

# Deep Brain Stimulation Failures Often Preventable

*Study shows that many errors are either avoidable or correctable by more experienced physicians.*

BY DAMIAN McNAMARA  
Miami Bureau

MIAMI BEACH — Operator errors are responsible for more than half of the failures of deep brain stimulation to lessen essential tremor or Parkinson's symptoms, according to the findings of one study presented at the American Academy of Neurology annual meeting.

Many of these patients benefit when deep brain stimulation (DBS) is repeated at movement disorder centers by more experienced physicians.

The Food and Drug Administration approved a DBS system (Activa, manufactured by Medtronic Inc.) to treat patients with essential tremor or Parkinson's disease in August 1997.

The agency expanded the system's indication to include patients with dystonia in April 2003.

Although DBS improves quality of life for many patients, some do not respond. Incorrect diagnosis, surgical lead misplacement, and device-related errors are among the preventable problems identified by Michael S. Okun, M.D., and his associates.

"There has been a surge in centers providing DBS after its FDA approval and an increasing number of patients presenting to experienced DBS centers with complaints," said Dr. Okun, codirector of the Movement Disorders Center at the University of Florida in Gainesville.

"About 12 patients per year are seen by centers of excellence for these referred problems," he said.

A lack of consensus on patient screening, provider training, and the best multidisciplinary approach contribute to the failure rate, Dr. Okun said.

**More physicians have been providing DBS since its FDA approval, and more patients are 'presenting to experienced DBS centers with complaints.'**

In addition, there is no consensus on the management of complications, some of which spur referral of the patient to an experienced DBS center for management.

The records of 41 consecutive patients who were treated at the University of Florida movement disorders center or the movement disorders center at the Beth Israel Medical Center in New York City were reviewed.

The patients' average age was 63 years. Thirty patients (73%) saw a movement disorders specialist prior to DBS implantation, and five patients (12%) had significant cognitive dysfunction before implantation.

The patients underwent the following types of DBS implantation: 21, bilateral subthalamic nucleus; 8, unilateral subthalamic nucleus; 8, unilateral ventral intermediate nucleus; 1, unilateral globus pallidus interna; 1, bilateral ventral intermediate nucleus; and 1, bilateral globus pallidus interna.

All of the study participants saw a movement disorders neurologist upon referral.

More than one-third, 36%, of patients had no improvement, and 15% had mini-

mal improvement. However, "51% had significant improvement or were rescued with good outcomes," Dr. Okun said at the meeting.

"The reasons for DBS failures were not only surgical," Dr. Okun said.

The researchers identified a timeline of preventable problems associated with DBS surgery. "It is quite interesting because many things were quite correctable," Dr. Okun said. "There is an expertise factor we can improve on."

Preventable problems included:

- ▶ Incorrect diagnosis (10 instances).
- ▶ Inadequate medication trial/dementia (10).
- ▶ Misplaced leads (19).
- ▶ Inadequate device programming (15).
- ▶ Medication adjustments (30).

Preoperative diagnoses included 31 with Parkinson's disease, 9 with essential tremor, and 1 patient with dystonia.

The actual diagnoses were 26 with Parkinson's disease, 5 with essential tremor, 1 with dystonia, 3 with Parkinson's disease with dementia, 2 with multiple system atrophy, 1 with Parkinson's disease/essential tremor, 1 with corti-

cobasal ganglionic degeneration, 1 with progressive nuclear palsy, and 1 with myoclonus.

Patients improved after 7 of the 19 misplaced leads were replaced, and partially improved after 3 others were replaced, he reported.

