



THE TMS COLLABORATIVE

Patient Guide to rTMS Therapy

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First and foremost almost every patient we've treated at The TMS Collaborative has been apprehensive beginning repetitive Transcranial Magnetic Stimulation (rTMS). If this is you, know that you are not alone. However, rTMS is not what you imagine it to be. Nearly all of our graduates indicated that the treatment was not painful and it has given them back their life. The below information is designed to give you a comprehensive outline of what to expect during rTMS treatments. If after you read this document you find yourself still unsure if rTMS is right for you please contact us and we will try to connect you with a past patient who will testify the rTMS is nothing to be afraid of and it's highly effective in treating depression.

rTMS was approved by the FDA in 2008. It has since steadily gained traction in the mental health community as a non-invasive, non-pharmaceutical, interventional treatment for patients who have not responded to antidepressants alone. If you have major depressive disorder and have not responded to treatment with multiple antidepressants, rTMS might be a logical next step in treating your major depression.

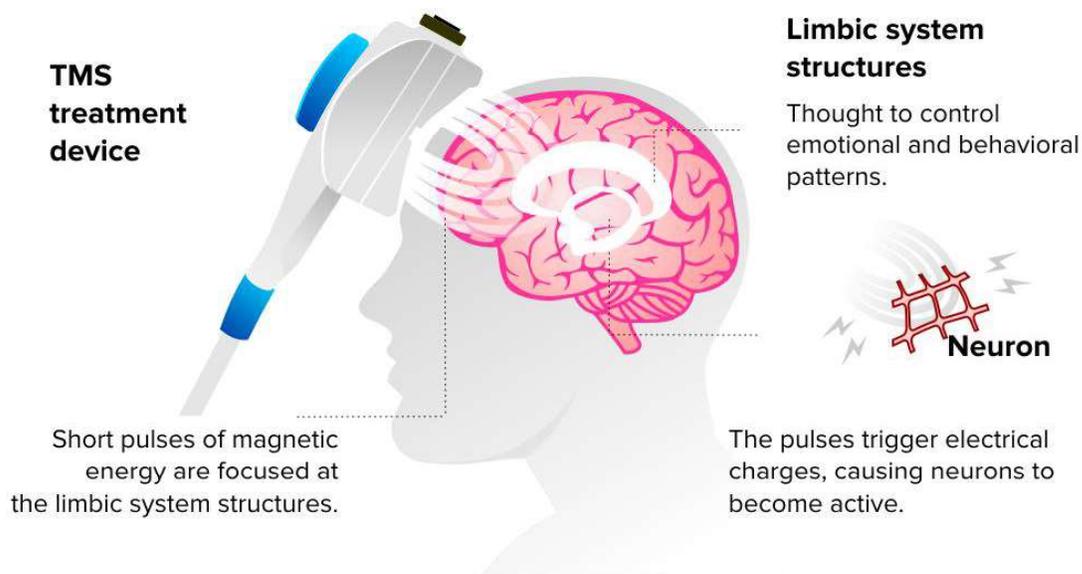
Background Information about rTMS

When people think of interventional psychiatry, the first treatment that usually comes to mind is electroconvulsive therapy (ECT). Movies and TV shows have harmfully and misleadingly referred to ECT as electric shock therapy. Nevertheless, while ECT is effective it does scare patients when they read the list of side effects; one of which is memory loss. rTMS is not ECT. It's similar in that it stimulates the brain and can help relieve symptoms of depression, but that's where the similarities end. rTMS is considerably more tolerable and safer than ECT. It does not require anesthesia, there is no memory loss, and the

patient is fully conscious throughout the entire treatment and is able to drive themselves to and from appointments.

Magnetic pulse to ease depression

A non-invasive procedure to help fight depression, called transcranial magnetic stimulation, or TMS, uses a magnetic pulse to stimulate brain cells that control mood.



