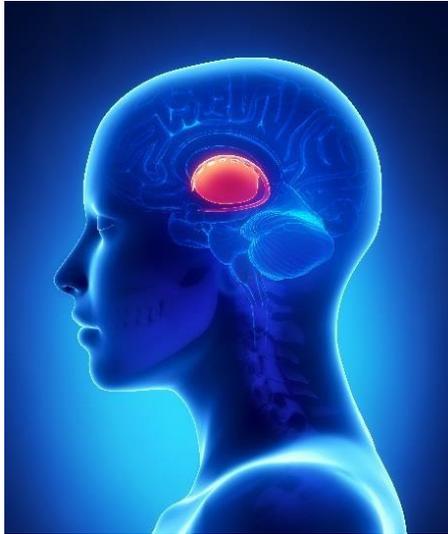


# Providence Deep Brain Stimulation Surgery Booklet



A GUIDE TO HELP YOU PREPARE FOR AND  
RECOVER FROM SURGERY

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# IMPORTANT PHONE NUMBERS

## Your Movement Disorder Care Team

Care Provider	Role	Phone #
Elise Anderson, MD	Neurologist	503-215-8580
Joanna O’Leary, MD	Neurologist	503-216-1150
Seth Oliveria, MD, PhD	Neurosurgeon	503-935-8500
Theresa Harczo, RN, BSN	RN Coordinator	Call your neurologist’s office: 503-215-8580 OR 503-216-1150

*\*Note if you have a local neurologist who plans to program your deep brain stimulator, you may continue to work with that neurologist and Dr. Oliveria.*

Other treating doctors:

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## Providence St. Vincent Hospital Phone Numbers

Services	Phone #
Pre-Surgical Care Clinic	503-216-1993
Hospital Information	503-216-1234
Surgery Unit	503-216-3691
Business Office	503-215-4300
Diet, Pain, or Smoking Cessation Classes	503-574-6595 or 1-800-562-8964

## WHAT IS DBS?

Deep Brain Stimulation “DBS” is a surgical procedure for treatment of movement disorders including Parkinson’s disease, essential tremor, and dystonia. Most often this surgery is performed in one procedure. Under certain circumstances it will be done in two separate procedures that are spaced 3-4 weeks apart. Electrode(s) are implanted deep inside the brain to the area that is causing your abnormal movements. The lead wires are tunneled under your scalp behind your ear to the front of your chest, just below your collarbone. These wires are connected to a pulse generator that contains the battery and computer for the DBS device. Signals are sent through the wire to the targeted area in your brain to change the abnormal signals. You will be given a handheld remote to turn your DBS on and off. There will be no external wires or devices, the entire system is implanted under your skin.

After a period of time, allowing your brain to heal, your DBS system will be turned on and programmed. You will have multiple visits to your neurologist’s office to find the best setting for you to reduce your symptoms. During those visits, the medications for your symptoms may also be adjusted. The goal is to control your symptoms with a combination of the DBS system and medication.

Please read the sections below regarding specific diseases that are treated with Deep Brain Stimulation.

## Information for Patients with Parkinson's Disease

Deep brain stimulation (DBS) helps control many symptoms of Parkinson's disease, including shaking, slowed movement, and stiffness. Most commonly, patients become candidates for DBS once medication alone does not effectively control their symptoms.

People with DBS therapy may see improvement in their quality of life and when performing activities like eating, bathing, dressing, toileting, and movement, as well as reducing the amount of medication they take. DBS can provide several additional hours of movement control per day when compared to medication alone.

### When should I have DBS surgery?

Parkinson's disease symptoms get worse over time. Many people expect that DBS is a last resort. People start DBS at the point when their lives become disrupted; when medications alone provide less movement control and side effects like nausea, dizziness, and causing unwanted movements (dyskinesia).

The best time to maximize benefit from DBS is when medications alone aren't providing enough relief, but still have some effect. Examples of this include:

- Tremors and stiffness occur for more hours each day.
- Medication doses take longer to work, and/or the effect is less predictable.
- The medications' effects wear off between doses and you must take them more often, including during the night.
- You need higher doses of medications to get the same effect.
- Side effects from your medications are worsening.

## Information for Patients with Essential Tremor

Deep brain stimulation (DBS) helps control the symptoms of Essential Tremor. You may be a candidate for DBS surgery if you have tremor in at least one arm or hand and it keeps you from doing what you want to do. This can include daily tasks like writing or eating. For many people their tremor causes embarrassment or anxiety when around other people causing them to reduce their social activity. DBS can be considered when medications have been tried and they didn't work, or their side effects could not be tolerated.

DBS tends to be the most effective for upper extremity (arm or hand) tremors, but can improve tremors in the head, voice and legs in certain situations.

### When should I have DBS surgery?

- Essential tremors tend to get worse over time.
- Many people expect that DBS is a last resort.
- However, the best time to maximize benefit from DBS is when your tremor becomes disabling despite trying the best medical therapy directed by a neurologist.

