



# Medical Coverage Policy

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## Discography

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#### INSTRUCTIONS FOR USE

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### Overview

This Coverage Policy addresses discography, also referred to as stimulation discography, or a discogram, an invasive diagnostic tool used to characterize the anatomical structure of the intervertebral disc and determine if a specific disc is causing back pain.

### Coverage Policy

**Lumbar provocative discography, including post discography computed tomography (CT) assessment, is considered medically necessary for the preoperative evaluation of discogenic back pain, when ALL of the following criteria for a single level lumbar fusion have been met:**

- unremitting pain with significant functional impairment of at least twelve months duration
- failure of at least six (6) consecutive months of structured\*, physician-supervised conservative medical management, which includes **ALL** of the following components:
  - exercise, including core stabilization exercises
  - nonsteroidal and/or steroidal medication (unless contraindicated)
  - physical therapy, including passive and active treatment modalities
  - activity/lifestyle modification

- participation in three (3) or more individual or group cognitive behavioral therapy (CBT) sessions provided by a licensed healthcare professional, with competence in principles and practice of CBT, (e.g., PT, OT, psychiatrist, psychologist, social worker, psychiatric nurse, other licensed professional) that include ALL of the following elements:
  - disease education
  - activity and lifestyle modification
  - stress management (stress management typically also includes strategies to deal with emotions such as fear, anxiety, sadness that can interfere with pain management)
- complex imaging studies (e.g., computed tomography [CT] scan or magnetic resonance imaging [MRI] scan) do not conclusively demonstrate single level degenerative disc disease as the likely cause of pain
- statement from a primary care physician, neurologist, physiatrist, psychiatrist, psychologist, or other licensed behavioral and/or other medical healthcare provider attesting to the absence of untreated, underlying mental health conditions/issues (e.g., depression, drug and alcohol abuse) as a major contributor to chronic pain

**\*Note: Structured medical management consists of medical care that is delivered through regularly scheduled appointments, including follow-up evaluation, with licensed healthcare professionals.**

**Lumbar discography (e.g., provocative discography, stimulation discography) with or without CT assessment, is considered not medically necessary when performed in connection with ANY other procedure in the lumbar spine, OR in anticipation of any procedure that has been determined to be experimental, investigational or unproven, including, but not limited to ANY of the following:**

- intradiscal electrothermal therapy (IDET™)
- disc nucleoplasty, decompression nucleoplasty, or Coblation® Nucleoplasty™
- laser discectomy (e.g., percutaneous, laparoscopic)
- intradiscal injections (e.g., platelet rich plasma, steroid, hyaluronic acid)

**Lumbar provocative discography, with or without CT assessment, is considered not medically necessary for ANY other indication.**

**The following discography procedures are each considered experimental, investigational or unproven:**

- cervical discography
- thoracic discography
- functional anesthetic discography (FAD)
- contrast disc analysis mapping

## General Background

Low back pain is the most common musculoskeletal problem in the world, and the leading cause of activity limitation and work absenteeism. It is estimated that globally, over 577 million people experience low back pain, and that it is more prevalent in women compared to men (8.01% versus 7.47%, respectively). Low back pain is found in individuals of all ages, and peaks between the ages of 45 and 49 (Wu, et al., 2020a; Duthey, 2013). Risk factors for chronic back pain include obesity, smoking, and a sedentary lifestyle. Persons with lower socioeconomic, employment, and/or educational status are also at a higher risk for chronic low back pain (Karran, et al., 2020).

### Provocative Discography

Provocative discography is an invasive diagnostic spine procedure that involves the administration of contrast into the nucleus pulposus of an intervertebral disc. Discography provides direct radiographic information concerning the nuclear morphological characteristics of the vertebral endplates and annulus. It provides a method of directly relating radiograph images to a patient's pain. Abnormalities of the vertebral disc and internal

disruption of the annulus have been considered sources of low back pain. Authors propose that discography identifies the primary pain generator causing back pain when other spinal diagnostic procedures have failed to identify the source, and allows for targeted intervention. Established alternatives to discography for diagnosing back pain include plain radiographs, spine magnetic resonance imaging (MRI) or spine computed tomography (CT).

Discography involves the injection of radiographic contrast into the nucleus of an intervertebral disc. The injection of contrast dye allows for the determination of intradiscal pressures. The pressures and volume of contrast can be used to determine the integrity of the inner and outer annuli. Changes in volume and pressure result in direct stimulation of the nerve endings within the fibers of the disc. Authors contend that discography induces pain as a result of the increased pressure from the contrast material, neurochemical stimulation and/or an increase in intervertebral pressure.

The standard for determining that a discogram is positive (i.e., abnormal discogram) is the occurrence of pain that is similar to or exactly like the patient's clinical pain provoked with the injection of dye, accompanied by an abnormal radiographic image of the disc (Gardocki and Park, 2021). These imaging patterns may be described as cotton ball, lobular, irregular, fissured, or ruptured. Cotton ball and lobular imaging patterns are typically considered normal, while irregular, fissured, and ruptured patterns display progressive degeneration (Devlin, 2021). However, some published studies differ in the definition of an abnormal discogram; as a result, the technique and interpretation of the discogram must also be closely evaluated when assessing outcomes.

Discography is a provocative clinical test and is typically not used as a baseline imaging study; the procedure is indicated for assessment of pain that is chronic in nature and unresponsive to other conservative measures. The test is typically performed in combination with CT scans. Post-discography CT scanning provides additional information about the exact pattern of the spread of contrast through or out of the disc space. Combined with anteroposterior and lateral radiographs, CT scanning allows the disc to be viewed in three planes. Surgery may be precluded by failing to find a painful disc on discography, finding multiple painful discs or indeterminate results (Thiyagarajah, et al., 2021).

