

A BRIGHTER FUTURE IS TAKING SHAPE

Treating Movement Disorders
with Deep Brain Stimulation



A Personalized Approach

If you're living with Parkinson's, Dystonia or Essential Tremor, you know all too well how these diseases disrupt your life. Losing the ability to perform simple, everyday tasks limits your independence and can strain your relationships. Additionally, the increasing side effects of medications sometimes feels even worse.

Medication is not 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, Dystonia and Essential Tremor patients around the world manage their symptoms when medication alone is no longer effective.

DBS uses a small, surgically-implanted device called a "stimulator", similar to a pacemaker, to send programmed stimulation 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.

ET is the most common of these three movement disorders – affecting ~4% of adults 40 years of age or older – followed by PD and dystonia (affecting more than 1.2 million and more than 500,000 patients across Europe, respectively) ^{1,2} See how DBS is helping many of these patients take back their lives at BostonScientific.eu

How Does DBS Work?

When Movement Disordered patients experience symptoms, it's because low dopamine levels in the 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, Movement Disorders' symptoms are often reduced.



Leads:

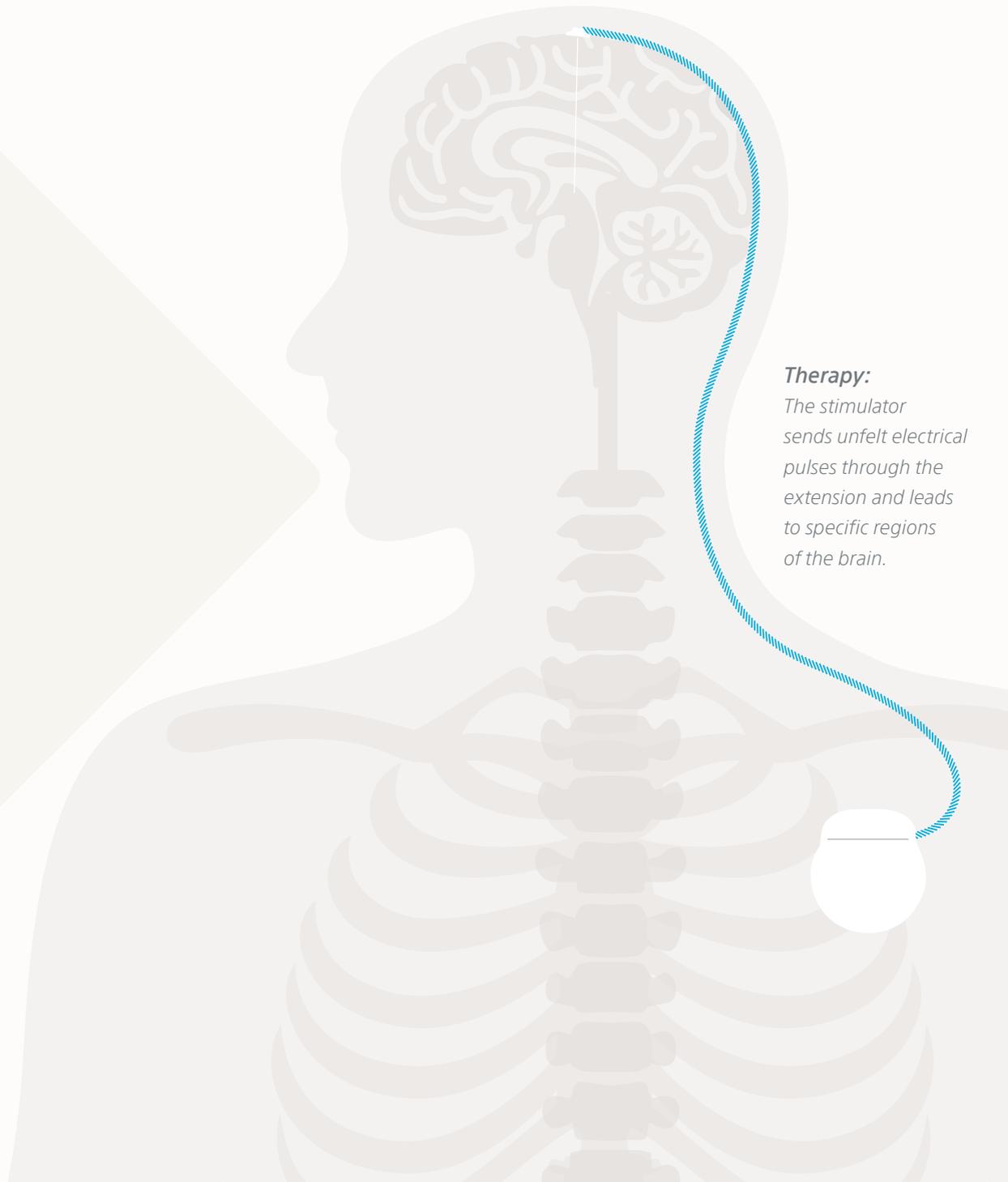
Your doctor will place one or two insulated wires called "leads" in the brain, which connect to a thin wire called an "extension."