## Information for Patients with Dystonia

Deep brain stimulation (DBS) helps control the symptoms of dystonia; a neurological movement disorder characterized by involuntary muscle contractions. These contractions force certain parts of the body into repetitive, twisting movements or painful postures. Dystonia can cause severe involuntary muscle contractions that often interfere with everyday functions like walking, sleeping, eating, and talking. There are various forms of dystonia which are identified by your neurologist.

### When should I have DBS surgery?

- Dystonia may get worse over time.
- Many people expect that DBS is a last resort.
- However, the best time to maximize benefit from DBS is when your dystonia becomes disabling despite the best medical therapy directed by a neurologist.

*Note that DBS for dystonia is classified as a Humanitarian Device - Authorized by Federal Law as an aid in the management of chronic, intractable (drug refractory) primary dystonia, including generalized and/or segmental dystonia, hemidystonia, and cervical dystonia (torticollis), in patients seven years of age or above. The effectiveness of the devices for treating these conditions has not been demonstrated.*

## WHAT TO EXPECT WITH DBS SURGERY

The steps before, during and after DBS surgery are described below. Throughout the process you will be followed by a neurologist and neurosurgeon who have special training with DBS, as well as several other members of our team.

### 1. PRE-OPERATIVE EVALUATIONS

Your neurologist, typically a movement disorders specialist, will evaluate you to see if you are a candidate for DBS. The evaluation may include some or all of the following:

- Medical history
- Neurological exam of your movements
- MRI of the brain: to check for any issues with your brain that would prevent surgery. This scan is also used to plan placement of your DBS electrode wires if you proceed to surgery.
- Lab tests: such as a blood test to make sure your blood clots properly
- Neuropsychological tests: to test for underlying problems with thinking or talking that need to be considered during your surgery.
- Physical, occupational and/or speech therapy: to evaluate movement issues prior to surgery, including problems walking or taking care of yourself. Some individuals have swallowing problems before surgery that will be carefully evaluated by our speech therapists.

Neurosurgical evaluation: you will meet with the neurosurgeon to review your exams and tests and discuss how DBS can help with your symptoms.

Once the preoperative evaluation(s) are complete, your neurologist and neurosurgeon will discuss your case in detail.

## 2. MRI FOR SURGICAL PLANNING

You will have a special MRI scan of the brain prior to surgery, which can only be performed at certain imaging centers. Your neurosurgeon will use these images to create maps of your brain that guide accurate placement of DBS leads during the surgery.

## 3. SURGERY

As previously mentioned, you will most likely have surgery performed in one procedure rather than in two separate visits. Below is a breakdown of these two stages to DBS surgery.

### STAGE 1:

- The DBS electrode (lead wire) is implanted into the brain.
- The MRI performed prior to surgery is used to perform precise placement of electrodes into specific areas of the brain.
- To do this, we place your head into a frame that allows for accurate electrode placement, and then drill small holes through the skull to reach the brain.
- This is not painful: we numb the scalp and then perform the initial steps of the procedure with you fully sedated.
- At the end of the surgery, we gradually let you wake up enough to briefly test the placement of the DBS electrodes—this process provides the highest level of confidence that you will have the best possible

result from your new DBS system. Many patients have little memory of this step of the procedure.

- A CT scan is also done in the operating room to further ensure accurate electrode placement.
- When necessary, we can perform the procedure with patients completely asleep if they are unable to tolerate even brief awake testing.
- We take all necessary steps in making our patients comfortable during the procedure in the operating room. We work closely with our anesthesiologists to ensure that this process is simple and not stressful.
- Most patients spend one night in the hospital after surgery, then spend 1-2 weeks recovering at home.

## STAGE 2

- Neurostimulator and extension cable (wire) implantation. This is usually performed with stage one or can be done 3-4 weeks after Stage 1\*, a neurostimulator (similar to a pacemaker), is placed under the skin of the chest, two finger widths below the collarbone.
- *The neurostimulator in the chest is connected to the lead wire in the brain by an extension wire, which runs under the skin of the neck.*
- This procedure is done under general anesthesia. If this procedure is done 3-4 weeks after the brain leads are implanted, you will go home the same day of surgery and take medication for a few days afterward for pain and discomfort.
- In most cases you will be sent home with your new DBS system turned off, you will then follow up with your neurologist to turn it on and start programming the device.

#### 4. DBS PROGRAMMING

Approximately a month later, your neurologist or clinical support team will begin to adjust your DBS settings to best control your symptoms and minimize any side effects. It will take a few programming sessions over a couple months to find the stimulation levels that work best for you. These appointments are key to getting the results you want over time. Programming sessions may take 60- 120 minutes initially and typically get shorter with each follow up visit.

