

## rTMS SERVICE

Repetitive Transcranial Magnetic Stimulation (rTMS) is a noninvasive procedure that uses magnetic fields to stimulate nerve cells in the brain to improve symptoms of depression.

rTMS is typically used when other depression treatments haven't been effective.

rTMS involves stimulation of an area of your brain using a pulsing magnet placed on your scalp. The magnet is designed to give a focused beam of magnetic energy inducing small electrical currents with the aim of altering brain function for therapeutic purposes.

rTMS works by changing the brain electrical activity and the brain chemicals that are involved in controlling mood.



This information booklet is designed to provide you with a description of rTMS to assist your understanding of the procedure and to answer some of the questions you may have.

When you are depressed it is often difficult to concentrate. Don't be concerned if you cannot read through the whole booklet initially. Just pick out the sections that seem important to you at the time, and come back to it later. You may wish to use it to help you ask questions of your psychiatrist, credentialed mental health nurse, or relatives.

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## WHY IS rTMS USED?

Your treating Psychiatrist or doctor will consult with you to make a decision about a referral to the rTMS treatment program.

Depression is a treatable condition, but for some people, standard treatments aren't effective. Repetitive Transcranial Magnetic Stimulation (rTMS) is typically used when standard treatments such as medications and talk therapy (psychotherapy) don't work.

rTMS may be an appropriate treatment option for adult patients with treatment resistant major depression, who have failed to achieve a satisfactory response from prior antidepressant medications (defined as "treatment resistant depression").

The aim of rTMS treatment is to lift your mood. With an improvement in mood there is often an associated improvement in sleep, appetite, energy and concentration and a decrease in negative thoughts. rTMS is an acute treatment for depression and you will require ongoing treatment from your psychiatrist to maintain remission.

The evidence base for the use of rTMS in schizophrenia is less substantive than that for depression. Clinical trials have found rTMS to have beneficial effects in reducing the severity and/or frequency of auditory hallucinations. rTMS therefore won't be routinely offered to patients with schizophrenia who have auditory hallucinations that have not improved with adequate trials of antipsychotic medications at The Toowoomba Clinic.

The effectiveness of the treatment of depression is recognized by the Royal Australian and New Zealand College of Psychiatrists and similar organisations in the USA, Canada, UK and many other countries.

The nature of this treatment, including the risks and benefits that you may experience will be fully explained to you by your treating psychiatrist.

## WHO CAN HAVE rTMS?

As with other treatments for depression, not all patients will benefit from rTMS treatment. However you will be observed and clinically assessed for response to treatment.

To receive rTMS you will require a referral to The Toowoomba Clinic from your GP or Psychiatrist.

As rTMS involves magnetic energy there are some people who are unable to have rTMS.

Exclusions to rTMS include:

- Pregnancy
- Cardiac Pacemakers / Defibrillators
- Previous head / brain surgery
- Aneurysm clips or coils
- Stents
- Implanted vagus nerve or deep brain stimulators
- Implanted electrical devices, such as pacemakers or medication pumps
- Electrodes for monitoring brain activity
- Cochlear implants for hearing
- Any magnetic implants
- Bullet fragments
- Any other metal device or object implanted in your body
- Significant neurological disorder (MS, cerebral lupus, brain tumour etc.)
- Facial tattoos which have metallic or magnetic sensitive ink

NB: Standard dental fillings and braces are not affected by the magnetic field and are acceptable for treatment with rTMS.

rTMS is a treatment for serious mental health conditions. It is important for you to understand that there may be alternative treatments for your condition which may include medications and psychotherapy. Although there is a range of treatments, individuals will recover and respond in different ways and at different rates. Some people do not recover completely and others may take a long time to respond and recover.

Whether rTMS or an alternative treatment is most appropriate for you is based upon a thorough physical and psychiatric evaluation and depends on your prior experience with these treatments, the nature of your mental health condition and your response to medication and other considerations.

## HOW DOES IT WORK?

rTMS treatment is a non-invasive treatment based on repetitive transcranial magnetic stimulation, which delivers magnetic pulses to stimulate nerve cells in the part of the brain controlling mood, which is often underactive in patients with depression.

The brain is an organ that functions through complex electrochemical processes, which may be impaired by certain types of mental illness. Scientists believe rTMS acts by temporarily altering some of these processes, thereby returning function to normal.

