KAISER PERMANENTE®
Health Plan

Kaiser Foundation
of Washington

Clinical Review Criteria
Biofeedback
Neurofeedback

- Neurofeedback (EEG Biofeedback)
- Neuropsychiatric EEG-Based Assessment Aid (NEBA) – ADHD
- Quantitative EEG (Brain Mapping)

Criteria

For Medicare Members

Source	Policy
CMS Coverage Manuals	None
National Coverage Determinations (NCD)	Biofeedback Therapy (30.1).
Local Coverage Determinations (LCD)	3/14/2007 Noridian retired ***LCD Biofeedback Therapy Policy (L14443)***. These services still need to meet medical necessity as outlined in the LCD and will require review. LCDs are retired due to lack of evidence of current problems, or in some cases because the material is addressed by a National Coverage Decision (NCD), a coverage provision in a CMS interpretative manual or an article. Most LCDs are not retired because they are incorrect. Therefore, continue to use LCD L14443 for determining medical necessity.
Local Coverage Article	None
Kaiser Permanente Medical Policy	Due to the absence of an active NCD, LCD, or other coverage guidance, Kaiser Permanente has chosen to use their own Clinical Review Criteria, "**Attention Deficit Hyperactivity Disorder (ADHD)"** for medical necessity determinations. Use the Non-Medicare Criteria below. Due to the absence of an active NCD, LCD, or other coverage guidance, Kaiser Permanente has chosen to use their own Clinical Review Criteria, "**Quantitative EEG (Brain Mapping)"** for medical necessity determinations. Use the Non-Medicare Criteria below.

***For FEHB plans:** See the member's contract for specific coverage details

For Non-Medicare Members

Service	Criteria
Biofeedback	I. Biofeedback is covered for **ONE of the following**: A. Fecal Incontinence

Back to Top

	B. Tension or migraine headache if pharmacologic treatment inadequate or not indicated, by **1 or more** of the following: ▪ Breast-feeding patient ▪ History of long-term, frequent, or excessive use of analgesic or medications that can aggravate headache ▪ Insufficient or no response to multiple pharmacologic treatment attempts ▪ Intolerance of multiple pharmacologic treatment attempts ▪ Patient attempting to become pregnant ▪ Pregnant patient II. The following indications for biofeedback are not medically necessary. There is insufficient evidence in the published medical literature to show that this service/therapy is as safe as standard services/therapies and/or provides better long-term outcomes than current standard services/therapies. • Abdominal pain, recurrent • Anxiety disorders • Arthritis • Asthma • Autism • Back pain • Bell's palsy • Bruxism and sleep bruxism • Cardiovascular disorders • Chronic fatigue • Chronic pain • Chronic obstructive pulmonary disease (COPD) • Depression • Epilepsy • Facial palsy • Fibromyalgia • Hand hemiplegia • Insomnia • Knee pain • Low back pain • Low vision • Lupus [systemic lupus erythematosus (SLE)] • Motor function after stroke, injury, or lower limb surgery • Movement disorders • Myalgia or muscle pain • Neck pain • Orthostatic hypotension in patients with a spinal cord injury • Post-traumatic stress disorder (PTSD) • Raynaud's disease • Side effects of cancer chemotherapy • Temporomandibular joint disorders • Tinnitus • Vesicoureteral reflux • Voiding dysfunction • Vestibulodynia, vulvodynia, vulvar vestibulitis
Neurofeedback for ADHD (biofeedback)	See MCG* A-0330:

Back to Top

Neuropsychiatric EEG-Based Assessment Aid (NEBA)	*Biofeedback Inconclusive or Non-Supportive Evidence* For attention-deficit hyperactivity disorder in children, evidence is insufficient, conflicting, or poor and demonstrates an incomplete assessment of net benefits vs. harm; additional research is recommended. For adolescents, there is insufficient evidence in the published medical literature to show that this service/therapy provides better outcomes than current standard services/therapy. There was no literature reported for adults with attention-deficit hyperactivity disorder at the time of the review. *For access to the MCG Clinical Guidelines criteria, please see the MCG Guideline Index through the provider portal under Quick Access
EEG, Quantitative (Brain Mapping) for neuropsychiatric disorders	Kaiser Permanente has elected to use the EEG, Quantitative (Brain Mapping) (A-1050) MCG* Care Guideline for medical necessity determinations. This is not covered per MCG*. For access to the MCG Clinical Guidelines criteria, please see the MCG Guideline Index through the provider portal under *Quick Access*.
Biofeedback for the Treatment of Urinary Incontinence	See the Treatment of Urinary Incontinence criteria document