Discography has been proven to be a safe procedure although there are associated risks. Risks and complications include disc space infection (discitis), nerve root injury, subarachnoid puncture, urticaria, bleeding, nucleus pulposus pulmonary embolism, nausea, increased pain, and spinal headache. Acute lumbar disc herniation as a result of discography has been reported (Poynton, et al., 2005). The procedure is contraindicated for patients with dye sensitivity, spinal cord compression, prior fusion at the level being studied, or who have current local infections (Gardocki and Park, 2021; Stretanski and Vu, 2021). While older studies reported findings of disc disease progression post-discography, results from more recent studies have shown discography does not lead to acceleration of degenerative disc disease or disc herniation (Karaarslan, et al., 2019; McCormick, et al., 2019).

In clinical practice, a majority of discograms are performed to evaluate the lower three lumbar discs (Peh, 2005). Provocative discography is less frequently performed to assess cervical or thoracic disc pain. The approach for thoracic discography is similar to lumbar. Cervical discography is approached anteriorly rather than posteriorly. The technique for cervical discography is the same as for thoracic and lumbar.

Discography has been proposed for use prior to or in conjunction with various minimally invasive procedures to treat back pain, including intradiscal electrothermal therapy (IDET), nucleoplasty, laser discectomy, and intradiscal injections. Presently there is insufficient evidence in the published medical literature to demonstrate the safety, efficacy, and long term outcomes of these procedures. Please reference Cigna Medical Coverage policy "Minimally Invasive Spine Surgery Procedures and Trigger Point Injections" for additional information.

### **Cervical Discography**

Cervical discography requires an anterior approach and has been recommended for patients with persistent neck pain without localized neurological findings when standard imaging studies are negative. Potential complications are related to the surrounding anatomy and include injury to the trachea, esophagus, carotid artery, discitis, spinal cord injury and pneumothorax.

There is very limited evidence in the form of case series and published systematic reviews that lend some support to safety, low complication rates, and clinical utility of cervical discography for the evaluation of discogenic pain in select patients (Onyewu, et al., 2012; Buenaventura et al., 2007; Shah, et al., 2005; Zheng, et al., 2004; Grubb, and Kelly, 2000; Ohnmeiss, et al., 2000).

Manchikanti et al. (2018) published a systematic review of the diagnostic accuracy of lumbar, cervical, and thoracic discography. As part of the review the authors reviewed eight studies which met their inclusion criteria, five assessed lumbar discography (strength of evidence level 3) and three studies assessed cervical discography (strength of evidence level 4). For cervical and thoracic discography the available literature and value and validity continues to be low.

The results of a systematic review evaluating cervical discography concluded that despite a paucity of evidence and discrepancy among studies, the diagnostic accuracy of cervical discography has moderate validity and moderate predictive value based on modified United States Preventive Services Task Force (USPSTF) criteria (Manchikanti, et al., 2009a). This conclusion is based on Level II-2 evidence which is evidence obtained from at least one properly designed small diagnostic accuracy study. For this systematic review, the authors reviewed a total of 33 studies, three studies which met the inclusion criteria utilizing IASP (International Association for the Study of Pain) criteria: provocation discography with control discs and involving patients with chronic pain of at least three months duration.

**Professional Society/Organizations:** The International Society of Interventional Pain Physicians published guidelines regarding interventional techniques used for the management of chronic spinal pain (Manchikanti, et al., 2013a; Manchikanti, et al., 2009c; Boswell et al., 2007; Manchikanti et al., 2003). Within the most recent guideline, regarding diagnostic interventions, the authors note there is concern about false-positive results and cited prevalence rates exceeding 50%. The guidelines state that cervical discography is indicated to test the diagnostic hypothesis of discogenic pain of the cervical spine in individuals who have been properly selected and screened to eliminate other sources of cervical pain”.

Within the American College of Radiology (ACR) Appropriateness Criteria for Cervical Neck Pain or Cervical Radiculopathy (ACR, 2018) the ACR notes the use of provocative injections in the cervical spine to identify pain is controversial. Plain radiographs MR imaging and CT myelography are more appropriate. Discography is not recommended.

In 2019 the North American Spine Society (NASS) issued a coverage policy recommendation for discography (NASS, 2019). According to the recommendation cervical discography is indicated in “the presence of pain and some functional disability for a period of at least 6 months despite conservative therapy. This pain needs to be in a location that could reasonably be caused by the disc (i.e., axial neck or low back, with or without somatic referred pain). In addition, the suspected source of pain identified through other diagnostic imaging testing (e.g., MRI, myelography, CT) needs to be investigated and confirmed and that new or different treatment will be instituted based on the results of the discography. At this time, there are few treatments that would be indicated by a positive discography result; therefore, judicious use of this procedure is indicated.” The authors note there is some concern regarding the lack of a standard grading system, as well as the paucity of evidence published and that since facet-mediated pain is more prevalent than discogenic pain in the cervical spine, facet-mediated pain should be ruled-out with medial branch blocks prior to performing discography in the cervical spine. A disc is considered positive only if stimulation of the target disc reproduces concordant pain with a 7/10 on a visual analogue modified 10 point scale or 70% of most severe pain the patient experiences and at least one adjacent disc that does not produce pain or produces non-concordant pain with a low volume injection.

There is limited published evidence evaluating cervical discography. While there is some evidence in the form of case series and systematic reviews to support some utility for cervical discography, evidence from well-designed controlled trials is lacking. There is much debate regarding false-positive results and concerns regarding safety. The current evidence in the published peer-reviewed scientific literature is insufficient and does not lead to strong conclusions regarding clinical utility. Furthermore, what effect, if any, cervical discography has on surgical treatment for discogenic type pain has yet to be proven.

