



**Department of Psychiatry**

**Columbia University, College of P&S**

**NYS**

**Psychiatric Institute**

# **DIVISION OF BRAIN STIMULATION AND THERAPEUTIC MODULATION**

**JOURNAL CLUB**

## **MARIA CHAI, MD**

RESIDENT IN PSYCHIATRY, HOSPITAL JULIO DE MATOS  
LISBON, PORTUGAL

VISITING RESIDENT, DIVISION OF BRAIN STIMULATION AND THERAPEUTIC MODULATION  
COLUMBIA UNIVERSITY

*will present*

**Simpson KN, Welch MJ, Kozel FA, Demitrack MA, Nahas Z. Cost-effectiveness of transcranial magnetic stimulation in the treatment of major depression: a health economics analysis. Adv Ther. 2009 Mar 28.**

## **Wednesday April 15, 2009**

**1:00 PM to 2:00 PM**

**Location: New York State Psychiatric Institute, 1051 Riverside Drive, Room 5001**

(Enter Kolb Annex, 40 Haven Ave., turn rt., walk through atrium and across bridge over Riverside Dr. to new NYSPI, take elevator to 5th Fl.)

(See over for brief speaker biography and J Club paper abstract)

## **ABOUT MARIA CHAI, MD**

Dr. Maria Chai is a psychiatry resident from Lisbon, Portugal, with clinical interests in brain stimulation applications, particularly in mood disorders and dementias. In April 2009, Dr. Chai is a Visiting Resident with the Division of Brain Stimulation and Therapeutic Modulation, Columbia University.

## **PAPER FOR JOURNAL CLUB**

Simpson KN, Welch MJ, Kozel FA, Demitrack MA, Nahas Z. Cost-effectiveness of transcranial magnetic stimulation in the treatment of major depression: a health economics analysis. *Adv Ther.* 2009 Mar 28. [Epub ahead of print]

Medical University of South Carolina, 67 President Street, Room 502N, Charleston, SC, 29403, USA.

**INTRODUCTION:** Transcranial magnetic stimulation (TMS) is a novel antidepressant therapy shown to be effective and safe in pharmacotherapy-resistant major depression. The incremental cost-effectiveness and the direct cost burden compared with sham treatment were estimated, and compared with the current standard of care. **METHODS:** Healthcare resource utilization data were collected during a multicenter study (n=301) and a decision analysis was used to stratify the 9-week treatment outcomes. A Markov model with an acute-outcome severity-based risk of relapse was used to estimate the illness course over a full year of treatment follow-up. These model estimates were also compared to best estimates of outcomes and costs of pharmacotherapy treatment, using the published STAR(\*)D outcomes. The cost-effectiveness of TMS was described using an incremental cost-effectiveness ratio (ICER) per quality-adjusted life year (QALY) gained and on a direct cost per patient basis across a varying range of assumptions. The model's sensitivities to costs due to losses in work productivity and to caregiver time were also examined. **RESULTS:** Compared with sham treatment and at a cost of US\$300 per treatment session, TMS provides an ICER of US\$34,999 per QALY, which is less than the "willingness-to-pay" standard of US\$50,000 per QALY for a new treatment for major depression. When productivity gains due to clinical recovery were included, the ICER was reduced to US\$6667 per QALY. In open-label conditions, TMS provided a net cost saving of US\$1123 per QALY when compared with the current standard of care. In the open-label condition, cost savings increased further when the costs for productivity losses were included in the model (net savings of US\$7621). The overall cost benefits of treating MD using TMS were greater in those patients at the earliest levels of treatment resistance in the overall sample. **CONCLUSION:** TMS is a cost-effective treatment for patients who have failed to receive sufficient benefit from initial antidepressant pharmacotherapy. When used at earlier levels of treatment resistance, significant cost savings may be expected relative to the current standard of care.