



Deep Brain Stimulation

Clinical Coverage Criteria

Overview

Deep brain stimulation (DBS) consists of electrical stimulation of specific sites in the brain with implanted electrodes to reduce the symptoms of movement disorders such as Parkinson's disease and Essential Tremor. Targeted areas include the ventral intermediate nucleus of the thalamus, the internal globus pallidus and the subthalamic nucleus. Each of these brain regions has two halves which control movement on opposite sides of the body. Unilateral DBS has been proposed for use in patients when the symptoms are more severe on one side. Bilateral DBS has been proposed for the treatment of bilateral symptoms.

Policy

Fallon Health requires Prior Authorization for Deep Brain Stimulation. These requests must be supported by the treating provider(s) medical records.

Fallon Health covers unilateral deep brain stimulation of the ventral intermediate (Vim) nucleus (Ventral intermediate nucleus may be referred to as either VIN or Vim in the medical literature) of the thalamus for suppression of tremor in the upper extremity in individuals age 18 and older when all of the following criteria are met:

1. Diagnosis of Essential Tremor based on postural or kinetic tremors of hand(s) without other neurologic signs, or diagnosis of idiopathic Parkinson's Disease (presence of at least two cardinal Parkinson's Disease features (tremor, rigidity, or bradykinesia) which is of a tremor-dominant form, AND
2. Marked disabling tremor of at least level 3 or 4 on the Fahn-Tolosa- Marin Clinical Tremor Rating Scale (or equivalent scale) in the extremity intended for treatment, causing significant limitation in daily activities despite optimal therapy, AND
3. Willingness and ability to cooperate during conscious operative procedure, as well as during post-surgical evaluations, adjustments of medications and stimulator settings.

Fallon Health covers unilateral or bilateral deep brain stimulation of the internal globus pallidus (GPi) or the subthalamic nucleus (STN) for individuals age 18 and older when all of the following criteria are met:

1. Diagnosis of Parkinson's Disease based on the presence of at least 2 cardinal Parkinson's Disease features (tremor, rigidity or bradykinesia), AND
2. Advanced idiopathic Parkinson's Disease as determined by the use of Hoehn and Yahr or Unified Parkinson's Disease Rating Scale (UPDRS) Part III Motor Subscale, AND
3. L-dopa responsive with clearly defined periods, AND
4. Persistent disabling Parkinson's symptoms or drug side effects (e.g., dyskinesias, motor fluctuations, or disabling "off" periods) despite optimal medical therapy, AND

5. Willingness and ability to cooperate during conscious operative procedure, as well as during post-surgical evaluations, adjustments of medications and stimulator settings.

Fallon Health covers unilateral or bilateral deep brain stimulation of the internal globus pallidus (GPi) or the subthalamic nucleus (STN) for individuals 7 years of age and older when all of the following conditions are met:

1. Diagnosis of intractable (drug refractory) primary dystonia, including generalized and segmental dystonia, hemidystonia and cervical dystonia (torticollis).

In accordance with National Coverage Determination (NCD) 160.24 for Medicare based plans Fallon Health covers unilateral or bilateral deep brain stimulation of the ventral intermediate (Vim) nucleus, when all of the following criteria are met:

1. Diagnosis of Essential Tremor based on postural or kinetic tremors of hand(s) without other neurologic signs, or diagnosis of idiopathic Parkinson's Disease (presence of at least two cardinal Parkinson's Disease features (tremor, rigidity, or bradykinesia) which is of a tremor-dominant form, AND
2. Marked disabling tremor of at least level 3 or 4 on the Fahn-Tolosa- Marin Clinical Tremor Rating Scale (or equivalent scale) in the extremity intended for treatment, causing significant limitation in daily activities despite optimal therapy, AND
3. Willingness and ability to cooperate during conscious operative procedure, as well as during post-surgical evaluations, adjustments of medications and stimulator settings.

Exclusions

- Non-idiopathic Parkinson's disease or "Parkinson's Plus" syndromes.
- Cognitive impairment, dementia or depression, which would be worsened by or would interfere with the patient's ability to benefit from deep brain stimulation.
- Current psychosis, alcohol abuse or other drug abuse.
- Structural lesions such as basal ganglionic stroke, tumor or vascular malformation as etiology of the movement disorder.
- Previous movement disorder surgery within the affected basal ganglion.
- Significant medical, surgical, neurologic or orthopedic co-morbidities contraindicating deep brain stimulation surgery or stimulation.
- Deep brain stimulation for obsessive compulsive disorder.

Codes

Coding for deep brain stimulation consists of a series of CPT codes describing the various steps of the procedure, i.e., implantation of the electrodes, implantation of the pulse generator, intra-operative monitoring and programming of the electrodes, and postoperative neuro-programming. Patients may undergo several sessions of electronic analysis with or without programming to find the optimal programming parameters. For bilateral stimulation via implantation of two cranial neurostimulator pulse generators, each connected to a single lead, add modifier -50 to either 81885 or 61886. For bilateral stimulation via implantation of one cranial neurostimulator pulse generator, connected to two leads, use 61886.