If requesting this service, please send the following documentation to support medical necessity:

- Last 6 months of clinical notes from requesting provider &/or specialist

The following information was used in the development of this document and is provided as background only. It is provided for historical purposes and does not necessarily reflect the most current published literature. When significant new articles are published that impact treatment option, Kaiser Permanente will review as needed. This information is not to be used as coverage criteria. Please only refer to the criteria listed above for coverage determinations.

Background

Biofeedback

Biofeedback is a technique designed to help individuals self-regulate certain physiological processes that are not normally considered to be under voluntary control or responses that are ordinarily easily regulated, but for which regulation has broken down due to trauma or disease. This is achieved through conveying audio and visual information about physiological processes such as blood pressure, heart rate, skin temperature, galvanic skin response (sweating), or muscle tension in real-time to raise awareness of physiological activities and train patients to control them. The goal of biofeedback is that eventually the patient will learn to control physiologic response without the aid of monitors (Kaiser 2011, Roditi 2011).

Different types of biofeedback include (Kaiser 2011, Magnusson 2008, Kapitza 2010):

- Electroencephalography (EEG) biofeedback, which monitors the activity of brain waves linked to different mental states.
- Electrocardiography (EKG) biofeedback, which tracks the patient's heart rate.
- Electromyography (EMG) biofeedback, which uses sensors to measure tension in specific muscles.
- Galvanic skin response biofeedback, which uses sensors to signal anxiety based on the activity of a person's sweat glands and the amount of perspiration on the skin.
- Skin temperature biofeedback, which involves attaching sensors to the fingers or feet to indicate stress when the temperature is low.
- Respiratory biofeedback, which uses sensors to measure breathing.
- Postural biofeedback, which uses sensors to measure body motion.

Biofeedback has been used to treat a variety of medical conditions such as urinary incontinence, ADHD, headaches, anxiety, and back pain.

Neurobiofeedback & Brain Mapping

Back to Top

Attention Deficit Hyperactivity Disorder (ADHD) is a common chronic neurobehavioral condition affecting approximately 5% of children worldwide. A child with ADHD may present as: 1) predominantly hyperactive, 2) predominantly inattentive, or 3) both hyperactive and inattentive. ADHD is often accompanied by impaired social adjustment, academic problems, and lower adaptive functioning in major life activities which may persist to adolescence and adulthood (Benner-Davis 2007, Gevensleben 2009, Lansbergen 2011).

Medication, particularly psychostimulants, is the primary treatment for ADHD. Psychostimulants work quickly, improve attention, and reduce hyperactivity and impulsitivity in about 70% of all children. However, their effect on academic achievement, family relation, and social skills is small. There are also some concerns regarding their side effects, and their long-term benefits have not been established. Behavioral therapy has been shown to reduce ADHD symptoms, but may not be sufficiently effective especially in terms of generalization and long-term effects (Leins 2007, Gevensleben 2009, Lansbergen 2011).

In searching for additional or alternative treatments for children with ADHD, neurofeedback (NF) emerged as a promising option. NF is a type of biofeedback that uses electroencephalography (EEG) to provide a signal that can be used by a person to receive feedback about brain activity. It is based on the rationale that there is a relationship between surface EEG and the underlying thalamocortical mechanism responsible for its rhythms and frequency modulations. Lubar was the first to report on EEG and behavioral changes in a hyperkinetic child. He explained that ADHD children differ from others in that their brain waves tend to be of larger amplitude. Specifically, the EEG shows excess theta activity along with lower amounts of beta activity. This pattern of brain wave activity usually indicates a sleep or daydreaming state, rather than an alert and focused state. The goal of EEG biofeedback training is to alter these abnormal brain waves by decreasing theta waves, while simultaneously increasing beta waves (i.e. theta suppression/beta enhancement). This would potentially help the child acquire self-control over certain brain activity patterns, derive self-regulation strategies, and apply the gained self-regulation skills in daily life (Lubar 1976, Lubar 1991, Bakhshayesh 2011).

