Medical Coverage Policy | Transcranial Magnetic Stimulation (TMS) as a Treatment of Depression and Other Psychiatric-Neurologic Disorders

EFFECTIVE DATE: 09|01|2025
POLICY LAST REVIEWED: 01|21|2026

OVERVIEW

Transcranial magnetic stimulation (TMS) is a noninvasive method of delivering electrical stimulation to the brain. The technique involves the placement of a small coil over the scalp and the passing of a rapidly alternating current through the coil wire. The electrical current produces a magnetic field that passes unimpeded through the scalp and bone and stimulates neuronal function. Repetitive TMS is being evaluated for the treatment of treatment-resistant depression (TRD) and other psychiatric and neurologic disorders. A variety of TMS modalities have been developed, which differ on parameters including stimulation intensity, frequency, pattern, and site of the brain stimulation. In conventional TMS, high frequency stimulation is delivered over the left dorsolateral prefrontal cortex (DLPFC) or low frequency stimulation over the right DLPFC. In bilateral TMS, both procedures are performed in the same session. Deep TMS employs an H-coil helmet designed to encompass a broader surface area and stimulate deeper brain structures than conventional TMS. Theta burst stimulation is administered at lower intensities and shorter intervals than conventional TMS.

MEDICAL CRITERIA

Not applicable

NOTIFICATION OF ADMISSION

Not applicable

POLICY STATEMENT

Medicare Advantage Plans and Commercial Products

Transcranial magnetic stimulation (TMS) of the brain using an FDA-cleared device is considered medically necessary when filed with a covered ICD-10 code (refer to the Coding section for details) for individuals over age 18 years with major depressive disorder or obsessive-compulsive disorder who have had an inadequate response to pharmacological agents and psychotherapy services. Please refer to the policy, Behavioral Health Outpatient Professional Services for specialties that may provide TMS services.

Note: TMS practitioner certification is required and should be tailored for specialty providers who directly oversee and administer TMS. This certification requires a deeper understanding of the mechanisms behind TMS, along with the ability to diagnose conditions, tailor treatment plans, and evaluate outcomes. This comprehensive training allows providers to integrate TMS effectively within broader therapeutic strategies.

Indications for which TMS of the brain for the treatment of all other psychiatric and neurologic disorders is not covered for Medicare Advantage Plans and not medically necessary for Commercial Products includes but is not limited to bipolar disorder, generalized anxiety disorder, panic disorder, posttraumatic stress disorder, schizophrenia, substance use disorder and craving, amyotrophic lateral sclerosis, chronic pain, epilepsy, fibromyalgia, Alzheimer's disease, Parkinson disease, stroke recovery, or migraine headaches as the evidence is insufficient to determine the effects of the technology on health outcomes.

For more information, please contact BCBSRI Behavioral Health Utilization Management at 1-800-274-2958.

COVERAGE

Benefits may vary by groups and contract. Please refer to the appropriate Evidence of Coverage and Subscriber Agreement for applicable behavioral health benefits/coverage.

BACKGROUND

Transcranial magnetic stimulation was first introduced in 1985 as a new method of non-invasive stimulation of the brain. The technique involves placement of a small coil over the scalp and passing a rapidly alternating current through the coil wire, which produces a magnetic field that passes unimpeded through the scalp and bone, resulting in electrical stimulation of the cortex. TMS was initially used to investigate nerve conduction; for example, TMS over the motor cortex will produce a contralateral muscular-evoked potential. The motor threshold, which is the minimum intensity of stimulation required to induce a motor response, is empirically determined for each individual by localizing the site on the scalp for optimal stimulation of a hand muscle, then gradually increasing the intensity of stimulation. The stimulation site for treatment is usually 5 cm anterior to the motor stimulation site. Interest in the use of TMS as a treatment for depression was augmented by the development of a device that could deliver rapid, repetitive stimulation. Imaging studies had shown a decrease in the activity of the left dorsolateral prefrontal cortex in depressed patients, and early studies suggested that high-frequency (eg, 5 to 10 Hz) TMS of the left dorsolateral prefrontal cortex had antidepressant effects. In contrast to electroconvulsive therapy (ECT), TMS does not require general anesthesia and does not generally induce a convulsion. Repetitive TMS (rTMS) is also being tested as a treatment for a variety of other psychiatric and neurologic disorders.