## **Thoracic Discography**

Thoracic discography is considered by some providers to be useful in clinical practice for the assessment of thoracic, chest, and upper abdominal pain. Similar to cervical discography, potential complications are related to the surrounding anatomy of the thoracic spine and include pneumothorax, spinal trauma, discitis and bleeding. The evidence supporting the safety and utility of thoracic discography is even more limited than cervical discography, consisting mainly of a few case series and systematic reviews (Buenaventura, et al., 2007; Shah, et al., 2005; Wood, et al., 1999). Within a recent systematic review published by Manchikanti et al. (2018) evaluating lumbar, cervical and thoracic discography, the authors reported the evidence for thoracic discography was nonexistent. Included in the authors search were only studies utilizing controlled discography with IASP standards or analgesic discography and only the studies with appropriate assessment and statistical evaluation for diagnostic prevalence.

**Professional Societies/Organizations:** The International Society of Interventional Pain Physicians has published guidelines for interventional techniques in the management of chronic spinal pain (Manchikanti, et al., 2013a; Manchikanti, et al., 2009c; Boswell et al., 2007; Manchikanti et al., 2003). Within this practice guideline among the diagnostic interventions, the authors reported that the evidence supporting thoracic discography is limited and very few authors have studied the procedure; however the procedure may be indicated to determine if an intervertebral disc is painful or not. The evidence reviewed for the 2013 updated guideline was based on evidence from two moderate quality studies; there was no recent literature included in the update.

Similar to cervical discography, the evidence evaluating thoracic discography is limited and does not lead to strong conclusions regarding safety and clinical utility. Currently the evidence is insufficient to support the clinical value of thoracic discography.

### **Lumbar Discography**

The clinical value of lumbar discography is also widely debated. The diagnosis of discogenic pain due to disc degeneration, internal disc disruption or annular tears, for example, is considered difficult and controversial by many authors. Not all patients with disc disease experience pain. In addition, it is reported that the ability of patients to separate spinal pain from nonspinal sources of lumbar pain may be questionable (Carragee, et al., 1999). Early published data showed high (37%) false-positive rates in a group of asymptomatic patients; however, more recent authors have reported lower false-positive rates. Several systematic reviews and case studies have been published evaluating lumbar discography. Although there is no general consensus regarding validity of discography as a diagnostic tool, authors generally agree that lumbar discography is an appropriate diagnostic test with some clinical utility for patients with low back pain, particularly when lumbar surgery is being considered, and when noninvasive diagnostic tests are inconclusive. Further, advances in procedural technique, standardized protocol, and patient selection have significantly reduced procedural risks and rates of false positive results (Gardocki and Park, 2021).

The medical literature suggests the predictive value of provocative discography on surgical outcomes has not yet been firmly established. Discography is often performed prior to arthrodesis, minimally invasive surgery and other intradiscal surgeries. Arthrodesis (spinal fusion) is a surgical method of controlling low back pain attributable to abnormal or unstable vertebrae and pain due to mechanical degeneration and is indicated when degenerative disc disease is limited to a single level. However it has been reported there was no difference in operative outcome between groups of subjects who had preoperative discography and those who did not (Madan et al., 2002). Discography has also been recommended for use prior to minimally invasive surgeries for patients with contained disc herniation; discography may define disc containment for those candidates (Guyer and Ohnmeiss, 2003). Discography is also routinely performed in combination with intradiscal electrothermal therapy (IDET) as a treatment for disc pain; however, the long-term results of IDET remain unknown.

**Literature Review:** Evidence in the published medical literature evaluating lumbar discography consists of systemic reviews, meta-analyses, technology assessments, prospective and retrospective clinical trials, randomized trials, and published reviews (Wu, et al., 2020b; Xi, et al., 2016; Margetic, et al., 2013; Manchikanti, et al., 2013a; Manchikanti, et al., 2013b; Manchikanti, et al., 2009a; Wolfer, et al., 2008; Buenaventura et al., 2007; Carragee, et al., 2006; Carragee, et al., 2005; Shah, et al., 2005; Cohen, et al., 2005; Guyer and Ohnmeiss, 2003). Many studies lack control groups and randomization. There is no general consensus regarding the clinical utility of lumbar discography; some authors have evaluated diagnostic accuracy and reported the evidence is strong to moderate for discography as an imaging tool for the evaluation of chronic low

back pain (Manchikanti, et al, 2009a; Buenaventura et al., 2007; Shah, et al., 2005) although Carragee et al. (2005) reported diagnostic accuracy is not high and discography has a calculated positive predictive value of 50-60%. Cohen et al. (2005) reported discography is less accurate than MRI in diagnosing herniated nucleus pulposus, although comparable or slightly more sensitive in detecting degenerative disc disease. As demonstrated in a systematic review by Manchikanti et al., (2013b) the evidence supporting diagnostic accuracy of provocation discography, after controlling for various factors which included methodological flaws, lack of standardization, and the absence of well-designed studies, is fair (according to USPSTF criteria: [good, fair, limited or poor]). According to a systematic review published by Manchikanti et al (2018) "lumbar provocation discography performed according to the IASP criteria may be a useful tool for evaluating chronic lumbar discogenic pain. Based on modified best evidence synthesis, the indicated strength of evidence was Level III for lumbar discography."

In other studies, authors have been concerned about reliability and false-positive results (Wolfer, et al., 2008; Carragee, et al., 2005); some authors have reported high false-positive rates, and others have reported zero false-positive rates. When performed in asymptomatic subjects, the pain provoked by discography cannot be compared to clinical or typical pain; therefore, some studies cannot address true false-positive rates. The patients provoked pain must be similar to the patient's clinical pain for the test to be considered positive.

Additionally, the ability of discography to improve surgical outcomes has yet to be proven (Cohen, et al., 2005) and studies comparing surgical outcomes between patients who have had discography preoperatively with those who have not are few. It is postulated that identification of a diseased disc as a generator of pain can improve clinical outcomes through better selection of candidates and therapies. In addition it may reduce the likelihood that discs which are not pain generators, are inappropriately treated (Manchikanti, et al., 2009b). When comparing outcomes of fusion procedures lumbar discography is sensitive but lacks specificity (Thiyagarajah, et al., 2021).

