



One-Week Intensive Therapy May Help Children With OCD

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Children with obsessive-compulsive disorder (OCD) often do not receive cognitive behavioral therapy (CBT), the most effective intervention, in part because of geographic barriers and the lack of trained providers. Children with OCD frequently receive psychiatric medication alone or together with unproven forms of psychotherapy.

Stephen P. Whiteside, PhD, LP, of the Department of Psychiatry and Psychology is using videophone technology to study the development of an efficient way to provide CBT to children with OCD through a 1-week intensive therapy program.

"CBT can be delivered effectively in an intensive format over a 3-week time span, which involves considerable time and financial expenditure for those who don't have local access," says Dr Whiteside. "CBT delivered successfully in a 5-day format has the potential to help many more families, whose children would otherwise remain untreated or inadequately treated."

Treatment Protocol

The 5-day intervention involves 10-hour sessions throughout the morning and afternoon. Mayo specialists educate children and their parents about how OCD works and use exposure and response prevention techniques, accomplishing as many exposures to symptoms as possible during treatment. "We then teach parents to act as treatment coaches at home," says Dr Whiteside. "The program is designed so the children don't need to work with a therapist when they return home."

Dr Whiteside's team originally studied

the 5-day therapy with 3 adolescent patients. "The program worked," notes Dr Whiteside. There appeared to be different paths to improvement. Some patients saw immediate improvement during the week that they then maintained at home. Others

improved more gradually over time, suggesting that the families were able to successfully use the coaching strategies that they learned.

The study uses videophone technology to evaluate the 5-day cognitive behavioral intervention for youth with OCD, administered at multiple sites. The children's symptoms are evaluated by specialists before and after treatment so that families who live a long distance from Mayo Clinic can participate in the study without making additional trips to Mayo.

Dr Whiteside is partnering with the University of South Florida and the Fordham University to complete a baseline comparison study of 30 pediatric patients (10 children at each site). Mayo Clinic Center for Innovation also has provided funding to explore the use of smartphones to help families continue treatment at home.

"If our research confirms that this approach is effective, the program will be expanded to address other anxiety disorders," notes Dr Whiteside.



Stephen P. Whiteside, PhD, LP

Psychiatrists Evaluate Patients With Parkinson Disease to Track Symptoms of Mood and Anxiety

Stereotactic implantation of electrodes for deep brain stimulation (DBS) in the subthalamic nucleus is an approved treatment for Parkinson disease. Despite DBS-associated improvement in the physical symptoms such as tremor, some patients with Parkinson disease who undergo DBS treatment may have psychiatric adverse effects, including symptoms of mania, depression, anxiety, and suicidal thinking. This risk is superimposed on the already high rate of comorbidity that patients with Parkinson disease experience with mood disorders, such as depression and bipolar disorder, psychotic syndromes, sleep disturbances, and anxiety disorders.

Cognitive Evaluation Before DBS

“The ultimate goal for all members of our Mayo Clinic DBS team is to improve the quality of life for patients and their caregivers while managing the motor symptoms of Parkinson disease. This outcome necessarily involves the assessment of nonmotor symptoms, such as psychiatric and cognitive functioning,” says Julie A. Fields, PhD, LP, a neuropsychologist in the Department of Psychiatry and Psychology.

Cognitive assessment of patients being evaluated for DBS is critical. At Mayo, patients participate in a 3- to 4-hour neuropsychological evaluation that examines the following characteristics:

- Attention and concentration
- Information processing speed
- Executive functioning, such as mental flexibility and problem solving
- Language
- Memory
- Visual-spatial abilities

DBS is generally considered safe, but in certain circumstances it may pose an increased risk of cognitive decline. “Some aspects of cognition are deficient in patients with Parkinson disease and certain difficulties are anticipated,” says Dr Fields. “When the neuropsychological compromise is greater than expected or presents in a pattern that suggests there may be other underlying neurological processes, we must proceed with caution.”

A decline in verbal fluency (how quickly the patient generates words) is the most consistent adverse finding after DBS. Other aspects of cognitive functioning also decline in some patients. The reason is not fully understood, but possible mechanisms include disease progression, poorer presurgical cognitive or motor functioning, stimulation parameters, dopamine dysregulation,

and interactions among these factors.

Dr Fields is working to identify reliable predictors of cognitive and quality-of-life outcomes and to better understand the underlying mechanisms, to inform treatment intervention



Julie A. Fields, PhD, LP

DBS and Animal Models of Alcoholism

In 2010, Osama A. Abulseoud, MD, with the Department of Psychiatry and Psychology at Mayo Clinic in Rochester, Minnesota, received a 3-year grant that allows him to study animal models of alcoholism to better understand how areas of the brain can stimulate behavior.



Osama A. Abulseoud, MD

Using the Wireless Instantaneous Neurotransmitter Concentration System (WINCS) developed at Mayo Clinic and deep brain stimulation (DBS), Dr Abulseoud expects to show that the neurotransmitter glutamate is released in rats bred to be alcoholic when they receive DBS.

WINCS allows measurement of neurotransmitters released in real time. DBS electrodes are implanted in the nucleus accumbens to stimulate it. “We test the glutamate transporter to determine how DBS works in this study,” says Dr Abulseoud. “Our goal is to determine if and how DBS can be used to treat alcohol dependence.”

