

A BRIGHTER FUTURE IS TAKING SHAPE

Treating Parkinson's Disease
with Deep Brain Stimulation

Deep Brain Stimulation



A Personalized Approach

If you're living with Parkinson's, you know all too well how the disease disrupts your life. Losing the ability to perform simple, everyday tasks limits your independence and can strain your relationships. And the increasing side effects of medications sometimes feel even worse.

Luckily, medication isn't your only treatment option. At Boston Scientific, we offer a unique, personalized therapy that can put you on the path to a better tomorrow. It's called Deep Brain Stimulation, or simply DBS.





*"I'm so glad I found DBS. I wasn't ready to throw in the towel."**
- Suzanne F., Boston Scientific DBS Patient

*Results from case studies are not necessarily predictive of results in other cases.
Results in other cases may vary.

What Is DBS?

Although it is not a cure, Deep Brain Stimulation (DBS) is a safe and proven medical treatment that has helped hundreds of thousands of Parkinson's patients manage their symptoms when medication alone is no longer effective.

DBS uses a small, surgically-implanted device called a "stimulator" to send signals to a targeted portion of your brain. This stimulation can improve your motor function by reducing symptoms such as tremor, slowness, and rigidity. For many Boston Scientific patients, this procedure has been life-altering.

Parkinson's affects roughly one million Americans and ten million people worldwide.^{1,2} See how DBS is helping many of these patients take back their lives at [DBSandMe.com](https://www.DBSandMe.com).

How Does DBS Work?

When Parkinson's patients experience motor symptoms, it's because low dopamine levels in their brain are causing abnormal signaling.

Deep Brain Stimulation can help regulate those signals by sending targeted electrical stimulation to specific regions of the brain. As a result, Parkinson's symptoms are often reduced.



Leads:

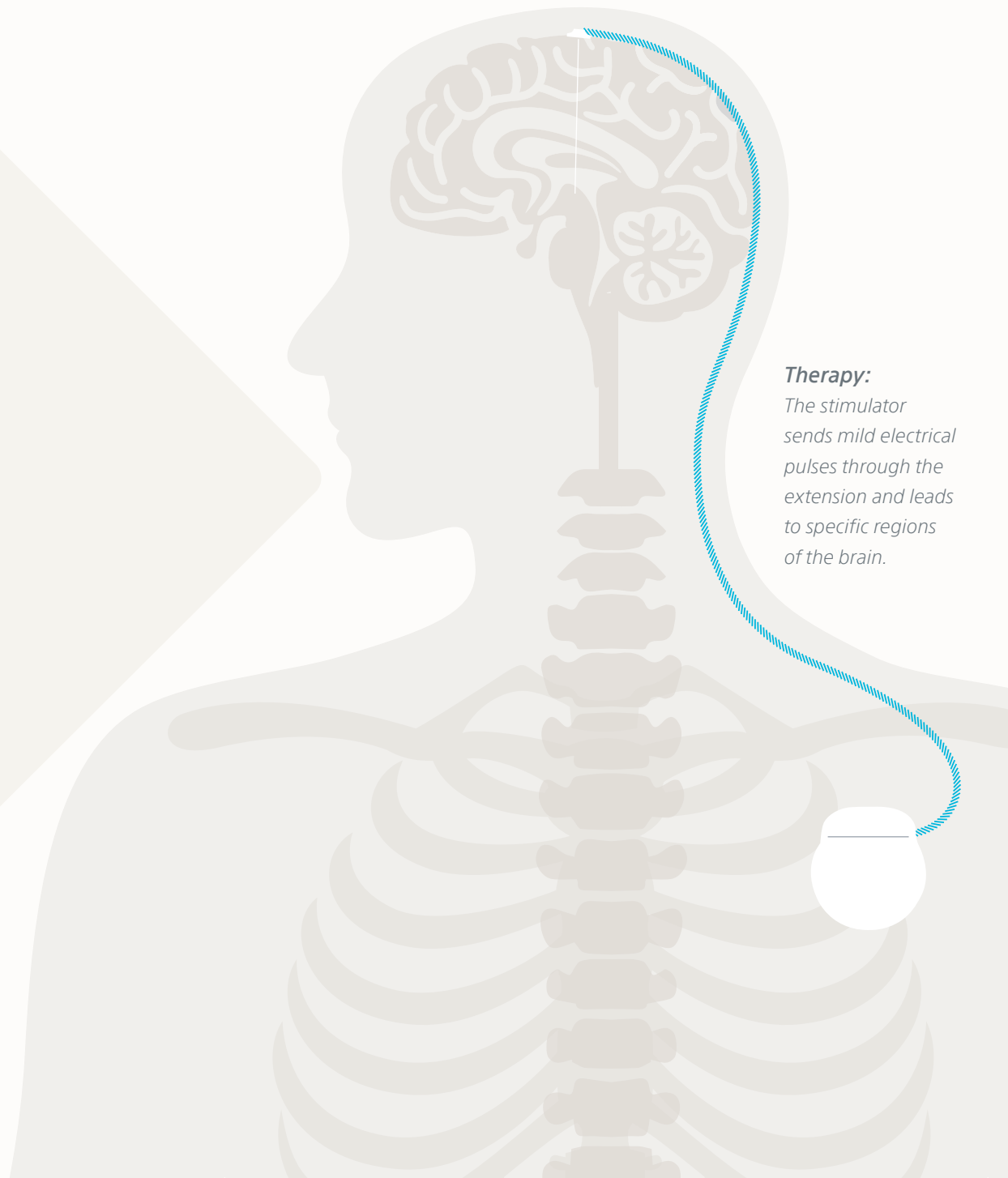
Your doctor will place one or two insulated wires called "leads" in the brain, which connect to a thin wire called an "extension."