Unlike major depressive disorder (MDD), which tends to be an episodic illness, OCD is a chronic lifelong disorder that typically begins in adolescence. It is the fourth most common mental illness and can cause significant distress and disability. Patients exhibit obsessions, compulsions and avoidance symptoms, which are correlated to abnormal activity in the cortico-stria to-thalamic-cortical circuit. Severe refractory cases are referred for neurosurgery (lesional or with an implanted brain stimulator). There is now a non-invasive approach using TMS to target the abnormal circuitry of OCD. In this approach, a coil is placed over the anterior cingulate cortex, which is 4 cm anterior to the foot motor cortex and beneath the dorsomedial prefrontal cortex. TMS for OCD is performed 5 days per week for 6 weeks for a total of 29 sessions. Prior to each treatment, patients undergo individually tailored provocations to activate the abnormal OCD circuitry (for instance, asking a person with germ-related obsessions and compulsions to touch the floor and then not use hand sanitizer). There is no need for anesthesia or analgesia and there are no activity restrictions before or after treatment (e.g., driving, working, operating heavy machinery). Other non-invasive treatments for OCD include cognitive behavioral therapy (CBT) and pharmacotherapy. CBT specific to OCD is known as exposure and response prevention (ERP), utilizing a trained cognitive behavioral therapist to guide the treatment. Pharmacotherapy options include serotonin reuptake inhibitors (SRIs), such as fluoxetine, paroxetine, sertraline and fluvoxamine, and the predominantly serotonergic tricyclic antidepressant clomipramine.

Conventional TMS delivers repeated electromagnetic pulses to induce prolonged modulation of neural activity, typically applied over the dorsolateral prefrontal cortex. High-frequency rTMS (usually ≥10 Hz) induces an increase in neural activity whereas low-frequency TMS (usually ≤1 Hz) has the opposite effect. If both procedures are performed in the same session, the intervention is described as bilateral rTMS.

A variety of TMS modalities have been developed, which differ on parameters including stimulation intensity, frequency, pattern, and site of the brain stimulation. Deep TMS employs an H-coil helmet design to encompass a broader surface area and stimulate deeper brain structures than conventional TMS. Theta burst stimulation is administered at lower intensities and shorter intervals than conventional rTMS.

Devices for transcranial stimulation have been cleared for marketing by the U.S. Food and Drug Administration (FDA) for diagnostic uses (FDA Product Code: GWF). A number of devices subsequently received FDA clearance for the treatment of major depressive disorder in adults who have failed to achieve satisfactory improvement from prior antidepressant medication in the current episode. Some of these devices use deep TMS or theta burst protocols. For example, the Brainsway Deep TMS system was FDA cleared for treatment-resistant depression in 2013 based on substantial equivalence to the Neurostar TMS Therapy System, and the Horizon (Magstim) and MagVita (Tonica Elektronik) have FDA clearance for their theta burst protocols.

Indications were expanded to include treating pain associated with certain migraine headaches in 2013, and obsessive-compulsive disorder in 2018.

In 2014, eNeura Therapeutics received 510(k) marketing clearance for the SpringTMS® for the treatment of migraine headaches. The device differs from the predicate Cerena™ TMS device with the addition of an LCD screen, a use authorization feature, a lithium battery pack, and a smaller size. The stimulation parameters are unchanged. The sTMS Mini (eNeura Therapeutics) received marketing clearance by the FDA in 2016. FDA product code: OKP.

