS codes, descriptions and materials are copyrighted by Centers for Medicare Services (CMS).

## **Related Information**

#### **Definition of Terms**

American Society of Anesthesiologists (ASA) Score:



- **ASA 1** A normal healthy patient.
- **ASA 2** A patient with mild systemic disease.
- **ASA 3** A patient with severe systemic disease.
- **ASA 4** A patient with severe systemic disease that is a constant threat to life.
- **ASA 5** A moribund patient who is not expected to survive

**Cervical myelopathy:** Loss of function in the upper and lower extremities due to compression of the spinal cord within the neck.

**Cervical radiculopathy:** Persistent neck pain that radiates into the shoulder/arm in a dermatomal/single nerve pattern, or progressive weakness caused by irritation or injury near the root of a spinal nerve in the neck. The North American Spine Society describes the most common clinical findings as arm pain, neck pain, scapular or periscapular pain, and paresthesias, numbness and sensory changes, weakness, or abnormal deep tendon reflexes in the arm.

#### **New York Heart Association (NYHA) Classification:**

**Class I** No symptoms and no limitation in ordinary physical activity, e.g., shortness of breath when walking, climbing stairs etc.

**Class II** Mild symptoms (mild shortness of breath and/or angina) and slight limitation during ordinary activity.

**Class III** Marked limitation in activity due to symptoms, even during less-than-ordinary activity, e.g., walking short distances (20–100 m). Comfortable only at rest.

**Class IV** Severe limitations. Experiences symptoms even while at rest. Mostly bedbound patients

**Subsidence:** Sinking or settling in bone, for example from a prosthetic component of an implant.

#### **Evidence Review**

## Description

Several prosthetic devices are currently available for cervical disc arthroplasty. Cervical disc arthroplasty is proposed as an alternative to anterior cervical discectomy and fusion for individuals with symptomatic cervical degenerative disc disease.



## Background

## Cervical Degenerative Disc Disease

Cervical degenerative disc disease (DDD) is a manifestation of spinal spondylosis that causes deterioration of the intervertebral discs of the cervical spine. Symptoms of cervical DDD include arm pain, weakness, and paresthesias associated with cervical radiculopathy. Disc herniation, osteophytes, kyphosis, or instability that compress the spinal cord can result in myelopathy, which is manifested by subtle changes in gait or balance, and, in severe cases, leads to weakness in the arms or legs and numbness of the arms or hands. The prevalence of DDD secondary to cervical spondylosis increases with age. An estimated 60% of individuals older than 40 years have radiographic evidence of cervical DDD. By age 65, 95% of men and 70% of women have at least one degenerative change evident at the radiographic examination. It is estimated that approximately five million adults in the US are disabled to an extent by spine-related disorders, although only a small fraction of those are clear candidates for spinal surgery.

#### **Treatment**

Anterior cervical discectomy and fusion (ACDF) has historically been considered the definitive surgical treatment for symptomatic DDD of the cervical spine. The goals of ACDF are to relieve pressure on the spinal nerves (decompression) and to restore spinal column alignment and stability. Resolution of pain and neurologic symptoms may be expected in 80% to 100% of ACDF patients. ACDF involves an anterolateral surgical approach, decompression of the affected spinal level, discectomy, and placement of a PEEK (polyetheretherketone) or titanium interbody cage plus autograft or allograft of bone in the prepared intervertebral space to stimulate healing and eventual fusion between the vertebral endplates. A metal anterior cervical plate is attached to the adjoining vertebral bodies to stabilize the fusion site, maintain neck lordosis, and reduce the need for prolonged postoperative brace application that is needed following ACDF without an anterior plate. Although there may be slight differences between autograft and allograft bone sources in the postoperative rate of union, clinical studies have demonstrated similar rates of postoperative fusion (90% to 100%) and satisfactory outcomes using either bone source. Studies have suggested that altered adjacent-segment kinematics following fusion may lead to adjacent-level DDD and need for secondary surgery.

Cervical disc arthroplasty is proposed as an alternative to ACDF for individuals with symptomatic cervical DDD. In cervical disc arthroplasty, an artificial disc device is secured in the prepared intervertebral space rather than an interbody cage and/or bone. An anterior plate is not used to stabilize the adjacent vertebrae, and postsurgical external orthosis is usually not required. The



cervical disc arthroplasty was designed to maintain anatomic disc space height, normal segmental lordosis, and physiological motion patterns at the index and adjacent cervical levels. The potential to reduce the risk of adjacent-level DDD above or below a fusion site has been the major reason driving device development and use. Disc arthroplasty and ACDF have very similar surgical indications, primarily unremitting pain due to radiculopathy or myelopathy, weakness in the extremities, or paresthesia. However, the chief complaint in cervical disc arthroplasty candidates should be radicular or myelopathic symptoms in the absence of significant spondylosis or spondylolisthesis.