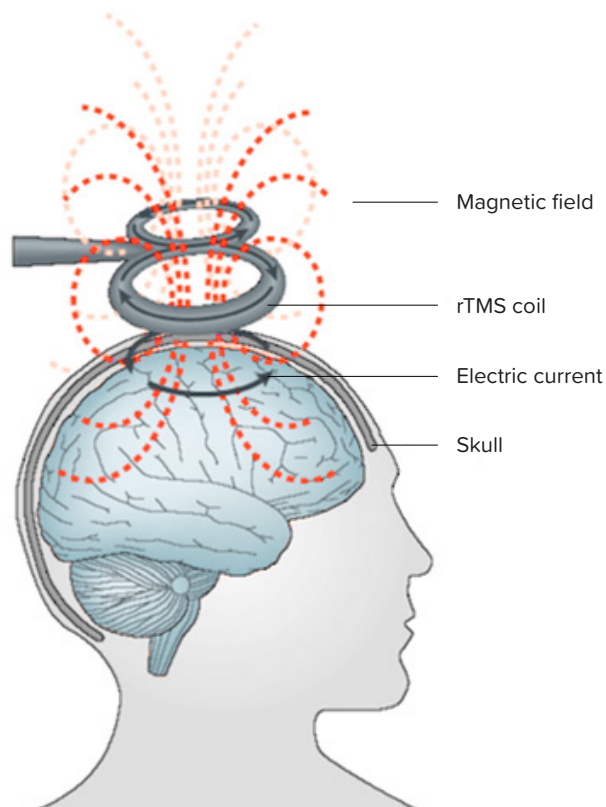
rTMS treatment delivers magnetic fields via a coil that is applied to one side of the patient's scalp, generally above the left side of the head (above the dorsolateral pre-frontal cortex)

Repeated stimulation of this part of the brain has been proven to produce an antidepressant effect on people suffering from depression.

The technology is similar to that of magnetic resonance imaging (MRI) and the magnetic fields produced are about the same type/strength as an MRI machine.

The magnetic field produces only tiny electrical currents which then go on to activate cells within the brain, which (as believed) release neurotransmitters (chemicals in the brain), which do play an important role/function in mood regulation.

Since depression is believed to be caused by an imbalance of neurotransmitters/chemicals in the brain, rTMS treatment helps restore the balance of these chemicals in the brain and goes on to relieve the symptoms of depression.



## HOW IS rTMS DIFFERENT FROM ECT (ELECTRO CONVULSIVE THERAPY)?

The two treatments are very different:

- rTMS treatment does not require anesthesia
- rTMS treatment does not require sedation
- rTMS treatment does not produce a convulsion
- rTMS therapy does not have a risk of memory loss or concentration disturbances
- rTMS sessions are longer in duration and require more sessions
- ECT intentionally causes a seizure
- Patients receiving ECT are sedated with a general anesthesia and paralysed with muscle relaxants
- Recovery from an ECT treatment session occurs gradually and all patients are quite closely monitored for several hours after an ECT treatment
- Confusion and loss of memory in the immediate period after ECT is common
- Long term memory problems have been shown to occur after ECT treatment

## HOW WILL rTMS HELP ME?

The potential benefit of rTMS for you is that it may lead to an improvement in your mental health condition.

rTMS has been shown to be a highly effective treatment for a number of conditions however not all patients respond equally well.

As with all forms of medical treatment, some patients recover quickly, others recover only to relapse again and require further treatment, while others may not respond at all.

It may take up to two weeks after the rTMS treatment is completed before symptom improvement occurs although most patients report an improvement within the course of the treatments.

Some patients may also require further follow up treatments.

## CONSENT

Your psychiatrist will explain the treatment, answer questions and request a written consent.

The consent process should detail alternative treatment considerations, the possible benefits of rTMS, the side effects and adverse events, including the possibility of seizures and mania.

A voluntary patient who lacks the capacity to give informed consent cannot be given rTMS.

Before consenting to rTMS, you have the right to obtain a second opinion from another psychiatrist of your choice or one recommended to you. You can also seek legal advice and you have the right to be represented by another person of your own choice before consenting. The representative is permitted to be with you when the psychiatrist explains the procedure.

Written consent may be withdrawn at any time. You should understand the risks of prematurely stopping rTMS and be informed of other treatments. When rTMS is stopped prematurely there is a high risk of relapse and likelihood that the entire treatment will need to be repeated.

Before treatment begins, the rTMS psychiatrist will need to identify the best place to put the magnets on your head and the best dose of magnetic energy for you. Your first appointment typically lasts about 60 minutes.

During this appointment:

- You'll be taken to a treatment room, asked to sit in a reclining chair and given earplugs to wear during the procedure.
- An electromagnetic coil will be placed against your head and switched off and on repeatedly to produce stimulating pulses. This results in a tapping or clicking sound that usually lasts for a few seconds, followed by a pause. You'll also feel a tapping sensation on your forehead. This part of the process is called mapping.
- Your doctor will determine the amount of magnetic energy needed by increasing the magnetic dose until your fingers or hands twitch. Known as your motor threshold, this is used as a reference point in determining the right dose for you. During the course of treatment, the amount of stimulation can be changed, depending on your symptoms and side effects.

The rTMS psychiatrist will then issue a prescription for future treatment sessions, which will be adhered to by the rTMS treatment Credentialed Mental Health Nurses.