The below ICD-10 diagnosis codes represent the conditions for which deep brain stimulation may be covered, inclusion of a code is not a guarantee of coverage. Coverage is subject to approved prior authorization.

Code type	Code	Description
CPT	61863	Twist drill, burr hole, craniotomy, or craniectomy with stereotactic implantation of neurostimulator electrode array in subcortical site (eg, thalamus, globus pallidus, subthalamic nucleus, periventricular, periaqueductal gray), without use of intraoperative microelectrode recording; first array
CPT	61864	Twist drill, burr hole, craniotomy, or craniectomy with stereotactic implantation of neurostimulator electrode array in subcortical site (eg, thalamus, globus pallidus, subthalamic nucleus, periventricular, periaqueductal gray), without use of intraoperative microelectrode recording; each additional array
	61867	Twist drill, burr hole, craniotomy, or craniectomy with stereotactic implantation of neurostimulator electrode array in subcortical site (eg, thalamus, globus pallidus, subthalamic nucleus, periventricular, periaqueductal gray), with use of intraoperative microelectrode recording; first array
	61868	Twist drill, burr hole, craniotomy, or craniectomy with stereotactic implantation of neurostimulator electrode array in subcortical site (eg, thalamus, globus pallidus, subthalamic nucleus, periventricular, periaqueductal gray), with use of intraoperative microelectrode recording; each additional array
	61880	Revision or removal of intracranial neurostimulator electrodes
	61885	Insertion or replacement of cranial neurostimulator pulse generator or receiver, direct or inductive coupling; with connection to a single electrode array
	61886	Insertion or replacement of cranial neurostimulator pulse generator or receiver, direct or inductive coupling; with connection to two or more electrode arrays
	61888	Revision or removal of cranial neurostimulator pulse generator or receiver
	95961	Functional cortical and subcortical mapping by stimulation and/or recording of electrodes on brain surface, or of depth electrodes, to provoke seizures or identify vital brain structures; initial hour of attendance by a physician or other qualified health care professional
	95962	Functional cortical and subcortical mapping by stimulation and/or recording of electrodes on brain surface, or of depth electrodes, to provoke seizures or identify vital brain structures; each additional hour of attendance by a physician or other qualified health care professional (List separately in addition to code for primary procedure)
	95970	Electronic analysis of implanted neurostimulator pulse generator system (e.g., rate, pulse amplitude and duration, configuration of wave form, battery status, electrode selectability, output modulation, cycling, impedance and patient

		compliance measurements); simple or complex brain, spinal cord, or peripheral (i.e., cranial nerve, peripheral nerve, autonomic nerve, neuromuscular) neurostimulator pulse generator/transmitter, without reprogramming
	95971	Electronic analysis of implanted neurostimulator pulse generator system (eg, rate, pulse amplitude, pulse duration, configuration of wave form, battery status, electrode selectability, output modulation, cycling, impedance and patient compliance measurements); simple spinal cord, or peripheral (ie, peripheral nerve, sacral nerve, neuromuscular) neurostimulator pulse generator/transmitter, with intraoperative or subsequent programming
	95972	Electronic analysis of implanted neurostimulator pulse generator system (eg, rate, pulse amplitude, pulse duration, configuration of wave form, battery status, electrode selectability, output modulation, cycling, impedance and patient compliance measurements); complex spinal cord, or peripheral (ie, peripheral nerve, sacral nerve, neuromuscular) (except cranial nerve) neurostimulator pulse generator/transmitter, with intraoperative or subsequent programming
HCPCS	L8680	Implantable neurostimulator electrode, each
	L8681	Patient programmer (external) for use with implantable programmable neurostimulator pulse generator
	L8686	Implantable neurostimulator pulse generator, single array, non-rechargeable, includes extension
	L8688	Implantable neurostimulator pulse generator, dual array, non-rechargeable, includes extension
ICD-10-CM	G20	Parkinson's disease
	G21.11	Neuroleptic induced parkinsonism
	G21.19	Other drug induced secondary parkinsonism
	G21.2	Secondary parkinsonism due to other external agents
	G21.3	Postencephalitic parkinsonism
	G21.4	Vascular parkinsonism
	G21.8	Other secondary parkinsonism
	G21.9	Secondary parkinsonism, unspecified
	G24.1	Genetic torsion dystonia
	G24.02	Drug induced acute dystonia
	G24.09	Other drug induced dystonia
	G24.2	Idiopathic nonfamilial dystonia
	G24.3	Spasmodic torticollis
	G24.4	Idiopathic orofacial dystonia
	G24.8	Other dystonia
	G24.9	Dystonia, unspecified
	G25.0	Essential tremor
	G25.1	Drug-induced tremor
	G25.2	Other specified forms of tremor
	G80.3	Athetoid cerebral palsy