In August 2018, the Deep TMS System (Brainsway) was granted a de novo 510(k) classification by the FDA as an adjunct for the treatment of adult patients with obsessive-compulsive disorder. The new classification applies to this device and substantially equivalent devices of this generic type.

The NeoPulse, now known as NeuroStar® TMS, was granted a de novo 510(k) classification by the FDA in 2008. The de novo 510(k) review process allows novel products with moderate or low-risk profiles and without predicates, which would ordinarily require premarket approval as a class III device, to be down-classified in an expedited manner and brought to market with a special control as a class II device.

In 2014, the Cerena™ TMS device (eNeura Therapeutics) was granted a de novo 510(k) classification by the FDA for the acute treatment of pain associated with migraine headache with aura.

For individuals who have treatment-resistant depression (TRD) who receive TMS, the evidence includes a large number of sham-controlled randomized controlled trials (RCTs) and meta-analyses of these trials. Relevant outcomes are symptoms, functional outcomes, and quality of life. Meta-analyses found improved response rates and rates of remission for conventional TMS and theta burst stimulation compared with sham TMS. Additionally, a head-to-head trial showed noninferiority of theta burst stimulation to conventional TMS, with no difference in the incidence of adverse events. Meta-analyses have concluded that the effect of TMS on average depression scores is smaller than the effect of electroconvulsive therapy (ECT) on TRD and that the mean improvement in depression scores with TMS did not reach the minimal clinically important difference; however, clinically meaningful improvements were noted in a subgroup of studies using higher frequency pulses. One potential area of benefit for TMS is in accelerating or enhancing the response to antidepressant medications, and there is some evidence that TMS, when given in conjunction with the initiation of pharmacologic therapy, improves the response rate compared with pharmacologic therapy alone. The effect of TMS appears to be less robust when it is given in combination with a stable dose of antidepressant medication. Meta-analyses have also found that the efficacy of TMS decreases with longer follow-up, though some studies have reported a persistent response up to 6 months in some patients. There is limited evidence to compare the effects of these treatments on cognition, although the adverse events of TMS appear to be minimal. While meta-analyses have reported that the effect of TMS is smaller than the effect of ECT on TRD, because TMS does not require general anesthesia or induce seizures, some individuals may decline ECT so the balance of incremental benefits and harms associated with TMS may be reasonable compared with ECT. Based on the short-term benefit observed in RCTs and the lack of alternative treatments aside from ECT in patients with TRD, TMS may be considered a treatment option in patients with TRD who meet specific criteria. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have obsessive-compulsive disorder (OCD) who receive TMS, the evidence includes a number of small-to-moderate sized sham-controlled double-blind RCTs and meta-analyses of these studies. Relevant outcomes are symptoms, functional outcomes, and quality of life. A meta-analysis of 15 RCTs (N=483, range 18-65) conducted in 2016, found a benefit of TMS on patient-reported OCD symptom severity at time points ranging from 2 to 6 weeks, but there was substantial variability in the stimulation parameters, including the cortical region that was stimulated and the frequency of stimulation. A meta-analysis conducted in 2021 included 26 RCTs. The primary analysis found a significant effect of rTMS compared to sham on OCD symptoms, but the effect seemed to last only until 4 weeks after the last treatment. The RCT that was the basis of FDA clearance of deep TMS for treatment of OCD compared deep