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 BostonScientific.eu



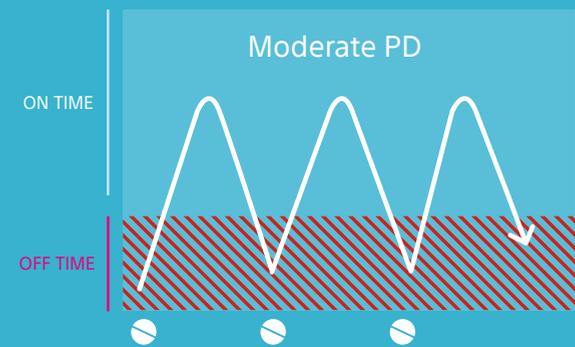
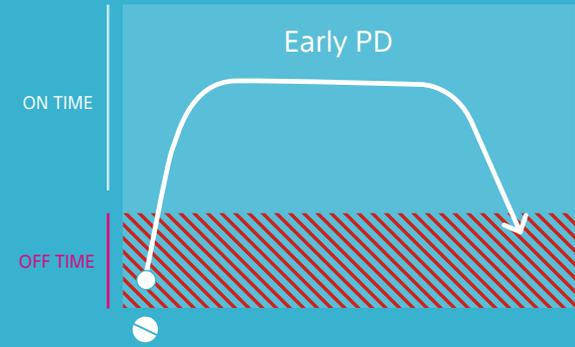
Therapy:
The stimulator sends unfelt electrical pulses through the extension and leads to specific regions of the brain.

Why Haven't I Heard About DBS Before?

DBS isn't generally offered to patients when they are first diagnosed with Parkinson's disease, Dystonia or Essential Tremor 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 Movement Disordered 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 disease, Dystonia and Essential Tremor patients to reduce the amount of medicine they take⁹ 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



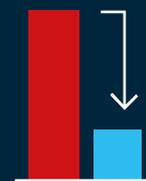
More "ON Time"

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



Improvement of Quality of Life

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



Less Medication

One year after DBS, 75% of patients reported a decrease in their 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, Dystonia and Essential Tremor, 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 25 years*

Remote Control

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

Vercise Genus™ P16

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



Vercise 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 main difference between these two stimulators is the longevity of the device. Though the systems use the same core technology, each offers some unique benefits.

The rechargeable stimulator battery should provide at least 5 years of service. In many cases, the stimulator battery should provide at least 25 years of service.* This requires you to recharge the device. This is very simple to do and helps to minimize future battery replacement surgeries. The non-rechargeable stimulator should provide at least 3.5 years*, after this period of time you will need to undergo surgery for a replacement device. This device does not need to be re-charged.

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.

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

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: At what point in the course of the disease should I consider DBS?

This may differ from each individual however, in general terms expert DBS centres agree that when medication intervals become very close in time (within 2–3 h), and on–off fluctuations, dyskinesia or tremor emerge and are difficult to control, then it is time to consider DBS therapy. Ask your neurologist and other physicians if DBS is a suitable therapy for you and your symptoms.

3: What does it feel like to live with an implanted DBS system?

Some people will feel the battery in their chest and sometimes the cables in their neck, however for most patients they get used to this sensation, and because of the improvement of their quality of life, the benefit of the system outweighs the sensation.

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 stimulator battery should provide at least 5 years of service. In many cases, the stimulator battery should provide at least 25 years of service. This requires you to recharge the device. This is very simple to do and helps to minimize future battery replacement surgeries. The non-rechargeable stimulator should provide at least 3.5 years*, after this period of time you will need to undergo surgery for a replacement device. This device does not need to be re-charged.

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

Yes, you can potentially have an MRI if your DBS devices is called Vercise Gevia, Vercise Genus P16 and Vercise Genus R16 are MRI compatible. However, it is important that you inform your DBS team of any medical exam, such as MRI, as they need to check that you are eligible for an MRI (such as electrodes and extensions implanted, position of the battery). Your battery will need to be placed in MRI mode for the full time of the exam, which will be achieved by the medical team using your remote control. 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 – although 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 thinner 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.

Go to **BostonScientific.eu** or scan the QR code below to learn more about Deep Brain Stimulation, and ask your doctor if DBS could help you control your Movement Disorders' symptoms.

REFERENCES: 1. Bhatia KP et al. *Mov Disord.* 2018 Jan;33(1):75-87. 2. Parkinson's disease Fact Sheet. European Brain Council. <https://www.braincouncil.eu/wp-content/uploads/2020/07/A4-Parkinsons-Disease-Fact-Sheet-Final.pdf>. Accessed: May 2021. 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 Eng 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.



Scan to watch



Point Phone's Camera Here

The Bluetooth® word mark and logos are registered trademarks owned by the Bluetooth SIG, Inc. and any use of such marks by Boston Scientific Neuromodulation Corporation is under license.



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.

The patient quotes in this material describe real personal experiences. Individual results may vary. Consult with your physician to determine if you are a candidate for this procedure and what you may gain from the therapy.

This material is for informational Purposes only and not meant for medical diagnosis. This information does not constitute medical or legal advice, and Boston Scientific makes no representation regarding the medical benefits included in this information. Boston Scientific strongly recommends that you consult with your physician on all matters pertaining to your health.

CAUTION: The law restricts these devices to sale by or on the order of a physician. Indications, contraindications, warnings, and instructions for use can be found in the product labelling supplied with each device or at www.IFU-BSCI.com. Products shown for INFORMATION purposes only and may not be approved or for sale in certain countries. This material not intended for use in France. All images are the property of Boston Scientific. All trademarks are the property of their respective owners.

NM-1509802-AA

**Boston
Scientific**
Advancing science for life™

www.bostonscientific.eu

© 2023 Boston Scientific Corporation or its affiliates. All rights reserved.