

A New Approach to Treating Intractable Cases of Depression

By Melinda Beck

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You sit in what looks like a dentist's chair and a psychiatrist places a metal coil against your head. Rapid magnetic pulses penetrate your scalp and skull and produce a mild electrical current in the left prefrontal cortex of your brain. You feel a tickling sensation and hear a loud tapping sound. The treatment, known as TMS, for transcranial magnetic stimulation, lasts about 40 minutes and is done daily for four to six weeks. If you're suffering from major depression, you could start feeling better within a few weeks.

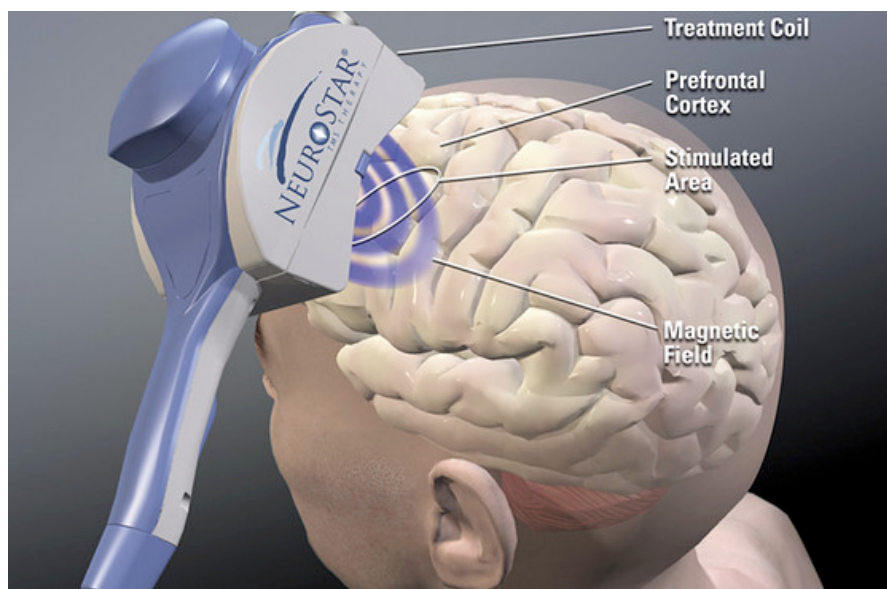
"We've seen improvement in mood, sleep, appetite, energy level and a restoration of hopefulness and self-esteem," says psychiatrist Sarah Lisanby, chief of the brain stimulation division at Columbia University.

Earlier this month, the Food and Drug Administration approved the first TMS system, called *NeuroStar*, made by Neuronetics Inc. of Malvern, Pa., to treat patients who haven't responded to at least one

antidepressant. Roughly 5% of U.S. adults suffer from major depression in a given year, and as many as 40% of them don't get adequate relief from psychotherapy or drugs.

For those who have failed other therapy, TMS is still no panacea. In a clinical trial of 325 patients at 23 sites in the U.S., Canada and Australia, only 24% improved on TMS, but that was twice the response to the placebo. Side effects were mild -- mostly scalp irritation and headaches -- and there was no weight gain or sexual side effects as with some antidepressants. And unlike electroconvulsive therapy (ECT), also used to treat severe depression, patients remain awake and don't need anesthesia. There's no confusion or memory loss as sometimes happens with ECT.

TMS is part of a new era in understanding and treating psychiatric disorders. Using high-tech imaging, scientists can now see depression in the brain, and some theorize that it involves an imbalance between the thinking areas in the cortex and the emotional areas of the limbic system.



Neuronetics- *Magnetic pulses stimulate the left prefrontal cortex, which is linked to depression.*

Imagine coming upon a snake, says psychiatrist Mark George at the Medical University of South Carolina: Your limbic system registers it as a threat. Then your cortex recognizes it as harmless and quiets down the response. "That balance disappears in depression," says Dr. George, who was an early pioneer of TMS. "With TMS we can tickle the cortex and over time restore the balance." Talk therapy can sometimes do that too, he notes.

But neither talk therapy -- nor medication -- is sufficient in some patients. "Joe," who didn't want his real name used, was a successful writer until he fell into a severe depression in the 1980s. He was suicidal for years and hospitalized repeatedly. He tried a gamut of antidepressants. "But they made me sleep 18 hours a day," he says. "The only thing I wanted to do was die."

Joe's psychiatrist encouraged him to enroll in a TMS trial. "It's the only thing that worked," Joe says. "Within six weeks, I was officially no longer depressed." Now he is off medication but returns for weekly TMS treatments.

TMS is still in its infancy. Even proponents say patients who don't respond to one antidepressant should try another drug before using TMS. For now, only a few U.S. centers plan to offer it (see Neuronetics.com for sites). It isn't yet covered by insurance, and prices are still being determined -- one estimate is about \$6,000 for a full course.

TMS has yet to be tested for milder depression, and experts aren't sure how long the effects last. Dr. George is recruiting patients for another clinical trial, sponsored by the National Institutes of Health, that will study different doses and durations of treatment and which patients are most likely to benefit.

Meanwhile, scientists are studying whether TMS might be useful to combat schizophrenia, post-traumatic stress disorder and migraine headaches, and to fight depression in adolescents, who face a higher risk of suicide on antidepressants. Says Dr. Lisanby, who has received research support from Neuronetics, "We're standing at the threshold of a new family of therapeutic interventions."