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DEEP BRAIN STIMULATION (DBS)

LEARN ABOUT **DBS SYSTEMS**

Exploring important considerations for your DBS journey

EXPLORING DIFFERENT FEATURES OF **DBS SYSTEMS**

All modern DBS systems offer various features designed to help manage symptoms of movement disorders such as:[1]

- Directional leads for precise symptom control
- MRI conditionality for safe imaging access
- Current steering for adjustment
- A choice of rechargeable or non-rechargeable batteries to suit different needs

This guide provides general information about DBS therapy and system features. Talk to your healthcare provider about these choices.

1

BATTERY SIZE

The size of the battery may impact comfort and how noticeable the implant is.[2]

- **Appearance**: Rechargeable systems tend to have a smaller profile, making them considerably less noticeable under the skin.[3]
- **Convenience**: Non-rechargeable systems tend to be larger, but eliminate the need for recharging.[3]

2

BATTERY LONGEVITY

Battery longevity plays a role in how often a battery may need to be replaced.[3]

- **Fewer Replacement Surgeries:** Rechargeable systems may last longer, potentially reducing the need for replacement surgery. However, rechargeable systems require regular recharging, which differs among manufacturers, even at comparable therapy settings.[3]
- **Low Maintenance Therapy:** Non-rechargeable systems do not require recharging, but will eventually need a battery replacement.[3]

3

INTERACTION WITH YOUR DEVICE

To manage your therapy, you will likely need to interact with your DBS system through a patient controller, which varies between manufacturers.[4] Discussing different controllers with your doctor may help you evaluate what works best for you.

- **Ease of Therapy Management:** Some DBS systems offer an intuitive interface with tutorials and support to help you feel confident in managing your therapy.[4]
- **Managing Multiple Accessories:** Some DBS systems require additional accessories, such as separate controllers, antennas, or specialized charging stations, while others allow direct control from a personal device.
- **Managing Recharging:** Rechargeable systems vary in the ease and frequency of charging. Some require frequent charging, while others can go up to a month between charges.[5]

4

ADVANCED FEATURES

Your doctor may discuss several advanced features as part of your treatment planning. Understanding these features can help you have an informed conversation about your options.

- **Remote Programming:** Optimizing your DBS therapy often involves several in-person visits to adjust your settings. Remote programming offers a solution by allowing your doctor to remotely adjust your DBS settings from the comfort of home, much like a telehealth visit.*

  Potential Benefits & Considerations:

  - Faster Optimization: With no need to travel for every adjustment, DBS settings can be changed more frequently, helping you reach optimal settings faster.[6]**
  - Time & Cost Savings: Fewer in-person visits reduce travel time and out-of-pocket expenses.[7]***
  - Connectivity Dependence: Requires Wi-Fi® or cellular connection for internet access.

- **Sensing Technology & Adaptive DBS:**[8] Some DBS systems detect certain brain signals, which your doctor may use to inform programming. Adaptive DBS may use these signals to automatically adjust stimulation within a limited range.

  Potential Considerations:

  - May provide your doctor additional data to assist programming.
  - Adaptive DBS may require additional visits to mitigate potential adaptive stimulation related side effects.
  - Sensing technology can use additional power, leading to more frequent recharging or earlier battery replacement.
  - After careful post-implant screening, some patients may see benefit from adaptive DBS as a programming option.
  - Studies have not shown adaptive DBS provides superior outcomes to traditional DBS.