Stimulator:

A small device called a "stimulator" is implanted under the skin in the chest, which also connects to the extension.

View our "How DBS Works" video at [DBSandMe.com](https://www.DBSandMe.com).



Therapy:

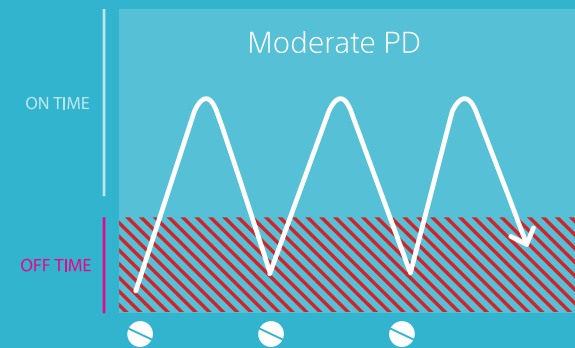
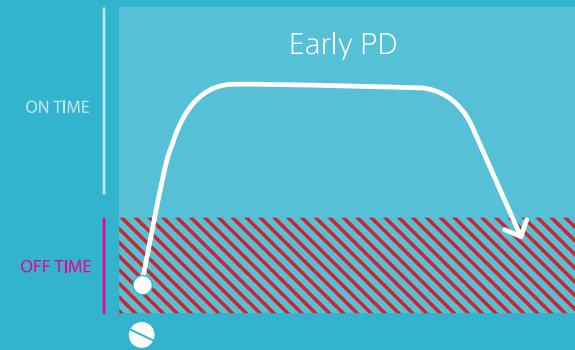
The stimulator sends mild electrical pulses through the extension and leads to specific regions of the brain.

Why Haven't I Heard About DBS Before?

DBS isn't generally offered to patients when they are first diagnosed with Parkinson's disease because medications like levodopa (L-DOPA) do a good job of maintaining your "ON time," giving you better control over your movements.

But over time, the effects of levodopa wear off faster. To reduce your "OFF time," you end up increasing your dose or taking even more medication, which in turn may lead to unintended side effects like intense, uncontrolled movements known as dyskinesia.³

As Parkinson's advances, medication may lose its ability to control your motor symptoms.⁴



 L-DOPA DOSES

When Should I Get DBS?

There is an ideal “window” for getting DBS therapy – and a point at which it’s too late to have the procedure. In general, the best time to begin DBS treatment is when you’re still responding to levodopa, but are no longer able to control motor symptoms with medication alone. This point varies from patient to patient, but is about four years after diagnosis.⁵

Although there is no age cutoff for DBS, overall health status and evidence of dementia will affect DBS eligibility, so it’s important to start talking about DBS with your movement disorder neurologist early in your disease progression. And if you’re struggling to keep up with your medication regimen, the time to talk to your doctor is now.

