Medical Policy Name	Transcranial Magnetic Stimulation for the Treatment of Major Depression
Medial Policy Number	20.5.001
Issued By	Chief Medical Officer
Approved By	Medical Directors, Provider Advisory Committee, Performance Pulse Check Committee
Original Effective Date	10/2014

Applies To: 1/1/2027 to 12-31-2027

Description of Treatment

Transcranial magnetic stimulation (TMS) is a treatment technique that uses a device that generates a magnetic field to influence brain activity. It is noninvasive and can help when other treatment approaches are not effective. The side effects are usually mild and temporary.

When Services May Be Eligible for Coverage

Coverage for eligible treatments or procedures may be provided only if:

- Benefits are available in the member's contract/certificate, and
- Medical necessity criteria and guidelines are met.

Criteria

A. Initial Authorization Request
   1. TMS meets the definition of medical necessity for a treatment resistant major depressive disorder when **ALL of the following criteria (sections a-c) have been met**.
      a. Confirmed diagnosis of severe Major Depressive Disorder WITHOUT Psychosis (International Classification of Disease: ICD-9 codes 296.2x and 296.3X, and ICD -10 codes F32.x and F33.x).
         i. Severity documented by one (1) clinically accepted depression rating scale from Table 1.
      b. The request is for a member between the ages of 18 and 70.
      c. The member has any **one of the following**:
         i. Failure of two (2) trials of psychopharmacologic agents approved by the FDA for treating Major Depressive Disorder. These must include:
            1) Medicine trials from at least two (2) different antidepressant classes (for example SSRI, SNRI, TCA, MAI-O, etc.)
         ii. Inability to tolerate a therapeutic dose of medications as evidenced by two (2) trials of psychopharmacologic agents from

at least two (2) different antidepressant classes with documented distinct intolerable side effects.

iii. The member's condition meets Lucet Medical Policy for Electroconvulsive Therapy (ECT), and both of the following are met:
   1) There is documentation that the member has been evaluated for ECT, and clinical circumstances prevent the use of ECT.
   2) ECT outcome would not be overall superior to TMS (e.g., in cases with psychosis, acute suicidal risk, catatonia, or life-threating dysfunction in basic life needs). In these conditions, TMS should not be utilized.

B. Accelerated Intermittent Theta Burst Stimulation (aiTBS) may be authorized as an alternative to TMS only when the member has documented insurmountable barriers to receive regular TMS as described in Expectations of Care Delivery 2 and 3.

C. Retreatment Requests for TMS
   1. **Must meet both (a) and (b):**
      a. Meets all requirements for initial TMS treatment (above)
      b. Repeat acute treatment for relapses of depressive symptoms is considered medically necessary when both (i) and (ii) are met:
         i. There is documentation submitted that the member responded to prior treatments, specifically with a 50% or greater improvement in a standard rating scale for depressive symptoms (Table 1).
         ii. A minimum of ninety (90) days has elapsed since the termination of the prior TMS treatment course.

Expectations of Care Delivery

1. Training and Requirements
   a. Lucet will register any clinics or practitioners via documentation of certification, prior to allowing use of this benefit.
   b. Psychiatrist
      i. Board-certified psychiatrist with training in the use of TMS for Major Depression.
      ii. Required to personally perform first TMS treatment (including cortical mapping, motor threshold determination, delivery, and management) and re-determination of the Motor Threshold (MT).
      iii. Subsequent TMS treatment may be administered by a psychiatrist.
   c. TMS Technician
      i. Required to have certification in administering TMS.
      ii. Subsequent TMS treatment may be administered by a technician.
2. TMS administered with an FDA-approved device.