The History

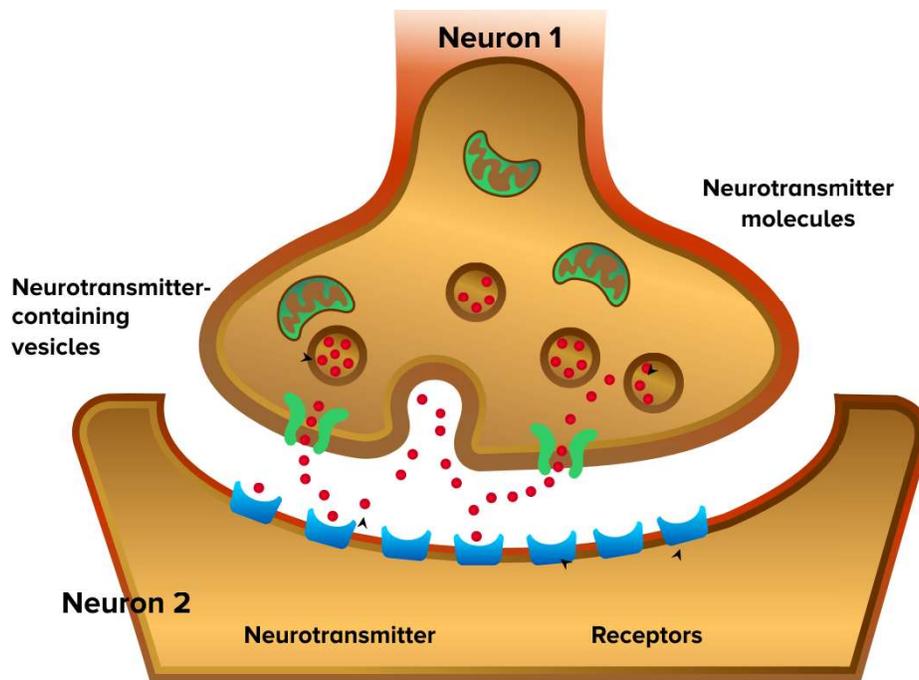
The first successful demonstration of rTMS took place in 1985. rTMS therapy was approved by the FDA in 2008. It has since gone on to be used as a treatment in some of America's most prestigious teaching hospitals, like MA General, Brigham and Women's, Johns Hopkins, and UCLA Medical Center to name only a few. In recent years the technology has become available in clinic settings such as The TMS Collaborative. These clinics offer patients a more local option for their treatment. As of 2020, The TMS Collaborative has performed thousands of rTMS treatments.

The Science

rTMS uses electromagnetic pulses to activate brain cells. The magnetic waves emitted during rTMS help stimulate the neurons in the patient's prefrontal cortex. Getting the neurons firing correctly helps them

effectively receive the brain's natural chemistry. This treatment protocol helps optimize the area of the brain believed to play a major role in a person's mood.

Researchers theorize that rTMS causes areas of the brain rendered underactive by depression to become active again, prompting the release of a higher number of neurotransmitters and thus improving a patient's mood.



The Possibilities

rTMS has a wide range of potential applications in addition to treating depression. In fact, it was just approved by the FDA in 2018 to treat obsessive-compulsive disorder. Other conditions that it could possibly have positive implications for include:

- Attention-deficit/hyperactivity disorder
- General anxiety disorder
- Post-traumatic stress disorder
- Parkinson's disease
- Autism spectrum disorder

Beyond the clinical setting, rTMS serves as a versatile tool for many areas of research, especially those pertaining to the brain and the nervous system. This is because researchers can use rTMS to create temporary changes in the brain, and subjects can be safely exposed to rTMS with little to no side effects.

Undergoing rTMS Therapy: What Is It Like to be an rTMS Patient?

Currently, psychotherapy and antidepressants continue to be the first line of treatment for depression. rTMS is usually recommended for patients who are not responding to this treatment regimen. rTMS is a repetitive treatment that is administered five times a week for roughly 6 to 7 weeks. Treatment sessions last 19 minutes, therefore patients are in and out of the clinic within 30 minutes.

Logistics and Pre-Treatment Steps

Anyone of your behavioral healthcare providers or your primary care physician can refer you to an rTMS clinic. The TMS Collaborative will request patient information from the referring clinician and from any other providers who are involved with your mental health treatment. Additionally, you will have a telephone or face to face consultation with a member of The TMS Collaborative to discuss your behavioral health history, your current symptoms and your rTMS therapy goal(s). This consultation is also an opportunity for you to ask any questions you may have regarding rTMS therapy.

Most patients with major depressive disorder who meet their insurance carriers' preauthorization guidelines end up being approved to start rTMS therapy. However, there are some conditions and scenarios that may preclude you from proceeding with rTMS.

- If you have a non-removable conductive metal implant in or around your head (brain stimulators, cochlear implants, vagus nerve stimulators, etc.)
- Certain additional mental health diagnosis
- If you have a history of seizures or a seizure disorder

- If you have experienced certain brain-related injuries
- Have dementia or cerebrovascular disease
- Facial tattoos with metallic or magnetic-sensitive ink
- Shrapnel or bullet fragments in or near the head
- Aneurysm clips or coils
- Stents in the neck or brain
- Deep brain stimulators
- Electrodes to monitor brain activity
- Metallic implants in your ears and eyes
- Other metal devices or object implanted in or near the head

