

MEDICAL POLICY

POLICY TITLE	PARASPINAL SURFACE ELECTROMYOGRAPHY TO EVALUATE AND MONITOR BACK PAIN
POLICY NUMBER	MP-2.097

Original Issue Date (Created):	6/1/2015
Most Recent Review Date (Revised):	6/10/2020
Effective Date:	9/1/2020

[POLICY RATIONALE](#)
[DISCLAIMER](#)
[POLICY HISTORY](#)

[PRODUCT VARIATIONS](#)
[DEFINITIONS](#)
[CODING INFORMATION](#)

[DESCRIPTION/BACKGROUND](#)
[BENEFIT VARIATIONS](#)
[REFERENCES](#)

I. POLICY

Paraspinal surface electromyography (SEMG) is considered **investigational** as a technique to diagnose or monitor back pain as there is insufficient evidence to support a conclusion concerning the health outcomes or benefits associated with this procedure.

Cross-reference:

MP-2.063 Electromyography and Nerve Conduction Studies

II. PRODUCT VARIATIONS

[TOP](#)

This policy is only applicable to certain programs and products administered by Capital BlueCross please see additional information below, and subject to benefit variations as discussed in Section VI below.

III. DESCRIPTION/BACKGROUND

[TOP](#)

Back Pain

Back pain is a common condition that affects most individuals at some point in their lives. Identifying the pathogenesis of back pain is challenging, in part due to the complex anatomy of the back, which includes vertebrae, intervertebral discs, facet joints, spinal nerve roots, and numerous muscles. Back pain may be related to osteoarthritis, disc disease, spondylosis, or muscular pathologies, such as muscle strain or spasm. Moreover, due to referred pain patterns, the location of the pain may not be anatomically related to the pathogenesis of the pain. For example, buttock or leg pain may be related to pathology in the spine. In addition to the diagnostic challenges of back pain is the natural history of acute back pain.

Diagnosis

Aside from physical examination, diagnostic testing includes imaging technologies, such as magnetic resonance imaging, designed to identify pathology (e.g., bulging discs), or tests such as discography to localize the abnormality by reproducing the pain syndrome. However, these tests

MEDICAL POLICY

POLICY TITLE	PARASPINAL SURFACE ELECTROMYOGRAPHY TO EVALUATE AND MONITOR BACK PAIN
POLICY NUMBER	MP-2.097

lack specificity and must be carefully interpreted in the context of the clinical picture. For example, magnetic resonance imaging identifies 5% of asymptomatic patients as having bulging discs. However, the presence of a bulging disc may only be clinically significant if correlated with other symptoms. Assessment of the musculature may focus on range of motion or strength exercises.

In contrast to anatomic imaging, surface electromyography (SEMG), which records the summation of muscle activity from groups of muscles, has been investigated as a technique to evaluate the physiologic functioning of the back. A noninvasive procedure, SEMG differs from needle electromyography, an invasive procedure in which the electrical activity of individual muscles is recorded. Paraspinal SEMG has been explored to evaluate abnormal patterns of electrical activity in the paraspinal muscles in patients with back pain symptoms such as spasm, tenderness, limited range of motion, or postural disorders. The technique is performed using a single or an array of electrodes placed on the skin surface, with recordings made at rest, in various positions, or after a series of exercises. Recordings can also be made by using a handheld device, which is applied to the skin at different sites. Electrical activity is assessed by computer analysis of the frequency spectrum (ie, spectral analysis), amplitude, or root mean square of the electrical action potentials. In particular, a spectral analysis that focuses on the median frequency has been used to assess paraspinal muscle fatigue during isometric endurance exercises. Paraspinal SEMG has been researched as a technique to establish the etiology of back pain and has been used to monitor the response to therapy and establish physical activity limits, such as assessing capacity to lift heavy objects or ability to return to work.

Paraspinal SEMG is an office-based procedure that may be most commonly used by physiatrists or chiropractors. The following clinical applications of the paraspinal SEMG have been proposed:

- clarification of diagnosis (ie, muscle, joint, or disc disease)
- selection of a course of medical therapy
- selection of a type of physical therapy
- preoperative evaluation
- postoperative rehabilitation
- follow-up of acute low back pain
- evaluation of exacerbation of chronic low back pain
- evaluation of pain management treatment techniques

Treatment

Most cases of acute low back pain resolve with conservative therapy (eg, physical therapy) while continuing normal activities within limits permitted by the pain. Therefore, initial imaging or other diagnostic testing is generally not recommended unless “red flag” warning signs are present or the pain persists for more than 4 to 6 weeks. Red flag findings include significant trauma, history of cancer, unrelenting night pain, fevers or chills, and progressive motor or sensory deficits.

