

Evidence Based Practice Clinical Roll Out Program
for rTMS for Depression in VHA Mental Health Clinics
Coordinating Site: Palo Alto VAHCS

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What is Transcranial Magnetic Stimulation (TMS)?

- Transcranial Magnetic Stimulation (TMS) was approved by the US Food and Drug Administration (FDA) in 2008 for treatment resistant depression. It is another tool medical providers can use to help treat depression in addition to medications and therapy. TMS can be done while on antidepressant medications or while doing therapy. TMS is also being studied for treating other health conditions.
- TMS is used to change activity in the brain “noninvasively”. This means there is no drug or device placed inside the brain. We put a TMS magnetic coil on the head and this coil uses magnetism to create small, brief electrical pulses in the brain. If we cause the coil to pulse quickly, over many sessions the brain area underneath the coil and the areas communicating with it to increase in activity. If we cause the coil to pulse slowly we can reduce activity in that brain region. A TMS session is done in a clinic while you are awake, sitting in a chair and lasts about 25 minutes. Most people need multiple sessions over several days (20-30) to get benefit from the treatment.

How effective is TMS? Will it work for me? and How long will it last?

- Based on recent research studies, about 1/3 of people find TMS helps their depression. This is similar to the chances of an antidepressant medication or a therapy helping your depression.
- At this time we don't have a good way to predict who will benefit from TMS. The decision to do TMS should be based on a discussion between you and your healthcare provider.
- There is limited long term data on TMS. Many people who are helped by TMS report it helping long-term. Some people find they need “booster sessions” or are helped by a repeated session of TMS if their depression returns. Your medical provider will discuss a plan for follow-up and future treatments if you need them.

What Will Happen During TMS?

- A medical provider will discuss your history and medications to see if this is a treatment that will be a good fit for you. They will explain the procedures and answer any questions you have.
- Next the medical provider will determine the exact location and amount of magnetism you will need for your treatments. This will involve putting electrode stickers on your hand and stimulating the part of the brain that causes your thumb to twitch.
 - Just as we give people different doses of medications based on their weight or age, everyone differs in their sensitivity to brain stimulation. Some people need stronger and some people need weaker amounts of stimulation. Our goal is to use the lowest dose to be effective while minimizing side effects and safety concerns.

- Next you will get your TMS treatment.
 - During TMS treatment you will sit in a reclined chair with your head in pillow to help you hold your head still.
 - It is important that you are comfortable because you will need to sit still during the treatment. Let us know if you need to shift, re-adjust, or stop for any reason.
 - Your job is to relax, be still, and stay awake. You can close your eyes if you want.
 - You will wear a cap marked with your treatment location and ear plugs.
 - The treatment magnetic coil will be placed touching your head and you will hear a tapping sound from the machine.
 - A staff member will be in the room with you at all times. Ask if there is anything you need.

Is TMS safe for me?

- Before getting TMS you will meet with a medical provider to review safety information as it applies to you. They will ask you about conditions that might put you at risk.
- There are some people who would not get TMS because it would be unsafe for them.
 - For Example: People with Cochlear implants (permanent implants into the skull to help people hear) and People with Implanted metallic hardware or stimulators close to the treatment coil would never be safe for TMS treatment.
- Some people may have conditions that would increase risk for them while receiving TMS. Whether TMS would be recommended would be based on a more detailed discussion with you and your medical provider to weigh the risk versus the benefits to you.
 - For example:
 - Some medications could increase risk for seizure. These medications may be stopped or changed based on a discussion with your medical provider. It is important you tell your medical provider about any medications, over-the-counter drugs, supplements, and medications you may only take rarely or occasionally.
 - Current Drug and Alcohol use. This can increase risk for seizure based what you use, the amount and frequency of use. Be sure to discuss this with your medical provider.
 - Sleep deprivation. Let your medical provider know if you have nights where you might get only an hour or two of sleep as this may put you at a higher risk for seizure.
 - History of stroke, brain cancer, brain infections, traumatic brain injury, seizure, and/or epilepsy would need to be discussed further with your medical provider.
 - There is not enough data to determine the safety of TMS and pregnancy. If you are trying to become pregnant or think you may be pregnant discuss this with your medical provider.

What side effects should I watch for and know about before deciding to start TMS?

- TMS is generally well tolerated but there are some side effects to know about and watch for. Many are mild and if you let a staff member know about them they can make changes to help them go away. Staff members will also watch for these and may ask you if you have noticed any of these things as you continue in treatment.
- No medication or treatment is completely safe and without risks so it is important to know about the risks and side effects for a treatment and discuss these with your medical provider to see if this is a good treatment for you. There are also risks to not getting treatment for medical conditions so it is important to discuss these with your medical provider and those who help you make medical decisions to create a plan that works for you.
 - The most frequent side effect reported by about 1/3 of people is a mild to moderate headache after the first treatment session. These headaches may feel like a tension headache and usually go away after the first or second treatment session. If bothersome an over-the-counter pain medication like Tylenol is often recommended.
 - The most serious, although very rare risk is that of seizure. Very rarely seizure has occurred in people receiving TMS. These people have had increased risk factors for seizure. In these people, when TMS is stopped the seizure has resolved. Nobody has developed a seizure disorder from receiving TMS. Due to the seizure risk, often people at risk for seizures based on medical history or medications they are taking are often not recommended for this treatment. The staff members you will work with are set-up and trained to take care of you in the extremely rare case that you have a seizure during treatment. You will never be alone during treatment.
 - Other side-effects occasionally reported by patients include
 - Discomfort under the coil, heat.
 - Tingling, muscle twitching, discomfort in the face, neck, jaw or teeth.
 - Hypomania or feeling euphoric.
 - Potential side-effects also include
 - Change auditory threshold if ear plugs are not worn or are worn incorrectly. Let staff know if you notice any changes in your hearing or new ringing in your ears.
 - Syncope or passing out from nervousness.

I want to know more:

- [Link to in-depth Pathophysiology](#)
- [Link to pivotal research study findings](#)
- [Link to Videos](#)
- [Link to resources for depression](#)
- [Link to CSP556 RESULTS!!](#)
- [Link to clinicaltrials.gov](#)