*In a survey of patients, the majority said they wish they had received DBS sooner than they did.**



*Survey of 100 Boston Scientific DBS implant recipients.

How Effective Is DBS?

Not all Parkinson's patients are affected by the disease in the same way.

The severity, type, and recurrence of any symptom will vary by patient. As will his or her response to DBS treatment.

But quite often, DBS allows Parkinson's patients to reduce the amount of medicine they take⁸ and live free from disruptive side effects such as uncontrolled movements, incontinence, and moodiness.

96%

96% Patient Satisfaction

If given the chance, 96% of DBS patients would choose to do it again.⁶



More "ON Time"

DBS provides roughly 8 to 10 hours of "ON time," giving you control and independence to live your life without rigidity or freezing.^{7,8,9}



Sustained Results

Marked improvements in motor function are sustained for at least 5 years.⁹



Less Tremor

People with tremor experience an average of 70% reduction in tremor, depending on its type and location.¹⁰



Fewer Pills

One year after DBS, 75% of patients reported a decrease in their Parkinson's medication.¹¹

What Makes Boston Scientific's DBS Unique?

For DBS to be effective, your physician must be able to precisely control the placement and intensity of your therapy, modulating the areas of your brain affected by Parkinson's while avoiding regions associated with potential side effects.

Boston Scientific is uniquely capable of delivering this precision thanks to a technology called Cartesia 3D*.

*Note: Stimulation using multiple independent current control (MICC) with a Directional Lead is referred to as Cartesia 3D





Cartesia 3D: A System Approach

Boston Scientific pairs directional leads with a stimulator that is capable of independently powering each electrode on the lead. The result is Cartesia 3D—a set of programming capabilities that offer more focused therapy with less risk of side effects.

Cartesia 3D also makes it easier for your doctor to adapt and fine-tune your stimulation over time, so you can be confident you'll continue to receive the therapy you need.



The Cartesia 3D Advantage

When a directional lead is paired with a single-source DBS system, you don't get the entire benefit of the directional technology. Only multiple-source systems (such as those with Cartesia 3D) allow for true directional programming.¹²

Note: Stimulation using multiple independent current control (MICC) with a Directional Lead is referred to as Cartesia 3D

Vercise Genus R16

- Rechargeable
- Lasts at least 15 years*

Remote Control

- Simple, easy-to-use interface
- Bluetooth® wireless communication

Vercise Genus P16

- Non-rechargeable
- Lasts about 3–5 years*



Cartesia™ Directional Lead

- Broad coverage
- Precise control of stimulation



Comfort Meets Convenience

Boston Scientific offers a choice of two types of stimulators: a non-rechargeable (or “primary cell”) stimulator and a rechargeable one.

The non-rechargeable stimulator lasts 3–5 years and never requires charging. The rechargeable stimulator does require charging, but lasts at least 15 years, which helps to minimize future battery replacement surgeries. And since the Vercise Genus™ charging system and remote control are completely wireless, you can enjoy the freedom of staying active while recharging.

Both types of stimulators are designed to be thin and lightweight with smooth, gently rounded edges. This not only improves comfort, but also helps to conceal signs of the implant. Talk to your physician about which option is best for you.

Frequently Asked Questions

1: Is DBS safe?

Two decades of DBS treatment to over 100,000¹³ patients has shown both the short- and long-term safety of DBS.^{6,7,8,9} DBS surgery should be carried out by an experienced neurosurgeon working as part of an interdisciplinary team. As with any surgical procedure, there are risks and potential side effects, which vary by patient. Though most are temporary and will go away as your therapy is optimized, you should discuss these risks with your physicians.

2: Could I be a candidate for DBS?

The ideal candidate is a Parkinson's patient who continues to respond positively to levodopa treatment but is unable to control motor symptoms with medication alone. Ask your neurologist and other physicians if DBS is a suitable therapy for you and your symptoms.

3: Will my insurance cover DBS therapy?

For Medicare patients, DBS therapy will be covered. Most other health plans will also cover DBS, though your doctor or hospital may need to provide an authorization prior to the procedure. Call our Pre-Authorization Support team at 855-855-4506 to learn what your insurance will and will not cover.