In EEG biofeedback training, the therapist explains to the child the connection between what is happening in his/her cortex and what is recorded on the EEG and helps him/her learn how to gain control over the brain activity patterns. The EEG biofeedback equipment is connected to the individual with sensors that are placed on the scalp and ears. Once connected, the brainwave activity can be observed on a computer monitor. Individuals are then taught to play computerized games using their brainwave activity. Changes in the individual's brainwave activity are then fed back to the individual through visual and/or auditory information by the computer. During a typical 45-minute session, the child is seated in front of a computer, electrodes are connected to his head, and then a therapist starts up a videogame or movie on the child's screen and monitors his brain waves on another screen. The child then locks his eyes on the action, concentrating on sending the kind of brain waves that will keep a virtual airplane flying, or perhaps a favorite movie rolling. If his attention wanders or he begins to fidget, the plane slows or the movie screen darkens, and the therapist encourages him to regain focus using techniques such as slow, deep breathing. Children may also practice maintaining learned brainwave states when engaged in school- or work-related tasks (Gevensleben 2009).
In the last three decades many studies compared brain activity using electro-encephalography (EEG) among children with ADHD versus the brain activity of normal controls in an attempt to study the underlying neurophysiology of ADHD; and to investigate subtypes of the disorder and their response to treatment. The EEG frequency bands of most interest in ADHD research are the theta, beta, and alpha bands either alone or in relation to one another such as the theta/beta power or amplitude ratio. Alpha band activity is typically observed during rest when the eyes are closed and is negatively associated with central nervous system arousal. Beta band activity on the contrary, generally accompanies mental activity and concentration. Cortical theta is observed frequently in young children, but in older children and adults, it tends to appear during meditative, drowsy, or sleeping states. Researchers suggest that most children with ADHD display EEG differences in their brain electrical activity as compared to normal children, particularly with respect to their increased frontocentral theta activity primarily during the resting state. This indicates decreased cortical activity that may be associated with underarousal. A theta /beta ratio (TBR) due to increased theta is reported by many investigators as a consistent characteristic of ADHD. Some groups recommend using the TBR during eyes-opened or eye-closed resting condition as an add-on for the diagnosis and monitoring of ADHD. However, it is reported that the true functional significance of this measure is still unknown, and an elevated theta activity may be a nonspecific marker of cortical dysfunction common to other disorders such as epilepsy, bipolar disorder, and polysubstance abuse (Arns 2013, Liechti 2013, Loo 2012).

A number of studies examined the accuracy and diagnostic value of the theta power and TBR in discriminating normal children from children with learning disorders, ADD, and ADHD. In 2005, Boutros and colleagues performed a review and meta-analysis to estimate the strength and effect size of increased theta activity in ADHD patients. Based on their findings they concluded that the increased EEG theta activity in ADHD is promising and should be further developed as a diagnostic test for ADHD. Around the same time another group of investigators (Snyder and Hall, 2006) also

 Back to Top

conducted a meta-analysis to investigate the theta and beta powers and their ration (TBR) and concluded that the pooled results support the finding that an increase in the theta/beta ratio is a commonly observed trait in ADHD relative to normal controls. They however, cautioned that theta/beta ratio trait may arise with other conditions, and that a prospective study covering differential diagnosis would be required to determine generalizability to clinical applications (Arns 2013, Boutros 2005, Loo 2012 Snyder 2006).

Based on this EEG technology, the Neuropsychiatric EEG-Based Assessment Aid (NEBA) System (NEBA Health, Augusta, GA) was developed and recently received Food and Drug Administration (FDA), in July 2013, to help assess ADHD in children and adolescents 6-17 years of age. It is not to be used as a stand-alone diagnostic test, but as a conjunctive tool for diagnosing ADHD. NEBA is a non-invasive test that calculates the ratio of theta and beta waves frequencies in 15-20 minutes (FDA and NEBA websites accessed January 15, 2014).

