Biofeedback may be considered medically necessary as part of the overall treatment plan for migraine and tension-type headache.

Biofeedback for the treatment of cluster headache is considered investigational.

Unsupervised home use of biofeedback for treatment of headache is considered not medically necessary.

Biofeedback may require 10 to 20 office-based sessions of 30 to 60 minutes each.

Biofeedback is a technique intended to teach patients self-regulation of certain physiologic processes not normally considered to be under voluntary control. Biofeedback is frequently used in conjunction with other therapies (e.g., relaxation, behavioral management, medication) to reduce the severity and/or frequency of headaches.

Benefit determinations should be based in all cases on the applicable contract language. To the extent there are any conflicts between these guidelines and the contract language, the contract language will control. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

Some state or federal mandates (e.g., Federal Employee Program [FEP]) prohibits plans from denying Food and Drug Administration (FDA)-approved technologies as investigational. In these instances, plans may have to consider the coverage eligibility of FDA-approved technologies on the basis of medical necessity alone.

A variety of biofeedback devices have been cleared for marketing by the U.S. Food and Drug Administration (FDA) through the 510(k) process. These devices are designated by the FDA as class II with special controls and are exempt from premarket notification requirements. The FDA defines a biofeedback device as “an instrument that provides a visual or auditory signal corresponding to the status of one or more of a patient's physiological parameters (e.g., brain
alpha wave activity, muscle activity, skin temperature) so that the patient can control voluntarily these physiological parameters.” FDA product code: HCC.

### Rationale

#### Background
Biofeedback involves the feedback of a variety of types of physiologic information not normally available to the patient, followed by a concerted effort on the part of the patient to use this feedback to help alter the physiologic process in some specific way. Biofeedback training is done either in individual or group sessions, alone or in combination with other behavioral therapies designed to teach relaxation. A typical program consists of 10 to 20 training sessions of 30 to 60 minutes each. Training sessions are performed in a quiet, nonarousing environment. Subjects are instructed to use mental techniques to affect the physiologic variable monitored, and feedback is provided for the successful alteration of the physiologic parameter. This feedback may be signals such as lights or tone, verbal praise, or other auditory or visual stimuli.

The various forms of biofeedback differ mainly in the nature of the disease or disorder under treatment, the biologic variable that the subject attempts to control, and the information that is fed back to the subject. Biofeedback techniques include peripheral skin temperature feedback, blood-volume-pulse feedback (vasoconstriction and dilation), vasoconstriction training (temporalis artery), and electromyographic biofeedback; these may be used alone or in conjunction with other therapies (e.g., relaxation, behavioral management, medication). In general, electromyographic biofeedback is used to treat tension headaches. With this procedure, electrodes are attached to the temporal muscles, and the patient attempts to reduce muscle tension. Feedback on the achievement of a decrease in muscle tension is provided to the subject, reinforcing those activities (behaviors or thoughts) that are effective. Thermal biofeedback is a commonly employed technique for migraine headache, in which patients learn to increase the temperature of their fingertips through the use of imagery and relaxation. In this technique, a temperature sensor is placed on the finger, and the subject is taught to increase peripheral vasodilation by providing feedback on skin temperature, an effect that is mediated through sympathetic activity. The combination of thermal biofeedback and relaxation training has also been used to improve migraine symptoms. The pulse amplitude recorded from the superficial temporal artery has also been used to provide feedback. Temporal pulse amplitude biofeedback has been used to treat both chronic tension-type headaches and migraine headaches.

#### Literature Review
This review was informed by a Blue Cross Blue Shield Association Technology Evaluation Center (TEC) Assessment (1995). Evidence reviews assess the clinical evidence to determine whether the use of technology improves the net health outcome. Broadly defined, health outcomes are the length of life, quality of life, and ability to function- including benefits and harms. Every clinical condition has specific outcomes that are important to patients and managing the course of that condition. Validated outcome measures are necessary to ascertain whether a condition improves or worsens; and whether the magnitude of that change is clinically significant. The net health outcome is a balance of benefits and harms.

