

## deep brain stimulation

### **Surgery offers hope to Parkinson's patients with unrelenting symptoms**

When Rita Brockman extends both her arms, the difference is striking. Her left hand shakes—a clear sign of the essential tremor she's had since she was just a teen—but her right hand remains remarkably still.

What can't be seen is the medical technology that makes this miracle possible. In August, Kris Smith, MD, a neurosurgeon at Barrow, implanted a deep-brain stimulation (DBS) system in the 74-year-old Phoenix woman, alleviating the disabling tremors on the right side of her body.

"I can feed myself now," says Rita.

DBS is a fairly new approach to the control of tremor in people with movement disorders whose symptoms are not relieved by medication. Barrow participated in trials of DBS in the late 1990s, and the technology received final Food and Drug Administration approval in 2002. Dr. Smith and Andrew Shetter, MD, have performed more than 300 DBS procedures at Barrow.

Like many patients, Rita remembers very little of her surgery. During the four-hour procedure, Dr. Smith implanted an electrode in the left side of a small area of her brain called the subthalamic nucleus. Wires from the electrode were run under the skin from the top of Rita's skull, behind her ear and down her neck to a small stimulator implanted below her left shoulder blade.

Two weeks after her surgery, Rita came to the Muhammad Ali Parkinson Research Center to have her stimulator programmed.

"You try to find the setting that provides the greatest relief of symptoms with the fewest side effects," says Lynn Marlor, RN, who programmed Rita's stimulator. Possible side effects include blurred vision and tingling around the mouth and in the fingers.

DBS offers Rita several benefits:

- Because it does not involve destroying brain cells, DBS has fewer side effects than conventional surgeries for movement disorders, and it can be reversed. (Conventional surgeries, such as thalamotomy and pallidotomy, involve destroying brain cells and, thus, are not reversible.)
- The stimulator can be removed should other, more effective treatments become available. The stimulator can be adjusted as Rita's symptoms change.
- Conventional surgeries typically provide relief from symptoms for only about five years. The stimulator can relieve symptoms for a much longer period of time.

"I have had no complications, no side effects," Rita says. In fact, she is so happy with DBS that she plans to have the procedure done on the right side of her brain.

To make DBS available to more patients like Rita, the Muhammad Ali Parkinson Research Center (MAPRC) has recruited Anwar Ahmed, MD, a neurologist who specializes in surgical approaches to movement disorders. Dr. Ahmed was previously at the Cleveland Clinic, where he specialized in screening candidates for DBS and programming the stimulator after the surgery.

"Deep brain stimulation has proven to be safe and effective for many patients," says Richard Burns, MD, director of the MAPRC. "Our goal is to make the surgery available to more patients who can benefit from it."

As for Rita, she is looking forward to her second surgery. "It would be marvelous to have two working hands," she says. "I just want to be able to take care of myself."