The effect of discography on progression of disc degeneration has also gained interest. Carragee et al. (2009) published the results of a prospective matched cohort study evaluating disc degenerative progression over 10 years with (n=50) and without baseline discography (n=52, control). Magnetic resonance imaging was obtained at baseline and at 7-10 years follow-up. The authors noted more frequent and greater degenerative findings, including herniation, end-plate changes, disc grade progression, and annular fissures in the discography group when compared to the matched control group. The authors also noted greater loss of disc height and loss of disc signal in the discography group following annular puncture and injection. In the author's opinion, careful consideration of risk and benefit should be used when recommending procedures involving disc puncture. In 2016 Cueller et al. reported on the comparative incidence of lumbar spine surgery, clinical imaging events, and low back disability events in subjects exposed to discography compared with control subjects over a 10-year follow-up period. At 10-year follow-up, 57 discography subjects and 53 control subjects were able to be included in the final analysis. The authors reported there were 16 lumbar surgeries in the discography group, compared with four in the control group. Medical visits, CT/MRI examinations, work loss, and prolonged back pain episodes were all more frequent in the discography group compared with control subjects (Cueller, et al., 2016).

In an assessment of discography for diagnosis of low back pain, Hayes reviewed seven studies involving sample populations from 36-310 subjects. Comparisons included discography versus no discography prior to surgery (four studies); both groups received discography, then underwent either surgical treatment or nonsurgical management (two studies); pretest/posttest study comparing surgeons' decisions prior to versus after receiving information regarding discography results (one study). Outcomes were measured using Oswestry Disability Index (ODI) scores, quality of life scores (QOL), and change in decision regarding surgery. Follow-up range was six months to six years. Hayes acknowledged the body of evidence is small in size and low in quality and suggests that discography does not lead to improved health outcomes in patients with low back pain being considered for surgery. Two studies suggest discography can lead to serious complications in the long term, including accelerated disc degeneration and increased likelihood of lumbar surgery. According to the authors overall, there is very little evidence supporting the clinical utility of discography (Hayes, 2019).

Evidence in the medical literature does support the use of discography for the following selected conditions (Stretanski and Vu, 2021; Thiyagarajah, et al., 2021; Guyer and Ohnmeiss, 2003):

- for further evaluation of demonstrably abnormal discs when required to assess the extent of the abnormality or correlation of the abnormality with clinical symptoms
- for patients with persistent, severe symptoms in whom other diagnostic tests have failed to reveal clear confirmation of a suspected disc as the source of pain
- for assessment of patients who have failed to respond to previous surgical interventions (i.e., to detect pseudoarthrosis or a symptomatic disc in a posteriorly fused segment and to evaluate for recurrent disc herniation)
- for assessment of discs before fusion
- for assessment of minimally invasive surgical candidates to confirm a contained disc herniation or to investigate dye distribution pattern before chemonucleolysis or other percutaneous procedures

**Professional Societies/Organizations:** The American Pain Society introduced a clinical practice guideline (Chou, et al., 2009) for interventional therapies, surgery, and interdisciplinary rehabilitation for low back pain. The guideline recommendations are based on a systematic review of evidence from randomized controlled trials. According to the guideline, based on moderate-quality evidence, in patients with nonradicular low back pain provocative discography was not recommended as a procedure for diagnosing discogenic low back pain. In addition the authors note the diagnostic accuracy remains uncertain, false-positives can occur in persons without low back pain, and its use has not been shown to improve clinical outcomes.

The International Society of Interventional Pain Physicians published guidelines for interventional techniques in the management of chronic spinal pain (Manchikanti, et al., 2013b; Manchikanti, et al., 2009c; Boswell et al., 2007; Manchikanti et al., 2003). Based on the authors' review of the evidence the recommendations for lumbar provocation discography include appropriate indications with patients with low back pain to prove the diagnostic hypothesis of the discogenic pain specifically after exclusion of other sources of lumbar pain only when a treatment is available.

The American College of Radiology (ACR) published updated guidelines of appropriateness criteria for low back pain (ACR, 2021). The ACR concluded that, although controversial, there was fair evidence supporting the usefulness of lumbar discography for patients with chronic discogenic low back pain, however its use as an initial diagnostic tool in acute uncomplicated low back pain or chronic low back pain without prior management was not supported.

The American Association of Neurological Surgeons/Congress of Neurological Surgeons Joint Section on Disorders of the Spine and Peripheral Nerves published updated guidelines regarding the performance of fusion procedures for degenerative disease of the lumbar spine (Eck, et al., 2014). According to one of these guidelines it is recommended that lumbar discography not be used as a stand-alone test on which treatment decisions are based for patients with low back pain. If discography is performed as a diagnostic tool to identify the source of the patient's low back pain, it is recommended that both a concordant pain response and morphological abnormalities be present at the pathological level prior to initiating any treatment directed at that level. The authors noted that it is possible an association exists between progression of degenerative disc disease and the performance of a provocative discography study; as a result individuals should be counseled regarding potential development prior to undergoing the test.

