

What you need to know about repetitive transcranial magnetic stimulation

What is repetitive transcranial magnetic stimulation (rTMS)?

Repetitive transcranial magnetic stimulation (rTMS) is a non-invasive procedure that uses magnetic pulses to stimulate particular areas of the brain. rTMS has been proven to be effective and safe. Any side effects are mild and do not last very long.

rTMS can target the parts of the brain that are involved in depression. Depression is typically treated with medications and psychotherapy. When those interventions don't work, the depression is called "treatment-resistant." rTMS may be able to help people with treatment-resistant depression. The benefits may last for months, and some patients even fully recover.

Who can benefit from rTMS?

- People who have tried medications for depression without success
- People who are unable to tolerate anti-depressant medication



How does rTMS work?

An rTMS machine generates a series of fast magnetic pulses through an electromagnetic coil placed close to the head. These pulses are targeted to stimulate specific parts of brain that are related to mood regulation. When these brain regions are stimulated, they become more active. This allows for better control of the symptoms of depression. rTMS is done in a clinic or hospital by a trained technician who is supervised by a psychiatrist. It does not require sedation or anaesthetic.

What are the risks and side effects of rTMS?

rTMS has been proven to be generally safe and comfortable. Most side effects range from mild-to-moderate, and happen during the rTMS session or shortly afterwards. Also, patients seem to find these side effects more tolerable over repeated sessions. In some very rare cases, there may be more significant side effects.

Common side effects:

- A headache during or after treatment. Patients can take over-the-counter headache medicine if needed.
- Mild tingling or itching at the point of stimulation. This fades quickly after the rTMS stops.

Rare side effects:

- Involuntary facial muscle reactions, including spasms, tingling or twitching. This only occurs during rTMS treatment. If truly uncomfortable, the position of the coil can be moved slightly to reduce this effect.
- Feelings of light-headedness or dizziness. This fades quickly after the rTMS stops.

Very rare side effects:

- Less than 1% chance of induced mania or hypomania.
- A very small chance of seizure (about 1 in 10,000 people). The staff is trained to handle this situation.

What should I expect from rTMS treatment?

For rTMS to be effective, you will typically receive treatment daily for four to six weeks. The first session takes an hour and a half, and the rest of the sessions will take one hour.

Before treatment

To be considered for rTMS treatment, you will need to be referred by a psychiatrist or your family doctor. You will then be scheduled for an appointment to do a psychiatric consultation to determine if rTMS is right for you.

You will be asked to:

- Get a physical exam to ensure that you are suited for the treatment.
- Complete questionnaires and assessments before and during your treatment to help us determine your response to treatment.

First rTMS session

This session will be longer (60 - 90 minutes), as we must establish the amount of magnetic energy to use in your treatment.

- We'll make sure that you feel relaxed, comfortable and safe. We will determine the best placement of the rTMS coil on your head. This differs from person to person.
- The rTMS machine is quite loud. We will give you earplugs to protect your hearing and keep you comfortable.
- The rTMS electromagnetic coil sends a series of repeated pulses. It sounds like tapping or clicking that lasts several seconds. You will also likely feel a tapping sensation on your forehead, which is perfectly normal.
- We will determine your "motor threshold." This is the amount of energy your brain requires for treatment. We do this by stimulating a part of the brain that controls a muscle in your hand, and we will increase the stimulation energy until your finger or hand twitches.
- We will then target the appropriate brain region and begin treatment. This lasts for 37.5 minutes, but **you may request breaks if needed**. The tapping or clicking sound will be faster as the treatment is delivered.

Remaining rTMS sessions

These sessions will be like the treatment portion of the first session.

You will need to complete some questionnaires about your symptoms at different points of the treatment:

- After 10 sessions (halfway through the planned treatment course)
- At the end of treatment
- One month after treatment
- Three months after treatment
- Six months after treatment

This will help us monitor your progress over time.

After treatment

This treatment does not require a stay in the clinic or hospital and has few side effects. As a result, many people can return to their daily routine after their treatment session.