## **Summary of Evidence**

For individuals who have cervical radicular pain or myelopathy who receive single-level cervical disc arthroplasty, the evidence includes randomized controlled trials (RCTs) and meta-analyses of RCTs. Relevant outcomes are symptoms, morbid events, functional outcomes, quality of life, and treatment-related morbidity. At two-year follow-up, trials of all artificial cervical discs met noninferiority criteria compared to anterior cervical discectomy and fusion. Mid-term outcomes have been reported on five devices (Prestige ST, ProDisc-C, Bryan, Mobi-C, PCM [porous coated motion]). At four to five years, the trial results have been consistent with the continued noninferiority of cervical disc arthroplasty for clinical outcomes and lower cumulative reoperation rates. Seven-year follow-up of the Prestige, ProDisc-C, and Mobi-C pivotal trials continue to show lower secondary surgery rates, although this is not a consistent finding in other reports. Serious adverse events appear to be uncommon. Heterotopic ossification can occur in a substantial proportion of spinal segments with artificial intervertebral discs but does not appear to lead to a decline in clinical outcomes. The evidence to date shows outcomes that are at least as good as the standard treatment of anterior cervical discectomy and fusion. There have been no safety signals with discs approved by the US Food and Drug Administration (FDA) for single-level cervical disc arthroplasty. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have cervical radicular pain or myelopathy who receive 2-level cervical disc arthroplasty of the cervical spine, the evidence includes RCTs. Relevant outcomes are symptoms, morbid events, functional outcomes, quality of life, and treatment-related morbidity. FDA approval of Simplify Cervical Disc and Prestige LP for implantation at two levels was based on superiority to 2-level ACDF in overall success at two years. The increase in overall success rates at two years has been maintained for those individuals who have reached the 10-year follow-up. At two- and four-year follow-ups, the first artificial cervical disc approved for 2 levels (Mobi-C) was found to be superior to ACDF for Neck Disability Index (NDI) scores, NDI success rates,



reoperation rates, and overall success composite outcome. At five years, trial results were consistent with the continued superiority of 2-level cervical disc arthroplasty for clinical outcomes and lower cumulative reoperation rates. Adjacent-segment degeneration with Mobi-C was found in a significantly lower percentage of individuals compared with 2-level ACDF patients. Based on this evidence, it can be concluded that 2-level cervical disc arthroplasty with either of these FDA-approved discs is at least as beneficial as the established alternative. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

## **Ongoing and Unpublished Clinical Trials**

Some currently ongoing and unpublished trials that might influence this policy are listed in **Table 1**.

**Table 1. Summary of Key Trials** 

NCT No.	Trial Name	Planned Enrollment	Completion Date
Ongoing			
NCT05691231 <sup>a</sup>	Long-Term Assessment of the Safety and Performance of the NuVasive Simplify Disc at Two Levels	158	May 2029
NCT05740176 <sup>a</sup>	The Synergy Disc for the Treatment of 2 Level Cervical Degenerative Disc Disease Compared With Cervical Fusion Surgery	200	Dec 2025
NCT05489822ª	PMCF Study to Evaluate the VERTICALE Cervical System in Spine Surgery According to Its Intended Use.	20	Apr 2026
NCT04520776 <sup>a</sup>	A Multicenter, Prospective, Randomized, Clinical Trial Comparing the Safety and Effectiveness of the BAGUERAC Cervical Disc Prosthesis to the Mobi-C Cervical Disc for the Treatment of Patients With Symptomatic Cervical Disc Disease at a Single Level	284	Feb 2026
NCT04564885 <sup>a</sup>	A Multicenter, Prospective, Randomized, Clinical Trial Comparing the Safety and Effectiveness of the BAGUERAC Cervical Disc Prosthesis to the Mobi-C Cervical Disc for the Treatment of Patients With Symptomatic Cervical Disc Disease at Two Contiguous Levels	300	Oct 2025



NCT No.	Trial Name	Planned Enrollment	Completion Date
NCT03367052	Clinical and Radiological Outcomes of a 7-year Follow-up, Multi-center, Prospective, Randomized, Controlled Trial: Two-level Cervical ProDisc-C Vivo Versus Hybrid Construct.	542	Dec 2025
NCT04469231 <sup>a</sup>	A Multi-Center, Prospective, Historically Controlled Pivotal Trial Comparing The Safety And Effectiveness Of The Synergy Disc To Anterior Cervical Discectomy And Fusion In Patients With One-Level Symptomatic Cervical Degenerative Disc Disease (DDD)	175	Jan 2026
Unpublished			
NCT03123549 <sup>a</sup>	Clinical Study Protocol for the Investigation Of The Two Level Simplify Cervical Artificial Disc	182	Mar 2022
NCT02667067 <sup>a</sup>	Clinical Study Protocol for the Investigation Of The Simplify Cervical Artificial Disc	150	Jul 2021