In the 2020 guideline on the diagnosis and treatment of low back (lumbar spine) pain, the North American Spine Society (NASS) addressed four clinical questions specific to the use of discography. The findings and associated recommendations were as follows (Kreiner, et al., 2020):

- High-level evidence that provocative discography without manometric measurements correlated with pain reproduction in the presence of moderate to severe disc degeneration on MRI/CT discography (Grade of Recommendation: A [Good evidence])
- High-level evidence that provocative discography without manometric pressure measurements correlated with the presence of endplate abnormalities on MRI imaging (Grade of Recommendation: A)

- Conflicting evidence that pressure controlled provocative discography correlates with nuclear transverse relaxation time (T2) signal intensity on magnetic resonance imaging (MRI) in patients with low back pain (Grade of Recommendation: I [Insufficient or conflicting evidence])
- Conflicting evidence that provocative discography without manometric pressure measurements correlates with the presence of a high-intensity zone (HIZ) on MRI imaging (Grade of Recommendation: I)

In 2019 the North American Spine Society (NASS) issued a coverage policy recommendation for discography (NASS, 2019). According to the recommendation lumbar discography is indicated in “the presence of pain and some functional disability for a period of at least 6 months despite conservative therapy. This pain needs to be in a location that could reasonably be caused by the disc (i.e., axial neck or low back, with or without somatic referred pain). In addition, the suspected source of pain identified through other diagnostic imaging testing (e.g., MRI, myelography, CT) needs to be investigated and confirmed and that new or different treatment will be instituted based on the results of the discography. At this time, there are few treatments that would be indicated by a positive discography result; therefore, judicious use of this procedure is indicated.”

### **Functional Anesthetic Discography (FAD)**

Functional anesthetic discography is a diagnostic procedure that involves injecting an anesthetic agent directly into a spinal disc. Proponents suggest functional anesthetic discography can be used to confirm the presence of injured discs as the source of the patient’s low back pain symptoms. According to the manufacturer, functional anesthetic discography is designed to diagnose and potentially treat low back pain caused by degenerative disc disease. Although techniques may vary, during this procedure, under light sedation and x-ray guidance, a small catheter is inserted into the suspected disc and anchored in place with a small balloon. After recovering from light sedation, the patient is asked to engage in physical activity to reproduce pain. Local anesthetic is then injected in the disc believed to be causing the patient’s pain. In some cases, administration of intradiscal steroid injection has been proposed in addition to the anesthetic. Reduction in pain is considered diagnostic. If the injection into a specific disc relieves the patient’s back pain, the disc can be further evaluated for potential treatment. If the test does not relieve the patient’s pain, the physician can investigate other possible causes of pain.

The FAD™ System (originally developed by InnoSpine, Inc., Palo Alto, CA, and later acquired by Kyphon Inc., Sunnyvale, CA) received 510(k) approval through the U.S. Food and Drug Administration (FDA) in April 2005 (FDA, K043500) as a Class II device. According to the FDA, the intended use of the system is to deliver either a single dose or continuous administration of radiopaque contrast, local anesthetics, and/or saline solution to the intradiscal space. In April 2007 and February 2008, the Discyphor Catheter System (Kyphon, Inc., Sunnyvale, CA), a more recent update to the FAD System, was cleared by the FDA.

Although researchers are presently investigating the use of functional anesthetic discography for diagnosing discogenic pain, there is insufficient evidence in the published, peer-reviewed scientific literature to support safety and efficacy at this time. Manchikanti and colleagues (2013b) published an update of the systematic review of the accuracy and utility of lumbar discography in chronic low back pain and reported there was limited evidence supporting FAD or provocation discography with local anesthetic injection. NASS concluded in their coverage policy recommendations for discography that currently, there is not enough high-quality literature available to support the use of functional anesthetic discography (Kreiner, et al., 2020; NASS, 2019).

### **Contrast Disc Analysis Mapping**

The addition of 3-D image post-processing, reconstruction and/or mapping of data with markers have been investigated as a method of improving the accuracy and predictive value of discography. However, there is insufficient evidence in the peer-reviewed, published scientific literature to support improved diagnostic utility as compared to standard, established provocative discography.

### **Use Outside of the US**

No relevant information.



## Medicare Coverage Determinations

	Contractor	Policy Name/Number	Revision Effective Date
NCD		No National Coverage Determination found	
LCD		No Local Coverage Determination found	

Note: Please review the current Medicare Policy for the most up-to-date information.

## Coding/Billing Information

- Note:** 1) This list of codes may not be all-inclusive.  
 2) Deleted codes and codes which are not effective at the time the service is rendered may not be eligible for reimbursement.

### Lumbar Discography

**Considered Medically Necessary when criteria in the applicable policy statements listed above are met:**

CPT®* Codes	Description
62290	Injection procedure for discography, each level; lumbar
62292	Injection procedure for chemonucleolysis, including discography, intervertebral disc, single or multiple levels, lumbar
72295	Discography, lumbar, radiological supervision and interpretation

**Considered Experimental/Investigational/Unproven when used to report cervical or thoracic discography, functional anesthetic discography (FAD) or contrast disc analysis mapping:**

CPT®* Codes	Description
62291	Injection procedure for discography, each level; cervical or thoracic
64999	Unlisted procedure, nervous system
72285	Discography, cervical or thoracic, radiological supervision and interpretation
77003	Fluoroscopic guidance and localization of needle or catheter tip for spine or paraspinal diagnostic or therapeutic injection procedures (epidural or subarachnoid) (List separately in addition to code for primary procedure)

\*Current Procedural Terminology (CPT®) ©2020 American Medical Association: Chicago, IL.

## References

1. Alamin TF, Kim MJ, Agarwal V. Provocative lumbar discography versus functional anesthetic discography: a comparison of the results of two different diagnostic techniques in 52 patients with chronic low back pain. Spine J. 2011 Aug;11(8):756-65.
2. American College of Radiology (ACR). ACR Appropriateness Criteria®: Cervical Neck Pain or Cervical Radiculopathy. Revised 2018. Accessed September 14, 2021. Available at URL address: <https://www.acr.org/Clinical-Resources/ACR-Appropriateness-Criteria>
3. American College of Radiology (ACR). ACR Appropriateness Criteria®: Low Back Pain. Revised 2021. Accessed September 14, 2021. Available at URL address: <https://www.acr.org/Clinical-Resources/ACR-Appropriateness-Criteria>
4. Anderson MW. Lumbar discography: an update. Semin Roentgenol. 2004 Jan;39(1):52-67.

