



## A 'Current' Approach to Depression

*Magnetic brain stimulation comes with potential and a research checklist.*

A \$60,000 transcranial magnetic stimulation (TMS) system was recently unpacked in the Meyer 3 suite where it becomes the centerpiece of a new patient service opening this fall.

It looks like nothing so much as a very cushy dentist's chair with a calculator-size device on an attached adjustable arm. But TMS is out of the box in ways more than literal. And it offers a high-tech alternative for patients with deep, lasting depression."

TMS induces weak electric currents that excite targeted sites in the brain. Why that can ease depression is far from clear, says psychiatrist Irving Reti, who directs Hopkins' new Brain Stimulation Program. But having a safe and noninvasive treatment that, unlike medication, doesn't have whole-body effects is reason enough for making it available, he says. The understanding will come later, with his and others' work.

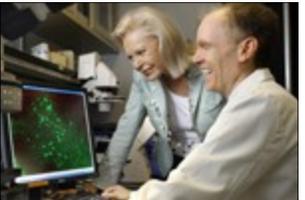
TMS was FDA-approved for clinical use last year as an alternate therapy for major depression in adult patients who've given antidepressants a valiant trial and not been helped.

"It's still a work in progress, though," Reti says. So Hopkins' use begins by sticking closely to the FDA guidelines. "The main question," he explains, "is efficacy." With TMS, relief from depression appears variable. For some, it's just short of god-from-a-machine; there are patients who report that their depressions lift completely. Others see less effect. The benefit averages out, according to some 30 trials conducted worldwide, to about a quarter of patients reporting significant relief. Then follow-up antidepressants sustain it.

"There's a real need to be able to identify who's most likely to be helped," Reti says, "and we'll be looking for clinical predictors." The fact that TMS takes a time commitment—the recommended protocol is 40 minutes daily, five days a week for four to six weeks—underscores the need.

Safety, however, isn't in question. "The risk of seizures, which might be a concern, is exceedingly low," Reti adds. Even more important to patients is the lack of the cognitive side effects that can occur with electroconvulsive therapy, the other stimulation-based approach to depression. And unlike ECT, there's no need for anesthesia. "Aside from mild headache in some, patients don't have complaints," he says.

This could make TMS a good option for people who can't tolerate antidepressant medications or



It would be wonderful if TMS proves effective in adolescents—a breakthrough in ways to help them," says Audrey Gruss of Reti's upcoming study.

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who, like transplant patients, are endangered by drug interactions. “We may also find out it’s useful in pregnancy,” Reti adds. The way is open, then, for clinical trials. As a start, the Hopkins group has two under way. One will study TMS in teens from 15 to 18 years old with entrenched depression. The recent black-box warnings about antidepressants in this group, Reti says, spurs that trial on.

A second study—with adults—uses a variation of TMS that penetrates deeper brain. Because the technique’s electromagnet is open to creative design, an experimental deep-brain version of TMS can reach beyond the 3 centimeters of prefrontal cortex that standard therapy touches. Exciting the deeper ventromedial prefrontal cortical pathways that control pleasure and motivation may make TMS more effective, Reti says.

He can’t wait to start.

### **From Donor to Catalyst: Gruss Knows How to Help**

Audrey Gruss didn’t begin to make her mark on depression until she lost Hope.

An international philanthropist, she and husband Martin have for years underwritten anything, really, that lifts the human spirit: supporting theater, music, art, offering scholarships, improving hospitals, preserving architecture. But it was the death of her mother, Hope, that galvanized Gruss’s giving in a new way.

“Trauma early in my mother’s life must have brought out her depression,” says Gruss. Hope Butvydas, a sensitive, artistic woman, fled from post-war Communist Lithuania to America with two young children in tow. She fell ill. And for some 40 years, she was periodically hospitalized with a depressive illness that seared the meaning of suffering in her daughter’s mind.

Gruss studied biology at Tufts University. A cum laude graduate, she worked for the research arm of Revlon, then, after studies in economics, began a 25-year career in marketing and advertising. She headed creative services worldwide for Elizabeth Arden and had her own successful international firm offering science-based skin care products. Her marriage flourished; her philanthropy grew.

But in 2005, when her mother died of medical causes, giving became more personal as a bereft Gruss searched for a memorial. And at one of those peak moments where interest, curiosity and experience overlap—as though Gruss had been in lifelong training for it—the way became clear. In 2006, after consulting some of the nation’s best minds on mood and emotional disorders, she founded the Hope for Depression Research Foundation (HDRF), an organization that underwrites targeted, gutsy studies with high potential to advance diagnosis, treatment and prevention of these mind-brain disorders.

By giving serious support to top international scientists—those whose work shows how neurobiology drives the psyche—the HDRF joins Hopkins in looking for both cure and prevention.

Irving Reti’s HDRF grant enables him to help patients as it advances understanding. With his supported work, Hopkins has become one of a handful of sites testing the next generation of TMS devices. HDRF is specifically funding a pilot study using TMS for adolescents—currently the only trial that focuses on this vulnerable group most in need of an alternative to antidepressants.