



Patient & Family Guide  
2021

# Deep Brain Stimulation (DBS)



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# Deep Brain Stimulation (DBS)

Deep brain stimulation (DBS) is used to help treat conditions like Parkinson's disease (PD), essential tremor, dystonia (movement disorders), and some other neurological disorders.

## Am I a candidate for DBS?

- The decision to perform DBS surgery is made by a team of health care providers after a complete review of your health.
- First, you will meet with your health care team, including your neurologist, a neurosurgeon, and nurses. This meeting sometimes also includes residents and students. This meeting will take about 1 hour, and includes:
  - › A neurological exam
  - › A review of your health history
  - › A review of your current medications
- At this time, the team may decide further tests are needed, including:
  - › MRI (magnetic resonance imaging)
  - › Neuropsychological exam (an all-day assessment with a neuropsychologist to test your cognitive (thinking) abilities)

- › Video assessment (a short video is taken by the neuromodulation nurses to check your symptoms while doing simple tasks such as writing, talking, and walking. If you have PD, you will be tested both on and off your PD medications.)
- After your health review, your health care team will decide if DBS surgery is right for you. This process may take several months.
- If your health care team decides that DBS surgery is right for you, you will meet again with the team to sign a consent form. It is important for you to have a support person at both meetings to talk about any questions or concerns you may have.

## **Surgery**

### **Stage 1**

- Stage 1 of the surgery is performed either under local anesthesia (you are awake and given freezing), or with general anesthesia (you are given medication to put you to sleep). When you meet with the team to sign a consent form, the surgeon will talk with you about which anesthesia is right for you.

- You will be taken to the operating room (OR), where a stereotactic frame (special metal frame) will be put around your head and held in place with special pins. You will be given local anesthesia (freezing). You will be awake, but will feel only minimal (a small amount) pain. This frame will stay on until one (if only doing one side) or both electrodes are in place.
- Once the frame is in place, you will have a radiological scan (also called O-arm or CT scan). This will help your neurosurgeon find the exact area of your brain, called the target area, for stimulation. This will be done in the X-ray Department or in the OR.
- You will get more local anesthetic before your neurosurgeon drills a small hole called a ‘burr’ hole in your skull. After this, test electrodes will be placed to record the activity of the brain. You will hear lots of different sounds — these are your brain cells. The same electrodes are used to do a test stimulation. You might have relief of your symptoms or side effects of the stimulation (like tingling, twitching) that will stop after turning off the test stimulation.

- If you are awake, your neurosurgeon will ask you some questions such as counting to 10 or reciting the days of the week. They may also ask you to draw or write something or to report any side effects you may feel. This will help your surgeon to learn if the stimulation is working and to make sure it is connected to the area of your brain that is causing your symptoms.
- If you are asleep, your neurosurgeon may check if the stimulation is working and make sure it is connected to the area of your brain that is causing your symptoms by placing small needles in your muscles to check your muscle activity. These needles are put in and taken out while you are asleep.
- Next, the final electrode (the “lead”) will be passed through the hole and into the brain.
- If leads are placed in both sides of your brain, this procedure will be done first on one side, then on the other.

## **Stage 2**

- In Stage 2, the internal (inside) pulse generator (IPG) and extension wires will be put in place. If the first part of the surgery was done while you were awake, you will now be put to sleep using general anesthetic.

- 2 small incisions (cuts) will be made behind your ear and near your collarbone, usually on the left side. The pulse generator is placed in the incision. The extension wires are put under the skin of your scalp and neck. They run behind your ear and connect to the pulse generator.
- You will have a bump under your skin just below your collarbone where the pulse generator is placed. You may also have some small bumps on your head. The device and wires cannot be seen outside your body.

## **After surgery**

- After surgery, you will be taken to the recovery area. A nurse will check on you every 15 minutes. Once you are fully awake and feeling OK, you will be taken to the Neurosurgical Nursing Unit 7.3.
- Your first night in the hospital is usually spent in the IMCU (part of Unit 7.3). The rest of your stay will be in another part of 7.3. Expect to stay 3 to 5 days in the hospital.

- Before you go home, your care team will visit you. Your pulse generator is usually not turned on during this time. Your DBS system will be turned on 4 to 6 weeks after surgery. This is done in the neuroscience clinic during an outpatient visit.
- When it is turned on, a portable computer (remote) is used to adjust the current and turn it on and off. When you come to have your DBS system turned on, we will teach you how to use the remote.
- The pulse generator has a special battery that will last about 3 to 5 years. You will have to have surgery again to have the battery replaced once it wears out. Sometimes, a rechargeable generator is implanted. If you and your surgeon decide that a rechargeable generator is right for you, they will talk with you about this before surgery.
- After your surgery, you will get a temporary wallet card with information about your DBS system. A laminated card with your name and the make and model of your system will be mailed to you by the company shortly after your surgery. You should keep this in your wallet at all times. You do not need to wear a MedicAlert® tag unless you choose to.

## Going home

- Before going home, you will get specific instructions about showering and how to care for your incision (cut).
- You will get an appointment to see your neurosurgeon in the Neurosurgery Clinic in 4 weeks. At this time, your DBS system will be turned on.
- **Do not lift anything heavy (over 10 pounds) for 6 weeks after surgery.**
- **Do not drive for at least 6 weeks after surgery.** Talk to your surgeon about driving at your follow-up appointment.
- Over time, you can go back to your usual activities.
- You may have a headache from the stereotactic frame. If you have a really bad headache, call your primary health care provider right away.
- The neuromodulation nurses will follow you closely, after surgery and while you have your DBS.
  - › Hours: Monday to Friday, 8 a.m. to 4 p.m.
  - › Phone: 902-473-7809



**Call your primary health care provider right away if you have any of the following:**

- › Severe (really bad) headache
- › Fever
- › Itching or hives
- › Muscle weakness
- › Nausea (feeling sick to your stomach) and vomiting (throwing up)
- › Numbness or tingling on 1 side of your body
- › Pain
- › Redness, swelling, or irritation at any of the incision sites
- › Trouble speaking
- › Trouble seeing or other vision problems

## Living with a DBS system

- Avoid large magnets and security fields, common in airports. These magnets may turn your system off or on. **Show your implantation card at airport security and ask for a “pat down”.** Airports are familiar with these types of devices and will have a protocol in place. Give yourself extra time at security when travelling.
- **Do not get a treatment called diathermy.** It is a type of ultrasound used for pain relief and healing at physiotherapy, chiropractic, and some dental offices.

**If you are ever admitted to a hospital or an Emergency Department, make sure you tell the health care team that you have a DBS system.**