5. Bernard TN Jr. Lumbar discography followed by computed tomography. Refining the diagnosis of low-back pain. *Spine*. 1990 Jul;15(7):690-707.
6. Boswell MV, Shah RV, Everett CR, Sehgal N, et al. Evidence-based practice guidelines in the management of chronic spinal pain. *Pain Phys*. 2007 Jan;10(1):7-111.
7. Buenaventura RM, Shah RV, Patel V, Benyamin R, Singh V. Systematic review of discography as a diagnostic test for spinal pain: an update. *Pain Physician*. 2007 Jan;10(1):147-64.
8. Carragee EJ, Alamin TF, Carragee JM. Low-Pressure Positive Discography in Subjects Asymptomatic of Significant Low Back Pain Illness. *Spine*. 2006 Mar;31(5):505-9.
9. Carragee EJ, Don AS, Hurwitz EL, Cuellar JM, Carrino JA, Herzog R. 2009 ISSLS Prize Winner: Does discography cause accelerated progression of degeneration changes in the lumbar disc: a ten-year matched cohort study. *Spine (Phila Pa 1976)*. 2009 Oct 1;34(21):2338-45.
10. Carragee EJ, Hannibal M. Diagnostic evaluation of low back pain. *Orthop Clin N Am*. 2004 Jan;35(1):7-16.
11. Carragee EJ, Lincoln T, Parmar VS, Alamin T. A gold standard evaluation of the "discogenic pain" diagnosis as determined by provocative discography. *Spine*. 2006 Aug 15;31(18):2115-23.
12. Carragee EJ; Tanner CM; Khurana S; Hayward C; Welsh J; Date E; Truong T; Rossi M; Hagle C. The rates of false-positive lumbar discography in select patients without low back symptoms. *Spine*. 2000 Jun;25(11):1373-80; discussion 1381.
13. Carragee EJ, Tanner CM, Yang B, Brito JL, Truong T. False-positive findings on lumbar discography. Reliability of subjective concordance assessment during provocative disc injection. *Spine*. 1999 Dec;24(23):2542-7.
14. Centers for Medicare and Medicaid Services (CMS). Local Coverage Determinations (LCDs) alphabetical index. Accessed September 14, 2021. Available at URL address: <https://www.cms.gov/medicare-coverage-database/indexes/lcd-alphabetical-index.aspx>
15. Centers for Medicare and Medicaid Services (CMS). National Coverage Determinations (NCDs) alphabetical index. Accessed September 14, 2021. Available at URL address: <https://www.cms.gov/medicare-coverage-database/indexes/ncd-alphabetical-index.aspx>.
16. Chen Y, Tang T, Erdek MA. Advanced Image-Guided Procedures for Painful Spine. *Neuroimaging Clin N Am*. 2019 Nov;29(4):553-561.
17. Chou R, Fu R, Dana T, Pappas M, Hart E, Mauer KM. Interventional Treatments for Acute and Chronic Pain: Systematic Review. Comparative Effectiveness Review No. 247. (Prepared by the Pacific Northwest Evidence-based Practice Center under Contract No. 75Q80120D00006.) AHRQ Publication No. 21-EHC030. Rockville, MD: Agency for Healthcare Research and Quality; September 2021.
18. Chou R, Loeser J, Owens D, Rosenquist R, Atlas S, Baisden J, et al. Interventional therapies, surgery, and interdisciplinary rehabilitation for low back pain: an evidence-based clinical practice guideline from the American Pain Society. *Spine*. 2009 May 1;34(10):1066-77.
19. Cohen SP, Larkin TM, Barna SA, Palmer WE, Hecht AC, Stojanovic MP. Lumbar discography: a comprehensive review of outcome studies, diagnostic accuracy, and principles. *Reg Anesth Pain Med*. 2005 Mar-Apr;30(2):163-83.

20. Cuellar JM, Stauff MP, Herzog RJ, Carrino JA, Baker GA, Carragee EJ. Does provocative discography cause clinically important injury to the lumbar intervertebral disc? A 10-year matched cohort study. *Spine J.* 2016 Mar;16(3):273-80.
21. Derby R, Kim BJ, Lee SH, Chen Y, Seo KS, Aprill C. Comparison of discographic findings in asymptomatic subject discs and the negative discs of chronic LBP patients: can discography distinguish asymptomatic discs among morphologically abnormal discs? *Spine J.* 2005 Jul-Aug;5(4):389-94.
22. Derby R, Lee SH, Kim BJ, Chen Y, Aprill C, Bogduk N. Pressure-controlled discography in volunteers without low back symptoms. *Pain Med.* 2005 May-Jun;6(3):213-21; discussion 222-4.
23. Devlin VJ. Chapter 16: Diagnostic and Therapeutic Spinal Injections. In Devlin, ed.: *Spine Secrets*, 3rd ed. Elsevier; 2021:159-168.
24. Duthey B. Update on 2004 Background Paper, BP 6.24 Low back pain. Geneva: World Health Organization; 2013.
25. Eck JC, Sharan A, Resnick DK, Watters WC 3rd, Ghogawala Z, Dailey AT, et al. Guideline update for the performance of fusion procedures for degenerative disease of the lumbar spine. Part 6: discography for patient selection. *Neurosurg Spine.* 2014 Jul;21(1):37-41.
26. Fang C, Zhang W, Chen L, Li H. The correlation between the high-intensity zone on a T2-weighted MRI and positive outcomes of discography: A meta-analysis. *J Orthop Surg Res.* 2017;12(1):26.
27. Gardocki RJ, Park AL. Chapter 39: Degenerative Disorders of the Thoracic and Lumbar Spine. In Azar and Beaty, eds: *Campbell's Operative Orthopaedics*, 14<sup>th</sup> ed. Elsevier; 2021:1719-1801.
28. Gokaslan ZL, Desai A Utility of Provocative Discography. *World Neurosurg.* 2014 Feb 15.
29. Grubb SA, Kelly CK. Cervical discography: clinical implications from 12 years of experience. *Spine.* 2000 Jun 1;25(11):1382-9.
30. Gruver C, Guthmiller KB. Provocative discography. [Updated 2021 June 4]. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan. Accessed September 17, 2021. Available at URL address: <https://www.ncbi.nlm.nih.gov/books/NBK470389/>
31. Guyer RD, Ohnmeiss DD; North American Spine Society (NASS). Lumbar discography. *The Spine Journal.* 2003 May-Jun;3(3):11-27.
32. Hayes, Inc. Hayes Medical Technology Directory Report. The Clinical Utility of Lumbar Discography for Assessing Chronic Low Back Pain: Impact on Patient Management and Health Outcomes. Lansdale, PA: Hayes, Inc.; published September 7, 2017. Annual review October 22, 2018, November 12, 2019.
33. Humphreys SC. Neuroimaging in low back pain. *American Family Physician.* 2002 Jun;65(11):2299-306.
34. Karaarslan N, Yilmaz I, Ozbek H, et al. Are radio-contrast agents commonly used in discography toxic to the intact intervertebral disc tissue cells?. *Basic Clin Pharmacol Toxicol.* 2019;124(2):181-189.
35. Karran EL, Grant AR, Moseley GL. Low back pain and the social determinants of health: a systematic review and narrative synthesis. *Pain.* 2020;161(11):2476-2493.
36. Kreiner DS, Matz P, Bono CM, et al. Guideline summary review: an evidence-based clinical guideline for the diagnosis and treatment of low back pain. *Spine J.* 2020;20(7):998-1024.
37. Laslett M, Aprill CN, McDonald B, Oberg B. Clinical predictors of lumbar provocation discography: a study of clinical predictors of lumbar provocation discography. *Eur Spine J.* 2006 Feb 11;1:1-12.