MEDICAL POLICY

POLICY TITLE	PARASPINAL SURFACE ELECTROMYOGRAPHY TO EVALUATE AND MONITOR BACK PAIN
POLICY NUMBER	MP-2.097

Regulatory Status

Surface electromyography (SEMG) devices approved by the U.S. Food and Drug Administration include those that use a single electrode or a fixed array of multiple surface electrodes. Examples include the CMAP Pro (Medical Technologies) and Model 9200 EMG System (Myotronics-Noromed).

Several U.S. Food and Drug Administration–approved devices combine SEMG along the spine with other types of monitors. For example, in 2007, the Insight Discovery (Fasstech) was cleared for marketing through the 510(k) process. The device contains six sensor types, one of which is for SEMG. The indications include measuring bilateral differences in SEMG along the spine and measuring SEMG along the spine during functional tasks. (Earlier Insight models had fewer sensors.) U.S. Food and Drug Administration product code: IKN.

IV. RATIONALE

[TOP](#)

Summary of Evidence

For individuals who have back pain who receive paraspinal surface electromyography (SEMG) for evaluation and monitoring, the evidence includes several nonrandomized studies on using findings to classify back pain. The relevant outcomes are test accuracy and validity, symptoms, functional outcomes, quality of life, and resource utilization. There have been no studies directly comparing SEMG with other noninvasive techniques for evaluating back pain, and standard criteria for normal and abnormal SEMG measurements have not been determined. SEMG has been proposed as a noninvasive technique providing objective measurements that would inform treatment decisions in patients with back pain. While studies have shown that SEMG results have detected different pathologies in patients with back pain, none of the studies reported health outcomes. There is also no data on the impact of SEMG for managing patients. The evidence is insufficient to determine the effects of the technology on health outcomes.

V. DEFINITIONS

[TOP](#)

N/A

VI. BENEFIT VARIATIONS

[TOP](#)

The existence of this medical policy does not mean that this service is a covered benefit under the member's health benefit plan. Benefit determinations should be based in all cases on the applicable health benefit plan language. Medical policies do not constitute a description of benefits. A member's health benefit plan governs which services are covered, which are excluded, which are subject to benefit limits and which require preauthorization. There are different benefit plan designs in each product administered by Capital BlueCross. Members and providers should consult the member's health benefit plan for information or contact Capital BlueCross for benefit information.

MEDICAL POLICY

POLICY TITLE	PARASPINAL SURFACE ELECTROMYOGRAPHY TO EVALUATE AND MONITOR BACK PAIN
POLICY NUMBER	MP-2.097

VII. DISCLAIMER

[TOP](#)

Capital BlueCross’s medical policies are developed to assist in administering a member’s benefits, do not constitute medical advice and are subject to change. Treating providers are solely responsible for medical advice and treatment of members. Members should discuss any medical policy related to their coverage or condition with their provider and consult their benefit information to determine if the service is covered. If there is a discrepancy between this medical policy and a member’s benefit information, the benefit information will govern. If a provider or a member has a question concerning the application of this medical policy to a specific member’s plan of benefits, please contact Capital BlueCross’ Provider Services or Member Services. Capital BlueCross considers the information contained in this medical policy to be proprietary and it may only be disseminated as permitted by law.

VIII. CODING INFORMATION

[TOP](#)

Note: This list of codes may not be all-inclusive, and codes are subject to change at any time. The identification of a code in this section does not denote coverage as coverage is determined by the terms of member benefit information. In addition, not all covered services are eligible for separate reimbursement.

Investigational; therefore, not covered, paraspinal surface electromyography (SEMG):

CPT Codes®							
95999	96002	96004	97799	99199			

Current Procedural Terminology (CPT) copyrighted by American Medical Association. All Rights Reserved.

Investigational; therefore, not covered:

HCPCS Code	Description
S3900	Surface electromyography (EMG)

IX. REFERENCES

[TOP](#)

1. Cram JR, Lloyd J, Cahn TS. The reliability of EMG muscle scanning. *Int J Psychosom.* 1994;41(1-4):41-45. PMID 7843866
2. De Luca CJ. Use of the surface EMG signal for performance evaluation of back muscles. *Muscle Nerve.* Feb 1993;16(2):210-216. PMID 8429847
3. Jones SL, Hitt JR, Desarno MJ, et al. Individuals with non-specific low back pain in an active episode demonstrate temporally altered torque responses and direction-specific enhanced muscle activity following unexpected balance perturbations. *Exp Brain Res. Sep* 2012;221(4):413-426. PMID 22875027

