

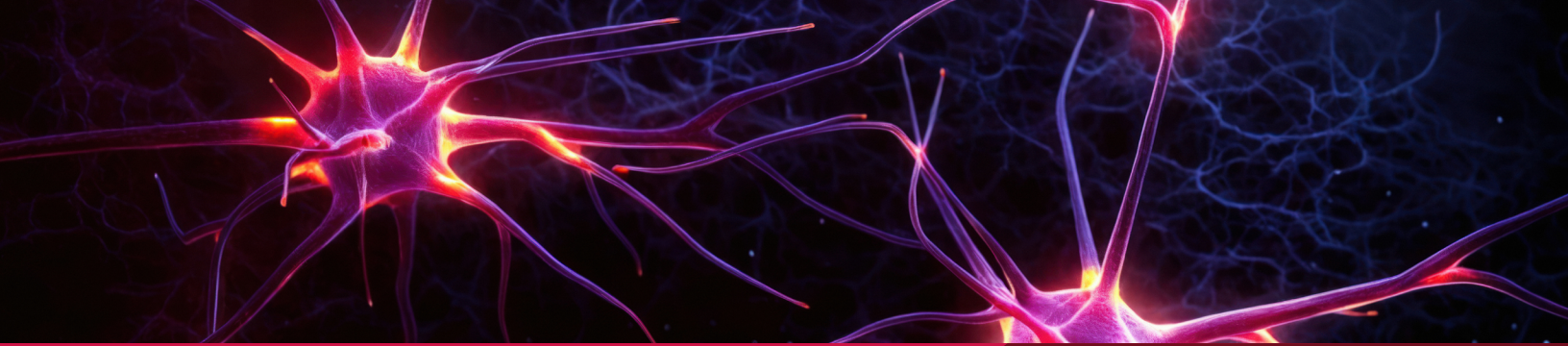


# Neuromodulation Surgery



THE OHIO STATE  
UNIVERSITY

WEXNER MEDICAL CENTER



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Please review the information in this book to help prepare for your surgery. We want you to ask questions about anything that is unclear or that you would like to know more about.

For a digital copy of this book, please visit [go.osu.edu/pted5607](https://go.osu.edu/pted5607).

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This resource is for informational purposes only. Talk to your healthcare provider if you have any questions about your care. For more education, contact the Library for Health Information at 614-293-3707 or [health-info@osu.edu](mailto:health-info@osu.edu).

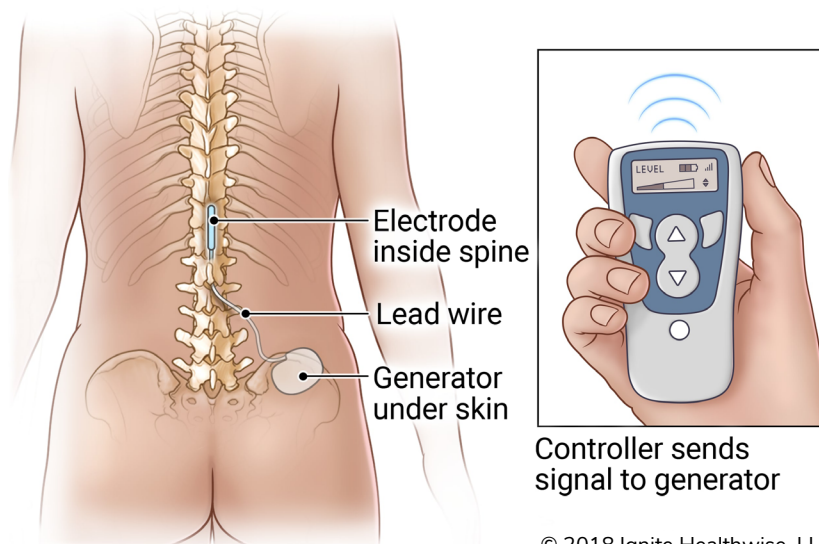
# Neuromodulation Treatments

Neuromodulation is a series of techniques that act directly on your nervous system. By changing the way your nerves carry information to and from the brain, they can be used to treat various symptoms and conditions.

There are some common neuromodulation treatments. Your healthcare provider will discuss more details about your specific treatment with you.

## Spinal cord stimulators

A spinal cord stimulator, or SCS, is a device used to help with pain. It works by placing small wires, called leads, into the epidural space near the spine. These wires are connected to a battery that's placed under the skin. The device sends out tiny electrical signals that mix up the pain messages so they do not reach the brain. This helps reduce the feeling of pain. SCS does not fix the cause of the pain — it just helps manage it. It may be recommended if options like physical therapy, spine injections, or pain medicine have not worked.



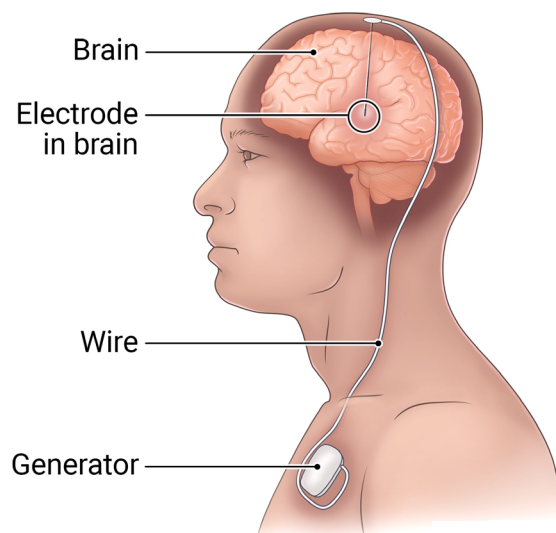
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## Focused ultrasound ablation

Focused ultrasound ablation, or FUSA, is used to treat patients with tremors associated with movement disorders like tremor dominant Parkinson's and essential tremors. High intensity sound waves and MRI guidance treat the part of the brain causing the tremors. No incision is needed for this treatment.

