

# ECT, TMS and Other Brain Stimulation Therapies

---

When treatments such as medication and therapy aren't able to relieve the symptoms of depression or another mental health condition, there are other options available. A psychiatrist might suggest electroconvulsive therapy (ECT) or other forms of brain stimulation. Brain stimulation therapies involve stimulating or touching the brain directly with electricity, magnets or implants.

## **Electroconvulsive Therapy (ECT)**

ECT is a procedure where controlled electric currents are passed through the brain while the person is under general anesthesia. This results in a brief, controlled seizure that affects neurons and chemicals in the brain. It is most often used to treat severe depression and depression with psychosis that has not responded to medications. In some cases of treatment resistant bipolar disorder, ECT may be considered as a treatment option.

Once called electroshock therapy, ECT still has many negative associations. When it was first used in the 1940s, it was very primitive. The reality today is different.

People are asleep during the procedure and wake up 5-10 minutes after it has finished. They are able to resume normal activity in about an hour.

Most people have four to six treatments before major improvement is seen. This is followed by additional treatments and in some cases "maintenance ECT" on a less frequent basis, such as once a month or once a year.

Side effects of ECT may include:

- Physical effects, such as headaches, muscle pain, nausea
- Confusion following treatment, which may last a few minutes or hours
- Memory loss, which can range from forgetting conversations or events right before and after a treatment, forgetting things from weeks or months before treatment, and less commonly, from years before

## **Transcranial Magnetic Stimulation (TMS)**

TMS is a procedure that creates magnetic fields to stimulate nerve cells in the brain to improve symptoms of depression. With TMS, a large electromagnetic coil is placed on a person's forehead and short pulses are directed into an area of the brain believed to control moods.

The doctor performing the treatment will determine the amount of magnetic energy needed during the first treatment session. TMS treatments will last about 40 minutes. Unlike ECT, TMS does not require the use of anesthesia and person will remain awake during the treatment. Several sessions generally are required over a period of weeks.

TMS should not be used to treat anyone experiencing depression with psychosis or bipolar disorder or having a high risk of suicide. It also cannot be used if a person has a pacemaker or any metal objects in their head.

Side effects of TMS are usually mild and may include:

- Muscle contractions or tingling in the face or the jaw
- Headache or light-headedness
- Seizures, if a person has a history of seizures

## **Other Brain Stimulation Therapies**

ECT and TMS are the most widely used brain stimulation therapies, but there are two other options available. However, they have not been widely studied and their effectiveness remains unclear.

### **Vagus Nerve Stimulation (VNS)**

VNS uses a pulse generator, about the size of a stopwatch, placed in the upper left side of the chest to stimulate the vagus nerve, which carries messages to parts of the brain that control mood and sleep, with electrical impulses. VNS can be used to treat depression, as well as other medical conditions including epilepsy.

The FDA has approved VNS for treating hard-to-treat depression, depression that hasn't improved after trying four different medications or ECT. However, VNS is controversial and rarely used.

### **Deep Brain Stimulation (DBS)**

Originally developed to reduce tremors from Parkinson's disease, the FDA approved DBS for use in treating obsessive-compulsive disorder (OCD). DBS is currently being studied as treatment for Tourette's syndrome and major depression. The use of DBS for mental health, however, is largely experimental and its safety and effectiveness are unknown.

Deep brain stimulation involves surgically putting two electrodes directly in the brain and a pulse generator implanted in a person's chest.

There are possible side effects from either the surgery or stimulation. Over several months, adjustments to the electrodes may help.

See more at: <http://www.nami.org/Learn-More/Treatment/ECT,-TMS-and-Other-Brain-Stimulation-Therapies>

*Updated March 2015*