During each subsequent treatment you are seated in a comfortable chair. You are fully conscious and responsive. There are no medications involved in the treatment. A rTMS nurse rests the magnet over the appropriate area of the scalp and activates the magnet.

You will need to remove any metal hair clips, earrings and studs, glasses and hearing aids during your treatment. For ease of treatment it is preferable that you do not have gel, mousse or other products in your hair.

During treatment, you hear a clicking sound and feel a tapping sensation on your head. Many patients will be able to listen to music, watch television, read a magazine or talk to the credentialed mental health nurse who stays with you during the treatment. The procedure will take between 20 – 40 minutes, depending on your specific prescription.

At the end of the treatment you can return to your usual routine activities, including driving your car.



## HOW MANY TREATMENTS WILL I NEED?

The number of treatments that you will have depends on your mental health condition, how quickly you respond to the treatment and the clinical judgement of your psychiatrist.

rTMS is typically given 5-6 times a week for 20 treatments.

Treatment needs vary from individual to individual but typically your psychiatrist will prescribe maintenance treatment if your depression symptoms are returning.

## WHAT RISKS ARE INVOLVED?

Generally rTMS is considered safe and well tolerated. However, it can cause some side effects.

Side effects are generally mild to moderate and improve shortly after an individual session and decrease over time with additional sessions.

They may include:

- Headache or localized neck pain - treated with mild analgesia
- Scalp discomfort at the site of stimulation
- Tingling, spasms or twitching of facial muscles
- Lightheadedness

Serious side effects are rare. They may include:

- Seizures
- Mania, particularly in people with bipolar affective disorder
- Short term hearing loss if there is inadequate protection during treatment.

rTMS does not cause memory loss weight gain, sexual difficulties or damage to scalp or hair.

## HOW CAN THESE RISKS BE REDUCED?

To reduce the risk of medical complications, you will require a medical evaluation prior to commencing rTMS. Please inform your psychiatrist if you have any of the following:

- Previous seizures/ fits/ epilepsy
- Cardiac Pacemakers / Defibrillators
- Previous head / brain surgery
- Aneurysm clips or coils
- Stents
- Implanted vagus nerve or deep brain stimulators
- Implanted electrical devices, such as pacemakers or medication pumps
- Electrodes for monitoring brain activity
- Cochlear implants for hearing
- Any magnetic implants
- Bullet fragments
- Any other metal device or object implanted in your body
- Significant neurological disorder (MS, cerebral lupus, brain tumour etc.)
- Facial tattoos which have metallic or magnetic sensitive ink
- Pregnancy

Your current medications will also be reviewed. Most treatments for medical conditions will be continued.

A physical examination will be required to be renewed every 6 months whilst undergoing rTMS.

Short term hearing loss can be prevented by the use of ear plugs and if you have bipolar affective disorder, the staff will monitor you carefully for signs of hypomania.

In spite of these precautions, there is a very small chance that you may experience a medical complication. Should this occur, emergency medical care and treatment will be instituted immediately.

To ensure our practitioners possess the knowledge and skills required to provide safe and effective treatment, The Toowoomba Clinic provides rTMS training and credentialing before psychiatrists and Credentialed Mental Health Nurses are granted clinical rTMS privileges.

## EVALUATION OF TREATMENT OUTCOMES

In order to evaluate the outcomes of rTMS treatment you will be asked to complete questionnaires on your mental state at the beginning of (pre) treatment and again after two weeks (mid), four weeks (end), and then finally two weeks following completion of (post) treatment that is around 6 weeks after commencing your rTMS treatment. The tools we use are internationally recognized so that we can benchmark the information and continue to improve our treatments.

## SUMMARY

rTMS is one aspect of your treatment at The Toowoomba Clinic. Whilst undergoing rTMS treatment you will continue to receive your medications and will be required to attend your scheduled follow up sessions with your Credentialed Mental Health Nurse and treating Psychiatrist for monitoring, helping you to understand your illness and develop or strengthen strategies for preventing further episodes and/or a decline in your mental health and wellbeing.

rTMS will help to relieve the symptoms of your depression but will not solve all your problems.

If you are not sure why you are being given rTMS, don't be afraid to ask. It is sometimes difficult to remember things when you are depressed so you may need to ask several times.

The usual course of rTMS is 20 treatments administered 5 – 6 times per week over a period of four weeks.

rTMS may be given as a maintenance treatment if you have responded well to rTMS in the past.

You have a right to withdraw your consent to rTMS treatment at any time. Withdrawal of your consent to rTMS will not in any way, alter your right to continued treatment with the best alternative treatments available.

You have a right to seek a second opinion about having this treatment.

You have the right to have your family/significant others informed and educated about your treatment.

## COST OF TREATMENT

You will be fully informed about the cost of rTMS treatment and care prior to consenting to your proposed rTMS treatment by one of our friendly receptionists at The Toowoomba Clinic.