## Deep brain stimulation

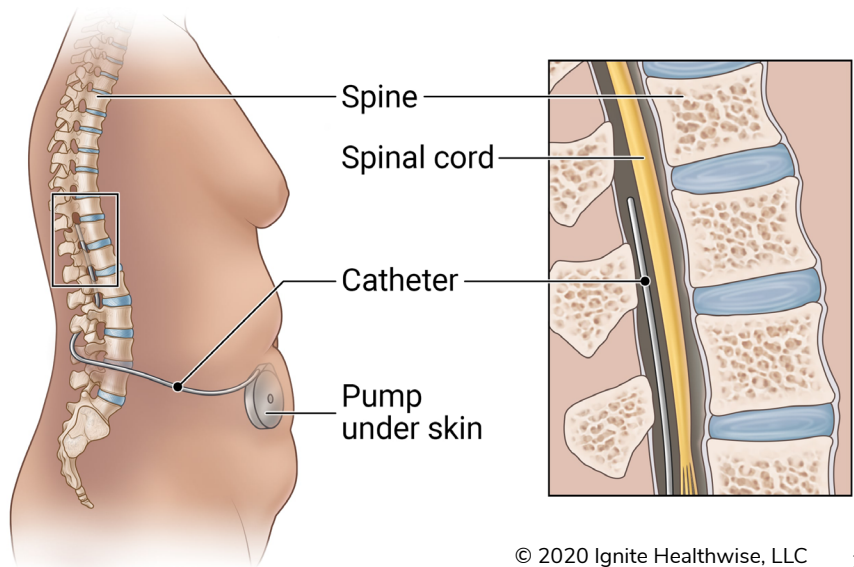
Deep brain stimulation, or DBS, are used to treat movement disorders like Parkinson's or dystonia. Electrodes are surgically placed into specific areas of the brain that are responsible for your symptoms and connected to a battery by wires that lie under your skin.



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## Intrathecal pain pumps

Intrathecal pain pumps, or IPP, are a treatment option for chronic pain. A small tube called a catheter is implanted into the area of your spine that holds your spinal fluid, called the intrathecal space. It is connected to a pump that delivers pain medicine into this space.

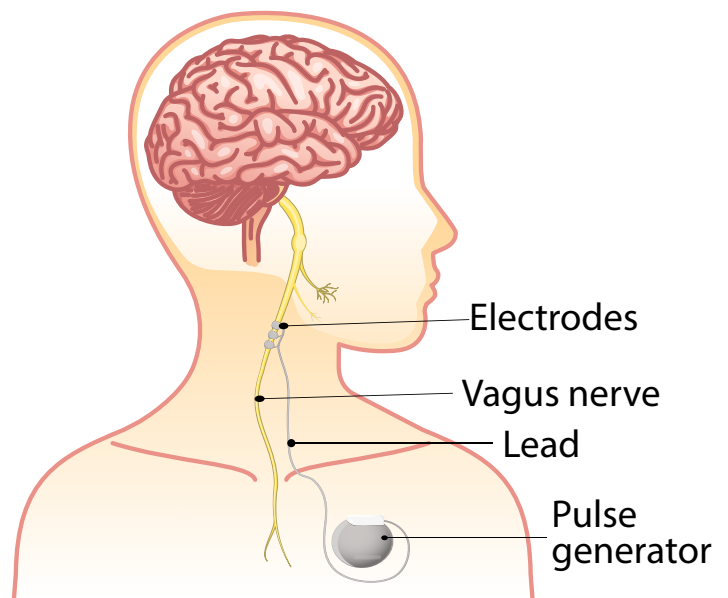


## Intrathecal baclofen pumps

Intrathecal baclofen pumps, or ITB, are a treatment option for those with spasticity related disorders when oral medications are not working. This pump delivers baclofen, a medicine that reduces pain and discomfort caused by muscle spasms. A catheter is implanted into the intrathecal space and connected to an implanted pump programmed to deliver baclofen into the cerebral spinal fluid space.

## Vagal nerve stimulators

Vagus nerve stimulation, or VNS, is a treatment that uses a small device placed in your neck. This device sends tiny electrical signals to a nerve called the vagus nerve. These signals travel to your brain and help change how brain cells work. Some people call it a “pacemaker for the brain.” Doctors use VNS to help treat epilepsy that’s hard to control, depression, and to help people recover after a stroke.



## Peripheral nerve stimulators

Peripheral nerve stimulators, or PNS, are used to treat nerve pain in different areas of the body. Leads are surgically placed near nerve pathways that carry pain signals that carry a mild electric current and scramble the pain signals.

# Your Care Team

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Our goal is to provide you with personalized care. Here is a list of providers you may have on your healthcare team.

## Neurologist

These are doctors who treat problems with the brain and nervous system. If you do not already have one, you might be sent to see a neurologist if you are going to have surgeries like FUSA, DBS, a Baclofen pump, or VNS. They help plan your care before and after surgery.