References

1. Centers for Medicare & Medicaid Services (CMS) National Coverage Determination for Deep Brain Stimulation for Essential Tremor and Parkinson's disease (160.24) Effective April 1, 2003
2. Mallet Luc, Polosan M, Jaafari N, et al. Subthalamic Nucleus Stimulation in Severe Obsessive-Compulsive Disorder. *N Engl J Med* 2008;359(20):2121-34.
3. Ponce FA, Lozano AM. Deep brain stimulation state of the art and novel stimulation targets. *Prog Brain Res.*2010;184:311-24.
4. Williams A, Gill S, et al. Deep brain stimulation plus best medical therapy versus best medical therapy alone for advanced Parkinson's disease (PD SURG trial): a randomised, open-label trial. *Lancet Neurol.* 2010 June; 9(6): 581–591.
5. Jiménez MC, Vingerhoets FJ. Tremor revisited: treatment of PD tremor. *Parkinsonism Relat Disord.* 2012 Jan;18 Suppl 1:S93-5.
6. Bronte-Stewart H, Taira T, et al. Inclusion and exclusion criteria for DBS in dystonia. *Mov Disord.* 2011 Jun;26 Suppl. 1:S5-16.
7. Jahanshahi M, Czernecki V, Zurovski AM. Neuropsychological, neuropsychiatric, and quality of life issues in DBS for dystonia. *Mov Disord.* 2011 Jun;26 Suppl 1:S63-78.
8. Starr PA, Bejjani P, et al. Stereotactic techniques and perioperative management of DBS in dystonia. *Mov Disord.*2011 Jun;26 Suppl 1:S23-30.
9. Kahan J, Uner M, Moran R, et al, Resting state functional MRI in Parkinson's disease: the impact of deep brain stimulation on 'effective' connectivity. *Brain.* 2014 Apr;137(Pt 4):1130-44. doi: 10.1093/brain/awu027. Epub 2014 Feb 24.
10. Liu Y, Li W, Tan C, Liu X, Wang X, Gui Y, Qin L, Deng F, Hu C, Chen L, Meta-analysis comparing deep brain stimulation of the globus pallidus and subthalamic nucleus to treat advanced Parkinson disease. *J Neurosurg.* 2014 Sep;121(3):709-18. doi: 10.3171/2014.4.JNS131711. Epub 2014 Jun 6.
11. FitzGerald JJ, Rosendal F, de Pennington N, Joint C, Forrow B, Fletcher C, Green AL, Aziz TZ. Long-term outcome of deep brain stimulation in generalised dystonia: a series of 60 cases. *J Neurol Neurosurg Psychiatry.* 2014 Dec;85(12):1371-6. doi: 10.1136/jnnp-2013-306833. Epub 2014 Apr 1.
12. Schlaepfer TE, Bewernick BH, et. al. Deep brain stimulation of the human reward system for major depression--rationale, outcomes and outlook. *Neuropsychopharmacology.* 2014 May;39(6):1303-14. doi: 10.1038/npp.2014.28. Epub 2014 Feb 11.
13. Eberhardt O, Reithmeier T, Topka H. [Long-term effects of deep brain stimulation for movement disorders: a literature-based analysis]. *Nervenarzt.* 2014 Dec;85(12):1551-60. doi: 10.1007/s00115-014-4210-8.
14. Fang JY, Tolleson C. The role of deep brain stimulation in Parkinson's disease: an overview and update on new developments. *Neuropsychiatr Dis Treat.* 2017 Mar 7;13:723-732. doi: 10.2147/NDT.S113998. eCollection 2017.
15. Tsering D, Tochen L, Lavenstein B Considerations in deep brain stimulation (DBS) for pediatric secondary dystonia. *Childs Nerv Syst.* 2017 Feb 28. doi: 10.1007/s00381-017-3361-x.
16. Kohl S, Baldermann JC. Progress and challenges in deep brain stimulation for obsessive-compulsive disorder. *Pharmacol Ther.* 2018 Jan 31. pii: S0163-7258(18)30018-4. doi: 10.1016/j.pharmthera.2018.01.011. [Epub ahead of print]

17. Mehanna R, Bajwa JA, Fernandez H, Wagle Shukla AA. Cognitive Impact of Deep Brain Stimulation on Parkinson's Disease Patients. *Parkinsons Dis.* 2017;2017:3085140. doi: 10.1155/2017/3085140. Epub 2017 Nov 22.
18. Jakobs M, Fomenko A, Lozano AM, Kiening KL. Cellular, molecular, and clinical mechanisms of action of deep brain stimulation-a systematic review on established indications and outlook on future developments. *EMBO Mol Med.* 2019 Mar 12. pii: e9575. doi: 10.15252/emmm.201809575. [Epub ahead of print]

Policy History

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Not all services mentioned in this policy are covered for all products or employer groups. Coverage is based upon the terms of a member's particular benefit plan which may contain its own specific provisions for coverage and exclusions regardless of medical necessity. Please consult the product's Evidence of Coverage for exclusions or other benefit limitations applicable to this service or supply. If there is any discrepancy between this policy and a member's benefit plan, the provisions of the benefit plan will govern. However, applicable state mandates take precedence with respect to fully-insured plans and self-funded non-ERISA (e.g., government, school boards, church) plans. Unless otherwise specifically excluded, federal mandates will apply to all plans. For Medicare and Medicaid members, this policy will apply unless Medicare and Medicaid policies extend coverage beyond this policy.