3. One (1) treatment session per day is given for five (5) consecutive days per week for six (6) consecutive weeks. Immediately following the six (6) (week treatment period, the treatment frequency is tapered, as follows:
    a. Week One (after six-week initial treatment): 3 treatment sessions
    b. Week Two (after six-week initial treatment): 2 treatment sessions
    c. Week Three (after six-week initial treatment): 1 treatment session
4. Accelerated intermittent theta burst stimulation (aiTBS) – Multiple sessions per day is given over 1 to 3 weeks (up to 38 sessions), using a device approved for iTBS.
5. Standardized depression rating scales (Table 1) will be administered during TMS treatment to monitor progress at a minimal frequency of an initial pre-treatment test which is to occur prior to the six (6) week initial treatment period, followed by testing every two (2) weeks during the six (6) week treatment period and a final test at the last treatment visit. If the rating scales document a lack of meaningful change or worsening of symptom intensity, review by a physician advisor may be indicated.
    a. For consistency, one (1) rating scale should be chosen and administered during the entire treatment course.

Table 1 - Clinically Accepted Depression Rating Scales include but are not limited to:

Name	Number of items	Minimum score for initial authorization
Beck Depression Inventory (BDI)	21	>29
Inventory of Depressive Symptomatology Clinician-rated (IDS-C)	30	>36
Quick Inventory of Depressive Symptomatology Self-reported (QIDS-SR)	16	>15
Montgomery-Asberg Depression Rating Scale (MADRS)	10	>34
Patient Health Questionnaire (PHQ9)	9	>19

Authorization if Determined to be Medically Necessary

1. Initial authorization:
    a. One (1) unit of 90867, 36 units of 90868, and one (1) unit of 90869.
    b. Requests for additional units of 90869 should be submitted with detailed clinical rationale.
2. Retreatment Requests
    a. 36 units of 90868
3. Accelerated intermittent theta burst stimulation (iTBS)

a. Up to 38 sessions are approved over a period of three weeks, using a device approved for iTBS.

Limitations of Coverage - The use of TMS with any of the following is considered not appropriate or medically necessary:

1. There is current evidence of:
    a. Recent substance use (Urine Drug Screen (UDS) confirmation may be required).
    b. Active psychotic symptoms.
    c. Acute suicidal risk
    d. Catatonia
    e. Life-threating dysfunction in basic life needs
    f. Active neurologic disorder, including but not limited to encephalopathy, dementia from any cause, Parkinson's Disease, post-stroke syndromes, increased intracranial pressure or bleeding, cerebral aneurysm, A-V malformations, CSF shunts, implants in the CNS or head/neck, etc.
2. The request is for treatment of psychiatric diagnoses other than Treatment Resistant Depression.
3. The request is for treatment of OCD.
4. The member has non-removable metallic objects or implants in his/her head or neck regions.
5. The request is for Maintenance TMS Treatment.
6. The request is for Magnetic Seizure Therapy (MST), which is using TMS to stimulate the induction of seizures, has been tried as an alternative to the electrical induction of seizures in electroconvulsive therapy (ECT).
7. The request is for Navigated Transcranial Magnetic Stimulation (nTMS) which uses a diagnostic tool to stimulate functional cortical areas at precise anatomical locations to induce measurable responses. This technology is being investigated to map functionally essential motor areas for diagnostic purposes and for treatment planning.
8. The request is for Electroencephalogram (EEG) guided TMS, including but not limited to Magnetic E-Resonance Therapy (MeRT). These therapies use EEG to determine magnetic pulse frequency, intensity and coil placement based on brainwave patterns.

Summary of Evidence

For major depressive disorder, two clinical practice guidelines (CPG) (Walter et al., 2023; McQuaid et al., 2022) recommend psychotherapy and/or pharmacotherapy as first-line treatment interventions for all age groups.

One CPG (McQuaid et al., 2022), for adult patients who have demonstrated partial or no response to two or more adequate pharmacologic treatment trials (sufficient length and adherence), suggested offering repetitive transcranial magnetic stimulation (rTMS) for

treatment. The CPG also indicated that there is insufficient evidence to recommend for or against theta-burst stimulation for the treatment of MDD.