To assess whether the evidence is sufficient to draw conclusions about the net health outcome of technology, two domains are examined: the relevance and quality and credibility. To be relevant, studies must represent one or more intended clinical use of the technology in the intended population and compare an effective and appropriate alternative at a comparable intensity. For some conditions, the alternative will be supportive care or surveillance. The quality and credibility of the evidence depend on study design and conduct, minimizing bias and confounding that can generate incorrect findings. The randomized controlled trial (RCT) is preferred to assess efficacy; however, in some circumstances, nonrandomized studies may be
adequate. RCTs are rarely large enough or long enough to capture less common adverse
events and long-term effects. Other types of studies can be used for these purposes and to
assess generalizability to broader clinical populations and settings of clinical practice.

Migraine and Tension-Type Headache
Clinical Context and Therapy Purpose
The purpose of biofeedback for patients who have migraines or tension-type headaches is to
provide a treatment option that is an alternative to or an improvement on existing therapies.

The question addressed in this evidence review is: Does the use of biofeedback improve the net
health outcome in individuals who suffer from migraines or tension-type headaches?

The following PICOs were used to select literature to inform this review.

Patients
The relevant population of interest are individuals who suffer from migraines or tension-type
headaches.

Interventions
The therapy being considered is biofeedback.

Biofeedback would be administered by therapists in an outpatient setting and may require
electromyographic monitoring.

Comparators
The following therapy is currently being used to treat migraines or tension-type headaches:
standard therapy without biofeedback.

Outcomes
The general outcomes of interest are reductions on instances and intensity of migraines or
tension-type headaches and reductions in medication usage.

Follow-up over the course of 10 to 20 sessions would be of interest to monitor for outcomes.

Adults
Nestoriuc et al (2007, 2008) published systematic reviews on biofeedback for migraines and
tension-type headaches. Meta-analysis for the treatment of migraine included 55 studies
(randomized, pre-post, uncontrolled) with 39 controlled trials, reporting a medium effect size of
0.58 (pooled outcome of all biofeedback interventions) for treatment of migraine. Effect sizes
were computed using Hedges' g, which quantifies between-group treatment outcome
differences (mean difference between groups divided by the pooled standard deviation). For
the treatment of tension-type headaches, 53 studies met criteria for analysis; they included
controlled studies with standardized treatment outcomes, follow-up of at least 3 months, and at
least 4 patients per treatment group. Meta-analysis showed a medium-to-large effect size of
0.73 that appeared to be stable over 15 months of follow-up. Biofeedback was reported to be
more effective than headache monitoring, placebo, and relaxation therapies. Biofeedback in
combination with relaxation was more effective than biofeedback alone, and biofeedback
alone was more effective than relaxation alone, suggesting different elements for the two
therapies. Although these meta-analyses were limited by the inclusion of studies of poor
methodologic quality, reviewers did not find evidence of an influence of study quality or
publication bias in their findings.

Verhagen et al (2009) conducted a systematic review of behavioral treatments for chronic
tension-type headaches in adults. Eleven studies, including two studies with low risk of bias,
compared biofeedback with waiting-list conditions. Results were found to be inconsistent due to
low power, leading reviewers to conclude that larger and more methodologically robust studies should be performed.

**Children**

Stubberud et al (2016) reported on a meta-analysis of biofeedback as prophylaxis for pediatric migraines. They identified 5 RCTs (total n=137 children and adolescents) that met inclusion criteria. Meta-analysis found that biofeedback reduced migraine frequency (mean difference in attacks per week, -1.97, 95% confidence interval, -2.72 to -1.21; p<0.001), attack duration (mean difference, -3.94; 95% confidence interval, -5.57 to -2.31; p<0.001), and headache intensity (mean difference, -1.77 out of 5; 95% confidence interval, -2.42 to -1.11; p<0.001) compared with wait-list controls. However, the identified studies had incomplete reporting and uncertain risk of bias, limiting confidence in the estimates.

