

# Transcranial Magnetic Stimulation (TMS)

Information for patients, carers, family and support persons

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## Transcranial Magnetic Stimulation

Transcranial Magnetic Stimulation (TMS) is a non-invasive form of brain stimulation that can be used to treat depression. In treating depression TMS may be used when patients have not responded to antidepressant medications, have unacceptable side effects to medications or would prefer to try another treatment option.

Research into the use of TMS for treating depression has been going on for over 20 years. This research has confirmed the effectiveness of TMS for this purpose. Following on from this research a number of countries including Australia have adopted using TMS as a treatment option for depression. In the United States TMS was first approved for use in treating depression in 2008.

In TMS a magnetic field is generated from an electrical coil which is placed over the scalp. The magnetic field travels freely through the scalp and skull and stimulates a small frontal section of the brain called the dorsolateral prefrontal cortex. This leads to changes in brain activity which are thought to spread to other areas. Over repeated sessions the changes in brain activity brought about by TMS are thought to correct abnormal brain functioning associated with depression.

## Side effects from TMS

TMS treatment is usually well tolerated especially when compared to other treatments for depression such as medications. It is uncommon for patients to cease TMS treatment due to side effects.

Some patients may experience mild discomfort with TMS. This is most likely to occur during initial TMS treatment sessions. The discomfort may occur in the scalp underneath the magnetic coil. Sometimes the discomfort will spread down the face. Other patients may complain of muscle spasm underneath the TMS coil or headache. If discomfort does occur simple analgesics such as aspirin or paracetamol can be helpful.

Some patients may complain of tiredness after having a TMS session.

## Risks associated with TMS

While TMS is a very safe procedure there are some risks associated with its use. Before being offered TMS, patients are carefully assessed to make sure that this will be a safe form of treatment for them.

- Seizure is the most serious concern with TMS treatment. It is estimated that seizure may occur in one per 30,000 TMS treatment sessions. This risk of seizure is thought to be comparable to, or even lower than the risk of seizure with antidepressant medication.
- Patients with a history of bipolar disorder may be at risk of experiencing an episode of mania with TMS.



## Risks associated with TMS

- Fainting can occur in TMS and isn't harmful. Although differentiating whether someone has had a TMS induced seizure versus an episode of fainting can be difficult.
- During TMS the magnetic coil makes a clicking noise which can be quite loud. This can lead to transient changes in hearing ability. This is easily prevented by using ear plugs which will be offered at the start of every treatment.
- If patients have metal inside their head or on the surface of the head this can heat up during a TMS session leading to burns. Metal loops can generate currents when exposed to magnetic fields and be particularly likely to heat up.

## Situations where TMS is avoided

- If you have epilepsy or have previously had a seizure.
- If you have anything in your head that may be affected by magnetic fields such as surgical clips or implanted devices (for example cochlear implants). Metal may move or heat up and electrical devices may malfunction when exposed to magnetic fields. Likewise, devices outside of the head such as cardiac pacemakers may malfunction if the TMS coil is accidentally operated too close to them.
- If your health is such that the event of a TMS induced seizure would be particularly dangerous: for example patients with serious heart disease or raised intracranial pressure.
- If you have an active brain disorder (e.g. recent stroke).
- In children and adolescents. The research into the use of TMS in these populations is extremely limited.
- If there is the possibility of pregnancy.
- Withdrawal from alcohol or substances.

## What happens during TMS treatment sessions?

Treatment sessions for TMS occur in the TMS suite at The Melbourne Clinic. During your first session a psychiatrist from the TMS team will work out where exactly on your forehead to place the coil of the TMS machine. This is done by placing the coil over the motor area of your brain and finding the lowest machine intensity setting which will make a small movement in the fingers of your hand. Once this location is found a simple measurement will show where to place the coil for your treatment sessions.

Treatment sessions for TMS last between 20 and 45 minutes. During this time you will be monitored by a nurse in the TMS suite. You will be sitting in a comfortable chair completely awake and alert. There is also a television screen in each of the individual treatment rooms which you are free to watch if you choose.

## How many sessions are in a TMS treatment course?

A course of TMS consists of 20 to 30 sessions. Most patients will have 20 sessions. You will have five sessions of TMS per week. This means that a course of TMS will usually take four weeks to complete.

## Getting a referral for TMS

If you are interested in having TMS your psychiatrist can discuss with you whether this is a suitable treatment option. From there a referral can be made to the TMS Team at The Melbourne Clinic for you to be formally assessed.

## Commonly asked questions

### **Are the magnetic fields generated during TMS harmful?**

We believe the magnetic fields generated in TMS are not harmful. Long term studies looking specifically at the effects of TMS generated magnetic fields would be helpful in confirming this. It has been found that chronic exposure to magnetic fields even greater than those generated during TMS appears to be safe.

### **Can I have more than one session of TMS per day?**

This isn't done during the initial course of TMS. Some patients having maintenance TMS will have two sessions per day but this isn't always the case.

### **How long will it take for my mood to improve with TMS?**

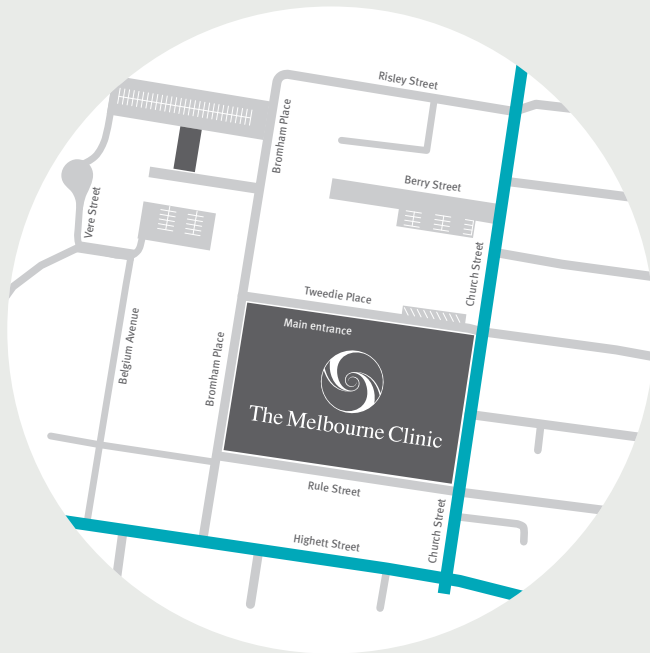
This is quite variable. Generally patients can hope to see some improvement in their mood during the second or third week of treatment if TMS is going to work for them. For some patients, a response can be more delayed.

### **Can TMS be given as an outpatient?**

Yes, but after each treatment we recommend patients should not drive or return to work on that day. Please speak about this with your Psychiatrist.

### **What are the fees involved in TMS?**

Most services will be covered under your private health insurance however there are some therapies on offer which may not be included in your policy. In these instances our friendly staff can provide you with an estimate of the costs involved in these services.



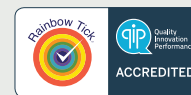
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