

Transcranial direct current stimulation (tDCS) for depression

Information for the public

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What has NICE said?

There is not much good evidence about how well transcranial direct current stimulation (tDCS) for depression works, particularly how many treatments are needed and how long the effects last. But there are no major safety concerns. It should only be used if extra care is taken to explain the uncertainties and potential risks, and extra steps are put in place to record and review what happens.

What does this mean for me?

Your health professional should fully explain what is involved in having this procedure, and discuss the possible benefits and risks with you. In particular, they should explain the uncertainty about the evidence on how likely it is to improve your symptoms. You should also be told how to find more information about tDCS. You should only be asked if you want this procedure after having this discussion. Your health professional should ask you if details of your procedure can be collected.

Other comments from NICE

NICE said that more research is needed on the effectiveness of tDCS, and how it should be given for best effect.

The condition

Depression is common. It causes feelings of sadness, despair, hopelessness, and guilt or low self-worth, as well as tiredness, lack of interest in life and difficulty concentrating. People with severe depression may be unable to eat or sleep, or to take part in social activities, may become completely withdrawn and may have suicidal thoughts. The condition can last from weeks to years, and can recur.

Treatments for depression include psychological (talking) therapies and antidepressant medicines. In severe depression that has not improved with other treatments, electroconvulsive therapy (ECT) is sometimes used. ECT is used with a general anaesthetic. It involves applying an electric current to the brain so strong that it causes seizures (fits) and sometimes memory loss.

NICE has looked at using [transcranial direct current stimulation](#) as another treatment option. NHS Choices (www.nhs.uk) and NICE's [information for the public about depression](#).

The procedure

Transcranial direct current stimulation (tDCS) involves electrical stimulation of the brain by applying a weak direct current to the scalp. The aim is to change brain activity in the area just under the scalp.

The patient is awake and usually seated during tDCS. A portable battery-operated stimulator delivers a low-strength current to 2 electrodes placed on the scalp. Treatment is usually given by a trained doctor, but patients can also do it themselves. Treatment usually involves daily sessions lasting 20–30 minutes for several weeks. tDCS may be used alone or with other treatments for depression.

Benefits and risks

When NICE looked at the evidence, it decided that there is not much good evidence about how well transcranial direct current stimulation (tDCS) for depression works. The 7 studies that NICE looked at involved a total of about 2000 patients.

Generally, they showed the following benefits:

- an improvement in symptoms of depression with tDCS, when used (for 6 weeks) alone or with an antidepressant medicine

- a response lasting for up to 6 months in people who improved with initial treatment.

The studies showed that the risks of tDCS included:

- mania or hypomania due to treatment (6 episodes)
- damage to the skin of the scalp, which healed without scars about 1–3 weeks after treatment ended
- skin redness 2 weeks after treatment in up to 25% of patients
- a burning sensation reported in about 9% of studies, itching in about 39% and tingling in about 22%
- headache in up to 19% of patients
- light-headedness in 40% of patients when tDCS was given weekly and in 17% when it was given every 2 weeks
- sleepiness in 16% and tiredness in 10% of patients
- blurred vision in 7% of patients when tDCS was given weekly and in 11% when it was given every 2 weeks
- nausea in 10% of patients when tDCS was given weekly and in 6% when tDCS was given every 2 weeks
- 1 report of panic attacks.

NICE was also told about another possible risk: 'flashing lights' when stimulation is applied at the front of the brain.

If you want to know more about the studies, see the [guidance](#). Ask your health professional to explain anything you don't understand.

Questions to ask your health professional

- What does the procedure involve?
- What are the benefits I might get?
- How good are my chances of getting those benefits? Could having the procedure make me feel worse?

- Are there alternative procedures?
- What are the risks of the procedure?
- Are the risks minor or serious? How likely are they to happen?
- What care will I need after the procedure?
- What happens if something goes wrong?
- What may happen if I don't have the procedure?

About this information

NICE [interventional procedures guidance](#) advises the NHS on the safety of a procedure and how well it works.

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Accreditation

