

**What's Hot in Parkinson's Disease  
April 2009**

**Finally a DBS Expert Consensus Statement Aimed at Their True  
Customers: The Patients**

**Michael S. Okun, M.D.  
Medical Director, National Parkinson Foundation**

As the years roll by, too often we continue to preach and throw academic pearls in the general direction of our patients. We preach these pearls and cite their validity by pointing the patient toward well-crafted consensus statements appearing in high impact medical journals. This sterile academic approach has left more than a handful of patients confused in making decisions regarding their own therapy. On April 1<sup>st</sup>-3<sup>rd</sup> the Parkinson Alliance (with shared sponsorship provided by the Davis Phinney Foundation, the Lee Silverman Voice Treatment Foundation (LSVT), and the National Parkinson Foundation) convened a panel of 49 of the world's experts on deep brain stimulation (DBS) for Parkinson's disease. The task assigned to these experts was not to craft a typical consensus statement for themselves, but to come up with a document aimed squarely at their true customers—the patients.

DBS is a relatively new procedure that utilizes an implantable electrode which may be used in place of, or in conjunction with ablative brain procedures such as pallidotomy or thalamotomy (where a portion of the brain is irreversibly burned). Patients with Parkinson's disease, tremor, dystonia, or obsessive compulsive disorder (OCD) who are medically refractory to therapy, and who have no cognitive difficulties or "minimal" cognitive (thinking issues) dysfunction may be appropriate candidates. There are also other expanding indications such as depression, cluster headache, epilepsy, and now Tourette syndrome.

The procedure is FDA approved for Parkinson's disease, essential tremor, dystonia and OCD, and the currently available technology is manufactured by the Medtronic corporation, although many companies are now involved in the development of brain hardware. The DBS lead has four electrode contacts (quadrapolar), and depending on the disorder and/or the target one may use variably sized contacts with different spacing arrangements. Each contact can be activated utilizing monopolar (the current when passed to the brain is shaped like a big globe or sphere) or bipolar stimulation (the current when passed to the brain is shaped like an ellipse), and multiple settings can be adjusted for individual patient needs. The settings that can be adjusted may include the pulse width (how big each pulse of stimulation is), frequency (how frequently per second we give each pulse), and amplitude of stimulation (how much voltage we pass through the lead). The DBS electrode is implanted into a specific target within the brain, and is attached to a programmable pulse generator. The pulse

generator, or neurostimulator, is implanted in a subcutaneous pocket below the clavicle and connected to the DBS electrode in the brain via a tunneled extension cable that passes subcutaneously (under the skin) over the clavicle, and across the posterior aspect of the neck and skull (the pulse generator is just like a cardiac pacemaker but the wire goes to the brain).

Below is a pictorial representation of the Medtronic DBS device which displays the DBS lead which is inserted into the brain, connector wire, and neurostimulator (battery) (Image provided courtesy of Medtronic Corporation, Minneapolis, Mn).



The overarching goal of creating the DBS consensus statement/document was to cover all areas that may be pertinent to patients and to families. The topics addressed included 1- patient selection, 2- gait and speech DBS outcomes, 3- non-motor DBS outcomes (mood and cognition), 4- long-term DBS outcomes, 5- DBS technical issues, 6- DBS surgical complications, 7- DBS hardware issues, 8- DBS programming, 9- DBS surgical targets (subthalamic nucleus versus globus pallidus interna), and 10- using ablative or destructive lesions of the brain versus using DBS. Each topic area discussion was led by two of the world's experts. Following group discussion the two experts were charged with summarizing the area and re-presenting the consensus statements for further discussion, and finally for ultimate agreement.

Many of us who have been offering DBS to Parkinson's disease patients for years have yearned for a document that would summarize the pertinent state of the field in a language digestible for the patients as well as applicable to the primary care doctor/primary neurologist. We anticipate this document when completed, will summarize key DBS issues such as who may benefit and how, the potential risks, and also the potential challenges of long-term therapy. It is amazing in medicine how quick we forget who are customers are, and what they need. As we forge forward with new therapies in Parkinson's disease, and we discover novel and important information, we need to keep in mind our primary responsibility to share our findings in the context of patient-centered publications. This DBS consensus document will be available in the Summer of 2009 at the Parkinson Alliance website <http://www.parkinsonalliance.org/>.