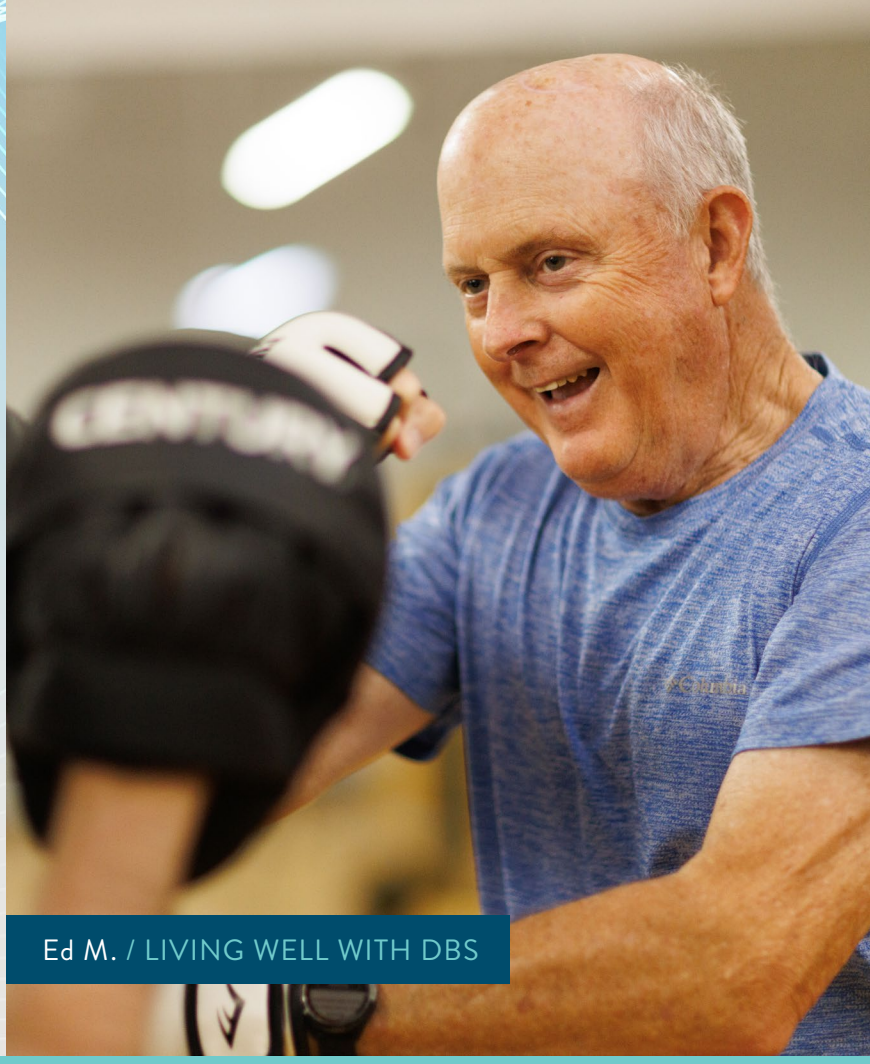
- **Stimulation Control:** DBS manufacturers offer different ways to direct stimulation within the brain, including Multiple Independent Current Control (MICC), Interleaving, and Multistim. Each method has a distinct approach to delivering therapy.

TALK TO **SOMEONE WHO'S BEEN THERE**

We recognize that choosing DBS as a treatment option is a big decision for those who receive it and their care partners.

Through our DBS Ambassador program, you can connect with volunteers who have undergone DBS therapy and are open to sharing their experiences and answer questions about their journey.

> "I've had some wonderful discussions and received useful information through the Ambassador program."
>
> – *Paul M.*



Ed M. / LIVING WELL WITH DBS

Scan the QR code to connect with an Ambassador.

*Anywhere with a cellular or Wi-Fi® connection and sufficiently charged patient controller and neurostimulation device.

**With programming access through NeuroSphere™ Virtual Clinic. Based on results from an analysis of the first 49 patients in the ROAM study primary endpoint.

***Time and cost related to travel.

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7. Pintér D, Járdaházi E, Janszky J, Kovács N. Potential clinical and economic benefits of remote deep brain stimulation programming. *Neuromodulation*. 2022. doi:10.1038/s41598-022-22206-z
8. US Food and Drug Administration. Medtronic. *Activa®, Percept™ and SenSight™ Deep Brain Stimulation Therapy System Summary of Safety and Effectiveness Data (SSED)*. PMA Number P960009/S478. Accessed March 20, 2025. https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpma/pma.cfm?id=P960009S478