38. Madan S, Gundanna M, Harley JM, Boeree NR, Sampson M. Does provocative discography screening of discogenic back pain improve surgical outcome? *J Spinal Disord Tech.* 2002 Jun;15(3):245-51.
39. Manchikanti L, Abdi S, Atluri S, Benyamin RM, Boswell M, Buenaventura RM, et al. An Update of Comprehensive Evidence-Based Guidelines for Interventional Techniques in Chronic Spinal Pain. Part II: Guidance and Recommendations. *Pain Physician* 2013a; 16:S49-S283.
40. Manchikanti L, Benyamin RM, Singh V, Falco FJ, Hameed H, Derby R, et al. An update of the systematic appraisal of the accuracy and utility of lumbar discography in chronic low back pain. *Pain Physician.* 2013b Apr;16(2 Suppl):SE55-95.
41. Manchikanti L, Boswell MV, Singh V, Benyamin RM, Fellows B, Abdi S, et al., Comprehensive evidence-based guidelines for interventional techniques in the management of chronic spinal pain. *International Society of Interventional Pain Physicians.* *Pain Physician* 2009c;12:699-802.
42. Manchikanti L, Datta S, Derby R, Wolfer LR, Benyamin RM, Hirsch JA; American Pain Society. A critical review of the American Pain Society clinical practice guidelines for interventional techniques: part 1. Diagnostic interventions. *Pain Physician.* 2010 May-Jun;13(3):E141-74.
43. Manchikanti L, Dunbar EE, Wargo BW, Shah RV, Derby R, Cohen SP. Systematic review of cervical discography as a diagnostic test for chronic spinal pain. *Pain Physician.* 2009a Mar-Apr;12(2):305-21.
44. Manchikanti L, Glaser SE, Wolfer L, Derby R, Cohen SP. Systematic review of lumbar discography as a diagnostic test for chronic low back pain. *Pain Physician.* 2009b May-Jun;12(3):541-59.
45. Manchikanti L, Soin A, Benyamin RM, et al. An Update of the Systematic Appraisal of the Accuracy and Utility of Discography in Chronic Spinal Pain. *Pain Physician.* 2018 Mar;21(2):91-110.
46. Manchikanti L, Staats PS, Singh V, et al. Evidence-based practice guidelines for interventional techniques in the management of chronic spinal pain. *Pain Physician.* 2003;6(1):3-81.
47. Margetic P, Pavic R, Stancic MF. Provocative discography screening improves surgical outcome. *Central European Journal of Medicine.* 2013 Oct;125(19-20):600-10.
48. McCormick ZL, Lehman VT, Plastaras CT, et al. Low-Pressure Lumbar Provocation Discography According to Spine Intervention Society/International Association for the Study of Pain Standards Does Not Cause Acceleration of Disc Degeneration in Patients With Symptomatic Low Back Pain: A 7-Year Matched Cohort Study. *Spine (Phila Pa 1976).* 2019;44(19):E1161-E1168.
49. McCutcheon ME, Thompson WC 3rd. CT scanning of lumbar discography. A useful diagnostic adjunct. *Spine.* 1986 Apr;11(3):257-9.
50. North American Spine Society (NASS). Discography. Coverage Policy Recommendations. Copyright © 2019 North American Spine Society.
51. Ohnmeiss DD, Guyer RD, Mason SL. The relation between cervical discographic pain responses and radiographic images. *Clin J Pain.* 2000 Mar;16(1):1-5.
52. Onyewu O, Manchikanti L, Falco FJ, et al. An update of the appraisal of the accuracy and utility of cervical discography in chronic neck pain. *Pain Physician.* 2012;15(6):E777-E806.
53. Peh WCG. Provocative discography: current status. *Biomed Imaging Interv J.* 2005;1(1):e2.
54. Poynton AR, Hinman A, Lutz G, Farmer JC. Discography-induced acute lumbar disc herniation. A report of five cases. *J Spinal Disord Tech.* 2005 Apr;18(2):188-92.

