

New Technologies in the Treatment of Mood Disorders



Treatment for depression and bipolar disorder (also known as manic depression) usually includes talk therapy, medication and support from people who understand. Sometimes people do not respond to traditional treatments or need additional help managing symptoms. Today many researchers are focusing their attention on technology to develop new, more effective treatments.

Looking At Where We've Been To Understand Where We're Going

Scientists believe that depression and bipolar disorder are caused by an imbalance of brain chemicals, called neurotransmitters. Medications used to treat these illnesses work to change brain chemistry and correct this imbalance.

In the 1930s, researchers discovered that applying a small amount of electrical current to the brain caused small mild seizures that changed brain chemistry. Over the years, much has been done to make this form of treatment, electroconvulsive therapy (ECT), milder and easier for patients to tolerate. ECT is used to treat about 100,000 patients with depression each year. It is very effective in treating severe depression. However, there can be side effects such as confusion and memory loss. The procedure must be performed in a hospital with general anesthesia.

This concept of altering brain function and chemistry with outside stimulation led to the development of several new treatments. They are now being tested to determine their safety and effectiveness in treating depression.

Note: Various clinical trials (research studies) investigating treatments for effectiveness and safety in treating depression and bipolar disorder are underway. Participation in clinical trials requires careful consideration and discussion with your doctor. For information on clinical trials and what to consider before entering one, visit www.DBSAlliance.org.



**Depression and Bipolar
Support Alliance**

We've been there. We can help.

Transcranial Magnetic Stimulation (TMS)

One procedure under investigation is Transcranial Magnetic Stimulation (TMS). TMS was developed in 1985 and has been studied as a treatment for mental illness since 1995. In TMS therapy, a special electromagnet delivers short bursts of energy to stimulate nerve cells in the brain. This helps correct the existing chemical imbalance. Research studies have shown this treatment can have beneficial results. It has been shown to be as effective as other depression treatments, and is generally free of the side effects that are most commonly seen with antidepressant medication. Clinical trials are ongoing.

Early TMS machines delivered a magnetic pulse every second. They are used by neurologists to diagnose nerve damage. Advances in the technology have resulted in machines that are capable of delivering up to 50 pulses per second. Studies have shown that certain types of this rapid rate TMS (rTMS) can have beneficial effects for some patients.

TMS therapy can be performed in a physician's office. It does not require surgery, hospitalization, or anesthesia. A small hand-held device placed against the scalp delivers short magnetic pulses that affect the brain. The energy from the TMS device can be focused on a specific area of the brain, which may allow for more precise treatment than ECT. TMS sessions generally take 30 minutes. Current research suggests that treatment is most effective when given five days per week for two to four weeks.

The side effects associated with TMS are mild and relatively infrequent. Some patients report a slight knocking or tapping sensation on the head. This may be a result of the tapping sound produced by the TMS device. Some patients report feeling slight muscle contractions on the scalp. Others experience a mild headache or lightheadedness, which usually goes away soon after the treatment session.

The Food and Drug Administration has not yet approved TMS for treatment of depression. As with any medical procedure, there are some risks associated with TMS. The main risk is that the device could cause a seizure, though current treatment guidelines make this extremely rare. No memory loss or difficulty in concentration has been reported in any research study to date.

Vagus Nerve Stimulation (VNS)

The vagus nerves, the longest nerves in the human body, run from the brain down each side of the neck, through the esophagus and into the gastrointestinal tract. In the brain the vagus nerves travel through the areas that control sleep and mood. Vagus Nerve Stimulation (VNS) involves implanting a small battery-powered device, similar to a pacemaker, under the skin on the left side of the chest. An insulated tube containing electrodes (called the lead) runs from the device to the vagus nerve on the left side of the neck. The device is programmed by a doctor to deliver a mild electrical stimulation to the brain at regular intervals. The patient can also use a special magnet to turn the device on and off. This stimulation triggers activity in the brain that may work to correct the chemical imbalance that causes depression. The Food and Drug Administration has approved VNS as a therapy for preventing epileptic seizures. VNS is not yet approved for the treatment of depression. Clinical trials are ongoing.

The most common side effects reported by people who use VNS therapy are hoarseness, sore throat and shortness of breath. People with the VNS device are advised to follow the same precautions as someone who has a pacemaker for heart problems.

Because it is implanted in the chest, the VNS device may interfere with proper imaging during a mammogram. This can be prevented by adjusting positioning during the procedure. Once the device is implanted, it can be difficult to remove it.

Some medical procedures may affect the VNS device. These include diathermy, a treatment used to promote healing and relieve pain, procedures used for heart problems, and ultrasound. People planning to have magnetic resonance imaging (MRI) should use special caution. Inform your doctor you have a VNS device before having any medical procedure. Studies have shown that VNS can have beneficial results, especially for individuals who have not found relief with other treatments.

Magnetic Stimulation Therapy (MST)

One of the newest procedures under investigation for the treatment of mood disorders is Magnetic Stimulation Therapy (MST). MST uses powerful magnetic fields to induce a small, mild seizure, similar to one produced through ECT. Research studies involving people have only recently begun. Researchers believe MST will be able to treat specific areas of the brain. It is hoped that this treatment will not affect memory or concentration. However, because the procedure causes a seizure, general anesthesia is required.

A Promising Future



Emerging technologies such as TMS, VNS and MST offer hope to people who are coping with treatment challenges. It may take some time for these treatments to be adequately studied so that we more completely understand their potential risks and benefits. At this point, the future looks promising. As with any treatment, different people will have different responses. All individuals are advised

to work with their doctors in collaborative partnerships to find the treatments that work best for them.

For more information

Clinical Trial Listings

(888) FIND-NLM (346-3656) • www.clinicaltrials.gov

Transcranial Magnetic Stimulation

(610) 640-4202 x1020 • www.neuronetics.com

Vagus Nerve Stimulation Therapy

(888) VNS-STIM (867-7846) • www.vnstherapy.com

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Questions to Ask Your Doctor

- When will I start to feel some improvement?
- What might the side effects of my treatment be? How can I cope with them?
- What are the risks associated with my treatment?
- How can I recognize problems if they happen?
- How can I reach you in an emergency?
- What can I do to improve my response to this treatment?
- How will this treatment affect the treatments I'm receiving for other illnesses?



Depression and Bipolar Support Alliance

We've been there.
We can help.

The Depression and Bipolar Support Alliance (DBSA) is the leading patient-directed national organization focusing on the most prevalent mental illnesses. The organization fosters an environment of understanding about the impact and management of these life-threatening illnesses by providing up-to-date, scientifically-based tools and information written in language the general public can understand. DBSA supports research to promote more timely diagnosis, develop more effective and tolerable treatments and discover a cure. The organization works to ensure that people living with mood disorders are treated equitably.

Assisted by a Scientific Advisory Board comprised of the leading researchers and clinicians in the field of mood disorders, DBSA has more than 1,000 peer-run support groups across the country. Nearly two million people request and receive information and assistance each year. DBSA's mission is to improve the lives of people living with mood disorders.

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Visit our updated, interactive website for important information, breaking news, chapter connections, advocacy help and much more.

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This brochure was reviewed by Robert N. Golden, M.D., Vice Dean of University of North Carolina School of Medicine and Ken Heideman of DBSA Boston.

DBSA does not endorse or recommend the use of any specific treatments or medications for mood disorders. For advice about specific treatments or medications, individuals should consult their physicians and/or mental health professionals.