## Neurosurgery Surgeon

Your surgeon guides your care from the time you see them in office, through your surgery and hospitalization, and during your follow up care.

## Pain Provider

These doctors focus on helping people manage long-term pain. If you are thinking about getting a pain pump, you might be referred to a pain provider. They would take care of the pump after it is placed.

## Pharmaceutical Device Representative

These are experts who know how to manage the devices that get placed in your body. After your surgery, they'll teach you how the device works and help set it up. You will get their contact information after your surgery.

## Psychologist

This is a mental health expert. Some insurance companies ask that you meet with a special kind of psychologist, called a neuropsychologist, before surgery. This is to make sure you're ready for the surgery and to check if there are any mental health issues that should be taken care of first.

## Advanced Practice Providers

Advanced practice providers (APPs) help the surgeon with your care and may assist during surgery. You may also see the physician assistant (PA) or nurse practitioner (NP) at your follow up appointments.

## Resident/Fellow

A resident/fellow is a licensed physician who works in a specialty area of medicine and who is supervised by your surgeon or consulting doctor.

## Anesthesiology

An anesthesiologist is a specially trained doctor who gives you medicine to prevent pain during surgery. They choose the right type of anesthesia for your needs, monitor your breathing, heart rate, and other vital signs during surgery, and help you wake up safely and comfortably afterward. The anesthesiology team will discuss your anesthesia with you ahead of time and answer any questions you may have.

## **Nursing Team**

Nurses will monitor your condition during your recovery and hospital stay. They will give you pain medicine when you need it. They will also help with normal daily activities such as bathing, grooming, getting into a chair for meals, and going to the bathroom. If you need anything, please let them know.

## **Physical Therapy**

Physical therapists (PT) will focus on walking, balance, and strength. They will work with you while you are in the hospital.

## **Occupational Therapy**

Occupational therapists (OT) will help teach and guide you to complete your everyday home activities and will offer suggestions for making your home environment safe.

## **Care Management Team**

The Care Management Team includes your care manager and social worker who work with you and your family, surgeon, and the rest of your healthcare team to coordinate a safe plan for your transition to the next level of care. This may include arranging for durable medical equipment, home healthcare, or skilled rehabilitation. Your care manager also coordinates any necessary communication and authorization with your insurance company.

## **Pharmacist**

The hospital's pharmacist offers education regarding your medicines. They keep a close watch on the medicines you receive while in the hospital.

## **Hospitalist**

In addition to your surgeon, you may also be seen by a physician who works in the hospital with admitted patients.

# Financial Issues

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## Check with your insurance

Your health insurance provider may require pre-authorization for this surgery. **Contact your insurance company and talk to the staff in your surgeon's office.**

**Please be prepared to pay any co-insurance or deductible as requested by Ohio State Wexner Medical Center.**

If your insurance has less than 100% coverage, we ask that you pay a deposit of \$300 before the procedure.

A representative from the hospital will contact you to pre-register you for your surgery. If you have not received a call by 2 days before your surgery date, please call our Pre-Registration Department at 614-293-8200. The representative will be able to discuss both your doctor and hospital coverage and charges.

If your coverage is considered out of network, you will likely not qualify for financial aid. **Please find out if you are in network or out of network early in the process.**

If you have MyChart, you can log on and complete a pre-registration questionnaire.

## Using Bureau of Workers' Compensation as payer

Patients that plan to use the Bureau of Workers' Compensation (BWC) as their payer source for surgery must notify Registration, the clinic nurse, and the surgery scheduler as soon as possible.

Please note that your surgery cannot be scheduled until your BWC claim for surgery is approved.

## Financial aid

We will work with you and your family to help you get the care that you need.

If you do not have health insurance or cannot pay your bill, we encourage you to call our financial counselors at 614-293-2100. A staff member will be able to help check if you might qualify for aid.

They can help:

- Complete applications for government programs.
- Describe other programs that may offset costs.
- Figure out a workable payment plan for the cost of your treatment.

The financial counselor can also help you with options related to the Affordable Care Act.

Ohio State Wexner Medical Center offers a sliding scale financial assistance program based on federal poverty guidelines that would be offered if you qualify.

# Preparing for Surgery

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**Review these instructions as soon as you get them, so you are well prepared for your surgery.** This can help you to have a better recovery. Follow these instructions to keep your surgery on schedule. Call your doctor's office if you have any questions.

## Pre-admission testing visit

You will be scheduled for some tests to check that you are ready for surgery. You will have a physical exam within 30 days of surgery. You will also have blood tests and maybe have an electrocardiogram, also called an ECG or EKG, to check your heart. Your surgeon might ask that you complete labs only, without a physical exam.

You will have a nasal swab to test for MRSA/MSSA, which can live in the nose and cause no symptoms. If your test is positive, you will be given a prescription for mupirocin nasal ointment. Apply the medicine in each nostril twice a day for 5 days.

You may be advised to stop certain medicines, such as blood thinners, non-steroidal anti-inflammatory, and certain medicines for autoimmune conditions.

You may have a visit with a provider (doctor or advanced practice provider) 1 month before surgery to go over the surgery and your recovery.

If you have a cardiologist, please make an appointment with your cardiologist before surgery to discuss the upcoming surgery and any needed updates to your cardiac testing.