MEDICAL POLICY

POLICY TITLE	PARASPINAL SURFACE ELECTROMYOGRAPHY TO EVALUATE AND MONITOR BACK PAIN
POLICY NUMBER	MP-2.097

4. Sheeran L, Sparkes V, Caterson B, et al. Spinal position sense and trunk muscle activity during sitting and standing in nonspecific chronic low back pain: classification analysis. *Spine (Phila Pa 1976)*. Apr 15 2012;37(8):E486-495. PMID 22024899
5. Hanada EY, Johnson M, Hubley-Kozey C. A comparison of trunk muscle activation amplitudes during gait in older adults with and without chronic low back pain. *PM R*. Oct 2011;3(10):920-928. PMID 22024323
6. Neblett R, Brede E, Mayer TG, et al. What is the best surface EMG measure of lumbar flexion-relaxation for distinguishing chronic low back pain patients from pain-free controls? *Clin J Pain*. Apr 2013;29(4):334-340. PMID 23328325
7. Hu Y, Siu SH, Mak JN, et al. Lumbar muscle electromyographic dynamic topography during flexion-extension. *J Electromyogr Kinesiol*. Apr 2010;20(2):246-255. PMID 19540776
8. Hu Y, Kwok JW, Tse JY, et al. Time-varying surface electromyography topography as a prognostic tool for chronic low back pain rehabilitation. *Spine J*. Jun 1 2014;14(6):1049-1056. PMID 24530438
9. Hung CC, Shen TW, Liang CC, et al. Using surface electromyography (SEMG) to classify low back pain based on lifting capacity evaluation with principal component analysis neural network method. *Conf Proc IEEE Eng Med Biol Soc*. Jan 2014;2014:18-21. PMID 25569886
10. Humphrey AR, Nargol AV, Jones AP, et al. The value of electromyography of the lumbar paraspinal muscles in discriminating between chronic-low-back-pain sufferers and normal subjects. *Eur Spine J*. Mar 2005;14(2):175-184. PMID 15549487
11. Peach JP, McGill SM. Classification of low back pain with the use of spectral electromyogram parameters. *Spine (Phila Pa 1976)*. May 15 1998;23(10):1117-1123. PMID 9615362
12. Roy SH, Oddsson LI. Classification of paraspinal muscle impairments by surface electromyography. *Phys Ther*. Aug 1998;78(8):838-851. PMID 9711209
13. Van Damme B, Stevens V, Perneel C, et al. A surface electromyography based objective method to identify patients with nonspecific chronic low back pain, presenting a flexion related movement control impairment. *J Electromyogr Kinesiol*. Dec 2014;24(6):954-964. PMID 25304196
14. Kienbacher T, Fehrmann E, Habenicht R, et al. Age and gender related neuromuscular pattern during trunk flexion-extension in chronic low back pain patients. *J Neuroeng Rehabil*. Feb 19 2016;13:16. PMID 26896325
15. Schabrun SM, Elgueta-Cancino EL, Hodges PW. Smudging of the Motor Cortex Is Related to the Severity of Low Back Pain. *Spine (Phila Pa 1976)*. Aug 1 2017;42(15):1172-1178. PMID 25893342
16. Ellestad SM, Nagle RV, Boesler DR, et al. Electromyographic and skin resistance responses to osteopathic manipulative treatment for low-back pain. *J Am Osteopath Assoc*. Aug 1988;88(8):991-997. PMID 2975645

MEDICAL POLICY

POLICY TITLE	PARASPINAL SURFACE ELECTROMYOGRAPHY TO EVALUATE AND MONITOR BACK PAIN
POLICY NUMBER	MP-2.097

- 17. *Bittman B, Cram JR. Surface electromyography: an electrophysiological alternative in pain management. Paper presented at: Presented at the American Pain Society; Oct 22-25 1992; San Diego, CA.*
- 18. *Blue Cross Blue Shield Association Medical Policy Reference Manual. 2.01.35, Paraspinal Surface Electromyography to Evaluate and Monitor Back Pain. July 2019.*

X. POLICY HISTORY

[Top](#)

MP 2.097	CAC 1/27/15 New policy created however content was previously addressed in MP-2.063 Electromyography, Nerve Conduction Velocity Studies, and Quantitative Sensory Testing. No changes to the policy statement. References and rationale updated. Policy coded.
	CAC 1/26/16 Consensus review. No change to the policy statement. References and rationale updated. Coding reviewed.
	Administrative Update 11/10/16. Variation reformatting
	CAC 1/31/17 Consensus review. No changes to the policy statements. References reviewed. Coding reviewed.
	12/8/17 Consensus review. No change to the policy statement. Background, rationale, and references updated.
	10/8/18 Consensus review. No change to policy statements. Rationale condensed. References updated.
	7/25/19 Consensus review. No change to policy statements. FEP variation removed since was achieved. Background and references updated.
	6/10/20 Consensus review. No change to policy statement. Rationale and references reviewed.

[Top](#)

Health care benefit programs issued or administered by Capital BlueCross and/or its subsidiaries, Capital Advantage Insurance Company®, Capital Advantage Assurance Company® and Keystone Health Plan® Central. Independent licensees of the BlueCross BlueShield Association. Communications issued by Capital BlueCross in its capacity as administrator of programs and provider relations for all companies.