Another study (Dalhuisen et al., 2024) found that rTMS was more effective than pharmacological treatment in patients with moderately treatment-resistant depression. Furthermore, greater reductions in symptoms of anxiety and anhedonia were observed after treatment with rTMS, which supports ongoing research in this area. The authors concluded that rTMS should be considered as a viable treatment option at an early stage of the treatment algorithm and may be more effective than antidepressant medication switch or augmentation.

Accelerated theta burst TMS (aTBS)

Repetitive transcranial magnetic stimulation (TMS) is established as effective and FDA-approved for individuals with TRD (Treatment Resistive Depression), with accelerated theta-burst TMS also recently showing efficacy (McIntyre et al., 2023). Whether or not accelerated TBS is equivalent to traditional rTMS is a topic of intense interest. While some studies have shown it to be non-inferior, a recent investigation by Wada (2025) failed to establish that TBS is non-inferior to rTMS And, a systematic review of accelerated theta burst stimulation (aTBS) published in 2025 (Lefaucheur et al., 2026) concluded: "…due to limitations such as small sample sizes, methodological heterogeneity, and suboptimal control conditions or targeting methods, it is not possible to draw clear and definitive conclusions at present." Since then, a Brainsway-sponsored study published in 2026 (Hanlon et al., 2026) is one of the largest accelerated TBS trials yet with 104 participants, and it did show non-inferiority with standard TMS. Standard TMS was slightly more effective and had slightly less side effects and drop-outs.

So far, accelerated TMS has not been shown to be an effective treatment for acute suicidality. In a 2026 meta-analysis (Joseph et al. 2026), accelerated TMS did not change suicidal symptom severity compared to sham or standard TMS, suggesting it is not a good treatment for quick intervention on suicidal states. The study noted that high-risk cases may have been excluded from studies. Another study in the American Journal of Psychiatry in 2026 (Traynor et al. 2026) also concludes that accelerated TMS for suicidality did not separate from sham, even with conjoint antidepressant initiation. ECT had strong anti-suicide effects in all studies examined.

Neuronavigated TMS

Stanford neuromodulation therapy (SNT, previously referred to as Stanford accelerated intelligent neuromodulation therapy, or SAINT), a high-dose iTBS protocol with functional-connectivity-guided targeting (navigated TMS), was more effective than sham stimulation for treatment-resistant depression. This study only had 29 participants who completed the study, limiting conclusions that can be drawn from it. Further trials are needed to determine SNT's durability and to compare it with other treatments (Cole et al., 2022).

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Regarding durability of the SNT iTBS, a 2025 study by Geoly showed that most remitters and responders relapsed into depression after 12 weeks. The authors suggested that additional treatments or re-treatment might be necessary.

Deep TMS

Deep TMS is a technique that penetrates deeper into cortical brain tissue. There are few recent high-quality articles on this method. One 2023 article (Tendler et al., 2023) was a naturalistic study without a control group. Also, in this study, only 67% of participants were severely depressed.

Time to improvement with TMS

In a 2023 post-marketing study of maintenance TMS (d'Andrea et al., 2023), it was noted that the peak of recovery was often up to 5 months after treatment was completed. Some benefits of treatment did not appear until several months after TMS treatment. 14 studies were included, none done in the past 4 years. Only 2 were of TMS that started after acute treatment. There was no agreed upon protocol.

TMS in other psychiatric disorders

In a 2023 review of TMS for Bipolar Disorder (Mutz, 2023), the author noted that there are few sham-controlled studies of TMS in Bipolar Disorder. Of the main three, one showed effect greater than sham in 2 weeks but not at 4 weeks. Another study of 49 patients did not separate from sham TMS. Another using intermittent theta-burst stimulation (iTBS) did not separate from sham. Most of the positive evidence for TMS efficacy in Bipolar Affective Disorder is case reports and uncontrolled studies. The author noted that there are few sham-controlled studies of TMS in Bipolar Disorder. Of the main three, one showed effect greater than sham in 2 weeks but not at 4 weeks. Another study of 49 patients did not separate from sham TMS. Another using intermittent theta-burst stimulation (iTBS) did not separate from sham.

