

REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION (rTMS)

How does rTMS work?

rTMS stimulates the brain and promotes 'neuroplasticity'. This is the brain's ability to mend and build connections between nerve cells.

For depression, we stimulate the left side of the prefrontal cortex to help restore connections which are not working.

For anxiety, we may stimulate the right side of the brain with a slower type of stimulation to reduce its activity.

Am I suitable for treatment with rTMS?

rTMS is a suitable treatment for some people who suffer from depression or anxiety, which has not responded to anti-depressants and talking therapy.

Some clinics use rTMS to treat other psychiatric conditions, but we currently only use rTMS to treat resistant depression (including bipolar depression) and anxiety.

You need to be referred by your psychiatrist. We expect you to remain under the care of your usual mental health team during treatment.

Who should not have rTMS?

We do not usually treat people with a diagnosis of epilepsy due to the risk of triggering a seizure. It is important that you tell us if you have ever had a seizure.

Because rTMS generates high magnetic fields, you cannot have rTMS treatment if you have any type of metal in or near your head, except for dental braces or fillings.

People who have any of the following should not receive rTMS:

- Facial tattoos with metallic or magnetic-sensitive ink (please discuss with us if in you are unsure)
- 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
- Metal shards, shrapnel, or bullet fragments in or near the head
- Other metal devices or object implanted in or near the head.

Whilst cardiac pacemakers in the chest are a long way from the magnetic coil, the manufacturers of our rTMS machine say that it should not be used in people who have a cardiac pacemaker.

What are the side effects?

The side effects of rTMS are less than for medications because rTMS only affects the targeted area of the brain and the scalp over it whereas medication can affect other parts of the body too.

rTMS commonly causes muscle twitching in the scalp during the session.

For some people, this leads to a headache which can usually be treated with simple painkillers such as paracetamol. Headache tends to reduce as sessions continue.

Some people feel tired after treatment.

There is a small risk of a seizure during rTMS treatment (less than 1 in 30,000-50,000). It is possible that this risk may be increased with the accelerated iTBS protocol that we use. Brain injury, alcohol use, sleep deprivation and some medications may also increase the risk of seizure.

The increased risk of a seizure stops once the magnetic pulses stop, so you will not be at increased risk of seizures once you go home.

What time commitment does rTMS involve?

With the accelerated intermittent Theta Burst Stimulation (aiTBS) protocol for depression, you will come to the hospital 5 days a week, typically for 2 weeks (10 days). You will usually be at the hospital for around 2 1/2 hours each day.

On each day that you attend, you will have 3 treatment sessions. Each session involves treatment of 1800 pulses over 9 minutes, with a 50-minute interval between sessions.

With the 'Standard' rTMS protocol for depression, you will come to the hospital 5 days a week, typically for 6 weeks (30 days). You will receive treatment once a day with each lasting around 30 minutes.

Most people can continue normal activities (e.g. reading, walking etc.) after the treatment sessions.

Driving

We recommend that you do not drive on the first day of your treatment. If your condition otherwise permits it, you can drive home after all subsequent treatments. Please talk to your psychiatrist if you are unsure about the DVLA driving rules about your condition.

rTMS pricing

Patients who are referred for rTMS by an Oxford Health Consultant Psychiatrist are treated 'on the NHS' i.e. free.

The following pricing schedule applies to all other patients. Payment must be received before treatment can start.

Initial assessment with Psychiatrist: **£265**

Follow up review with psychiatrist: **£125**

Accelerated intermittent Theta Burst Stimulation protocol:

- 30 sessions (3 sessions per day for 10 days): **£2,200**
- Further sessions: **£220/day** for a full 3 sessions per day.

If you do not come to your appointment, and do not give us adequate notice, we cannot reallocate it to another patient. Please contact us as soon as you know you cannot attend.

Email is best as it avoids misunderstanding: rmsclinic@oxfordhealth.nhs.uk or *phone* **01865 903524**.

Paperwork and medical records

Information about rTMS can be found on the website or in the Patient Information Leaflet ([rTMS – PIL v7.0](#)).

You will be asked to sign a consent form, which confirms that you have read and understood the Patient Information Leaflet before starting treatment.

You will need to complete some questionnaires prior to treatment sessions.

Information about your rights and access to your health records, including a leaflet, can be found at the following link: <https://oxfordhealth.nhs.uk/support-advice/getting-help/health-records>

What will happen at my appointments?

When you arrive, we will take your blood pressure, oxygen levels and pulse.

At your first session, one of our doctors will talk with you to make sure that rTMS is a suitable treatment for you. Please ask questions and tell us if you are worried about anything.

If you agree to start treatment, we will ask you to sign a consent form and to complete some questionnaires.

We will show you through to the treatment room. You will sit in a large adjustable chair, like a dentist's chair.

We will ask you to remove any jewellery, including necklaces, earrings, face or tongue studs and hair grips. We will put your mobile phone and debit/credit cards where they will not be affected by the magnetic field.

We will put specially designed caps on your head to determine the point where the magnetic coil will be focussed. We may make additional measurements if needed.

Sometimes, we work out the dose to give by applying brief pulses to establish your 'motor threshold'. Your motor threshold is the minimum amount of magnetic energy to make your thumb twitch; this varies from person to person. We will place the coil over the target area using a flexible positioning arm.

We usually adjust the intensity of the treatment based on what is comfortable for you.

We will give you earplugs to wear for comfort and hearing protection. During treatment, you will hear a series of clicking sounds and feel a tapping sensation on your head underneath the treatment coil.

You will need to complete monitoring questionnaires. You may either do this at home before you attend or when you arrive.

Afterwards, we offer you tea/coffee and biscuits.

Some people feel tired after the treatment and may prefer not to drive home. There are no formal restrictions on this, but you should not drive if you feel unsafe to do so.

Treatment duration and follow-up

Response to treatment varies across individuals, with some responding only later in the course. A usual course with the accelerated intermittent Theta Burst Stimulation protocol requires 2 weeks. The 'standard' rTMS protocol requires 6 weeks.

An extension of the course may be discussed depending on how you respond.

We like to follow you up 2 weeks after your treatment and then 2 months after. We will discuss these follow-up arrangements with you at your last session.

After the course of treatment has finished, you may need to return for top-up sessions. The frequency of these gradually reduces from once a week to once every month.

Practical arrangements

Style your hair to lie as flat as possible as the cap is tight fitting (*see below*).



Magstim TMS cap, image from <https://www.welconyhost.net/product/cap/>

Bring a hairbrush to use afterwards if your hair needs this.

Have a good breakfast before attending.

Bring something to keep you occupied in the time between the treatment sessions. You can wait in the main hospital café (next to reception) or in our tearoom.

If you would like to walk in the hospital grounds or the nearby Warneford Meadow, consider bringing outdoor footwear.

Do not drive away between sessions. The traffic may be unpredictable, and you may have trouble parking when you return to the hospital site.

You are welcome to bring a family member, friend, or carer.