What to Expect

After the initial consultation and insurance pre-authorization, you will be scheduled to undergo a mapping session to determine the position of the electromagnetic coil and the frequency of the treatment pulses. Treatment protocols are established to uniquely suit the patient's physiology. Treatment protocols may vary from patient to patient. The first stage of the mapping will be the rTMS physician measuring the patient's motor threshold. Measuring the motor threshold helps the physician personalize the patient's settings to determine the amount of energy required to stimulate brain cells during all of the rTMS treatment sessions. Once the motor threshold is determined, the treatment coil is then positioned on the patient's scalp to rest atop the left prefrontal cortex region of the patient's brain. The left prefrontal cortex is where the neurons that regulate a person's mood are located. The left dorsolateral prefrontal cortex is the part of the brain where depression is likely to be most localized. Once the coil is in place and the frequency setting is correctly inputted, the treatment then commences. During the treatment, patients will hear a series of clicking sounds and they will feel a tapping sensation under the treatment coil. In nearly all cases patients do not report any pain during the procedure. However, if there is any

initial discomfort during the first few tappings the rTMS technician can easily adjust the treatment intensity to a comfortable level. For nearly all patients rTMS therapy is not painful. However, if the initial rTMS sessions prove to have some slight discomfort, you should be encouraged that as the treatments continue, you will gradually grow accustomed to the therapy, and it should become increasingly tolerable. The only thing we ask of the patient is that they remain still during treatment in order to ensure that the coil stays in the right position for the entire 19 minutes.

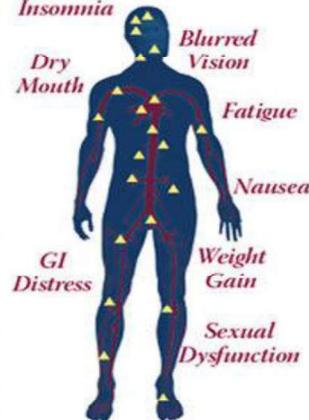
Side Effects

rTMS is well-tolerated and associated with few side-effects. The most common side-effect, which is reported in roughly ¼ of patients, are headaches. These are mild and generally diminish over the course of the treatment. Over-the-counter pain medication can be used to treat these headaches. Additionally, an even smaller percentage of patients may experience scalp and or facial sensations during rTMS pulses. These too tend to diminish over the course of treatment although adjustments can be made immediately in coil positioning and stimulation settings to reduce discomfort.

As the image below highlights, rTMS, by comparison, has not been associated with many of the side-effects caused by antidepressant medications.

DRUG THERAPY

OTHER ADVERSE EVENTS
Nervousness
Weakness
Abnormal Ejaculation
Constipation
Anxiety
Impotence
Diarrhea
Increased Appetite
Dizziness
Sweating
Decreased Appetite
Tremor
Drowsiness
Decreased Sexual Interest
Headache/Migraine
Treatment Discontinuation
Side Effects



Insomnia
Dry Mouth
Blurred Vision
Fatigue
Nausea
GI Distress
Weight Gain
Sexual Dysfunction

TMS THERAPY



Scalp Pain or Discomfort

OTHER ADVERSE EVENTS
Eye Pain
Toothache
Muscle Twitching
Facial Pain
Pain of Skin

In clinical trials, fewer than 5% of patients discontinued treatment with NeuroStar TMS Therapy due to adverse events.

From product labeling for currently marketed antidepressant medications; adverse events occurring at an

The most serious risk of rTMS is seizures. However, the risk of a seizure is exceedingly low, and there have been no documented cases of seizure while being treated by the type of machine we use at The TMS Collaborative. The type of machine we use is manufactured by Magstim which is the company that invented TMS Therapy. It should be noted that a patient has a higher risk of seizures from their antidepressant medication than from an rTMS treatment. The TMS Collaborative follows up-to-date safety guidelines that are designed to minimize the risk of seizures. rTMS does not affect cognition, which means the patient can go to and leave from every session without assistance and resume daily activity afterward.

Treatment Timeline

Patients typically begin to feel the results of rTMS three to four weeks after starting treatment. However, some patients have actually reported feeling effects before the three to four week mark. If you have not felt any significant changes in your mood by the fourth week, you should not be alarmed. The TMS Collaborative has performed thousands of treatments and in some instances, patients begin to feel positive effects later than four weeks into their treatment.

In order to measure your progress, your rTMS technician will ask you to complete a PHQ-9 questionnaire on a weekly basis. These questions are designed to score the severity of your depression and to monitor your progress during treatment. The lasting effects of rTMS vary from patient to patient. With some patients, we might never see them for rTMS therapy again because they achieve total depression remission. In other cases, a patient might need to come back to be re-treated. As long as you showed at least an initial 50% improvement in your depression during your previous rTMS sessions it's highly likely your insurance company will cover additional rTMS sessions. In cases where insurance coverage is not an option for retreatment, The TMS Collaborative offers a sliding scale payment plan for patients who need it. Thank you for considering The TMS Collaborative for your Major Depression Treatment.