A meta-analysis by Palemo et al (2010) and a Cochrane review by Eccleston et al (2009) evaluated psychological therapies for the management of chronic and recurrent pain in children and adolescents. Twenty-one RCTs met inclusion criteria for the analysis of headache, including three trials with biofeedback and relaxation training and three trials with biofeedback and cognitive training. Clinically significant pain reduction was found with biofeedback (odds ratio, 23.34), but there was no significant effect on disability or emotional functioning. Reviewers concluded that psychological treatments (including biofeedback as part of a treatment regimen) are effective in pain control for children with headaches, and the benefits appeared to be maintained.

**Section Summary: Migraine and Tension-Type Headache**

The evidence on biofeedback for the treatment of migraines and tension-type headaches includes meta-analyses of numerous RCTs. Systematic reviews have found significant effects of biofeedback on headache frequency and intensity in both children and adults. Biofeedback in combination with relaxation is more effective than relaxation alone, suggesting that these act independently.

**Cluster Headache**

Only small case series and case reports were identified in the treatment of cluster headache with biofeedback. No controlled trials were found.

**Summary of Evidence**

For individuals who have migraines or tension-type headaches who receive biofeedback, the evidence includes RCTs and systematic reviews of these trials. The relevant outcomes are symptoms, functional outcomes, and quality of life. The literature, which includes meta-analyses of a large number of controlled and uncontrolled studies, has suggested that this treatment can reduce the frequency and/or severity of migraines and tension-type headaches. Biofeedback, along with other psychologic and behavioral techniques (e.g., relaxation training) may be particularly useful for children, pregnant women, and other adults who are unable to take certain medications. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals who have cluster headaches who receive biofeedback, the evidence includes small case series and case reports. The relevant outcomes are symptoms, functional outcomes, and quality of life. No controlled trials were identified on biofeedback for cluster headache. The evidence is insufficient to determine the effects of the technology on health outcomes.

**Supplemental Information**

**Clinical Input From Physician Specialty Societies and Academic Medical Centers**

While the various physician specialty societies and academic medical centers may collaborate with and make recommendations during this process, through the provision of appropriate reviewers, input received does not represent an endorsement or position statement by the physician specialty societies or academic medical centers, unless otherwise noted.
In response to requests from Blue Cross Blue Shield Association, input was received from 3 physician specialty societies and 3 academic medical centers (4 inputs) in 2009. Input considered biofeedback to be a reliable and appropriate nonpharmacologic option for the treatment of headaches.

### Practice Guidelines and Position Statements

#### Association for Applied Psychophysiology and Biofeedback
The Association for Applied Psychophysiology and Biofeedback (2013) issued standards for performing biofeedback. The standards stated that biofeedback for the treatment of migraine and tension headache has been validated as being safe and effective for these conditions and that biofeedback is not used alone as a diagnostic tool or treatment; rather, it is an adjunctive tool used in combination with other standard interventions.

#### National Institute of Neurologic Disorders and Stroke
The National Institute of Neurologic Disorders and Stroke (2018) indicated that when headaches occur 3 or more times a month, preventive treatment is usually recommended:

> "Drug therapy, biofeedback training, stress reduction, and elimination of certain foods from the diet are the most common methods of preventing and controlling migraine and other vascular headaches. Drug therapy for migraine is often combined with biofeedback and relaxation training.”

#### American Academy of Neurology et al
The American Academy of Neurology and American Headache Society (2019) published joint practice guidelines on migraine prevention in children and adolescents; the use of biofeedback was not mentioned in the recommendation.

The American Academy of Neurology and American Headache Society (2013) updated their joint practice guidelines on migraine prevention in adults; the use of biofeedback was not mentioned in the recommendations.

