

Media Contact:
Drew Avril
CoActive Public Relations
Ph: 718-871-7117
davril@coactivepr.com



The International Neuromodulation Society Announces Promising Results for Treating Anorexia Nervosa with Deep Brain Stimulation

– Two-Year Study Reveals Effective Alternate Therapy for Devastating Eating Disorder –

ACAPULCO, MEXICO (December 10, 2007) – A study presented yesterday at the International Neuromodulation Society's (INS) eighth world congress demonstrated the effectiveness of deep brain stimulation (DBS) as a treatment for anorexia nervosa. The results were announced on the first day of the year's largest conference on neuromodulation, the alteration (or modulation) of nerve activity by delivering electrical or pharmaceutical agents directly to a target area.

Bomin Sun, MD, director and professor of the Center of Functional Neurosurgery at Shanghai Jiao Tong University Rui Jin Hospital, China, presented the results of a more than two-year study on the treatment of 20 patients whose previous psychiatric and pharmaceutical therapies had been ineffective. Two months following DBS treatment, anorexic patients gained between 17 and 44 pounds, and many saw significant improvement in obsessive-compulsive and anxiety symptoms.

"Anorexia nervosa is a complex condition, involving sociological, neurobiological and psychological components," said Dr. Sun. "This DBS treatment is very promising in that all patients had an improvement in eating behavior, psychiatric symptoms, or a combination of both. This surgical procedure should serve as an alternative therapy in advanced cases."

Dr. Sun and colleagues implanted electrodes via a minimally invasive surgery in 15 patients, and used the DBS electrodes to stimulate the nucleus accumbens (the neurons within the forebrain), a similar approach used for treating Parkinson disease. Twelve of these patients received radiothermal lesions (capsulotomy) targeted at the anterior internal capsule (an area of white matter in the brain) in addition to the DBS. While the pre-operation positron emission tomography (PET) scans displayed a significant increase in metabolic levels, the post-operation PET scans demonstrated an immediate decrease in metabolic levels in all the patients.

All patients were followed for two to 26 months following treatment. Patients who underwent the capsulotomy combined with DBS showed significant improvement both in eating behavior and psychiatric symptoms. Three patients that received only deep brain stimulation showed an improvement in obsessive-compulsive and anxiety symptoms, but minimal progress in eating behavior.

Side effects such as urinary incontinence, memory loss and confusion were observed in a few patients who underwent lesioning of the anterior internal capsule. There were no side effects observed in patients who only received deep brain stimulation.

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An eating disorder is defined as either an extreme reduction or extreme increase in food intake.¹ Today, eating disorders affect up to 24 million Americans and 70 million individuals worldwide.² While treatments such as nutritional counseling, psychotherapy and antidepressants are effective for many with eating disorders, some chronic cases are unresponsive to this treatment paradigm.

Anorexia nervosa is characterized by emaciation due to an unwillingness to maintain a normal, healthy weight. The incidence of anorexia is 13 cases per 100,000 persons per year, with females between 15 and 19 years of age making up 40 percent of these cases.³ Individuals with anorexia are up to 10 times more likely to die as a consequence of their illness.⁴

About the International Neuromodulation Society

The International Neuromodulation Society (INS) is a non-profit group of clinicians, scientists and engineers dedicated to the scientific development and awareness of neuromodulation – the alteration of nerve activity through the delivery of electrical stimulation or chemical agents to targeted sites of the body. Founded in 1989 and based in San Francisco, CA, the INS educates and promotes the field through meetings, its journal *Neuromodulation: Technology at the Neural Interface* and chapter websites. For more information, please visit www.neuromodulation.com. For conference information, please visit <http://www.neuromodulation.com/2007-ins-nans-neuromodulation-conference-in-acapulco.htm>

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¹ National Institute of Mental Health. [Eating Disorders](http://www.nimh.nih.gov/health/publications/eating-disorders/eating-disorders-are-treatable-diseases.shtml). Nov. 19, 2007. <http://www.nimh.nih.gov/health/publications/eating-disorders/eating-disorders-are-treatable-diseases.shtml>

² The Renfrew Center Foundation for Eating Disorders, [Eating Disorders 101 Guide: A Summary of Issues, Statistics and Resources](http://www.renfrew.org), published September 2002, revised October 2003, <http://www.renfrew.org>.

³ Hoek HW. (2006) Incidence, prevalence and mortality of anorexia nervosa and other eating disorders. *Curr Opin Psychiatry*, 19 (4), 389-94.

⁴ National Institute of Mental Health. [Anorexia Nervosa](http://www.nimh.nih.gov/health/publications/eating-disorders/anorexia-nervosa.shtml) Nov. 19, 2007. <http://www.nimh.nih.gov/health/publications/eating-disorders/anorexia-nervosa.shtml>