4: Can I stop my medication after DBS surgery?

Sometimes successful DBS surgery can lead to a decrease in your medication and potentially reduce its side effects, though the treatment is not intended to replace your medication.

5: How long will my DBS system last?

The rechargeable Vercise Genus™ system is designed to last at least 15 years.*
The non-rechargeable Vercise Genus™ system should last 3 to 5 years.*

6: Is it possible to have an MRI with a DBS implant?

The Vercise Genus™ DBS System does provide full-body MRI access** under certain conditions. If your system does not meet those conditions other imaging options (including X-rays, CT scans, PET scans, and ultrasounds) may be available. Always consult your doctor to learn which imaging modality will be your best option.

7: Can I have a DBS implant if I already have a pacemaker?

Typically, DBS batteries are placed in the upper chest, near the area a pacemaker would be. However, a DBS implant can be inserted on the other side of your chest.

8: Can I travel with my DBS implant?

Yes, you can travel with your DBS system. Metal detectors, X-ray machines, security scanners, and other security devices will not damage the implant, but may cause unintentional stimulation. The implant may also activate metal detector alarms, so carrying your patient ID card with you at all times is recommended. If traveling abroad, you may need an outlet adapter to charge your system.

9: What will I feel when my DBS device is switched on?

During initial programming, you may experience a tingling sensation. This helps pinpoint your ideal settings. Afterwards, most patients hardly notice the device—though some do experience a slight tingling in the arm or leg, or mild tension in facial muscles that often subsides.

10: Does the DBS device make a noise?

No, the DBS device is completely silent.

11: Will other people be able to notice my DBS device?

Since the DBS stimulator and wires are placed under the skin, they are hardly noticeable from the outside. For thin patients, the stimulator site will be slightly raised, and the wire may appear like a slightly larger vein, but this should not be noticeable through clothing. The incision usually leaves a small scar.

*Battery life is dependent on the stimulation settings and conditions.

**MRI conditional when all conditions of use are met.

How Can I Get Started?

Talk to your neurologist about DBS, and visit DBSandMe.com to:

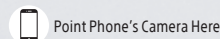
- ☐ *Download a personalized discussion guide.*
- ☐ *Use our DBS self-assessment tool.*
- ☐ *Speak to a Patient Ambassador who's undergone DBS.*
- ☐ *Sign up for a physician-led DBS webinar.*
- ☐ *Connect with a Boston Scientific Representative.*
- ☐ *Locate a physician near you.*

| To speak with a Boston Scientific representative, call our Customer Care team at 833-DBS-INFO.



Go to DBSandMe.com or scan the QR code below to learn more about Deep Brain Stimulation, and ask your doctor if DBS could help you control your Parkinson's symptoms.

REFERENCES: 1. www.apdaparkinson.org/what-is-parkinsons | Accessed FEB2021. 2. <http://parkinson.org/understanding-parkinsons/causes-and-statistics> | Accessed FEB2021. 3. www.brainandlife.org/disorders-a-z/disorders/app/detail/parkinsons-disease | Accessed FEB2021; www.mayoclinic.org/diseases-conditions/parkinsons-disease/symptoms-causes/syc-20376055 | Accessed FEB2021; <https://www.michaeljfox.org/understanding-parkinsons/living-with-pd/topic.php?dyskinesia&navid=dyskinesia> | Accessed FEB2021. 4. Okun et al. *Parkinson's disease DBS: what, when, who and why? The time has come to tailor DBS targets.* Expert Rev Neurother. 2010. 10(12): 1847-1857. 5. Engl J Med 2013; 368:610-622. DOI: 10.1056/NEJMoa1205158. 6. Knoop et al. Bridging the gap in patient education for DBS surgery for Parkinson's disease. *Parkinson's Disease.* 2017. 2017: 1-6. 7. Okun et al. Subthalamic deep brain stimulation with a constant current device in Parkinson's disease: An open-label, randomised, controlled trial. *Lancet Neurology.* 2012. 11: 140 - 149. 8. Timmerman et al. Multiple-source current steering in subthalamic nucleus deep brain stimulation for Parkinson's disease (the VANTAGE study): a non-randomized, prospective, multi-centre, open label study. *Lancet Neurology.* 2015. 14: 693 - 701. 9. Krack et al. Five-year follow up of bilateral stimulation of the subthalamic nucleus in advanced Parkinson's disease. *N Engl J Med.* 2003. 349: 1925 - 1934. 10. Farris, S. and Giroux, M. (2013). DBS: A Patient Guide to Deep Brain Stimulation. Movement and Neuroperformance Center, Colorado. 11. Weaver et al. Bilateral deep brain stimulation vs best medical therapy for patients with advanced Parkinson Disease: A randomized Controlled Trial. *JAMA.* 2009. 301: 63 - 73. 12. Eleopra et al. *Brain impedance variation of directional leads implanted in subthalamic nuclei of Parkinsonian patients.* Clinical Neurophysiology. 2019. 130: 1562-1569. 13. Lozano and Lipsman. Probing and regulating dysfunctional circuits using deep brain stimulation. *Neuron.* 2013. 77: 406 - 424.