According to the FDA, the use of the device together with the complete medical and psychological examination, can help confirm an ADHD diagnosis or a clinician's decision that further diagnostic testing should focus on ADHD or other medical or behavioral conditions that lead to symptoms similar to ADHD. The FDA reviewed the NEBA System through a de novo classification process, a regulatory pathway for some low- to moderate-risk medical devices that are not substantially equivalent to an already legally marketed device (FDA website accessed January 15, 2014).

Evidence and Source Documents

Biofeedback for Anxiety Disorders
Biofeedback for Back Pain
Biofeedback for Migraine and Tension Headaches
Biofeedback for Treatment of Urinary Incontinence

Medical Technology Assessment Committee (MTAC)

Biofeedback for Anxiety Disorders

02/13/2012: MTAC REVIEW

Evidence Conclusion: There is insufficient evidence to determine the safety and efficacy of biofeedback for the treatment of generalized anxiety disorders.

Articles: The literature search revealed several studies evaluating biofeedback for the treatment of generalized anxiety disorder. All of the studies had small sample sizes and the majority were published more than 20 years ago. The newest study was a randomized controlled trial that evaluated the efficacy of a biofeedback enhanced virtual reality system. This study was not selected for review as the treatment group contained only 4 subjects (Gorini, 2010). Conclusion: There is insufficient evidence to determine the safety and efficacy of biofeedback for the treatment of generalized anxiety disorders.

The use of biofeedback for anxiety disorders does not meet the *Kaiser Permanente Medical Technology Assessment Criteria*.

Biofeedback for Chronic Back Pain

02/13/2012: MTAC REVIEW

Evidence Conclusion: The Kaiser review included four randomized controlled trials that ranged in size from 42 to 128 patients. Findings from these trials suggest that pain and disability improved with biofeedback, cognitive behavioral therapy (CBT), biofeedback plus CBT, placebo biofeedback, and rehabilitation; however, no significant differences were found between biofeedback and the other treatments. The body of evidence was limited by heterogeneity in the patient population, biofeedback protocols, and comparator treatments. Additionally, the studies were small with short follow-up periods. Biofeedback vs. CBT alone vs. waitlisted controls (Newton-John 1995) • N=44 • Type of biofeedback: Electromyography biofeedback (EMG). • Both the biofeedback and the CBT groups showed improvement in pain intensity, pain belief, and depression; however, there no significant differences between the two groups. There was no improvement in the waitlisted control group. Biofeedback plus CBT vs. CBT alone vs. waitlisted controls (Glombiewski 2010) • N=128 • Type of biofeedback: EMG • Both the combined group and the CBT alone group showed improvement in pain intensity compared to waitlisted control; however, there no significant differences between the two groups. Active biofeedback vs. placebo biofeedback (Kapitza 2010) • N=42 • Type of biofeedback: Respiratory biofeedback. • There was no significant difference in pain reduction between the two groups. Biofeedback plus rehabilitation vs. rehabilitation alone (Magnusson 2008) • N=47 • Type of biofeedback: Postural biofeedback. • Although the combined group showed improvements in pain, range of motion, and quality of life, the study did not report if they were statistically significantly different from the rehabilitation alone group. Conclusion: There is insufficient evidence to determine the safety and efficacy of biofeedback for the treatment of chronic back pain.

Back to Top

Articles: The 2007 American College of Physicians and the American Pain Society (ACP/APS) guideline evaluated the evidence on biofeedback for chronic back pain. The studies evaluating this treatment were of poor quality and therefore they were unable to evaluate the net benefits of biofeedback. The conclusions of the ACP/APS guideline were supported by a 2009 BMJ clinical evidence review (Chou 2009). In 2011, the Kaiser Permanente Medical Technology Assessment Team (MTAT) also reviewed biofeedback for the treatment of chronic back pain. No additional studies were identified after the Kaiser review. The following technology assessments were selected for review: Kaiser Permanente TPMG New Medical Technologies. Biofeedback for chronic neck and low back pain. May 2011.

The use of biofeedback for back pain does not meet the *Kaiser Permanente Medical Technology Assessment Criteria*.