NCT: national clinical trial

# Clinical Input from Physician Specialty Societies and Academic Medical Centers

While the various physician specialty societies and academic medical centers may collaborate with and make recommendations during this process, through the provision of appropriate reviewers, input received does not represent an endorsement or position statement by the physician specialty societies or academic medical centers, unless otherwise noted.

## **2015 Input**

In response to requests, input was received from three physician specialty societies and two academic medical centers while this policy was under review in 2015. There was agreement that cervical disc replacement may be medically necessary under specified conditions. Likewise, there was agreement that combined use of an artificial disc and fusion over two levels was investigational. Input was mixed regarding the medical necessity of 2-level artificial intervertebral disc arthroplasty.



<sup>&</sup>lt;sup>a</sup> Denotes industry-sponsored or cosponsored trial

## 2009 Input

In response to requests, input was received from two physician specialty societies and two academic medical centers while this policy was under review in 2009. Input did not support the conclusion that artificial intervertebral disc arthroplasty is investigational.

#### **Practice Guidelines and Position Statements**

The purpose of the following information is to provide reference material. Inclusion does not imply endorsement or alignment with the policy conclusions.

Guidelines or position statements will be considered for inclusion if they were issued by, or jointly by, a US professional society, an international society with US representation, or the National Institute for Health and Care Excellence (NICE). Priority will be given to guidelines that are informed by a systematic review, include strength of evidence ratings, and include a description of management of conflict of interest.

## International Society for the Advancement of Spine Surgery

In 2021, the International Society for the Advancement of Spine Surgery issued a position statement on cervical and lumbar disc replacement.<sup>49</sup> Based on a review of the available evidence-based scientific literature, the Society "strongly supports both cervical and lumbar total disc replacements, including multi-level use as approved by the FDA, as safe and effective treatment alternatives to fusion in appropriately selected patients. FDA study guidelines and labelling regarding inclusion and exclusion criteria should be followed for use."

#### National Institute for Health and Care Excellence

In 2010, the NICE issued guidance on the artificial cervical disc, concluding that<sup>50</sup>:

"Current evidence on the efficacy of prosthetic intervertebral disc replacement in the cervical spine shows that this procedure is at least as efficacious as fusion in the short term and may result in a reduced need for revision surgery in the long term. The evidence raises no particular safety issues that are not already known in relation to fusion procedures. ...



This procedure should only be carried out in specialist units where surgery of the cervical spine is undertaken regularly.

NICE encourages further research into prosthetic intervertebral disc replacement in the cervical spine. Research outcomes should include long-term data on preservation of mobility, occurrence of adjacent segment disease and the avoidance of revision surgery."

## **Medicare National Coverage**

A search of the Medicare National Database identified a national coverage determination on artificial intervertebral discs for the lumbar spine but not for the cervical spine.<sup>51</sup>

## **Regulatory Status**

In 2007, the Prestige ST Cervical Disc (Medtronic) was approved by the FDA through the premarket approval (PMA) process as a class III device. The Prestige ST Cervical Disc is composed of stainless steel and is indicated in skeletally mature individuals for reconstruction of the disc from C3 through C7 following single-level discectomy. The device is implanted using an open anterior approach. Intractable radiculopathy and/or myelopathy should be present, with at least one of the following items producing symptomatic nerve root and/or spinal cord compression as documented by patient history (e.g., pain [neck and/or arm pain], functional deficit, and/or neurologic deficit) and radiographic studies (e.g., magnetic resonance imaging, computed tomography, x-rays): herniated disc and/or osteophyte formation. The FDA required Medtronic (the Prestige disc manufacturer) to conduct a seven-year post approval clinical study of the safety and function of the device and a five-year enhanced surveillance study to more fully characterize adverse events in a broader patient population.

Another disc arthroplasty product, the ProDisc-C (Synthes Spine), was approved by the FDA through the premarket approval process in 2007. As with the Prestige ST Cervical Disc, the FDA approval of ProDisc-C was made conditional on seven-year follow-up of the 209 subjects included in the noninferiority trial, seven-year follow-up of 99 continued-access subjects, and a five-year enhanced surveillance study to characterize more fully adverse events when the device is used under general conditions of use. The ProDisc C Vivo is currently marketed by Centinel Spine.

