COVERAGE:

Needle Electromyogram (EMG) (for diagnostic purposes) is considered medically necessary for the following indications:

- Myopathy - polymyositis, muscular dystrophy, and toxic and metabolic myopathies,

- Neuromuscular junction disorder - myasthenia gravis, Lambert-Eaton myasthenic syndrome, botulism, poisoning with acetylcholinesterase inhibitors, and congenital myasthenia syndromes,

- Polyneuropathies - (diseases which affect peripheral nerve axons, their myelin sheaths, or both) - used for making decisions about patient management for Guillain-Barre' syndrome, vasculitis, Vincristine neuropathy and as a guide for nerve biopsies,

- Mononeuropathies - used for patients that exhibit motor or sensory symptoms and signs due to injury to a particular nerve,

- Radiculopathies - EMG can identify the specific level(s) of root injury and differentiate between nerve root and other peripheral nerve lesions that might produce similar symptoms. A limitation is that these studies can not determine the cause of the injury or abnormal finding.

Surface EMG’s, including but not limited to the following, are considered inappropriate and therefore NOT medically necessary because of their inferior sensitivity and accuracy compared to needle EMG’s.

- Paraspinal surface electromyography (SEMG) - used as a technique to diagnose or monitor back pain
- Brain Motor Control Assessment (BMCA) - used to try and assess upper motor neuron function during reflex and voluntary muscle contraction.

Exception:

Electromyography studies {EMG} of anal or urethral sphincter, other than needle, any technique is considered medically necessary.

NOTE FOR TEXAS CLAIMS:

EMG’s have been performed traditionally by Neurologists or Physiatrists. The Texas State Board of Physical Therapy Examiners has determined that it is within the scope of a physical therapist's license to perform EMG’s.
DESCRIPTION:

**Needle Electromyogram (EMG)** is the recording of the electrical properties of muscle displayed on the oscilloscope (and heard through a loud speaker) during needle probe insertion, with the muscle at rest and during contraction. Normal resting muscle is electrically silent. With minimal contraction, single motor unit action potentials appear. With increasing contraction, their number increases to form an "interference" pattern. The activity of the muscle fibers is observed and recorded.

Needle EMG evaluation is performed in four steps:

1. Inserting or slightly moving the needle causes **insertional activity** that is induced by irritation of the muscle fibers.
2. In the relaxed muscle, **spontaneous activity** is assessed by moving the needle a few millimeters and pausing briefly. The needle is moved in four directions (quadrants) in the muscle to sample multiple sites from a single insertion.
3. The muscle is contracted slightly to assess several different **motor units**.
4. The force of muscle contraction is gradually increased to assess **recruitment** (the incorporation of previously inactive motor units).

Electromyography studies are indicated for evaluation of a wide range of disorders of the peripheral as well as central nervous system. These patients may present with symptoms such as weakness, pain, fatigue, cramping, and stiffness.

**Surface electromyography (SEMG)** records the summation of muscle activity from groups of muscles and has been investigated as a technique to evaluate the physiological functioning of the back. SEMG, a noninvasive procedure, is contrasted with needle electromyography, an invasive procedure, in which the electrical activity of individual muscles is recorded. Paraspinal SEMG, also referred to as paraspinal EMG scanning, has been explored as a technique 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 either at rest, in various positions, or after a series of exercises. Recordings can also be made by using a hand-held device, which is applied to the skin at different sites. Electrical activity can be assessed by computer analysis of the frequency spectrum (i.e., spectral analysis), amplitude, or root mean square of the electrical action potentials. In particular, spectral analysis focusing 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 also 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. SEMG devices approved by the Food and Drug Administration (FDA) include those that use a single electrode or a fixed array of multiple surface electrodes. The following clinical applications of the paraspinal SEMG have been proposed.

- Clarification of a diagnosis (i.e., muscle, joint, or disc disease)
- Select a course of medical therapy
- Select a type of physical therapy
- Pre-operative evaluation
- Post-operative rehabilitation
- Follow-up of acute low back pain
- Evaluation of exacerbation of chronic low back pain
- Evaluation of pain management treatment techniques

RATIONALITY:

Needle EMG

Needle EMG is an objective and practical tool for documenting disorders of the peripheral as well as central nervous system.

Surface EMG

There are inadequate data regarding SEMG to validate three key attributes of any diagnostic test, (i.e., its performance compared to a gold standard, studies documenting how the test is used in the management of the patient, and studies validating that the changes in patient management result in an overall health benefit).

PRICING:

None

REFERENCES:

- Rules - Texas State Board of Physical Therapy Examiners, Revised January 1994
NEEDLE ELECTROMYOGRAM (EMG) AND PARASPINAL SURFACE ELECTROMYOGRAPHY
MED205-006
POSTED DATE: 6/11/2003
EFFECTIVE DATE: 8/15/2003

- Sam CD, July 11, 1995, no applicable references found.
- 1995 BCBSA TEC Assessment; Tab 25.
- “Paraspinal Surface Electromyography to Evaluate and Monitor Back Pain” (11/15/2000) Medicine 2.01.35.

DISCLAIMER:

State and federal law, as well as contract language, including definitions and specific inclusions/exclusions, takes precedence over Medical Policy and must be considered first in determining coverage. The member’s contract benefits in effect on the date that services are rendered must be used. Any benefits are subject to the payment of premiums for the date on which services are rendered. Medical technology is constantly evolving, and we reserve the right to review and update Medical Policy periodically.

HMO Blue Texas physicians who are contracted/affiliated with a capitated IPA/medical group must contact the IPA/medical group for information regarding HMO claims/reimbursement information and other general polices and procedures.