Biofeedback for Migraine and Tension Type Headaches

02/13/2012: MTAC Review

Evidence Conclusion: A recent meta-analysis that included 94 RCTs and quasi-experimental studies evaluate the efficacy of different types of biofeedback for the treatment of migraine and tension-type headaches. Results from this analysis suggest that biofeedback was more effective than no treatment for headache reduction in patients with migraine headache (small effect size); however, there was no significant difference between biofeedback and placebo or relaxation. For patients with tension-type headache, biofeedback was significantly more effective than no treatment, placebo, and relaxation for headache reduction (small to medium effect size). There was no significant difference between biofeedback treatment modalities for the reduction of migraine headache pain (Nestouric 2008). A meta-analysis is only as good as the studies that it includes. The studies included in the meta-analysis had several limitations. • The majority of the studies included in the meta-analysis were small. The mean number of subjects per study was 40 for migraine studies and 45 for tension-type headache studies. • The type and number of sessions of biofeedback varied. • Several studies failed to describe basic treatment and patient characteristics. • Several studies used unstructured diagnostic systems. Conclusion: Migraine • Results from a recent meta-analysis suggest that biofeedback may be more effective than no treatment, but not placebo or relaxation for headache reduction. Tension-type headaches • Results from a recent meta-analysis suggest that biofeedback may be more effective than no treatment, placebo, and relaxation for headache reduction. • Another recent BMJ Clinical Evidence review found insufficient evidence to determine whether EMG biofeedback is effective for treating chronic tension-type headaches (Krishnan 2009).

Articles: Several meta-analyses and randomized controlled trials (RCTs) were identified that evaluated the efficacy of biofeedback for the treatment of migraine and tension-type headaches. The most recent meta-analysis was selected for review. An RCT published after the meta-analysis was also identified that evaluated the efficacy of a pain program that included education and training in pain theory plus EMG and temperature biofeedback compared to the pain program alone. This study was not selected for review due to methodological limitations (i.e., small sample size, high loss to follow-up, power not addressed, and baseline characteristics were not presented) (Mullally 2009). The following study was selected for review: Nestoriuc Y, Martin A, Rief W, Andrasik F. Biofeedback treatment for headache disorders: a comprehensive efficacy review. Appl Psychophysiology Biofeedback. 2008; 33:125-140. See Evidence Table.

The use of biofeedback for Migraine and Tension-type Headaches does not meet the *Kaiser Permanente Medical Technology Assessment Criteria.*

Neurofeedback for ADHD

10/17/2011: MTAC REVIEW

Evidence Conclusion: A number of small randomized and nonrandomized controlled trials included in Arns and colleagues' meta-analysis (evidence table 1) and the pooled results of available data indicate that NF may have some beneficial effects on a number of ADHD measures. However, when compared with stimulant therapy, NF did not prove to have an equivalent or superior effect on ADHD core symptoms. None of the studies monitored potential adverse effects of NF. The small study sizes, their short duration, lack of a valid control group, mixed and multiple interventions used, lack of double-blinding, additional time spent with the therapists for NF, as well as other study methodological limitations make it hard to determine the efficacy of the neurofeedback used alone or in addition to other interventions for the treatment of children with ADHD. Gevensleben and colleagues' trial (evidence table 2) conducted by a group of researchers in a university hospital in Germany, compared NF training to computerized attention skills training. This may be considered as a more valid comparison as it controls for therapist time and attention training. The primary endpoint was improvement in attention and reduced hyperactivity as rated by the parents. No measures of children's academic functioning or classroom performance were collected. The results of the trial showed that symptoms improved in both groups; however, the score of the primary outcome measure (parents' rating of FBB-HKS [a German rating scale]) was significantly higher in children in the NF group. The trial was randomized and controlled, but was not blinded, and the NF training

 Back to Top

program was developed by the study group. After the training period 18% of the children were started on a medication. Six months follow-up data, available for only two thirds of the participants, showed that the behavioral improvements were maintained at 6 months, but the difference between the two interventions did not reach a statistically significant level. The investigators attributed the lack of significant difference to insufficient statistical power due to the smaller number of children with follow-up data. They authors concluded that NF training may help some children, but more research is needed to replicate the findings and identify which children with ADHD are more likely to benefit from NF training. Well conducted randomized trials with a sham neurofeedback control, double-blinding, and long-term follow-up are needed to establish the efficacy and safety of neurofeedback in improving the core symptoms of ADHD.