Shamabadi et al. (2023) reviewed eleven studies of Bipolar Depression (BD) and response to TMS treatment when combined with neuroimaging modalities (5 navigated TMS methods). The studies suggested that nTMS may have benefits. This study reviewed significant clinical implications of neuroimaging modalities for prognosis, treatment planning, and patient outcomes in patients with bipolar depression who received TMS. Due to limitations, rTMS in BD research needs to be further studied and results replicated.

A pilot study of 31 subjects published in 2024 (Aaronson, et al.) showed positive results for conventional TMS in Bipolar Depression, suggesting that more research may be indicated.

Lorentzen et al. (2022) synthesized literature in a systematic review and quantitative meta-analysis of double-blind randomized controlled trials of TMS in patients with schizophrenia. 57 studies with a total of 2633 participants that were included in the meta-analysis. The author concluded that TMS appears to be an efficacious treatment option

for patients with schizophrenia suffering from negative symptoms, but the optimal TMS parameters are yet to be established. There was, however, substantial heterogeneity and high risk of bias among the included studies.

Meta-analysis of updated evidence (Gay et al., 2022) to assess overall rTMS efficacy on craving, differential effects between addiction types clustered into three groups (depressant (alcohol, cannabis, opiate), stimulant (nicotine, cocaine, methamphetamine), and behavioral addiction (gambling, eating disorder)), and stimulation settings. Studies on substance use, gambling, and eating disorders are included, with unrestricted stimulation settings. A total of 34 eligible studies were identified. Because of highly significant heterogeneity in primary results, a sensitivity analysis was performed on a remaining sample of 26 studies (30 units of analysis). Analyses performed using random effects model revealed a small effect size favoring active rTMS over sham TMS stimulation in the reduction in craving. The authors found a significant difference between addiction types, with a persistent small effect only for stimulant and behavioral groups. Efficacy of rTMS on craving in stimulant and behavioral addiction was highlighted, but recommendations on optimal stimulation settings and its clinical application await further research.

TMS in ages 15-17

In March 2024, the FDA cleared three TMS devices for adjunctive treatment for major depressive disorder in adolescents aged 15 and up. These are the NeuroStar Advanced Therapy system, the Magstim Horizon Inspire and 3.0 systems, and the Apollo TMS Therapy Devices. The clearance was a marketing clearance, meaning providers can be reimbursed for administering TMS to adolescents. This decision was made based on a research poster describing a naturalistic study of 1169 subjects who received TMS for major depressive disorder. Initial PHQ-9 scores were as low as 10, and the average age was 19.2 years old. TMS treatment resulted in improvement in both depressive symptoms and anxiety in both adolescents and young adults. As a naturalistic study, there was no control group. The authors concluded that TMS treatment resulted in improvement in both depressive symptoms and anxiety in both adolescents and young adults. An article associated with the study is in press (Croarkin et al., 2025).

In a 2022 systematic review of TMS in children and adolescents (Sigrist et al., 2022), the review notes: “To date, two randomized controlled trials on TMS in adolescent depression have been studied, and the only large-scale randomized trial suggests TMS is not more effective than sham stimulation.” This refers to the Croarkin 2021 study, where in adolescents both TMS and sham groups responded with improvement. Another review (Qiu et al., 2023) noted, “Repetitive transcranial magnetic stimulation (rTMS) benefits adults with depression while its efficacy and safety in children and adolescents with major depressive disorder (MDD) remain unclear.” It also noted that most studies did not have a sham control group.

One CPG for children and adolescents (Walter et al., 2023) did not recommend TMS but noted that it was one area for additional treatment research. As of 2025, the American

Academy of Child and Adolescent Psychiatry continues to take the position that the efficacy and safety of TMS in members under the age of 18 is not established.

TMS in members over 70

Several articles have come out regarding use of TMS in a geriatric population.