55. Pneumaticos SG, Reitman CA, Lindsey RW. Diskography in the evaluation of low back pain. *J Am Academy Orthop Surg*. 2006 Jan;14(1):46-55.
56. Resnick DK, Choudhri TF, Dailey AT, Groff MW, Khoo L, Matz PG, Mummaneni P, Watters WC 3rd, Wang J, Walters BC, Hadley MN. Guidelines for the performance of fusion procedures for degenerative disease of the lumbar spine. Part 6: magnetic resonance imaging and discography for patient selection for lumbar fusion. *J Neurosurg Spine*. 2005 Jun;2(6):662-9.
57. Resnick DK, Malone DG, Ryken TC. Guidelines for the use of discography for the diagnosis of painful degenerative lumbar disc disease. *Neurosurg Focus*. 2002 Oct;13(2)
58. Saboeiro GR. Lumbar discography. *Radiol Clin North Am*. 2009 May;47(3):421-33.
59. Santiago K, Cheng J, Jivanelli B, Lutz G. Infections Following Interventional Spine Procedures: A Systematic Review. *Pain Physician*. 2021;24(2):101-116.
60. Shah RV, Everett CR, McKenzie-Brown AM, Sehgal N. Discography as a diagnostic test for spinal pain: A systematic and narrative review. *Pain Physician*. 2005;8:187-209.
61. Shin DA, Kim HI, Jung JH, Shin DG, Lee JO. Diagnostic relevance of pressure-controlled discography. *J Korean Med Sci*. 2006 Oct;21(5):911-6.
62. Silber JS, Anderson DG, Vaccaro AR, Hillibrand AS, Simeone FA, Albert TJ. Pre-operative discography: appropriate indications and clinical interpretation. *The University of Pennsylvania Orthopedic Journal*. 2001;14:79-82.
63. Smith JS, Sidhu G, Bode K, Gendelberg D, Maltenfort M, Ibrahim D, Shaffrey CI, Vaccaro AR. Operative and Nonoperative Treatment Approaches for Lumbar Degenerative Disc Disease Have Similar Long-Term Clinical Outcomes Among Patients with Positive Discography. *World Neurosurg*. 2013 Sep 15. pii: S1878-8750(13)01111-X.
64. Staartjes VE, Vergroesen PA, Zeilstra DJ, Schröder ML. Identifying subsets of patients with single-level degenerative disc disease for lumbar fusion: the value of prognostic tests in surgical decision making. *Spine J*. 2018 Apr;18(4):558-566.
65. Stretanski MF, Vu L. Fluoroscopy Discography Assessment, Protocols, and Interpretation. In: *StatPearls*. Treasure Island (FL): StatPearls Publishing; July 17, 2021.
66. Thiyagarajah AR, Hord ED, Vallejo R. Discography. *Medscape*. Updated August 10, 2021. Accessed September 17, 2021. Available at URL address: <http://emedicine.medscape.com/article/1145703-overview>
67. Tomecek FJ, Anthony CS, Boxell C, Warren J. Discography interpretation and techniques in the lumbar spine. *Neurosurg Focus*. 2002 Aug;13(2):Article 13.
68. U.S. Food and Drug Administration (FDA). Discyphor™ Catheter System. 510(k) Summary. K063071 April 13, 2007. Accessed September 17, 2021. Available at URL address: <https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMN/pmnm.cfm>
69. U.S. Food and Drug Administration (FDA). Discyphor™ Catheter System. 510(k) Summary. K073516. February 21, 2008. Accessed September 14, 2021. Available at URL address: <https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMN/pmnm.cfm>

70. U.S. Food and Drug Administration (FDA). Functional Anaesthetic Discography System. 510(k) Summary. K043500. April 15, 2005. Accessed September 17, 2021. Available at URL address: <https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPMN/pmn.cfm>
71. Wieser ES, Wang JC. Surgery for neck pain. *Neurosurgery*. 2007 Jan;60(1 Suppl 1):S51-6.
72. Willems PC, Elmans L, Anderson PG, van der Schaaf DB, de Kleuver M. Provocative discography and lumbar fusion: is preoperative assessment of adjacent discs useful? *Spine*. 2007 May 1;32(10):1094-9; discussion 1100.
73. Wolfer LR, Derby R, Lee JE, Lee SH. Systematic review of lumbar provocation discography in asymptomatic subjects with a meta-analysis of false-positive rates. *Pain Physician*. 2008 Jul-Aug;11(4):513-38.
74. Wood KB, Schellhas KP, Garvey TA, Aeppli D. Thoracic discography in healthy individuals. A controlled prospective study of magnetic resonance imaging and discography in asymptomatic and symptomatic individuals. *Spine (Phila Pa 1976)*. 1999;24(15):1548-1555.
75. Wu PH, Kim HS, Jang IT. Intervertebral Disc Diseases PART 2: A Review of the Current Diagnostic and Treatment Strategies for Intervertebral Disc Disease. *Int J Mol Sci*. 2020b;21(6):2135. Published 2020 Mar 20.
76. Wu A, March L, Zheng X, et al. Global low back pain prevalence and years lived with disability from 1990 to 2017: estimates from the Global Burden of Disease Study 2017. *Ann Transl Med*. 2020a;8(6):299.
77. Xi MA, Tong HC, Fahim DK, Perez-Cruet M. Using Provocative Discography and Computed Tomography to Select Patients with Refractory Discogenic Low Back Pain for Lumbar Fusion Surgery. *Cureus*. 2016 Feb 27;8(2):e514.
78. Zheng Y, Liew SM, Simmons ED. Value of magnetic resonance imaging and discography in determining the level of cervical discectomy and fusion. *Spine*. 2004 Oct;29(19):2140-5, discussion 2146.
79. Zhou Y, Abdi S. Diagnosis and minimally invasive treatment of lumbar discogenic pain--a review of the literature. *Clin J Pain*. 2006 Jun;22(5):468-81.

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