#### U.S. Preventive Services Task Force Recommendations
Not applicable.

#### Medicare National Coverage
Medicare covers biofeedback therapy “only when it is reasonable and necessary for the individual patient for muscle re-education of specific muscle groups or for treating pathological muscle abnormalities of spasticity, incapacitating muscle spasm, or weakness, and more conventional treatments (heat, cold, massage, exercise, support) have not been successful. This therapy is not covered for treatment of ordinary muscle tension states or for psychosomatic conditions.”

### Ongoing and Unpublished Clinical Trials
A search of ClinicalTrials.gov in September 2019 did not identify any ongoing or unpublished trials that would likely influence this review.

### References


**Documentation for Clinical Review**

**Please provide the following documentation (if when requested):**
- History and physical and/or consultation notes including:
  - Type of headache requiring biofeedback
  - Treatment plan (including type of biofeedback and number of treatment sessions)

**Coding**

This Policy relates only to the services or supplies described herein. Benefits may vary according to product design; therefore, contract language should be reviewed before applying the terms of the Policy. Inclusion or exclusion of codes does not constitute or imply member coverage or provider reimbursement.

**MN/IE**

The following services may be considered medically necessary in certain instances and investigational in others. Services may be considered medically necessary when policy criteria are met. Services may be considered investigational when the policy criteria are not met or when the code describes application of a product in the position statement that is investigational.

<table>
<thead>
<tr>
<th>Type</th>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>CPT®</td>
<td>90875</td>
<td>Individual psychophysiological therapy incorporating biofeedback training by any modality (face-to-face with the patient), with</td>
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### Policy History

This section provides a chronological history of the activities, updates and changes that have occurred with this Medical Policy.

<table>
<thead>
<tr>
<th>Effective Date</th>
<th>Action</th>
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<tbody>
<tr>
<td>09/30/2014</td>
<td>BCBSA Medical Policy adoption</td>
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<tr>
<td>01/01/2017</td>
<td>Policy Revision without position change</td>
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<tr>
<td>01/01/2018</td>
<td>Policy Revision without position change</td>
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<tr>
<td>02/01/2019</td>
<td>Policy Revision without position change</td>
</tr>
<tr>
<td>01/01/2020</td>
<td>Annual review. No change to policy statement. Literature review updated.</td>
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### Definitions of Decision Determinations

**Medically Necessary:** A treatment, procedure, or drug is medically necessary only when it has been established as safe and effective for the particular symptoms or diagnosis, is not investigational or experimental, is not being provided primarily for the convenience of the patient or the provider, and is provided at the most appropriate level to treat the condition.

**Investigational/Experimental:** A treatment, procedure, or drug is investigational when it has not been recognized as safe and effective for use in treating the particular condition in accordance with generally accepted professional medical standards. This includes services where approval by the federal or state governmental is required prior to use, but has not yet been granted.

**Split Evaluation:** Blue Shield of California/Blue Shield of California Life & Health Insurance Company (Blue Shield) policy review can result in a split evaluation, where a treatment, procedure, or drug will be considered to be investigational for certain indications or conditions, but will be deemed safe and effective for other indications or conditions, and therefore potentially medically necessary in those instances.

### Prior Authorization Requirements (as applicable to your plan)

Within five days before the actual date of service, the provider must confirm with Blue Shield that the member's health plan coverage is still in effect. Blue Shield reserves the right to revoke an authorization prior to services being rendered based on cancellation of the member's eligibility. Final determination of benefits will be made after review of the claim for limitations or exclusions.

Questions regarding the applicability of this policy should be directed to the Prior Authorization Department at (800) 541-6652, or the Transplant Case Management Department at (800) 637-2066 ext. 3507708 or visit the provider portal at www.blueshieldca.com/provider.

Disclaimer: This medical policy is a guide in evaluating the medical necessity of a particular service or treatment. Blue Shield of California may consider published peer-reviewed scientific literature, national guidelines, and local standards of practice in developing its medical policy. Federal and state law, as well
as contract language, including definitions and specific contract provisions/exclusions, take precedence over medical policy and must be considered first in determining covered services. Member contracts may differ in their benefits. Blue Shield reserves the right to review and update policies as appropriate.