TMS to sham in 99 patients for 6 weeks, with an additional 4 weeks of follow-up as a secondary outcome. Using a modified intention-to-treat (ITT) analysis (n=94), there was a larger mean decrease from baseline (improvement) on the Yale-Brown Obsessive-Compulsive Scale (YBOCS) score (the primary efficacy outcome) in the active treatment group (-6.0 points) than the sham group (-2.8 points), translating to a moderate effect size of 0.69. At 6 weeks, the response rate was 38.1% in the active treatment group compared to 11.1% in the sham group (p=.003), as measured by a 30% or greater increase in the YBOCS. The difference in the primary outcome measure between active and sham groups was not statistically significant in the ITT analysis. There was a benefit for TMS on clinician-reported measures of improvement. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have migraine headaches who receive TMS, the evidence includes a systematic review(n=8 trials) and a sham-controlled RCT of 201 patients conducted for submission to the Food and Drug Administration (FDA) for clearance in 2013. Relevant outcomes are symptoms, functional outcomes, and quality of life. The systematic review found that repetitive TMS (rTMS) reduced migraine pain intensity and frequency compared to sham; it was unclear whether patients were receiving background pharmacotherapy. The trial results were limited by the 46% dropout rate and the use of a post hoc analysis. No recent studies have been identified with these devices. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have psychiatric or neurological disorders other than depression, migraine, or OCD (eg, bipolar disorder, generalized anxiety disorder, panic disorder, posttraumatic stress disorder, schizophrenia, substance use disorder and craving, amyotrophic lateral sclerosis, chronic pain, epilepsy, fibromyalgia, Parkinson disease, stroke recovery) who receive TMS, the evidence includes numerous small RCTs and meta-analyses of these randomized trials. Relevant outcomes are symptoms, functional outcomes, and quality of life. The trials included in the meta-analyses are typically small and of low methodologic quality. In addition, stimulation parameters have not been established, and trial results are heterogeneous. There are no large, high-quality trials for any of these conditions demonstrating efficacy or the durability of any treatment effects. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

CODING

Medicare Advantage Plans and Commercial Products

The following CPT code(s) are covered when filed with a covered ICD-10 code below, and are otherwise not covered for Medicare Advantage Plans and not medically necessary Commercial Products:

0889T Personalized target development for accelerated, repetitive high-dose functional connectivity MRI–guided theta-burst stimulation derived from a structural and resting-state functional MRI, including data preparation and transmission, generation of the target, motor threshold–starting location, neuronavigation files and target report, review and interpretation (Report 0889T once per personalized target development) (Do not report 0889T in conjunction with 70551, 70552, 70553, 70554, 70555 for the same session) (Do not report 0889T in conjunction with 77022) (New Code Effective 7/1/2024)

0890T Accelerated, repetitive high-dose functional connectivity MRI–guided theta-burst stimulation, including target assessment, initial motor threshold determination, neuronavigation, delivery and management, initial treatment day (Report 0890T once on the first day of the course of treatment) (Do not report 0890T in conjunction with 77022) (New Code Effective 7/1/2024)

0891T Accelerated, repetitive high-dose functional connectivity MRI–guided theta-burst stimulation, including neuronavigation, delivery and management, subsequent treatment day (Do not report 0891T in conjunction with 77022) (New Code Effective 7/1/2024)

0892T Accelerated, repetitive high-dose functional connectivity MRI–guided theta-burst stimulation, including neuronavigation, delivery and management, subsequent motor threshold redetermination with delivery and management, per treatment day (Do not report 0892T in conjunction with 77022) (Do not report 0892T in conjunction with 0890T, 0891T on the same day) (New Code Effective 7/1/2024)

90867 Therapeutic repetitive transcranial magnetic stimulation treatment planning
90868 Therapeutic repetitive transcranial magnetic stimulation treatment delivery and management, per session
90869 Therapeutic repetitive transcranial magnetic stimulation (TMS) treatment; subsequent motor threshold re-determination with delivery and management

Covered ICD-10 Code List
F32.0
F32.1
F32.2
F32.3
F32.4
F32.5
F32.81
F32.89
F32.9
F32.A
F33.0
F33.1
F33.2
F33.3
F33.40
F33.41
F33.42
F33.8
F33.9
F42.2
F42.8
F42.9

RELATED POLICIES
Behavioral Health Services Inpatient and Intermediate Levels of Care
Behavioral Health Outpatient Professional Services

PUBLISHED
Provider Update, March 2026
Provider Update, July 2025
Provider Update, February 2024
Provider Update, March 2023
Provider Update, September 2021

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