You can typically return to all your usual activities after surgery, always following your doctor's guidance regarding any specific limitations after surgery. DBS has little impact on your daily activities, the clothes you can wear, or how you travel. DBS delivers therapy 24 hours a day, so it's working to control your symptoms when you first wake up in the morning. DBS doesn't require any maintenance from you (except for recharging if you have a rechargeable system).

#### 5. ONGOING CARE

You will continue to have regular checkups with the neurologist who manages your DBS therapy, similar to before surgery. Your neurologist will make sure that your DBS system is working properly, adjust your stimulation to best control your symptoms, and check the battery of your neurostimulator to determine when you will need a replacement.

## PREPARING FOR SURGERY

Scheduled Appointments	Date	Time
Pre-op appointment with surgeon		
Pre-admit clinic appointment		
Surgery (Part 1)		
<i>*Note: check-in time is usually 2-3 hours before surgery</i>		
Surgery (Part 2)		
<i>*Note: check-in time is usually 2-3 hours before surgery</i>		
Post-op appointment with PA or PCP		
Post-op appointment with surgeon		
Programming appointment #1		
Programming appointment #2		

### Pre-operative Frequently Asked Questions

- What are the steps of my DBS surgery?** We generally perform DBS surgery in one procedure. When necessary, it can be done as a two-step process. There are two options, depending on your age and other factors:
  - Stage 1 and 2: Both the brain electrode(s), the extension cable and battery/pulse generator are placed.
  - Stage 1: Both brain electrodes are placed  
Stage 2 (3-4 weeks later): placement of the extension cable and battery/pulse generator
  - Stage 1: the first brain electrode is placed, then

Stage 2: the second brain electrode is placed, along with the extension cable and battery/pulse generator

- **Will you be placing hardware in my brain or under my skin?** Both. The majority of the system is under the skin, but the electrodes pass into the brain through small holes in the skull.
- **What other choices do I have?** These include continued medical therapy or destructive procedures in which brain areas are selectively burned with electrodes, radiation or ultrasound.
- **What are the risks to my surgery?** The common risks include infection, minor bleeding and discomfort. There are also temporary side effects that are related to stimulation that can require adjustment to your settings. In rare instances the DBS system can break or malfunction requiring replacement of various components. Thankfully serious complications including stroke, brain hemorrhage or damage to brain structures are rare.
- **How much will the surgery help my symptoms?** This is highly dependent on your disease and symptoms, and we will discuss this in detail during your preoperative visit.
- **What will you use to help me control my pain after surgery?** DBS is not particularly painful surgery, but you will be provided a combination of narcotic and non-narcotic medicines, as needed for pain after surgery, to ensure that you are comfortable.
- **Will I have special precautions after surgery?** There are very few specific precautions or limitations to your daily life after surgery. Most involve ensuring that your incisions

heal well, that you avoid routine postoperative problems, and that you don't experience falls or other injuries while you recover.

- **Can I get my incision(s) wet?** You can get your incisions wet 48 hours after surgery.
- **Will I be able to drive and if so, when?** You should not drive while taking pain medication. If there are no other specific limitations, driving should be performed with caution and common sense once you are ready.
- **When can I go back to work, or do my usual activities?** Typically, at least 1 week is recommended after the brain electrodes are placed in stage 1, and 3-5 days after the battery and extension cable is placed in stage 2.
- **When can I travel or go on vacation?** You should wait at least 4 weeks after surgery to fly on an airplane. Long trips should largely be avoided until you recover from surgery in case issues arise where you need to see your doctor.
- **How long will my hospital stay be?** Typically, surgery requires an overnight stay if brain electrodes are placed. You will be discharged the same day when only the extension cables and battery/generator are placed.
- **Where will I have my surgery?** The brain electrodes wires are all placed at Providence St. Vincent Medical Center in West Portland. The extension cables and battery/generator can be placed either at Providence St. Vincent Medical Center or at Providence Portland Medical Center in East Portland.
- **What things should I or my caregiver be looking out for?** See pages 30-32 under "continuing your recovery at home".

## Review your medications

Make a list of the drugs that you take whether prescribed, over the counter, vitamins, or herbal supplements. Write down the dose and how often you take them. Bring your medication list to your appointments. The next page is designed for you to write down your list.

Review your list with your surgeon. They will tell you which medications to stop and when to stop taking them.

- **You must stop taking blood thinning medications (for example, aspirin, plavix, coumadin, etc.) for 1 week before and 1 week after each stage of surgery.** Check with your ordering provider on how to safely stop your blood thinners.
- For some patients with Parkinson's disease, you will be asked to hold your Parkinson's medications the morning before implantation of the leads into the brain.