Articles: The search revealed one meta-analysis on the efficacy of neurofeedback treatment in ADHD and a number of RCTs that were included in the meta-analysis. Three small RCTs published after the meta-analysis, as well as a report on 6 months follow-up of an earlier RCT were also identified. The meta-analysis as well as the largest trial, which had a more valid design and longer follow-up, were selected for critical appraisal. Arns M, de Ridder S, Strehl U, et al. Efficacy of neurofeedback treatment in ADHD: the effects on inattention, impulsitivity and hyperactivity; a meta-analysis. Clin EEG Neurosci 2009; 40:180-189. **See** Evidence Table. Gevensleben H, Holl B, Albrecht B, et al. Is neurofeedback an efficacious treatment for ADHD? A randomized controlled trial. J Child Psychol Psychiatry. 2009; 50:780-789. **See** Evidence Table. Gevensleben H, Holl B, Albrecht B, et al. Neurofeedback training in children with ADHD: 6-month follow-up of a randomized controlled trial. Eur Child Adolesc Psychiatry 2010; 19:715-724. **See** Evidence Table.

The use of Neurofeedback for ADHD does not meet the *Kaiser Permanente Medical Technology Assessment Criteria.*

06/20/2016: MTAC REVIEW

Electroencephalography (EEG) Neurofeedback (NF) for Attention deficit hyperactivity disorder (ADHD)

Evidence Conclusion:

- The body of evidence is of low quality.
- Variations in the characteristics of EEG-NF protocols, the use of medications while receiving NF treatment, the small sample size, the lack of blinding in a number of studies and the short follow-up periods may have biased the findings.
- Neurofeedback may improve the core symptoms of ADHD in children but did not demonstrate superiority or was not equivalent to pharmacological therapy in reducing ADHD symptoms in children.
- There is insufficient evidence to determine whether Neurofeedback in combination with methylphenidate is effective in reducing the core symptoms of ADHD in children.

Articles: The literature revealed a number of articles, but the following articles were selected for critical appraisal: EEG neurofeedback treatments in children with ADHD: an updated meta-analysis of randomized controlled trials (Micoulaud-Franchi et al., 2014) See Evidence table 1. A randomized placebo-controlled trial of electroencephalographic (EEG) neurofeedback in children with attention-deficit/hyperactivity disorder (van Dongen-Boomsma, Vollebregt, Slaats-Willemse, & Buitelaar, 2013) See Evidence table 2. Effects of Neurofeedback versus stimulant Medication in Attention-Deficit/Hyperactivity Disorder: A Randomized pilot study (Meisel, Servera, Garcia-Banda, Cardo, & Moreno, 2014) See Evidence table 3. Effects of Neurofeedback versus stimulant Medication in Attention-Deficit/Hyperactivity Disorder: A Randomized pilot study (Ogrim & Hestad, 2013) See Evidence table 4. A randomised controlled trial of combined EEG feedback and methylphenidate therapy for the treatment of ADHD (Li, Yang, Zhuo, & Wang, 2013) See Evidence table 5.

The use of Electroencephalography (EEG) Neurofeedback (NF) for Attention deficit hyperactivity disorder (ADHD) does not meet the *Kaiser Permanente Medical Technology Assessment Criteria.*

Neuropsychiatric EEG-Based Assessment Aid (NEBA)

02/10/2014: MTAC REVIEW

Evidence Conclusion: There is no published evidence to date to determine the safety, accuracy, or clinical utility of NEBA system in discriminating between children with or without ADHD. The FDA approval was based on a clinical study of 275 children and adolescents with attention and/or behavioral concerns. The study was conducted by the manufacturer of the NEBA system and has not been published in a peer reviewed journal to date. The observational studies on the correlation between the theta/beta ratios (TBR) had their limitations, and their results were inconclusive. In addition (according to Loo, 2012) there are wide variation in EEG instrumentation that can make it very hard to compare or generalize results of studies using different EEG hardware and software.

Articles: The literature search did not reveal any published study on the NEBA system; it only identified several observational studies that investigated brain activity using EEG in children with ADHD compared with normal controls, as well as three meta-analyses that pooled the results of a number of these studies.