- In a 2022 retrospective review of geriatric depression (Cappon et al., 2022), the study subjects included subjects as young as 50. Studies had varying results and within studies results were heterogeneous. The RCT's done were not large studies.
- A 2022 study (Blumberger, et al., 2022) compared bilateral theta-burst stimulation (TBS) to conventional TMS and found it to be non-inferior. There was more pain with TBS. The average age was 67 years old. Subjects were rated using the Montgomery-Asberg Depression Rating Scale. In the TMS group, average decrease in depression scores was 32%. In the TBS group, the decrease was 38.5%. 35% of this group went into remission. However, subjects before treatment had average scores in the mild to moderate range on the MADRS and had failed only one antidepressant medication. This limits the ability to generalize the results to clinical populations.
- In another retrospective analysis (Almheiri et al., 2023), the oldest subject was 71, so it does not inform of any potential change to our current policy limit of age 70. The mean age was 66. It also noted that the usual way of doing rTMS, Left DLPFC treatment, had no effect, only bilateral TMS did. The author speculated that more effective protocols for geriatric patients might be developed in the future.

Recently the FDA cleared the Brainsway TMS device to treat older members, ages 70-86. However, the current literature does not adequately support raising the policy age limit of age 70 for TMS authorization.

TMS in OCD

The Brainsway device is said to be deep transcranial magnetic stimulation (dTMS) safe and effective as a treatment alternative for OCD and recently received regulatory approvals (Roth et al., 2020). Data from one double-blind multicenter dTMS study found efficacy of this novel treatment in OCD patient who previously failed to respond to multiple medications and CBT. Limitations of this analysis included small sample size and the lack of controlled monitoring of prior,
pharmacological and psychotherapy treatments.

Roth et. al found that the majority of OCD patients benefitted from dTMS, and the onset of improvement usually occurred within 20 sessions (Roth et al., 2021). Extending the treatment course beyond 29 sessions resulted in continued reduction of OCD symptoms, raising the prospect of value for extended treatment protocols in non-responders.

EEG Guided TMS

EEG guided Transcranial Magnetic Stimulation, designed to measure cortical responses, and individualize stimulation frequency, timing, intensity, and/or coil placement. (MeRT or

Magnetic E-resonance Therapy is a type of EEG Guided TMS.) The evidence available so far is exploratory with limited standardization or agreement on procedures. Biomarkers in EEG analysis are reported for various conditions, but their clinical value is not established (Prokop-Millar et al., 2026). The lack of reliable biomarkers is a barrier towards being able for this technology to contribute to medical care (Zrenner et al., 2023). Randomized clinical trials comparing treatment outcomes over standard FDA-cleared TMS protocols have not been done (Wischnewski et al., 2024).

Exceptions

Exceptions to this medical policy must be approved by Lucet Chief Medical Officer or their designee.

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Related Documents

GUIDES / HANDOUTS
None

FORMS
Transcranial Magnetic Stimulation (TMS) Request Form

Document History

Date	Action	By Whom	Summary
09/2026	Revision	Medical Policy Workgroup	• Added criteria for theta burst TMS (iTBS). • Added statement on EEG guided TMS. • 7 references added. • Updated the summary of evidence. • Reordered content for clarity.
09/2025	Revision	Medical Policy Workgroup	• Clarified language regarding ECT recommendations. • Add child and adolescent indication from the FDA. • 10 references removed. • 3 references added. • Updated the summary of evidence.

09/2024	Revision	Dr. J. Langlow	• Added description of treatment.
			• Added Expectations of Care Delivery section.
			• Added Limitations of Coverage section.
			• Added summary of evidence.
			  ○ Updated the summary
			  ○ Added 19 references
			  ○ Kept 9 references
			  ○ Removed 16 references
			• Coding section renamed to Authorization if Determined to be Medically Necessary.

11/2023	Annual Review		
09/2023	Revision		
11/2022	Annual Review		
09/2021	Revision		
09/2020	Revision		
09/2019	Revision		
09/2018	Revision		
10/2017	Revision		
12/2016	Revision		
11/2016	Annual Review		
11/2015	Annual Review		

03/2015	Annual Review		
10/2014	New		

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