Stopping medications may:

- reduce bleeding during or after surgery
- keep your blood pressure from dropping too low
- help manage your blood sugar levels
- help your incisions to heal
- help to determine ideal electrode placement during surgery



## Questions to ask your doctor before surgery

- **I take aspirin, when should I stop taking it?** *Hold aspirin for 1 week before and 1 week after each surgery unless otherwise directed.*
- **Can I take non-steroidal anti-inflammatory drugs (NSAIDs) after surgery?** *Hold NSAIDs for 1 week before and 1 week after each surgery unless otherwise directed. Note: Taking Acetaminophen is safe to use.*
- **I am on blood thinners, when do I stop taking the medication? Do I need to start another medication before surgery?** *Hold blood thinners for 1 week before and 1 week after each surgery unless otherwise directed, in some cases a short-acting blood thinner will be used as a “bridge” while you are off your blood thinners.*
- **I take special medication for my rheumatoid arthritis, psoriasis, Crohn’s, or other health problems. When do I stop medication?** *Typically, these will be held 1 week before and 1 week after each surgery but confirm this with your surgeon.*
- **Should I take my blood pressure medication the night before or the day of surgery?** *Yes, unless instructed otherwise.*
- **I am a diabetic, should I take my medication pills or insulin?** *Yes, unless instructed otherwise, however you may need to adjust your dose in the morning before surgery based on when you will be instructed not to eat or drink.*
- **When can I restart my medications?** *Typically, one week after surgery, but this will be discussed before you leave the hospital.*

## GETTING READY FOR DBS SURGERY

Contact your treating providers



- Tell them you are having surgery.
- Ask them which medications you should stop before surgery (blood thinners, aspirin, diabetic, blood pressure, rheumatoid arthritis, psoriasis, or for other medications)

### Make sure you are healthy enough for surgery

Talk to your surgeon about any current or past problems with

- **Sleeping:** unable to sleep 7 hours, waking up with pain, snoring, sleep apnea
- **Constipation, heartburn, or nausea**
- **Bladder:** leaking urine, urinating all the time, difficulty starting urine stream or difficulty urinating after surgery
- **Bleeding problems or blood clots**
- **Heart and lung problems**
- **Diabetes**
- **Depression or anxiety**
- **Infection after surgeries or recent COVID 19 infection**
- **Radiation or chemotherapy**
- **Trouble swallowing**
- **Stop smoking or using nicotine products**

## Start your plan for going home

Plan for who will give you a ride home. Discharge generally occurs around lunch time the day after surgery.

Plan to have someone stay with you for the first couple of days once you are home. Let your surgeon know if this will be an issue. While it is expected that you will quickly return to your normal activities after your surgery, you may temporarily need help. We do not recommend going home alone.

## Preparing your Home

- Clear stairs and pathways of any clutter or loose rugs.
- Remove telephone or electrical cords from walking areas.
- Place a table next to a chair and bed for water, books and phone numbers.
- Consider getting help caring for pets.

## Other things to do prior to surgery

### 2 weeks before Surgery

- Schedule an appointment with the Pre-Surgical Care Clinic to have pre-op tests done if directed by the neurosurgeon.
- If you have not scheduled your programming visits with your neurologist, we recommend you do this now.
- You will be advised by your surgeon's office if additional testing is needed prior to surgery such as having Covid or MRSA testing.
- If you need a medical release for work, talk to your surgeon's office. Try to do this at least 1-2 weeks before your surgery.

## Day before Surgery

- Pack a small bag for typically one overnight stay
- Take a shower the night before and wash your hair with your regular products or those recommended by your surgeon's office.
- The anesthesiologist will usually call you the day before surgery to ask you about your medical and surgical history. If not, they will meet with you when you arrive prior to surgery.
- Know when to stop eating or drinking before surgery. *Your surgeon's office will provide you specific instructions on when to stop eating or drinking depending on the timing of your surgery. If you are allowed to take medications the morning of surgery, you may take them with a sip of water.*

## What to bring to the hospital

- Clean comfortable clothing to wear when you go home
- Flat shoes with backs on them
- List of emergency contact numbers
- Pacemaker or defibrillator card
- Glasses, hearing aids, and dentures
- List of questions for the doctor
- List of all medications, herbals, and vitamins
- This guide
- Your C-PAP or Bi-PAP machine from home
- Walker or cane if you are currently using one
- Copy of your advance directive or POLST form to the hospital if it not already on file.



## Day of surgery

- Please arrive on time.
- When you arrive, enter the hospital's main entrance and check in at the Surgery Waiting Area. You and family/friend will be brought back to the short-stay unit.
- You may be in short stay longer than 2 hours before going into the operating room.
- Your nurse will have you change into a gown, start your IV to give you fluids, medication, and review your health history.
- You will be asked many questions about your medical history. Sometimes the same questions are asked MANY times. This is for your safety.
- You will sign a consent form.
- Your nurse or doctor will mark your surgery site.
- Your surgeon, anesthesiologist and DBS representative may meet with you before surgery to answer any questions.

## RECOVERING FROM DBS SURGERY

### After your surgery

You will be in the recovery room for about 1-2 hours. You can typically have visitors within 1 hour of arrival in the recovery room. Once appropriate, you will move to the neurosurgical ward and stay there for observation overnight.