Risk Information: There is no cure for Parkinson's disease (PD) and essential tremor (ET), but there are options available to treat symptoms. The first-line therapy is medication. Surgical treatments are also available. It's important to discuss with your doctor what's right for you along with the risks and side effects of each option, such as motor fluctuations or permanent neurological impairment. As with any surgery or therapy, DBS has risks and complications. Loss of coordination is a potential side effect of DBS therapy. Patients should exercise reasonable caution when participating in activities requiring coordination, including those that were done before receiving therapy (for example, swimming). Patients should also exercise reasonable caution when bathing. New onset or worsening depression, which may be temporary or permanent, is a risk that has been reported with DBS therapy. Suicidal ideation, suicide attempts, and suicide are events that have also been reported. Most side effects of DBS surgery are temporary and correct themselves over time. Some people may experience lasting, stroke-like symptoms, such as weakness, numbness, problems with vision or slurred speech. In the event that the side effects are intolerable, or you are not satisfied with the therapy, the DBS system can be turned off or surgically removed. Risks of brain surgery include serious complications such as coma, bleeding inside the brain, paralysis, seizures and infection. Some of these may be fatal.

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Rx Only
Brief Summary: Prior to using Abbott devices, please review the User's Guide for a complete listing of indications, contraindications, warnings, precautions, potential adverse events, and directions for use. The system is intended to be used with leads and associated extensions that are compatible with the system.

Indications for Use: Bilateral stimulation of the subthalamic nucleus (STN) or the internal globus pallidus (GPi) as an adjunctive therapy to reduce some of the symptoms of advanced levodopa-responsive Parkinson's disease that are not adequately controlled by medications, and unilateral or bilateral stimulation of the ventral intermediate nucleus (VIM) of the thalamus for the suppression of disabling upper extremity tremor in adult essential tremor patients whose tremor is not adequately controlled by medications and where the tremor constitutes a significant functional disability.

Contraindications: Patients who are unable to operate the system or for whom test stimulation is unsuccessful. Diathermy, electroshock therapy, and transcranial magnetic stimulation (TMS) are contraindicated for patients with a deep brain stimulation system.

Warnings/Precautions: Return of symptoms due to abrupt cessation of stimulation (rebound effect), excessive or low frequency stimulation, risk of depression and suicide, implanted cardiac systems or other active implantable devices, magnetic resonance imaging (MRI), electromagnetic interference (EMI), proximity to electrosurgery devices and high-output ultrasonics and lithotripsy, ultrasonic scanning equipment, external defibrillators, and therapeutic radiation, therapeutic magnets, radiofrequency sources, explosive or flammable gases, theft detectors and metal screening devices, case damage, activities requiring excessive twisting or stretching, operation of machinery and equipment, pregnancy, pediatric use, and implant heating. Loss of coordination is a possible side effect of DBS Therapy, exercise caution when doing activities requiring coordination (for example, swimming), and exercise caution when bathing. Patients who are poor surgical risks, with multiple illnesses, or with active general infections should not be implanted.

Adverse Effects: Loss of therapeutic benefit or decreased therapeutic response, painful stimulation, persistent pain around the implanted parts (e.g,. along the extension path in the neck), worsening of motor impairment, paresis, dystonia, sensory disturbance or impairment, speech or language impairment, and cognitive impairment. Surgical risks include intracranial hemorrhage, stroke, paralysis, and death. Other complications may include seizures and infection. User's Guide must be reviewed for detailed disclosure.

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‡ Indicates a third-party trademark, which is property of its respective owner.

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MAT-2501999 v1.0 | Item approved for U.S. use only.

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Electronic Certificate

Document Number:	MAT-2501999
Document Name:	25-103670 DBS - Portfolio - Patient - Learning About DBS Brochure
Version:	1 . 0
Description:	DESCIPRTION A brochure to help patients understand the differences between DBS Systems REVIEWERS Content Owner - Wes Waychoff Regulatory - Mary Mayka Marketing - Wes Waychoff MarComm - Patricia Stepaniuk ATTACHMENTS Document Coordinator Checklist
Geography:	US
Country:	United States
Business Unit:	Neuromodulation
Product:	Infinity Liberta
Type:	Material
Dissemination:	Print
Audience:	Consumer / Patient
Status:	Approved for Distribution
Approved for Distribution Date:	3/28/2025
Expiration Date:	3/27/2028

Role	Signature
Patricia Stepaniuk - MarComm Approval (patricia.stepaniuk@abbott.com)	Meaning: As the MarComm, I approve this document for use. Date: 27-Mar-2025 20:24:46 GMT+0000
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