## Important medicine changes before surgery

- **You will review your medicines at pre-admission testing.** Be sure to include all prescriptions, over-the-counter medicines, herbal products, or vitamin supplements you take. You may need to stop or change certain medicines. **The pre-admission testing providers or your primary care provider should approve stopping the listed medicines.**
- **Do NOT** take ibuprofen (Advil or Motrin), meloxicam (Mobic), diclofenac (Voltaren), naproxen (Aleve or Naprosyn), or Excedrin for **5 days** before surgery. Acetaminophen (Tylenol) is okay to take up until the day of surgery.
- **If you take aspirin or medicines that contain aspirin,** ask your doctor if you need to take a different pain medicine before your surgery.
- **Anti-seizure medicines:** If you take any medicines for epilepsy/seizures, please bring them with you the day of surgery. Continue to take them as prescribed before surgery.
- **If you take a medicine to thin your blood,** ask the doctor who ordered this medicine if it is safe for you to stop taking it before your surgery. They may tell you to stop taking it before your surgery OR your doctor may tell you to keep taking it. Make sure that you understand exactly what your doctor wants you to do.

**Below is a list of common blood thinner/stent medicines:**

- apixaban (Eliquis)
- clopidogrel (Plavix)
- dabigatran (Pradaxa)
- edoxaban (Savaysa)
- enoxaparin (Lovenox)
- fondaparinux (Arixtra)
- heparin
- rivaroxaban (Xarelto)
- ticagrelor (Brilinta)
- vorapaxar (Zontivity)
- warfarin (Coumadin, Jantoven)

- **If your surgery date gets changed, and you had stopped or changed your medicine to prevent clots**, call your doctor. You may need to restart the medicine while you wait for your surgery to be rescheduled.
- **If you have had a stent**, especially a stent in your heart or brain, **DO NOT STOP** taking your blood thinner medicine until you are instructed by the doctor who placed the stent.
- **Do not take oral medicine (pills) for diabetes the morning of your surgery.**
- **If you take any of these oral medicines listed below**, stop taking for the following number of days before your procedure:

Medicine	Number of days to stop taking before procedure
▸ ertugliflozin (Steglatro)	4 days
▸ bexagliflozin (Brenzavvy) ▸ canagliflozin (Invokana) ▸ dapagliflozin (Farxiga) ▸ empagliflozin (Jardiance) ▸ sotagliflozin (Inpefa)	3 days
▸ semaglutide (Rybelsus)	1 day

- **If you use one of these injection medicines**, stop taking before your procedure as listed below:

Medicine	When to stop taking before procedure
▸ dulaglutide (Trulicity) ▸ exenatide (Bydureon BCise, Byetta) ▸ liraglutide (Saxenda, Victoza) ▸ semaglutide (Ozempic, Wegovy) ▸ tirzepatide (Mounjaro, Zepbound)	<ul style="list-style-type: none"> <li>▸ If you use the injection daily: do not use on day of procedure</li> <li>▸ If you use the injection weekly: stop taking 1 week (7 days) before the procedure</li> <li>▸ If you use the injection weekly for <b>weight loss only</b>: stop taking for 2 weeks (14 days) before the procedure</li> </ul>

- **If you take phentermine (Adipex), phentermine/topiramate (Qysmia), or naltrexone/bupropion (Contrave)**, please contact your prescribing provider to taper off the medicine before your procedure. These medicines should be stopped slowly by taking smaller doses over time as directed by your provider.

- **DO NOT take herbal medicines** such as fish oil (omega-3), garlic, glucosamine-chondroitin, ginkgo, ginseng, probiotics) or vitamins (including multivitamins) for 2 weeks before surgery, unless you get other directions from your surgeon. Most vitamins and herbal supplements may be started again when you return home. Please refer to your After Visit Summary for details.

## Other health issues

- **If you get sick with a cold, sore throat, cough, or fever, or you have any infection before your surgery, call the office right away.** Your surgery may need to be rescheduled until your infection is treated.
- Have good eating habits and control your weight. If you are overweight, losing weight can make your recovery and rehabilitation easier.
- Avoid constipation. Talk to your doctor if you have had problems with constipation. If you have not had a bowel movement for a few days before your surgery, check with your doctor about a laxative or enema.

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# Using Your Incentive Spirometer

Using your incentive spirometer (breathing exerciser) helps reduce your chance of developing breathing problems after surgery, such as pneumonia.

**Do your breathing exercises 10 times every hour while you are awake. Continue at home for 2 to 3 weeks or until your cough is dry.**

### Steps for use

1. If possible, sit up straight. It may help to sit on the edge of a chair or your bed.
2. Hold the incentive spirometer upright.
3. Breathe out, and then close your lips tightly around the mouthpiece. Take in a slow deep breath through your mouth.
4. As you take a deep breath, the piston in the clear chamber of the incentive spirometer will rise. Breathe in slowly to allow the air sacs in your lungs time to open. Your incentive spirometer has an indicator to let you know if you are breathing in too fast.
5. After you breathe in as deeply as you can, hold your breath for 3 to 5 seconds. Set the goal indicator tab at the level that you reached.
6. Take out the mouthpiece and breathe out slowly. Relax and breathe normally for a few seconds until the piston returns to the bottom of the chamber.
7. Repeat these steps a **total of 10 times**. If you start to feel light-headed or dizzy, slow down your breathing and give yourself more time between the deep breaths.
8. After the 10 deep breathing exercises, **take a deep breath and cough to clear the mucus from your lungs.**

# Plan Ahead for Care After Surgery

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Our goal is to have you go home after surgery. It is easier to arrange things before you have your surgery to make sure you have things taken care of and the support you need arranged.