More recently, continued FDA approval requires completion of two post-approval studies. One study provides extended follow-up of the premarket pivotal cohort out to seven years. The

second study provides ten-year enhanced surveillance of adverse event data. Continued approval is contingent on submission of annual reports, which include the number of devices sold, heterotopic ossification, device malfunction, device removal, other serious device-related complications, and analysis of all explanted discs.

Devices with FDA approval for use in the United States are described in **Table 2**. These devices are for one site or two contiguous sites, there are no devices approved for non-contiguous sites.

Product Code: MJO

Table 2. Cervical Disc Prostheses Approved for Use in the United States

Prosthesis	Manufacturer	Characteristics	FDA Approval	Year
Prestige ST	Medtronic	Stainless steel	P060018	2007
ProDisc-C	Centinel Spine	2 metal (cobalt-chromium alloy) endplates and a polyethylene insert	P070001	2007
Bryan Cervical Disc	Medtronic Sofamor Danek	2 titanium-alloy shells encasing a polyurethane nucleus	P060023	2009
PCM Cervical Disc	NuVasive	PCM is a semi-constrained device consisting of 2 metal (cobalt- chromium alloy) endplates and a polyethylene insert	P100012	2012
SECURE-C	Globus Medical	Semi-constrained device with 2 metal (cobalt-chromium molybdenum alloy) endplates and a polyethylene insert	P100003	2012
Mobi-C	Zimmer Biomet (previously LDR Spine)	Semi-constrained device with metal (cobalt-chromium alloy) endplates and a polyethylene insert. Approved for both 1 and 2- levels.	P110002/P110009	2013
Prestige LP	Medtronic Sofamor Danek	Titanium-ceramic composite with a metal-on-metal bearing;	P090029	2014/2016

		approved for both 1- and 2- levels.		
M6-C	Orthofix (previously Spinal Kinetics)	Ultra-high molecular weight polyethylene weaved fiber creating a matrix (artificial annulus) within a sheath and titanium alloy endplates.	P170036	2019
Simplify Cervical Artificial Disc	NuVasive (previously Simplify Medical)	PEEK endplates and a mobile ceramic core; MRI compatible.	P200022/S003	2020/2021

FDA: US Food and Drug Administration; MRI: magnetic resonance imaging; PEEK: polyetheretherketone.

#### References

- Vernon H, Mior S. The Neck Disability Index: a study of reliability and validity. J Manipulative Physiol Ther. Sep 1991; 14(7): 409-15. PMID 1834753
- 2. Hu Y, Lv G, Ren S, et al. Mid- to Long-Term Outcomes of Cervical Disc Arthroplasty versus Anterior Cervical Discectomy and Fusion for Treatment of Symptomatic Cervical Disc Disease: A Systematic Review and Meta-Analysis of Eight Prospective Randomized Controlled Trials. PLoS One. 2016; 11(2): e0149312. PMID 26872258
- 3. Zhai S, Li A, Li X, et al. Total disc replacement compared with fusion for cervical degenerative disc disease: A systematic review of overlapping meta-analyses. Medicine (Baltimore). May 2020; 99(19): e20143. PMID 32384498
- 4. Burkus JK, Traynelis VC, Haid RW, et al. Clinical and radiographic analysis of an artificial cervical disc: 7-year follow-up from the Prestige prospective randomized controlled clinical trial: Clinical article. J Neurosurg Spine. Oct 2014; 21(4): 516-28. PMID 25036218
- Sasso RC, Anderson PA, Riew KD, et al. Results of cervical arthroplasty compared with anterior discectomy and fusion: four-year clinical outcomes in a prospective, randomized controlled trial. J Bone Joint Surg Am. Sep 21 2011; 93(18): 1684-92. PMID 21938372
- 6. Phillips FM, Geisler FH, Gilder KM, et al. Long-term Outcomes of the US FDA IDE Prospective, Randomized Controlled Clinical Trial Comparing PCM Cervical Disc Arthroplasty With Anterior Cervical Discectomy and Fusion. Spine (Phila Pa 1976). May 15 2015; 40(10): 674-83. PMID 25955086
- 7. Coric D, Kim PK, Clemente JD, et al. Prospective randomized study of cervical arthroplasty and anterior cervical discectomy and fusion with long-term follow-up: results in 74 patients from a single site. J Neurosurg Spine. Jan 2013; 18(1): 36-42. PMID 23140129
- 8. Davis RJ, Nunley PD, Kim KD, et al. Two-level total disc replacement with Mobi-C cervical artificial disc versus anterior discectomy and fusion: a prospective, randomized, controlled multicenter clinical trial with 4-year follow-up results. J Neurosurg Spine. Jan 2015; 22(1): 15-25. PMID 25380538
- Hisey MS, Bae HW, Davis RJ, et al. Prospective, Randomized Comparison of Cervical Total Disk Replacement Versus Anterior Cervical Fusion: Results at 48 Months Follow-up. J Spinal Disord Tech. May 2015; 28(4): E237-43. PMID 25310394