Your nursing and surgery teams will closely monitor you. They will:

- Talk with your family or caregiver and answer questions about your surgery.
- Watch for complications. In general, the hospital stay after a DBS procedure is 24 hours or less, however, you may stay longer if complications develop. ***You will receive specific instructions for home care prior to discharge.***

## Things to watch for after DBS Surgery

While DBS is considered a minimally invasive surgery, the brain will still go into a recovery mode by slowing some of your physical operations. The following things are common to see following surgery and not everyone will experience them. It is important for you and those who will be caring for you to be aware that you may experience these during your initial recovery days. Some will resolve in a couple days and others may last up to 10-14 days. A Providence nurse will contact you a few days after discharging home to review how you are doing.

- Possible blurred or double vision
- Tingling in your arms or face
- Possible muscle weakness
- Slow or slurred speech
- Difficulty walking, loss of balance or falls
- Dizziness
- Reduction in coordination
- Difficulty concentrating
- Headaches
- Less likely are shocking or jolting sensations
- Tender and swollen incisions

Please do not dismiss the above when you do experience them. Know that they are common but watch for worsening of these symptoms. If you have concerns before the nurse contacts you, please call Dr. Oliveria's team at The Oregon Clinic **503-935-8500**.

## Actions you can take to help your recovery

### Prevent constipation and nausea

- Take over the counter stool softeners to keep your bowel movements loose while you are taking pain medications.
- If you haven't had a bowel movement by the second day after surgery, use over the counter stool softeners and laxatives to help.
- Eat small meals and drink enough fluids.
- Sit in a chair with all meals and walk regularly with help

### Prevent Pneumonia

- Sit in a chair and walk in hallways with help.
- Every hour you are awake, take deep breaths, cough, or use the incentive spirometer provided by the hospital.



### Prevent Blood clots

- Sit up in a chair and walk regularly with help.
- Pump your feet up and down when sitting and lying-in bed.
- Compression devices will be ordered while in bed.



## Managing Pain

You can expect some increase in pain as your tissues heal from surgery. This is normal. Getting moving again will help you heal faster and decrease your pain over time. It is important to keep in mind that pain medications do not take away 100% of your pain.

## Non-medication options to help with pain

- Walk. This will help with stiffness and decrease pain.
- Space out your activities throughout the day. Allow for rest periods.
- Reposition frequently. You might feel uncomfortable if you sit or lie in one position for too long.
- If necessary, you can use an ice pack around the incisional area every 4 hours for 20 minutes at a time for 2-3 days after surgery.
- Music, meditation, and deep breathing exercises may help manage stress.

## Medications

- Your doctor will order pain medications after surgery. These may have Acetaminophen (Tylenol®) in them. Do not take more than 3,000 mg of Tylenol in a day.
- Avoid taking anti-inflammatory medication (NSAIDs), such as Celebrex®, or ibuprofen medications like Advil® or Aleve® (naproxen) for 7 days after surgery.

## Pain medications

- Ask for pain medication when you notice your pain is increasing. You may need to take it more regularly the first few days and then slowly decrease.
- Do not drink alcohol or use marijuana while you are taking pain medications.
- No driving or operating machinery while on pain medication or until cleared by your doctor to drive.
- If you need refills of your pain medication, call your surgeon's office **2 business days** in advance.

## Continuing your recovery at home

- If you have a puppy, kitten or lively pets, to prevent you from falling, have your pet in another room until you are walking independently.
- You will feel tired for a few weeks. Remember to rest and relax, but do not lay in bed all day.
- Do not smoke.



## Swallowing and eating

- Swallowing difficulty and a sore throat are common after surgery, this will improve with time. Eat soft foods, and advance the thickness of foods, as tolerated. Remember to swallow small amounts of food or fluids at a time.
- Drink plenty of fluids to stay well hydrated and eat proper nutrition to help with wound healing.

## Wound care

- Keep your incisions clean and dry.
- You will have staples or fibrin glue on your incisions. Either your surgeon's office or your primary care can remove your sutures or staples.
- Don't soak your wound in water (bathtub, hot tub or swimming pools) until your incisions are completely healed.
- You may take a shower immediately after surgery, but do not get your head wet for 48 hours (you can wear a shower cap in the meantime). After that, you should wash your hair regularly, every 1-2 days.
- Carefully wash around the incisions with soap and water. Do not rub or scrub your incision. Gently pat the incision dry with a clean towel after a shower.
- Do not apply additional ointments or any lotions to your incisions until they are completely healed.

## Observe for signs of infection

- Redness, warmth, and/or swelling developing around the wound.
- Yellow, green, or white pus draining from wound.
- Excessive drainage, foul odor, increasing pain at wound site, chills, or a fever greater than 101 degrees Fahrenheit.