## Plan for help

You should have someone with you or available to help you if needed for at least 1 to 2 days after surgery.

Ask your family and friends to be available to help:

- Give you a ride home from the hospital.
- Get you in and out of the car.
- Help you with bathing and exercising.
- Get you into and out of bed.
- Do laundry and light housekeeping.
- Deliver groceries and assist with meals.
- Get you to your follow up appointments.
- Collect your mail.
- Care for your loved ones or pets.

## Prepare your home

- Refill any regular medicines that will run out in the weeks after surgery.
- Have a list of emergency phone numbers located by your phone or a poster on your refrigerator.
- Consider setting up a temporary bedroom on the same floor as your bathroom and kitchen to avoid multiple trips up and down steps.
- Prepare a room with all your equipment on the first floor, if possible.
- Arrange your furniture to have wide, safe walkways throughout your home.
- Remove clutter or throw rugs from the floor that may cause you to trip and fall.
- Clear away any foot stools, electrical cords, or other items on the floor that could trip you.
- Rearrange your kitchen to have those items you use often within easy reach.
- Shop for frozen or canned food that will be easy to prepare.
- Put non-skid strips or pads in your bathtub or shower for safety.

# Nicotine Use

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Nicotine products include but are not limited to: cigarettes, electric cigarettes, vaping, chewing tobacco, snuff, and nicotine cessation products (such as the patch, gum, mints, and lozenges).

## Why quit

- Stopping all nicotine products will help with your wound healing, reduce the risk of infection after surgery.
- Oxygen is needed for wounds to heal well. Just 10 minutes of smoking can decrease the amount of oxygen in tissue for up to 1 hour.
- Wound healing is harder in homes with a smoker because the dressings absorb smoke.

## Tips to help you quit tobacco

- Set a quit date. This is the day that you officially stop using tobacco.
- Get rid of all ash trays, lighters, spit cups, and tobacco products in your home, car, and at work.
- Tell others you are quitting. Having support is key to successful quitting.
- Try the 4 D's:
  - Delay. See if you can wait 5 minutes before lighting up. Even a few minutes can help a craving to pass.
  - Deep breathe. Count to 5 for each breath in and each breath out. Repeat 10 times.
  - Drink fluids. Drink liquids throughout the day to help clear nicotine from your body. Try to drink 8 (8-ounce) glasses each day.
  - Do other activities to keep busy. Take a walk, read a book, play a game, or talk to a friend. Try to keep your hands and your mind busy.
- Talk to your doctor, nurse, or pharmacist about medicines or other ways that can help.

## Quit resources

Talk to your doctor about a cessation program. You can also get help with these resources:

- Ohio State Smoking Cessation Clinics: 614-293-0932
- Ohio Tobacco Quit Line: 800-QUIT-NOW (784-8669)
- Quit for Life program from the American Cancer Society: 800-227-2345
- American Lung Association: 800-586-4872
- Ohio Partners for Smoke Free Families: [ohiosmokefreefamilies.org](http://ohiosmokefreefamilies.org)
- Quitting Tobacco Use Book: [go.osu.edu/pted3430](http://go.osu.edu/pted3430)

# Getting Your Skin Ready for Surgery

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Your surgery involves cutting through your skin. Everyone has germs on their skin, and these germs can cause infection. To help prevent infection, you will need to wash your skin with a special soap, called **4% chlorhexidine gluconate (CHG)**, before your surgery. This soap kills germs. You may be given the soap or be asked to buy it from a pharmacy. If you need help finding it, ask the pharmacist.

- **DO NOT shave for 1 week (7 days) near the site where your surgery will be done.** Shaving with a razor can irritate your skin and make it easier to develop an infection. If needed, the hair on the site will be trimmed with electric clippers before you go to the operating room.
- CHG soap does not bubble and lather like most soaps.
- Be careful not to get CHG soap into your eyes, ears, nose, or mouth. If you do, rinse well with clean water.
- Do not wash your hair with CHG unless you are to have a cut (incision) made into your scalp. If you will have a cut made into your scalp, read the instruction about this on page 15.
- Make sure that your bed at home is covered in clean sheets.

## How to clean your body with CHG soap

### How to shower with CHG soap

Follow these instructions and **the steps in the illustration on the next page** each time you shower with CHG soap. Please call your surgeon's office if you have any questions.

#### 1. Shower with CHG soap as directed:

- For most patients: Take 2 showers using CHG soap.** Wash your whole body **from the neck down** with CHG soap **the night before your surgery** and then again **the morning of your surgery**.
- If you tested positive for MRSA/MSSA,** you will need to shower with CHG soap **daily for 5 days** (the 5th day is the morning of surgery).
- **Use 4 ounces (½ cup) of CHG soap or 4 to 5 pumps of CHG foam each time you shower.**
- Wash your body with CHG soap or foam for a **full 5 minutes**. Wash your skin gently **from the neck down**, avoiding your genital and rectal areas. **Pay special attention to your back.** Do not scrub hard.

#### 2. After showering with CHG soap, **DO NOT wash your body with regular soap.** You may wash your face as usual with regular soap.

## Follow these 8 steps to shower with CHG soap

**1** Wash your hair as usual with your regular shampoo and then wash your body with regular soap.  
Rinse well.

**2** Wet a clean washcloth. Turn off the shower.

**3** Apply some CHG soap to the wet washcloth.

**4** Use the washcloth to wash your whole body **from the neck down**.  
Keep adding more CHG and continue to wash for **5 minutes**.