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The Vercise Genus™ DBS System, Vercise Gevia™ DBS System, and Vercise™ DBS Lead-only system (before Stimulator is implanted) provide safe access to full-body MRI scans when used with specific components and the patient is exposed to the MRI environment under specific conditions defined in the supplemental manual ImageReady™ MRI Guidelines for Boston Scientific DBS™ Systems.

INDICATIONS FOR USE: The Boston Scientific Deep Brain Stimulation Systems are indicated for use in: -Bilateral stimulation of the subthalamic nucleus (STN) as an adjunctive therapy in reducing some of the symptoms of moderate to advanced levodopa responsive Parkinson's disease (PD) that are not adequately controlled with medication. -Bilateral stimulation of the internal globus pallidus (GPi) as an adjunctive therapy in reducing some of the symptoms of advanced levodopa responsive Parkinson's disease (PD) that are not adequately controlled with medication. **Contraindications:** The Boston Scientific Deep Brain Stimulation Systems are not recommended for patients who will be exposed to the following procedures: Diathermy as either a treatment for a medical condition or as part of a surgical procedure, Electroconvulsive Therapy (ECT) and Transcranial Magnetic Stimulation (TMS). The safety of these therapies in patients implanted with the Vercise DBS System has not been established. Patients implanted with Boston Scientific Deep Brain Stimulation Systems without ImageReady™ MRI Technology should not be exposed to Magnetic Resonance Imaging (MRI). Patients implanted with the Vercise Gevia™ or Vercise Genus™ or Vercise DBS Lead-only system (before Stimulator is implanted) with ImageReady MRI Technology are Full Body MR Conditional only when exposed to the MRI environment under the specific conditions defined in ImageReady MRI Guidelines for Boston Scientific Deep Brain Stimulation Systems. Boston Scientific Deep Brain Stimulation Systems are not recommended for patients who are unable to operate the system or are poor surgical candidates or who experience unsuccessful test stimulation. **Warnings:** Unauthorized modification to the medical devices is prohibited. You should not be exposed to high stimulation levels. High level of stimulation may damage brain tissue. Patients implanted with the Vercise DBS System may be at risk for intracranial hemorrhages (bleeding in the brain) during DBS lead placement. Strong electromagnetic fields, such as power generators, security screeners or theft detection systems, can potentially turn the stimulator off, or cause unpredictable changes in stimulation. The system should not be charged while sleeping. If you notice new onset or worsening depression, changes in mood or behavior or impulse control, or have thoughts of suicide contact your physician or emergency services immediately. Chemical burns may result if the Vercise Stimulator housing is ruptured or pierced. The Deep Brain Stimulation System may interfere with the operation of implanted stimulation devices, such as cardiac pacemakers, implanted cardioverter defibrillators, or medication delivery pumps. Patients should operate motorized vehicles or potentially dangerous machinery with caution. It is unknown if the device may hurt an unborn baby. Your doctor may be able to provide additional information on the Boston Scientific Vercise DBS System. For complete indications for use, contraindications, warnings, precautions, and side effects see DBSandMe.com or call 833-DBS-INFO or 833-327-4636. **Caution:** U.S. Federal law restricts this device to sale by or on the order of a physician.

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Advancing science for life™

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