Dr. Reti: “We place a coil next to the scalp of the patient and run through that an electric current that is changing, and that in turn sets up a magnetic field at right angles to the coil that permeates through the skull unimpeded.”

Dale: “Dr. Irving Reti is an associate professor of psychiatry at Johns Hopkins University. He’s describing a type of magnetic brain stimulation that’s showing promise in treating depression, addiction, and chronic pain.

Today on Brain Talk: Transcranial Magnetic Stimulation.”

Dr. Reti: “Transcranial Magnetic Stimulation is a way to non-invasively and painlessly stimulate neurons both in the brain, and peripherally.”

Dale: “As Dr. Reti explains, ‘it’s a gentler, less invasive form of stimulating the brain than electroshock therapy—known as ECT—which works by triggering a seizure. Transcranial Magnetic Stimulation—or TMS—does not.’”

Dr. Reti: “TMS is non-convulsive. Whereas patients getting ECT are anesthetized and then have the treatment, patients getting TMS drive to and from the clinic and have, essentially, no side effects associated with treatment.”

Dale: “TMS is known to help people with depression. And recent studies show it could help with overcoming addictions to substances like tobacco or drugs. It works in part by triggering new connections between neurons.”

Dr. Reti: “We stimulate front part of brain that regulates motivation, decision making, control of inhibitions and that by activating that part of the brain we can gain better control over elements necessary to stop using drugs.”

Dale: “Dr. Reti says ‘one reason why TMS may help with easing addictions, is that it might release dopamine into the reward system of the brain, in this way acting as a substitute for the dopamine released by the drug itself.’

Transcranial Magnetic Stimulation is also being looked at to help people with obsessive-compulsive disorder, Parkinson’s disease and other illnesses.”

Dr. Reti: “There is, however, a lot of interest in TMS being used as a treatment and that relies on the fact that when you give pulses repetitively, it triggers long-lasting changes that outlast the actual stimulation itself.”
Dale: “The changes can last for hours or days after the stimulation is over, but the effects are not permanent. ‘This,’ explains Dr. Reti, ‘is one of the drawbacks of the treatment.’

Dr. Reti: “The effects can be long-lasting and we are learning more about how long lasting they might be, but once the TMS treatments are stopped or tapered off it is important that other treatments are continued to maintain the beneficial effects that are triggered by the TMS.”

Dale: “And there are other inconveniences.”

Dr. Reti: “The second issue, of course, is that a treatment of TMS is less convenient than taking a medication, or even than sitting with a counselor and discussing issues that are relevant for that patient; whether that patient be addicted or depressed.”

Dale: “Currently, the FDA has approved TMS only for treating depression. And while Dr. Reti says ‘TMS is a work in progress’, he’s optimistic that this form of brain stimulation could be a viable treatment option for many people in the future.

For more information on Transcranial Magnetic Stimulation, log onto brainscienceinstitute.org. I’m Dale Connelly, and from Johns Hopkins University… this is Brain Talk.”

Learn more about Dr. Reti
Learn more about Brain Stimulation Therapies | National Institute of Mental Health
Learn more about TMS | National Alliance on Mental Illness
FAQ’s about TMS | Johns Hopkins Psychiatry and Behavioral Science Website
Johns Hopkins Brain Stimulation Program
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