**5** Turn on the shower water and rinse your whole body well.

**6** Pat yourself dry with a **clean** towel.

**7** Put on **clean** clothes.

**8** When you finish showering, **DO NOT** use lotion, powder, cream, makeup, oils, or cologne/perfume until allowed by your provider.

## How to take a sponge bath with CHG soap

If you are not able to shower, do a sponge bath each time to clean your body with CHG soap. Use **4 ounces (½ cup) of CHG soap or 4 to 5 pumps of CHG foam** each time you take a sponge bath.

1. First, bathe with a clean washcloth, water, and regular soap. Rinse well with clean water.
2. Then, get a clean washcloth and wet it with clean water.
3. Apply some CHG soap or foam to the wet washcloth.
4. Use the washcloth to wash your whole body **from the neck down**. Keep adding more CHG and continue to **wash for 5 minutes and pay special attention to your back**. Do not scrub too hard.
5. Rinse well with another clean washcloth and clean water.
6. Pat yourself dry with a clean towel.
7. Put on clean clothes or pajamas.
8. **DO NOT** use lotion, powder, cream, makeup, oils, or cologne/perfume until allowed by your provider.

### **If you are to have a cut (incision) made into your scalp:**

If you are to have a cut made into your scalp, you need to wash your hair with CHG each time you shower with CHG.

- Wash your hair with regular shampoo and rinse it well with water.
- Put a large amount of the CHG into your palm and then work it through your hair and scalp. It will not lather like your shampoo. Be careful not to get CHG into your eyes, ears, nose, or mouth.
- Rinse with clean water.

**Do not use this soap after surgery.**

**Please refer to your DBS folder for more guidelines.**

# Having Surgery

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## Starting night before surgery

Please **DO NOT** eat or drink anything after midnight before your surgery.

## Surgery arrival time

You will get a call 1 or 2 days before your surgery to tell you what time to arrive. If your surgery is scheduled for a Monday, you may be called on Friday. Please **arrive on time**, so we can prepare you for surgery.

## Pre-operative holding area

When you arrive in the pre-op holding area, or ambulatory surgery unit (ASU), the nurse will talk to you and give you a gown to change into for surgery.

- Your clothes are put into a bag and placed in a locker for safe keeping.
- Your blood pressure, pulse, temperature, and breathing rate will be checked. Other blood tests may be done if needed.
- Your nurse will swab your nose with a Betadine swab so please notify the nurse if you have an iodine allergy.
- A needle will be used to place a small tube, called an IV catheter, into a vein to give you fluids before, during, and after surgery.
- Dentures or partial plates, contact lenses, eyeglasses, hearing aids, and other items should be removed before surgery. Nail polish, make-up, jewelry, and any hair clips must also be removed.
- The anesthesiologist will come in to talk to you and have you sign a consent form.
- You will be asked to write your initials on the skin over the area that will have surgery. This is part of our safety checks.
- Your hair will be covered with a paper hat.

- Your family can stay with you in the pre-operative holding area or ambulatory surgery unit. The nurse will tell your family where they can wait while you are in surgery.

## Operating room

You will be taken into the operating room and all staff will wear gowns, caps, and masks. The room lights will be bright and the room will feel cool.

A nurse in the operating room will greet you and check your ID band. You will be asked some questions. A safety strap will be put over you, so you stay on the table. Staff will talk to you to let you know what they are going to do next.

You will be given medicine through your IV by anesthesiology to keep you free of pain and asleep during your surgery.

You may have a tube placed into your bladder to drain urine during surgery. This tube will be removed the day after surgery.

After your surgery is done, your surgeon will close the incisions and a dressing will cover the site.

Your surgery may take a longer or shorter time than you and your family were told. Your family can check a board in the waiting area to see where you are. After surgery, the surgeon will talk with your family.

## PACU

You will wake up in the Post-Anesthesia Care Unit (PACU), also called recovery. Your vital signs, oxygen level, and incision site will be checked. X-rays may be taken after recovery or the next day, depending on your surgery. You may be in PACU for many hours before going to your hospital room.

# In Hospital Care and Treatments

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## Your care team

A team of doctors, advanced practice providers (APPs), registered nurses (RNs), patient care assistants (PCAs), physical therapists (PTs), and occupational therapists (OTs) will work with you after surgery.

- The nurse will check you, provide treatments and medicines, and teach you about your incision and other care.
- The PCA will help with your care and some procedures.
- The PT will teach you how to safely move and do exercises to help with your recovery.
- **Your care team will help you get out of bed, so you do not fall.** Falling could cause an injury that keeps you in the hospital longer.

## Visitors

- For their health protection, children under the age of 12 should not visit.
- All visitors must wash their hands before entering or leaving a patient's room to reduce risk of infection. Use soap and water in the patient room or the alcohol-based hand sanitizer near the door.
- Please do not visit if you are ill.
- We ask that visitors are limited to 2 at a time.
- Isolation precautions must be followed. If there is an isolation sign on the patient's room door, see the patient's nurse before entering the room.
- If you have an adult visitor who plans to stay overnight, talk with the nurse. They may have to sign in at the nurse's station as an overnight guest. Only 1 adult is able to stay overnight.
- Visitor policies may change based on patient health and safety needs.

## Do not leave the unit

For your safety, we ask that you **stay on the nursing unit**, unless you are being taken to a test or procedure.