## When to call your surgical care team

- Signs of infection. Increasing redness, heat, swelling and a cloudy drainage.
- A sudden increase in pain that is not controlled by pain medication.
- Swelling in neck or chest after the battery implant surgery.
- A headache that is worse when you are sitting or standing and better when you are laying down flat.
- Difficulty swallowing.
- A rash, nausea, or vomiting.
- Swelling or pain in calf.
- Bowel or bladder problems (constipation, diarrhea, loss of control of bowel or bladder function, painful urination, difficulty or inability to urinate).

**CALL 911 WITH ANY LIFE THREATING  
EMERGENCY  
(Shortness of breath or chest pain)**

## Activity restrictions after DBS surgery

You will be asked to avoid certain activities while you heal from your surgery. When participating in a physical, recreational, or sporting activity, protect yourself from causing trauma to the neurostimulator. A blow to the chest near the neurostimulator can affect its functioning. If you are hit in that area, you may want to see your healthcare provider to have it checked.

If you are scheduled for a surgical procedure, tell your surgeon that you have a neurostimulator long before the operation. Also ask your healthcare provider's advice on whether anything special should be done before and during the surgery, as the electrocautery device that controls bleeding may interfere with the neurostimulator.

## General Precautions

- Do not lift more than **20 pounds** after your surgery for 2 weeks.
- No strenuous activity: avoid running, jumping, jarring, pulling or pushing motions. Keep your head above your heart until all lightheadedness clears.
- Do not drive until your doctor says it's okay (about 2 weeks).

## Getting Out of Bed

- Before standing, sit on the side of the bed. If you feel dizzy, wait for the sensation to clear before you get up.

## Stairs

- You will be able to go up and down stairs. Let your nurse and therapist know that you have stairs.

### Increasing your activity level

- Gradually increase your walking time and frequency each and every day.
- Walk on smooth surfaces. Avoid walking up hills.
- Beginning with 5 to 10 min walks 3 to 4 times a day.
- Remember to keep your muscles strong and prevent blood clots with activity.

### After surgery when everything is implanted

Remember to stretch your neck over the next 3 weeks. People tend to tilt their head to the side of the new DBS implant to take tension off the wound site. An annoying complication can occur if you do this. While you are healing, a scar will form around the cable (wire) in your neck and not allow as much movement. This can end up making it too short and you will feel “stuck” tilting your head. This can lead to limiting your neck movement permanently. The cable (wires) that were implanted are of sufficient length, so remember to periodically tilt your head away from the DBS implant side to stretch the new scar that forms.

## Tips for Daily Living

### Bathroom Safety after Surgery

If your movement is limited during recovery, ask a family member or friend to help prepare your bathroom. This helps make it safer and more comfortable while you heal. Use the tips below as a guide.



Prevent slips and falls by using non-slip bathmats on your bathroom floor and in your tub or shower. Use caution stepping over the edge of the bathmat to avoid tripping. Watch out for hazards, such as wet floors. Talk with your occupational therapist if you need more instruction in using bath aids.

### Showering

- Your first shower should be slightly cooler. You may need to sit on a bath bench or shower chair while you bathe.

### Driving a car

- Contact your provider for clearance.

## Living with a Deep Brain Neurostimulator

Consider these precautions and discuss the following with your healthcare provider:

- Always carry an ID card that states you have a DBS neurostimulator. You may choose to wear a medical ID bracelet indicating this as well.
- When travelling tell the airport security screeners you have a neurostimulator before going through the airport detectors. In general, they are safe and typically do not set off the alarm. If you are selected for additional screening with the hand-held detector, politely remind the screener that the detector wand should not be held over the neurostimulator for longer than a few seconds. The magnet may affect the function or programming of your neurostimulator.
- You can typically have an MRI after DBS, but special settings may be necessary. You will need to provide information about your DBS system to the technician prior to performing an MRI. We recommend you contact your provider prior to any MRI.
- Avoid places with large magnets such as power generators and automobile junkyards.
- Avoid high-voltage or radar machinery, such as radio or TV transmitters, electric arc welders, high-tension wires, radar installations, or smelting furnaces.

## DBS implant frequently asked questions

- **What diagnostic tests can I have?** *You can have CT, X-rays, EKG, fluoroscopy, PET scans and MEG. You can typically have an MRI after DBS, but special settings may be necessary. You will need to provide information about your DBS system to the technician prior to performing an MRI, mammograms, or any X-rays that require a tight enclosure as they may damage the neurostimulator. Be sure the provider knows you have an implanted neurostimulator before conducting the test so they can use precautions.*
- **Can I have a pacemaker or implantable cardioverter defibrillator?** *Yes, for this reason the DBS generator battery is typically implanted in the right chest wall, far enough away to prevent interference with a cardiac device that would be implanted in the left chest wall. If your generator is implanted on the left, it may need to be relocated to accommodate a cardiac device.*
- **If I get cancer, can I have radiation therapy?** *Yes, but again caution needs to be used to protect the DBS system. Radiation therapy must not be in the area of the device. Placing a lead shield over the device is recommended if you are going to receive radiation therapy. After each radiation treatment have your DBS system checked and reprogrammed if necessary.*
- **Can I use power tools?** *Typically, yes, however most tools create a weak electrical field. They can potentially turn your DBS device on or off if used close to your neurostimulator. Check your stimulator after use of the power tools to assure it is functioning correctly.*

