

Patient Selection

Deep Brain Stimulation for Parkinson's Disease

Bilateral deep brain stimulation of the internal globus pallidus (GPi) or subthalamic nucleus (STN) can reduce motor symptoms of Parkinson's disease that respond to levodopa, but are no longer well controlled by medication. These symptoms include tremor, bradykinesia and muscle rigidity. DBS is also beneficial for:

- Reducing motor fluctuations that cause patients to take levodopa multiple times per day.
- Dyskinesias – random, involuntary movements as a side effect of levodopa.

DBS does not improve non-motor symptoms of Parkinson's disease, such as balance, swallowing difficulties, memory and cognition problems, depression, anxiety and constipation. DBS does not slow Parkinson's disease progression and is not a cure.

Patients whose motor symptoms are no longer effectively treated with medication may be candidates for DBS. These patients may have “on” times, with disabling involuntary movements or non-motor side effects, and “off” times of disabling tremor, rigidity and difficulty moving or slow movements despite optimized medication management. Motor abilities may fluctuate unpredictably and medications may no longer control tremor. These symptoms mark the start of the time when DBS is typically most effective.

The time DBS is most effective ends when symptoms are no longer responding to dopaminergic medication, patients are severely disabled even with optimal medication, comorbidities prevent surgery or the patient has dementia.

In our experience, patients who require frequent medication adjustments and have been diagnosed for more than four years may be candidates.

Diagnostic criteria

- Clear diagnosis of idiopathic PD – patients with atypical parkinsonism do not benefit from DBS.
- Intact cognitive function – for example, patients who have a score above 26 on the mini mental status test may be good candidates, and scores should not be lower than 24. Patients with poor cognition may become worse after DBS, may not be able to manage the stimulator and may not experience significant functional benefit. OHSU's multidisciplinary team provides neuropsychological evaluation for patients with Parkinson's disease as part of our comprehensive DBS evaluation.
- Clear evidence of motor improvement with Sinemet, with good motor function in the best on-medication state – we require “on-off meds” testing to screen candidates. This may be done via telemedicine.
- Lack of other co-morbidities, including uncontrolled hypertension, serious cardiac disease and other unstable chronic illnesses.
- Other considerations such as the patient's age and degree of disability, goals of therapy are also reviewed in the comprehensive multidisciplinary evaluation by our DBS team.

Surgery and anesthesia risks

- Patients must be cleared for general anesthesia.
- No anticoagulation or aspirin therapy for a limited time before the procedure.

Specific risks of DBS

- Procedural complications – such as infection, coma, intracranial hemorrhage, seizures, paralysis, cerebral spinal fluid leakage and weakness.
- Complications of implanted device – infection, system migration and skin erosion and device failure.
- Speech and language impairments.
- Depression.
- Falls.

Contraindications

Deep brain stimulation is contraindicated in the following situations:

- “Parkinson’s plus” symptoms or neurological disorders other than idiopathic Parkinson’s disease – including brain lesions such as ischemic disease at the target, demyelinating plaques or tumor.
- Certain comorbidities, including serious cardiac disease, uncontrolled hypertension and coagulopathies.
- Patients with dementia.
- Pregnancy.

Refer a patient for DBS evaluation

To refer a patient or consult with our movement disorders team, please call the OHSU Physician Consult & Referral Service at 800 245-6478 or fax 503 346-6854.