- If you want to leave the nursing unit for any reason, be sure to check with your nurse each time before you leave.
- Please return to the unit within 15 minutes. Let the nurse know when you return to the room.

## Be a partner in your care

- **Be sure to tell your nurse right away if you feel sicker or have a new pain or problem, or if you feel something is just not right.**
- Ask if you have questions or concerns. Please ask if anything is different than what you were told to expect.

- Ask a family member or friend to be with you and to be your advocate. They can be an extra set of eyes and ears to watch and hear about your care to help you understand.
- Be sure to share all your health concerns and treatments with your doctor and care team. You may not think it is important, but it may help us to give you the safest care. Sharing information about your health once is often not enough. Many people may be involved in your care and you may need to let them know about you to help keep you safe.
- Be sure you get the results of any test or procedure. Ask your doctor or nurse when and how you should get the results.
- Make sure you, all your visitors, and anyone giving you care practice good hand cleaning. It is the best way to protect you from getting an infection.
- Look at medicines you are given to be sure they are correct and the right amount. If you are not sure what medicines you are being given, ask what they are and what they are for.
- Tell the staff if you are given food or drinks that you are not supposed to eat.
- If your ID wristband comes off, please let the staff know, so it can be replaced. You will be asked your name and your ID should be checked before you get medicines and some treatments.
- Learn what you can about your care. Asking a question again is never a problem when safety and your health are at stake.

Refer to the **Patient and Visitor Guide** for more information.

## Use the call light to ask for help to get up

**We will help you to get out of bed, so you do not fall.** Medicines that you take, some treatments, and just being in bed more can cause you to be weak and may cause dizziness. Cords and lines from equipment being used for your care can get pulled or trip you.

- **Always call us to get out of your bed or chair, or to go to the bathroom.** Please wait for your care team to come help you.
- If something is not close to you, use your call light to ask staff for help. Many patients fall when they are reaching for something.
- Never lean on or use an IV pole for support when you are walking.
- You will be taught how to use your walker to help you get around.

## Diet

You will progress to a regular diet, unless you are having nausea. Protein, calories, and fluids will help you heal and recover more quickly.

## IV fluids and antibiotics

- You will receive fluids into your veins through the IV after surgery. The IV will stay in place until you are eating and drinking fluids after surgery.
- When you are able to eat, your IV will be capped off, so you will not need to have the tubing attached at all times.
- You can expect to receive antibiotics to prevent infection for the first day after surgery. Most patients will not be given antibiotics to take at home.

## Incision

- Your incision may have staples, sutures, absorbable sutures, or glue.
- If you have sutures or staples, they will be removed in 2 to 3 weeks.
- Your incision will be covered with a dressing.
- Your nurses will teach you and your caregiver how to care for your incision at home.

## Preventing blood clots

During and after surgery, your limited ability to walk and move around can cause your blood circulation to be sluggish or slow and blood clots can develop. To prevent blood clots, your treatment may include:

- **Compression wraps on your legs.** These wraps attach to a small pump that pumps air in and out to increase the circulation in your legs. They will gently squeeze and relax while you are in bed to prevent blood clots. Keep them on whenever you are lying in bed during the hospitalization.
- **Medicine,** called an anti-coagulant or blood thinner.

## Bed exercises in the hospital

Therapists will visit you in your room. They will assist you to sit on the edge of the bed and teach you how to stand and use your walker. They will give you a list of exercises to do, show you how to do them, and tell you how often they should be done.

These exercises will help you stretch and strengthen your muscles and are an important part of your rehabilitation.

## Using your chair to have your meals

- In the days after surgery, staff will get you up to sit in a chair to have your meals. This is part of your therapy and ordered by your surgeon.
- Remember: **DO NOT get out of bed for any reason without a staff member helping you.**

# Managing Pain

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You can expect to have pain around your incision. You may also have pain and soreness in other areas of the body due to positioning during your surgery. There are many different ways to manage pain after surgery. The goal is to keep the pain down to a level that you are able to take part in activities such as bathing, walking to the bathroom, and therapy, and to rest and sleep.

## Pain control after surgery

Pain medicines do not work the same for everyone and it can take time to find what works best for you. The nurses will monitor your pain and your response to pain medicine, and contact your doctor as needed. Try to be patient as they work to find the best medicine combination for you. The first few days after surgery can be hard, but the pain does go down as you recover.

If you are having pain, please talk to your nurse and they can tell you what medicines you have taken, what options are available, and when you can take them next.

- You will be asked about your pain often. You will be asked to rate your pain on a scale of 0 to 10 with 0 being no pain and 10 being the worst pain.
- Your doctor will order medicine to help control your pain. Taking your pain medicine as ordered by your doctor will bring you the most relief as your body heals.
- You may need to take your pain medicine before your exercises or activity to improve your recovery.
- Our goal is to get your pain level to a 4 to 6 out of 10, so you can work with therapy.
- You will have pain after surgery. It will be more the first 1 to 2 weeks. We will prescribe medicines to help control pain, but you will still have mild pain after taking medicines.
- We will provide prescriptions for medicines at discharge, including pain medicines. If you need a refill before your 2 week visit, please call the office. We are unable to refill prescriptions on the weekend or at night.

## Non-Drug Pain Control

Many patients find using other treatments helps to reduce the need for pain medicines. Some of these options may include:

- Activity:** Start moving as soon as possible after surgery if your doctor says it is okay. Moving helps your breathing and digestion, and helps you heal faster. Moving and being active can help lessen pain over time.
- Cold:** Cold can help lessen some types of pain. Talk to your surgeon if this is recommended for you.
- Deep breathing:** Taking slow, deep breaths can help you relax and lessen pain.