- **Can I work on an automobile?** *Yes. If you experience any discomfort or problems near your implant while working on an automobile, stop and contact your healthcare provider to have it checked.*
- **Can I fly in an airplane?** *Yes, but you should wait at least 4 weeks after brain surgery.*
- **Can I use a hot tub, steam room, or sauna?** *Generally, yes. Be aware that excessively high temperatures can damage the device. If you become uncomfortable, remove yourself from the hot environment.*
- **Can I skydive?** *This is generally not recommended as extreme movement or impact can damage the DBS system. If this is important to you, discuss with your doctor regarding extra precautions that you can take.*
- **Can I scuba dive?** *Yes, but not below 33 feet of water. With greater depth the pressures encountered can damage the device.*
- **Can I have diathermy (deep heat treatment)?** *No, you cannot have any shortwave diathermy, microwave diathermy, or therapeutic ultrasound diathermy anywhere on the body. Energy from the diathermy can be transferred through your implanted system, can cause tissue damage and can result in severe injury or death.*

## HELPFUL RESOURCES

Certain lifestyle choices and health conditions can make it harder to heal after surgery. Here are some tips to make sure you're ready for surgery and heal after surgery.

### Diabetes

- If you have diabetes or high blood sugar:
- It is important to get your blood sugar to the right level before and after surgery.
- Your doctor can tell you who can help you learn to manage your blood sugar.

There are dietitians available if you would like help. Before scheduling your dietitian appointment, please check with your health insurance for benefits or if prior approval is needed. Clients may also self-pay.

For information or to make an appointment, please call:

- Providence St Vincent 503-216-2368
- Portland Medical Center 503-215-5160
- Providence Milwaukie Hospital 503-215-5160

Providence also offers classes in weight management, fitness and diabetes. Call Providence Resource Line, 503-574-6595, or visit [www.providence.org/classes](http://www.providence.org/classes).

## Help to Stop Smoking or Using Nicotine Products

Cigarettes, E-cigarettes, cigars, pipes, chewing tobacco

Smoking can make it harder for you to recover from surgery. Smoking or use of tobacco can:

- Make it easier for your blood to clot. This increases your risk of getting a blood clot after surgery.
- Decrease the amount and quality of blood that goes to the skin and bones. This increases the amount of time to heal after.

## Providence Smoking Cessation Classes and Support Group

Based upon the American Lung Association's Freedom from Smoking program, Providence Smoking Cessation Classes and groups are designed to help you quit smoking for good. You will learn a systematic approach to quitting through behavior modification techniques, coping skills, social support, and information on weight management, stress management and the role of medication. To register for a class, call Providence Resource Line at 503-574-6595 or 1-800-562-8964, or visit [www.providence.org/classes](http://www.providence.org/classes).

## Quit for Life®

In this telephone-based program, a coach helps you come up with a quit plan that works for you. This 12-month smoking cessation program offers the support of scheduled phone calls, written materials, and recommendations for medicines. To register, call 1- 866-QUIT-4-LIFE (1-866-784-8454) or visit [www.quitnow.net](http://www.quitnow.net).

American Lung Association – Freedom from Smoking Online program

[www.ffsonline.org](http://www.ffsonline.org)

**Tobacco Quit Line**

This free service offers advice on quitting, telephone counseling, and referrals to stop smoking programs based on your health insurance coverage. **Call 1-800-QUIT-NOW (1-800-784-8669).**

**Resources to Help Manage Pain**

Classes at Providence: Call 503-574-6595 to register or online at:

<http://oregon.providence.org/our-services/h/health-and-wellness-classes/>

Pain Medication	Time Taken

Maintain an Activity Log

Activity	Date

Questions for your doctor:

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Providence St. Vincent Patient Information

<https://www.providence.org/locations/or/st-vincent-medical-center/patients-and-visitors>

Guest housing information

Providence St. Vincent Hospital has guest housing across the street. It has 21 rooms averaging \$60 per night for rooms with either 2 twin beds or one queen-size bed. Three of the rooms are larger family rooms with 2 queen beds at \$70 per night. For assistance, please call the Travis and Beverly Cross Guest Housing at **503-216-1575** or the general hospital information number. You may also go to this website:

[www.oregon.providence.org/our-services/g/guest-housing](http://www.oregon.providence.org/our-services/g/guest-housing).