 Back to Top

The use of NEBA does not meet the *Kaiser Permanente Medical Technology Assessment Criteria.*

Applicable Codes

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

CPT® Codes	Description
90875	Individual psychophysiological therapy incorporating biofeedback training by any modality (face-to-face with the patient), with psychotherapy (eg, insight oriented, behavior modifying or supportive psychotherapy); 30 minutes
90876	Individual psychophysiological therapy incorporating biofeedback training by any modality (face-to-face with the patient), with psychotherapy (eg, insight oriented, behavior modifying or supportive psychotherapy); 45 minutes
90901	Biofeedback training by any modality
90912	Biofeedback training, perineal muscles, anorectal or urethral sphincter, including EMG and/or manometry, when performed; initial 15 minutes of one-on-one physician or other qualified health care professional contact with the patient
90913	Biofeedback training, perineal muscles, anorectal or urethral sphincter, including EMG and/or manometry, when performed; each additional 15 minutes of one-on-one physician or other qualified health care professional contact with the patient (List separately in addition to code for primary procedure)
HCPC Codes	**Description**
E0746	Electromyography (EMG), biofeedback device

Neuro-biofeedback—
Considered Not Medically Necessary:

CPT® Codes	Description
90875	Individual psychophysiological therapy incorporating biofeedback training by any modality (face-to-face with the patient), with psychotherapy (eg, insight oriented, behavior modifying or supportive psychotherapy); 30 minutes
90876	Individual psychophysiological therapy incorporating biofeedback training by any modality (face-to-face with the patient), with psychotherapy (eg, insight oriented, behavior modifying or supportive psychotherapy); 45 minutes
90901	Biofeedback training by any modality
Dx Codes	**Description**
F90.0-F90.9	Attention-deficit hyperactivity disorder

Brain Mapping for neuropsychiatric disorders—
Considered Not Medically Necessary:

CPT® Codes	Description
95961	Functional cortical and subcortical mapping by stimulation and/or recording of electrodes on brain surface, or of depth electrodes, to provoke seizures or identify vital brain structures; initial hour of attendance by a physician or other qualified health care professional
95962	Functional cortical and subcortical mapping by stimulation and/or recording of electrodes on brain surface, or of depth electrodes, to provoke seizures or identify vital brain structures; each additional hour of attendance by a physician or other qualified health care professional (List separately in addition to code for primary procedure)
95999	Unlisted neurological or neuromuscular diagnostic procedure
S8040	Topographic brain mapping

***Note:** Codes may not be all-inclusive. Deleted codes and codes not in effect at the time of service may not be covered.

Back to Top

To verify authorization requirements for a specific code by plan type, please use the **Pre-authorization Code Check.

Date Created	Date Reviewed	Date Last Revised
03/06/2012	03/06/2012[MDCRPC], 04/03/2012[MDCRPC], 02/05/2013[MDCRPC], 12/03/2013[MPC], 10/07/2014[MPC], 08/04/2015[MPC], 06/07/2016[MPC], 05/02/2017[MPC], 02/06/2018[MPC], 08/07/2018[MPC], 01/08/2019[MPC], 01/07/2020[MPC], 01/05/2021[MPC], 01/04/2022[MPC], 01/10/2023[MPC], 11/05/2024[MPC]	11/05/2024

[MDCRPC] Medical Director Clinical Review and Policy Committee

[MPC] Medical Policy Committee

Revision History	Description
06/20/2016	Added Electroencephalography (EEG) Neurofeedback (NF) for Attention deficit hyperactivity disorder (ADHD) MTAC review
08/10/2016	Merged NEBA criteria into same document
09/06/2016	Added KPWA policy for Medicare members
05/02/2017	Added indication to cover migraine headaches
10/03/2017	MPC approved to adopt MCG A-0330 summary of findings as criteria language
07/18/2018	Added FEHB language
06/23/2020	Removed deleted CPT code 90911; Added CPT codes 90912 and 90913
12/02/2022	Added Retired LCD L14443
09/05/2023	MPC approved to adopt EEG, Quantitative (Brain Mapping) MCG A-1050. Requires a 60-day notice; effective February 1, 2024.
03/12/2024	Removed urinary conditions from the exclusions list
11/05/2024	Merged Neurofeedback & Brain Mapping with Biofeedback criteria

Back to Top