- Janssen ME, Zigler JE, Spivak JM, et al. ProDisc-C Total Disc Replacement Versus Anterior Cervical Discectomy and Fusion for Single-Level Symptomatic Cervical Disc Disease: Seven-Year Follow-up of the Prospective Randomized U.S. Food and Drug Administration Investigational Device Exemption Study. J Bone Joint Surg Am. Nov 04 2015; 97(21): 1738-47. PMID 26537161
- 11. Zhang HX, Shao YD, Chen Y, et al. A prospective, randomised, controlled multicentre study comparing cervical disc replacement with anterior cervical decompression and fusion. Int Orthop. Dec 2014; 38(12): 2533-41. PMID 25209344
- 12. Latka D, Kozlowska K, Miekisiak G, et al. Safety and efficacy of cervical disc arthroplasty in preventing the adjacent segment disease: a meta-analysis of mid- to long-term outcomes in prospective, randomized, controlled multicenter studies. Ther Clin Risk Manag. 2019; 15: 531-539. PMID 30992666
- 13. Toci GR, Canseco JA, Patel PD, et al. The Incidence of Adjacent Segment Pathology After Cervical Disc Arthroplasty Compared with Anterior Cervical Discectomy and Fusion: A Systematic Review and Meta-Analysis of Randomized Clinical Trials. World Neurosurg. Apr 2022; 160: e537-e548. PMID 35085804
- 14. Deng Y, Li G, Liu H, et al. Mid- to long-term rates of symptomatic adjacent-level disease requiring surgery after cervical total disc replacement compared with anterior cervical discectomy and fusion: a meta-analysis of prospective randomized clinical trials. J Orthop Surg Res. Oct 12 2020; 15(1): 468. PMID 33046082
- 15. Peng Z, Hong Y, Meng Y, et al. A meta-analysis comparing the short- and mid- to long-term outcomes of artificial cervical disc replacement(ACDR) with anterior cervical discectomy and fusion (ACDF) for the treatment of cervical degenerative disc disease. Int Orthop. Jul 2022; 46(7): 1609-1625. PMID 35113188
- 16. Mummaneni PV, Burkus JK, Haid RW, et al. Clinical and radiographic analysis of cervical disc arthroplasty compared with allograft fusion: a randomized controlled clinical trial. J Neurosurg Spine. Mar 2007; 6(3): 198-209. PMID 17355018
- 17. Gornet MF, Burkus JK, Shaffrey ME, et al. Cervical disc arthroplasty with PRESTIGE LP disc versus anterior cervical discectomy and fusion: a prospective, multicenter investigational device exemption study. J Neurosurg Spine. Nov 2015; 23(5): 558-573. PMID 26230424
- 18. Murrey D, Janssen M, Delamarter R, et al. Results of the prospective, randomized, controlled multicenter Food and Drug Administration investigational device exemption study of the ProDisc-C total disc replacement versus anterior discectomy and fusion for the treatment of 1-level symptomatic cervical disc disease. Spine J. Apr 2009; 9(4): 275-86. PMID 18774751
- 19. Heller JG, Sasso RC, Papadopoulos SM, et al. Comparison of BRYAN cervical disc arthroplasty with anterior cervical decompression and fusion: clinical and radiographic results of a randomized, controlled, clinical trial. Spine (Phila Pa 1976). Jan 15 2009; 34(2): 101-7. PMID 19112337
- 20. Hisey MS, Bae HW, Davis R, et al. Multi-center, prospective, randomized, controlled investigational device exemption clinical trial comparing Mobi-C Cervical Artificial Disc to anterior discectomy and fusion in the treatment of symptomatic degenerative disc disease in the cervical spine. Int J Spine Surg. 2014; 8. PMID 25694918
- U.S. Food and Drug Administration (FDA). Summary of Safety and Effectiveness Data (SSED): Mobi-C. 2013; https://www.accessdata.fda.gov/cdrh\_docs/pdf11/P110002b.pdf. Accessed May 13, 2024.
- 22. Phillips FM, Lee JY, Geisler FH, et al. A prospective, randomized, controlled clinical investigation comparing PCM cervical disc arthroplasty with anterior cervical discectomy and fusion. 2-year results from the US FDA IDE clinical trial. Spine (Phila Pa 1976). Jul 01 2013; 38(15): E907-18. PMID 23591659
- 23. Vaccaro A, Beutler W, Peppelman W, et al. Clinical outcomes with selectively constrained SECURE-C cervical disc arthroplasty: two-year results from a prospective, randomized, controlled, multicenter investigational device exemption study. Spine (Phila Pa 1976). Dec 15 2013; 38(26): 2227-39. PMID 24335629
- 24. U.S. Food and Drug Administration (FDA). Summary of Safety and Effectiveness Data (SSED): SECURE-C. 2012; https://www.accessdata.fda.gov/cdrh\_docs/pdf10/P100003b.pdf. Accessed May 13, 2024.
- U.S. Food and Drug Administration (FDA). Summary of Safety and Effectiveness: M6-C Artificial Cervical Disc. 2019. https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpma/pma.cfm?id=P170036. Accessed May 13, 2024.



