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

(Continued on page 2)
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.