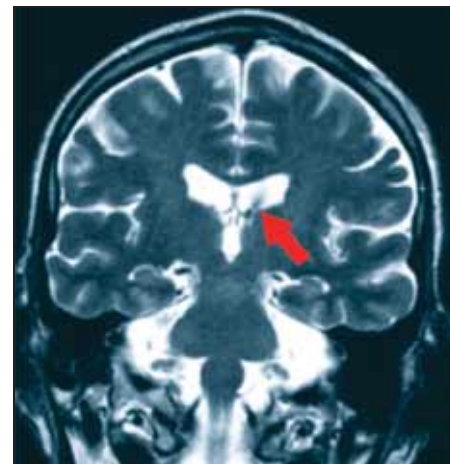
Programming problems included inadequate programming (15 patients), no or poor access to programming (7 patients), and difficult access to follow-up because of relocation (2 patients, 2 physicians). Reprogramming was successful for 15 patients and partially successful for 6 patients.

A majority, 73%, of participants required medication changes. Dr. Okun said, "This brings home the point that even after surgery patients often need medication adjustments."

Selection bias was a possible shortcoming of the study.

Dr. Okun said there are many improvements that can be made to prevent DBS failures and to improve outcomes.

Dr. Okun acknowledged that he teaches courses in programming the Activa DBS system for Medtronic. ■



**Operator errors caused more than half of all deep brain stimulation failures. Shown are DBS lead misplacements in the ventricle (left) and atop the thalamus (right).**

PHOTOS COURTESY DR. MICHAEL S. OKUN

## Quick Dementia Screen Increased Number of Diagnoses

BY KERRI WACHTER  
Senior Writer

WASHINGTON — Routine use of a simple dementia screening tool can boost the number of possible dementia cases identified in primary care without putting a substantial drain on physician time, according to data presented at an international conference sponsored by the Alzheimer's Association.

After institution of dementia screening for all patients 65 years old and older in two primary care clinics, the number of dementia diagnoses made by geriatricians and primary care physicians rose significantly. The number of diagnoses did not change at two other primary care facilities that served as controls, said Soo Borson, M.D., professor of geriatric psychiatry at the University of Washington in Seattle.

For the trial, dementia screening was performed by medical assistants who had been specially trained in administering and interpreting the Mini-Cog test, de-

veloped by Dr. Borson and her colleagues. Data from electronic records at two other primary care clinics served as controls.

The Mini-Cog screening test takes 1-3 minutes to administer and involves a three-item recall portion to assess memory and a clock-drawing test. The Mini-Cog is as effective as, if not better than, the Mini-Mental State Examination in identifying cognitive impairment, she said. A score of 0-2 on a scale of 5 indicates impairment.

The medical assistants informed physicians of the results and entered the results into the patient's medical record.

The medical assistants had a 96% agreement rate with the expert raters. The researchers identified the percentage of the clinic caseload comprising dementia diagnoses, dementia referrals,

cognitive impairment referrals, or prescriptions of cholinesterase inhibitors in the year following the start of cognitive screening.

Of the 540 patients eligible for screening at the test clinics, 70% were successfully screened; fewer than 1% refused. Of those screened, 16% scored below the Mini-Cog cut point of 3.

Prior to use of the screening tool, 11% of patients seen by the geriatricians were diagnosed with dementia, compared with 4% of those seen by primary care physicians.

After screening was introduced, the number of patients diagnosed with dementia rose to 15% for geriatricians and 6% for primary care physicians. In comparison, of the 1,143 patients treated at the control clinics, only 2% had a dementia diagnosis both years.

**Primary care referrals to specialists for suspected dementia increased in response to screening, but did not change in control clinics.**

The increase in the number of patients identified with cognitive problems at the test clinics didn't necessarily translate into more care for dementia.

"Even for geriatricians, less than 50% of people diagnosed with dementia were actively treated for it," Dr. Borson said at the meeting.

Primary care referrals to specialists for suspected dementia also increased in response to screening but did not change in control clinics.

Prescribing of medications for dementia increased slightly, but only among non-geriatricians in the test clinics. "This shows that screening has some effect, but isn't a sufficient intervention," Dr. Borson told this newspaper.

The findings show that screening can improve recognition of possible dementia.

Based on this and other studies by Dr. Borson's group, simple screening tools like the Mini-Cog appear to help the most with identifying the less cognitively impaired individuals whom physicians often miss. ■