- 26. Phillips FM, Coric D, Sasso R, et al. Prospective, multicenter clinical trial comparing M6-C compressible six degrees of freedom cervical disc with anterior cervical discectomy and fusion for the treatment of single-level degenerative cervical radiculopathy: 2-year results of an FDA investigational device exemption study. Spine J. Feb 2021; 21(2): 239-252. PMID 33096243
- U.S. Food and Drug Administration (FDA) Summary of Safety and Effectiveness: Simplify Cervical Artificial Disc. https://www.accessdata.fda.gov/cdrh\_docs/pdf20/P200022S003B.pdf. Accessed May 13, 2024.
- 28. Burkus JK, Haid RW, Traynelis VC, et al. Long-term clinical and radiographic outcomes of cervical disc replacement with the Prestige disc: results from a prospective randomized controlled clinical trial. J Neurosurg Spine. Sep 2010; 13(3): 308-18. PMID 20809722
- 29. Delamarter RB, Murrey D, Janssen ME, et al. Results at 24 months from the prospective, randomized, multicenter Investigational Device Exemption trial of ProDisc-C versus anterior cervical discectomy and fusion with 4-year follow-up and continued access patients. SAS J. 2010; 4(4): 122-8. PMID 25802660
- 30. Zigler JE, Delamarter R, Murrey D, et al. ProDisc-C and anterior cervical discectomy and fusion as surgical treatment for single-level cervical symptomatic degenerative disc disease: five-year results of a Food and Drug Administration study. Spine (Phila Pa 1976). Feb 01 2013; 38(3): 203-9. PMID 23080427
- 31. Delamarter RB, Zigler J. Five-year reoperation rates, cervical total disc replacement versus fusion, results of a prospective randomized clinical trial. Spine (Phila Pa 1976). Apr 20 2013; 38(9): 711-7. PMID 23124255
- 32. Lavelle WF, Riew KD, Levi AD, et al. Ten-year Outcomes of Cervical Disc Replacement With the BRYAN Cervical Disc: Results From a Prospective, Randomized, Controlled Clinical Trial. Spine (Phila Pa 1976). May 01 2019; 44(9): 601-608. PMID 30325888
- 33. Hisey MS, Zigler JE, Jackson R, et al. Prospective, Randomized Comparison of One-level Mobi-C Cervical Total Disc Replacement vs. Anterior Cervical Discectomy and Fusion: Results at 5-year Follow-up. Int J Spine Surg. 2016; 10: 10. PMID 27162712
- 34. Radcliff K, Davis RJ, Hisey MS, et al. Long-term Evaluation of Cervical Disc Arthroplasty with the Mobi-C© Cervical Disc: A Randomized, Prospective, Multicenter Clinical Trial with Seven-Year Follow-up. Int J Spine Surg. 2017; 11(4): 31. PMID 29372135
- 35. Sasso WR, Ye J, Foley DP, et al. 20-year Clinical Outcomes of Cervical Disk Arthroplasty: A Prospective, Randomized, Controlled Trial. Spine (Phila Pa 1976). Jan 01 2024; 49(1): 1-6. PMID 37644726
- 36. Foley DP, Sasso WR, Ye JY, et al. Twenty-Year Radiographic Outcomes Following Single-Level Cervical Disc Arthroplasty: Results From a Prospective Randomized Controlled Trial. Spine (Phila Pa 1976). Mar 01 2024; 49(5): 295-303. PMID 38018773
- 37. Coric D, Guyer RD, Bae H, et al. Prospective, multicenter study of 2-level cervical arthroplasty with a PEEK-on-ceramic artificial disc. J Neurosurg Spine. Apr 01 2022: 1-11. PMID 35364570
- 38. U.S. Food and Drug Administration. Summary of Safety and Effectiveness: Prestige LP Cervical Disc. PMA Number P090029/S003. 2016; https://www.accessdata.fda.gov/cdrh\_docs/pdf9/p090029s003b.pdf. Accessed May 13, 2024.
- 39. Davis RJ, Kim KD, Hisey MS, et al. Cervical total disc replacement with the Mobi-C cervical artificial disc compared with anterior discectomy and fusion for treatment of 2-level symptomatic degenerative disc disease: a prospective, randomized, controlled multicenter clinical trial: clinical article. J Neurosurg Spine. Nov 2013; 19(5): 532-45. PMID 24010901
- 40. Radcliff K, Coric D, Albert T. Five-year clinical results of cervical total disc replacement compared with anterior discectomy and fusion for treatment of 2-level symptomatic degenerative disc disease: a prospective, randomized, controlled, multicenter investigational device exemption clinical trial. J Neurosurg Spine. Aug 2016; 25(2): 213-24. PMID 27015130
- 41. U.S. Food and Drug Administration (FDA). Report of United States Clinical Study Results (G010188) -- Prestige LP Cervical Disc System. 2014; https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpma/pma.cfm?id=P090029 Accessed May 13, 2024
- 42. Gornet MF, Lanman TH, Burkus JK, et al. Two-level cervical disc arthroplasty versus anterior cervical discectomy and fusion: 10-year outcomes of a prospective, randomized investigational device exemption clinical trial. J Neurosurg Spine. Jun 21 2019: 1-11. PMID 31226684
- 43. Bae HW, Kim KD, Nunley PD, et al. Comparison of Clinical Outcomes of 1- and 2-Level Total Disc Replacement: Four-Year Results From a Prospective, Randomized, Controlled, Multicenter IDE Clinical Trial. Spine (Phila Pa 1976). Jun 01 2015; 40(11): 759-66. PMID 25785955