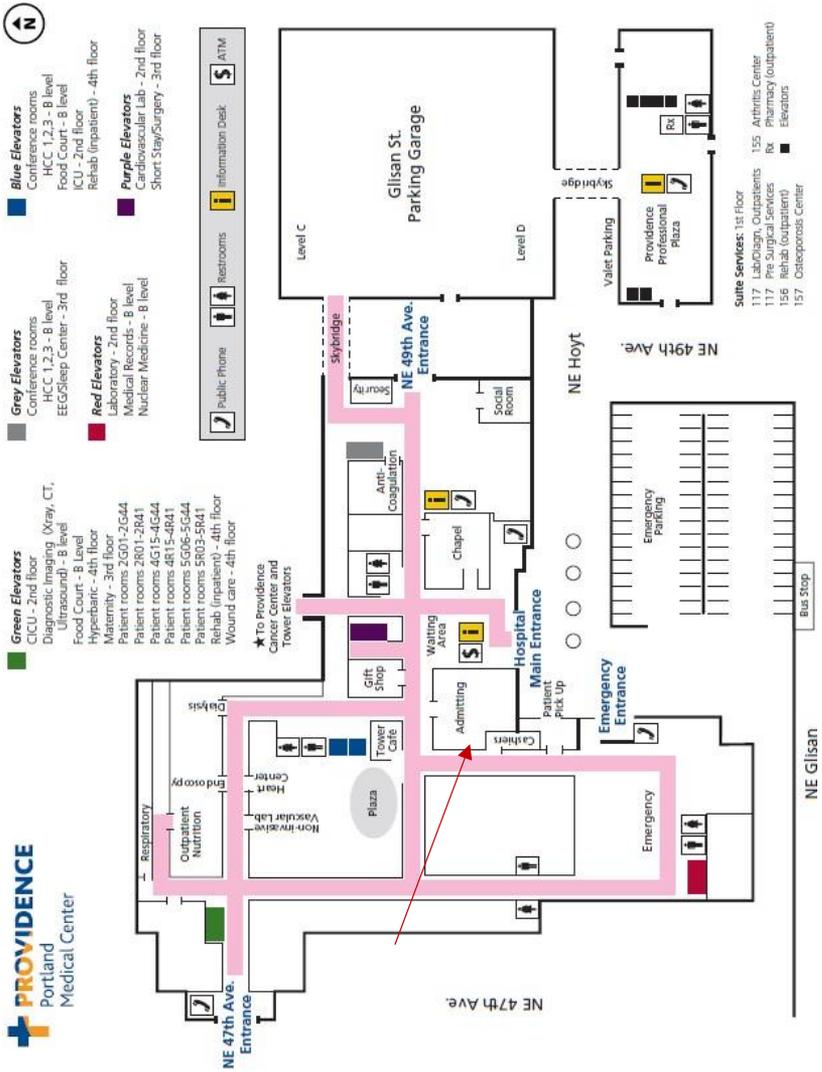
These guest rooms are basic, and you will need to bring your own toiletries. You may also qualify for reduced hotel pricing if you need to stay near the hospital the night before surgery.

Hotels near Providence St. Vincent Medical Center

Hotel	Address	Phone #
<b>Homewood Suites by Hilton</b>	15525 NW Gateway Court Beaverton, OR 97006	503-614-0900
<b>Embassy Suites Hotel</b>	9000 SW Washington Square Rd Tigard, OR	503-644-4000
<b>Double Tree by Hilton</b>	15402 NW Cornell Road Beaverton, OR 97225	503-614-8100

# PROVIDENCE PORTLAND MEDICAL CENTER

## Hospital Map



Providence Portland Medical Center Patient Information  
<https://www.providence.org/locations/or/portland-medical-center/patients-and-visitors>

**Guest housing information**

Providence Portland Medical Center - Providence Guest House has 30 rooms in total averaging \$60 per night, 8 are family rooms with 2 queen beds and 22 have one queen bed (\$70 per night). For more information or to make reservations call phone **503-962-1600** or **844-971-7768**.

You may also go to this website:  
[www.oregon.providence.org/our-services/g/guest-housing](http://www.oregon.providence.org/our-services/g/guest-housing).

These guest rooms are basic, and you will need to bring your own toiletries. You may also qualify for reduced hotel pricing if you need to stay near the hospital the night before surgery.

**Hotels near Providence Portland Medical Center**

<b>Hotel</b>	<b>Address</b>	<b>Phone #</b>
<b>Candlewood Suites (Portland Airport)</b>	11250 NE Holman Street Portland, OR 97220	503-614-0900
<b>Comfort Inn</b>	8225 NE Wasco St. Portland, OR 97232	503-644-4000
<b>Residence Inn - Lloyd Center</b>	1710 NE Multnomah St. Portland, OR 97232	503-288-1400
<b>Shilo Inn Portland - Rose Garden</b>	1506 NE Second Ave. Portland, OR 97232	503-736-6300