Similar studies with promising results have been completed for opiate addiction. “This study holds clinical importance for patients who are extremely motivated to remain sober but cannot,” says Dr Abulseoud. “Knowing the chemical reaction of DBS will help us understand the disease process and how to treat it. Testing the glutamate transporter modulators in this process will result in a leap to treatment and novel therapy through the compounds that become the transporter.”

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decisions. Future studies will examine the patterns and trajectories of cognitive decline in patients with Parkinson disease.

Psychiatric Evaluations Identify Symptoms of Mood and Anxiety and Educate Patients

At Mayo Clinic, psychiatrists work with patients who have Parkinson disease during their initial evaluation and throughout DBS treatment. Patients are awake for the DBS procedure. Anxiety may alter response and effectiveness, so anxiety-related issues must be addressed. "For patients who are well screened, DBS is an excellent treatment," says Shirlene Sampson, MD, with the Department of Psychiatry and Psychology.

It is not the standard of care that every DBS practice includes a psychiatrist. "The general public is not aware of psychiatric complications for patients with Parkinson disease," notes Dr Sampson. "Patients usually don't understand why they're being evaluated by psychiatrists." At Mayo, psychiatrists are involved from the beginning of evaluations to determine whether patients with Parkinson disease are candidates for DBS. The psychiatrist's role includes the following:

- Identifying any psychiatric condition that needs to be addressed before surgery
- Identifying any patients who may not be able to tolerate or adhere to the treatment procedure or careful, close clinical follow-up
- Educating and informing patients of possible

psychiatric complications, including the risk of suicide

"Our goal is to establish a comprehensive program to track both Parkinson symptoms and mood as they are affected by DBS," says Mark A. Frye, MD, chair of the Department of Psychiatry and Psychology at Mayo Clinic in Rochester, Minnesota, and director of the Integrated Mood Group. Overall, the first 50 patients with Parkinson disease to be evaluated by psychiatrists while being treated with DBS reported an improvement in symptoms, a reduction in medications, and less depression.

"It is clear that DBS is developing psychiatric applications. What's important at Mayo is how we're preparing for that opportunity," says Dr Frye.



Shirlene Sampson, MD



Mark A. Frye, MD

WINCS Measures Serotonin Levels in Real Time

The deep brain stimulation (DBS) program at Mayo Clinic in Rochester, Minnesota, directed by Kendall H. Lee, MD, PhD, of the Department of Neurosurgery, has developed the Wireless Instantaneous Neurotransmitter Concentration System (WINCS) to detect and measure levels of neurotransmitters released in the brain.

Serotonin is a neurotransmitter in the brain that is thought to have a key role in controlling depression. WINCS has been shown to measure serotonin with a technology called *fast-scan cyclic voltammetry*, an electrochemical method of measuring serotonin in real time in the living brain.

Dr Lee's team developed WINCS to better understand the mechanism of DBS. "We had no system to measure human neurotransmitter levels in real time," says Dr Lee. "We needed a sensor system to study mechanisms of action for DBS."

WINCS, in development for more than 5 years, is miniaturized, wireless, and computer controlled. It has been used in both animal studies and human patients undergoing DBS.

The ability to measure brain chemicals offers implications for elucidating how stimulating devices can modulate neuropsychiatric diseases, such as depression and alcoholism. "It is hoped that the measurements WINCS provides will help establish a therapeutic mechanism of DBS for neuropsychiatric disease," says Dr Lee. Future applications may include eating disorders, pain modulation, psychiatric disorders, and obsessive-compulsive disorders.

"What is significant is that if we can measure serotonin, perhaps we can modulate it," says Dr Lee. "Rather than just diagnosing disease or measuring neurotransmitters, we hope to use this tool to make feedback a neuromodulation device of the future."



Kendall H. Lee, MD, PhD

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In the News

“Bipolar Disorder—A Focus on Depression”

Published in the January 6, 2011, issue of the *New England Journal of Medicine*, this article describes the identification and management of depression due to bipolar disease. Author Mark A. Frye, MD, chair of the Department of Psychiatry and Psychology at Mayo Clinic in Rochester, Minnesota, presents cases that highlight common clinical problems, evidence supporting various treatment strategies, a review of formal guidelines, and clinical recommendations.

Pain Management Program for Adolescents Expands Services

Effective in October 2010, the Pediatric Pain Rehabilitation Clinic (PPRC) at Mayo Clinic in Rochester, Minnesota, began operating continuously with a permanent staff and a target census of 15. PPRC has been piloted since March 2008. More than 200 adolescents have been treated for chronic pain management, with a goal of functional restoration in this innovative program. For more information, contact Barbara K. Bruce, PhD, LP, at 507-255-2412.

America's Children in Peril

On January 20, 2011, Peter Jensen, MD, of the Department of Psychiatry and Psychology at Mayo Clinic in Rochester, Minnesota, participated in the National Press Club forum “America’s Children in Peril: Solving the Child Obesity and Mental Health Epidemics.” The forum, sponsored by Arizona State University, focused on innovative strategies supporting the premise that the foundation for a healthy adulthood is a healthy childhood.

Pain Rehabilitation for American Indians With Chronic Pain

Primary Investigator W. Michael Hooten, MD, and Mayo Clinic coinvestigators received a Native American Research Centers for Health VI grant for the development of a pain rehabilitation program that incorporates opioid dose tapering for American Indian adults with chronic pain. The program aims to adapt a cognitive behavioral intervention that is appropriate culturally. The team also will evaluate the efficacy of the adapted intervention on treatment outcomes.