- 44. Huppert J, Beaurain J, Steib JP, et al. Comparison between single- and multi-level patients: clinical and radiological outcomes 2 years after cervical disc replacement. Eur Spine J. Sep 2011; 20(9): 1417-26. PMID 21336970
- 45. Staub LP, Ryser C, Röder C, et al. Total disc arthroplasty versus anterior cervical interbody fusion: use of the Spine Tango registry to supplement the evidence from randomized control trials. Spine J. Feb 2016; 16(2): 136-45. PMID 26674445
- 46. MacDowall A, Skeppholm M, Lindhagen L, et al. Artificial disc replacement versus fusion in patients with cervical degenerative disc disease with radiculopathy: 5-year outcomes from the National Swedish Spine Register. J Neurosurg Spine. Nov 02 2018; 30(2): 159-167. PMID 30485205
- 47. Chen J, Wang X, Bai W, et al. Prevalence of heterotopic ossification after cervical total disc arthroplasty: a meta-analysis. Eur Spine J. Apr 2012; 21(4): 674-80. PMID 22134486
- 48. Nunley PD, Cavanaugh DA, Kerr EJ, et al. Heterotopic Ossification After Cervical Total Disc Replacement at 7 Years-Prevalence, Progression, Clinical Implications, and Risk Factors. Int J Spine Surg. Jun 2018; 12(3): 352-361. PMID 30276092
- 49. Schroeder GD, Vaccaro AR, Divi SN, et al. 2021 Position Statement From the International Society for the Advancement of Spine Surgery on Cervical and Lumbar Disc Replacement. Int J Spine Surg. Feb 2021; 15(1): 37-46. PMID 33900955
- 50. National Institute for Health and Care Excellence (NICE). Prosthetic intervertebral disc replacement in the cervical spine [IPG341]. 2010; https://www.nice.org.uk/guidance/ipg341. Accessed May 13, 2024.
- 51. Centers for Medicare & Medicaid Services. National Coverage Determination (NCD) for Lumbar Artificial DISC Replacement (LADR) (150.10). 2007; https://www.cms.gov/medicare-coverage-database/details/ncd-details.aspx?NCDId=313&ncdver=2&CoverageSelection=National&KeyWord=disc&KeyWordLookUp=Title&KeyWordSearchType=And&from2=search.asp&bc=gAAAACAAAAAAAAA3d%3d&. Accessed May 13, 2024.

