

Public release date: 26-Nov-2007

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Penn research shows transcranial magnetic stimulation effective in treating major depression

Nondrug, noninvasive treatment helps patients who have tried other options without success

PHILADELPHIA – Researchers at the University of Pennsylvania School of Medicine and other study sites have found that transcranial magnetic stimulation (TMS) – a non-invasive technique that excites neurons in the brain via magnetic pulses passed through the scalp – is a safe and effective, non-drug treatment with minimal side effects for patients with major depression who have tried other treatment options without benefit.

This study – the largest to-date studying TMS as a standalone treatment for major depression – appears in the December 1st issue of *Biological Psychiatry*.

“TMS provides a well-tolerated treatment option to patients whose depression is otherwise treatment resistant,” says John P. O’Reardon, MD, Associate Professor of Psychiatry at Penn, and lead study author. “Since TMS is administered via the scalp and therefore goes directly to the brain, it allows the patient to avoid bodily side effects such as weight gain, sedation and/or sexual function.”

The study was conducted at 23 sites in the U.S., Australia, and Canada, and involved 301 medication-free patients with major depression who had not benefited from prior treatment. The patients were randomized to active or sham TMS for 4-6 weeks. Response and remission rates with active TMS were approximately twice those of sham. Additionally, there were no unexpected, serious side effects, and less than 5% of patients discontinued their TMS due to side effects. This is about three times better tolerated and safer than standard medications, which have about a 15% discontinuation rate due to side effects.

Dr. O’Reardon further comments, “As indicated by recent large scale, government-sponsored, studies of existing treatment options for major depression conducted by the National Institute of Health (the STAR-D reports), there is a great need to develop new, effective treatments for patients, especially those not benefiting from first line interventions. The results of this study indicate that TMS offers new hope to patients in this regard.”

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Additional study authors are H. Brent Solvason, Philip G. Janiak, Shirlene Sampson, Keith E. Isenberg, Ziad Nahas, William M. McDonald, David Avery, Paul B. Fitzgerald, Colleen Loo, Mark A. Demitrack, Mark S. George, and Harold A. Sackeim.

Disclosure: Dr. O’Reardon has received grant support from BMS, Cyberonics, Lilly, Magstim, Neuronetics, Pfizer, and Sanofi; acted as a consultant for Lilly and Neuronetics; and is a member of speakers bureaus for BMS, Cyberonics, and Lilly.

PENN Medicine is a \$3.5 billion enterprise dedicated to the related missions of medical education, biomedical research, and excellence in patient care. PENN Medicine consists of the University of Pennsylvania School of Medicine (founded in 1765 as the nation's first medical school) and the University of Pennsylvania Health System.

Penn's School of Medicine is currently ranked #3 in the nation in U.S.News & World Report's survey of top research-oriented medical schools; and, according to most recent data from the National Institutes of Health, received over \$379 million in NIH research funds in the 2006 fiscal year. Supporting 1,400 fulltime faculty and 700 students, the School of Medicine is recognized worldwide for its superior education and training of the next generation of physician-scientists and leaders of academic medicine.

The University of Pennsylvania Health System includes three hospitals — its flagship hospital, the Hospital of the University of Pennsylvania, rated one of the nation's "Honor Roll" hospitals by U.S.News & World Report; Pennsylvania Hospital, the nation's first hospital; and Penn Presbyterian Medical Center — a faculty practice plan; a primary-care provider network; two multispecialty satellite facilities; and home care and hospice.

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