Deep Brain Stimulation and Functional Neurosurgery
Improving Lives Every Day
About Boulder Neurosurgical & Spine Associates

With locations throughout Northern Colorado, Boulder Neurosurgical & Spine Associates (BNA) provides local, national and international patients with personalized, minimally invasive and technologically-advanced care for all brain and spine conditions. We are one of the few practices in the country with expertise in both orthopedic and neurosurgical spine care. The mission of BNA is to be at the forefront of neurosurgical and orthopedic spine care and to expand the development and application of new techniques and instrumentation.

All BNA providers hold themselves to the highest standards, developing treatment plans intent on only the best patient outcomes, through either operative or non-operative treatment modalities. BNA works closely with affiliated specialists in Northern Colorado and beyond, to provide patients with faster, more effective relief.

BNA specializes in a broad range of areas including minimally invasive, endoscopic, complex reconstructive, laser spine and functional neurosurgery. Functional neurosurgery includes the treatment of conditions specific to the central nervous system, which consists of the brain and spinal cord.

Conditions treated by functional neurosurgery include Parkinson’s disease, essential tremor, dystonia, refractory chronic pain and epilepsy. These conditions can be treated by procedures such as Deep Brain Stimulation (DBS), spinal cord stimulation, vagal nerve stimulation, temporal lobectomy and other state-of-the-art surgical and non-surgical treatment options.
BNA surgeons are committed to improving treatment protocols for optimal clinical results, which translates to reducing risks, minimizing pain, speeding recovery and avoiding unnecessary surgeries. BNA offers one of the region’s few fellowship-trained functional neurosurgeons, who is also one of the only dually-trained bioethicists in the world. BNA surgeons find that a comprehensive and multidisciplinary approach to DBS improves patient outcomes by working closely with movement disorder neurologists, physical medicine and rehabilitation physicians, neuropsychologists and physical, occupational and speech therapists. The result is a patient-tailored approach to care, resulting in enhanced and effective results with ongoing support.

Deep Brain Stimulation

Deep Brain Stimulation is a surgical treatment for neurological disorders such as Parkinson’s disease, essential tremor and dystonia. It provides a constant, high frequency electrical signal to a specific area of the brain, which results in therapeutic benefits for many symptoms associated with movement disorders.

Why BNA for DBS

Why DBS

Previous treatment methods for movement disorders included the destruction of targeted brain tissue, which was irreversible. DBS, however, allows surgeons to control abnormal brain cell activity near an implanted DBS electrode, overriding abnormal chemical signals without destroying brain tissue.

Candidates

Parkinson’s disease (PD) patients eligible for DBS must
- Respond to dopaminergic medications to some extent
- Suffer from motor fluctuations despite optimized pharmacotherapy
- Experience undesirable side effects from Parkinson’s medications (in some cases)
- Have no significant dementia

Essential Tremor (ET) patients eligible for DBS must
- Have tried a reasonable course of medications such as propranolol or primidone
- Have impaired ability to complete every day activities such as dressing, grooming or eating

Dystonia patients eligible for DBS must
- Have tried medications such as muscle relaxants for treatment
- Have failed a significant course of physical therapy
- Suffer from pain and daily living limitations

Patients eligible for DBS must be
- Significantly disabled from their related disease
- In reasonably good health
- Able to participate in programming the device once it has been implanted

DBS

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How DBS Works

A lead, a thin insulated wire with electrodes at the tip, is inserted through a small opening in the skull and implanted in the brain. The tip is positioned within a targeted area of the brain. The lead is connected to an extension, a thin insulated wire, which is threaded under the skin of the head and neck, and connected to a neurostimulator, or battery pack. The neurostimulator is implanted under the skin near the collarbone. The whole system lies under the skin. This pacemaker-like device delivers a constant high-frequency stimulus to the tip of the electrode implanted in the brain. The stimulation overrides abnormal chemical activity in the brain.

Risks of DBS

The most serious risk for DBS is bleeding in the brain, which can cause stroke. Other risks include infection, malfunction of the stimulator or movement of the electrode(s) or generator. Many of these complications may require the temporary and/or permanent removal of some or all of the DBS equipment.

Next Steps

- Your primary care physician may refer you to a neurologist or neurosurgeon. A referral may or may not be required by your insurance company.
- Call Boulder Neurosurgical & Spine Associates at 303.938.5700 to schedule a consultation or email us at info@bnasurg.com. BNA does not require a referral to be seen for a DBS consultation. However, your insurance company may require a referral, as requirements are specific to each insurance plan.
- You may call BNA to receive a list of in-network insurance companies. BNA accepts Medicare and Medicaid.
- Special tests may be ordered upon your consultation with BNA in order to determine if you are an appropriate candidate for DBS surgery.

More information about DBS and our surgeons who conduct the procedure is available on our Web site at www.bnasurg.com.
Resources

Davis Phinney Foundation
4676 Broadway
Boulder, CO 80304
303.733.3340
Davisphinneyfoundation.org

Parkinson Association of the Rockies
1325 S. Colorado Blvd.
Ste. 204B
Denver, CO 80222
Parkinsonrockies.org

International Essential Tremor Foundation
P.O. Box 14005
Lenexa, KS 66285-4005
888.387.3667
Essentialtremor.org

Dystonia Medical Research Foundation
One East Wacker Drive, Suite 2810
Chicago, Illinois 60601-1905
Toll free: 800-377-DYST (3978)
dystonia.foundation.org

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