## History

Date	Comments
08/11/15	New Policy. Replaces policy 7.01.537. Also added definitions of cervical myelopathy and cervical radiculopathy. ICD-9 procedure code 84.61 added.
01/08/16	Minor update. CPT code 0092T, deleted 12/31/14, removed from policy. No other changes.
10/01/16	Annual Review, approved September 13, 2016. New policy statement added that 2-level cervical disc replacement may be considered medically necessary when criteria are met. Policy updated with literature review through June 2016; references added, updated and/or removed. Policy statement added as noted.
07/01/17	Annual Review, approved June 6, 2017. Policy moved into new format. Policy updated with literature review through February 23, 2017; Rationale revised, some references removed. Policy statements unchanged.
03/01/18	Interim Review, approved February 27, 2018. Note added that this policy has been revised. Added Surgery Site of Service criteria, which becomes effective June 1, 2018.
06/01/18	Minor update; removed note and link to updated policy. Surgery Site of Service criteria becomes effective.



Date	Comments	
07/01/18	Annual Review, approved June 12, 2018. Policy updated with literature review through February 2018; no references added. Medical necessity policy statement revised to include subsequent implantation of a second artificial cervical intervertebral disc at an adjacent level (contiguous to a previous placed artificial disc) when criteria are met. Investigational statements prior artificial disc placement and replacement at another cervical level removed. Prior artificial disc placement at another cervical level changed.	
02/01/19	Minor update, updated title of related policy 7.01.560.	
05/01/19	Minor update, clarified Site of Service requirements.	
07/01/19	Annual Review, approved June 20, 2019. Policy updated with literature review through February 2019; no references added. M6-C Artificial Cervical Disc was added to the list of single level FDA approved devices. Otherwise, policy statements unchanged. Removed CPT code 22864.	
04/01/20	Delete policy, approved March 10, 2020. This policy will be deleted effective July 2, 2020, and replaced with InterQual criteria for dates of service on or after July 2, 2020.	
06/10/20	Interim Review, approved June 9, 2020, effective June 10, 2020. This policy is reinstated immediately and will no longer be deleted or replaced with InterQual criteria on July 2, 2020.	
08/01/20	Annual Review, approved July 23, 2020. Policy updated with literature review through March, 2020; references added. Rationale changed to tabular format. Change in terminology from 'artificial intervertebral disc arthroplasty of the cervical spine' to 'cervical disc arthroplasty'.	
01/01/21	Minor correction only made to Documentation Requirement section – no other changes.	
02/01/21	Policy Criteria previously listed the PrestigeLP device as FDA approved for two contiguous levels only. Added PrestigeLP to FDA approved for level one to accurately reflect the device is FDA approved for both levels.	
07/01/21	Annual Review, approved June 1, 2021. Policy updated with literature review through March 11, 2021; references added. Policy statements unchanged. Removed CPT code 0375T termed 1/1/2020.	
08/01/21	Interim Review, approved July 22, 2021. Clarified language regarding hybrid cervical artificial disc and fusion.	
09/01/21	Interim Review, added Simplify to FDA approved list of cervical artificial discs; overlooked during annual review.	
04/01/22	Interim Review, approved March 21, 2022. Minor edits to list of examples of one and two level cervical artificial discs. Removed CPT code 0095T.	
07/01/22	Annual Review, approved June 13, 2022. Policy updated with literature review through March 1, 2022; reference added. Policy statements unchanged.	



Date	Comments
11/04/22	Minor update. Updated the manufacturer name listed in the policy statement from
	Spinal Kinetics LLC to its current name Orthofix for clarity. Intent unchanged.
07/01/23	Annual Review, approved June 12, 2023. Policy updated with literature review through
	March 3, 2023; references added. Minor editorial refinements to policy statements;
	intent unchanged. Changed the wording from "patient" to "individual" throughout the
	policy for standardization.
07/01/24	Annual Review, approved June 10, 2024. Policy updated with literature review through
	February 27, 2024; references added. Policy statements unchanged.

**Disclaimer**: This medical policy is a guide in evaluating the medical necessity of a particular service or treatment. The Company adopts policies after careful review of published peer-reviewed scientific literature, national guidelines and local standards of practice. Since medical technology is constantly changing, the Company reserves the right to review and update policies as appropriate. Member contracts differ in their benefits. Always consult the member benefit booklet or contact a member service representative to determine coverage for a specific medical service or supply. CPT codes, descriptions and materials are copyrighted by the American Medical Association (AMA). ©2024 Premera All Rights Reserved.

**Scope**: Medical policies are systematically developed guidelines that serve as a resource for Company staff when determining coverage for specific medical procedures, drugs or devices. Coverage for medical services is subject to the limits and conditions of the member benefit plan. Members and their providers should consult the member benefit booklet or contact a customer service representative to determine whether there are any benefit limitations applicable to this service or supply. This medical policy does not apply to Medicare Advantage.