- ❑ **Distraction:** Focus your attention on something other than pain. Playing cards or games and talking and visiting with family may relax you and keep you from thinking about the pain. Watching TV or reading may also be helpful.
- ❑ **Music:** Whether you listen to music, sing, hum, or play an instrument, music can help you relax and help you breathe more deeply and slowly. It can also increase your energy and help change your mood.
- ❑ **Aromatherapy:** Uses essential oils to help support emotional, physical, or spiritual well-being. People who use aromatherapy may use oils in different ways, such as breathing in essential oils by using a room diffuser. Some use them with other products on the skin.
- ❑ **Relaxation techniques:** Stress and anxiety can make pain worse and may slow healing. Since it is hard to avoid stress, it can help to learn how to control it. Some ways to help you relax:
  - Use extra pillows and blankets to stay in a comfortable position.
  - Make sure the room is the right temperature for you.
  - Ask your support person to massage your back, hands, or feet to lessen your pain.
  - Try placing a cool cloth on your hands or face.
  - Close your eyes and imagine yourself in a place you find relaxing. Think about sounds or sights that you enjoy.

### Relaxation Resources

- Listen to free audio recordings for guided imagery, mindfulness practices, and relaxation techniques at [wexnermedical.osu.edu/integrative-health/resources](http://wexnermedical.osu.edu/integrative-health/resources).
- Books and compact discs (CDs) of relaxation exercises can be found at libraries or bookstores.
- You may find apps for your electronic device, such as your phone or tablet.

## Talking about your pain

**Tell your healthcare team as much as you can about your pain.** Share with them:

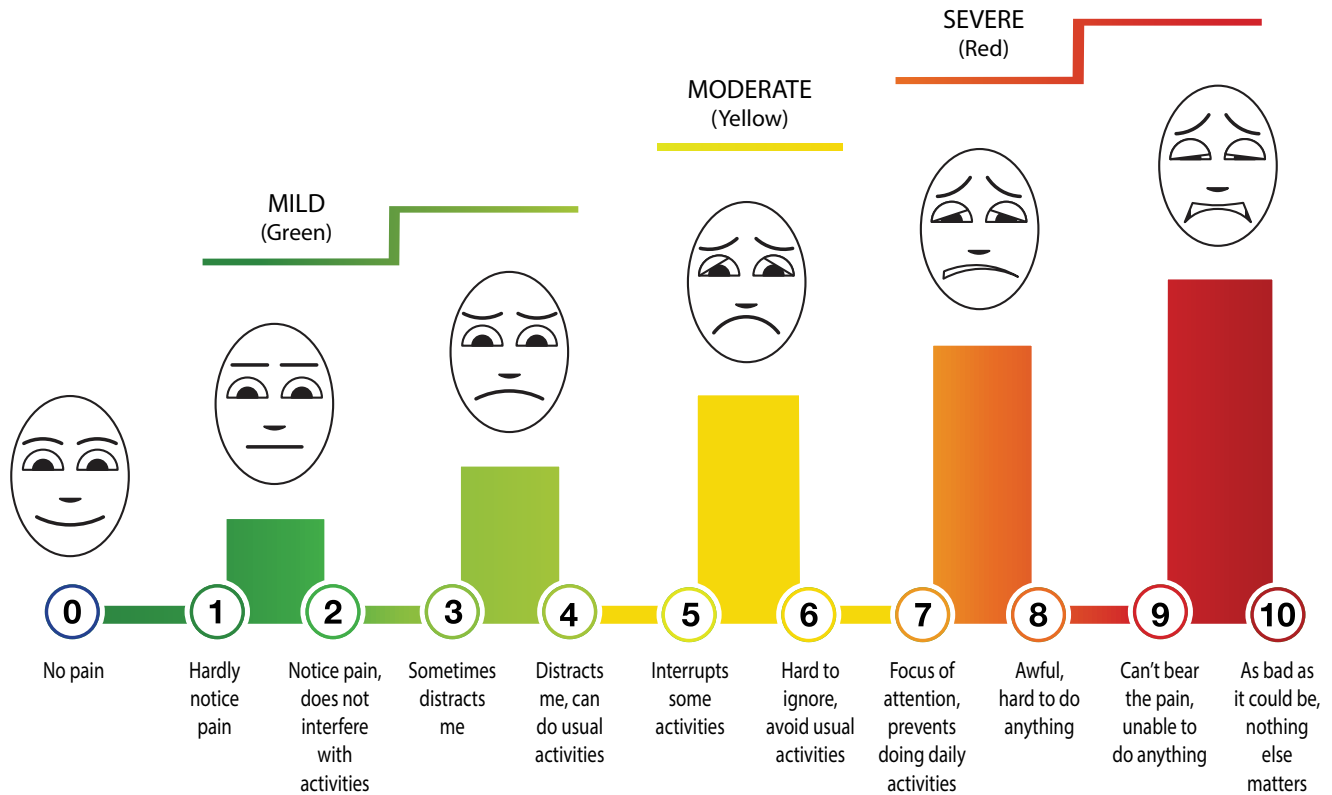
- **Location:** Where does it hurt?
- **Intensity:** How strong does the pain feel?
- **Duration:** How long do you feel the pain? How often does the pain occur?
- **Causes:** What makes the pain worse?
- **Relief:** What helps the pain?
- **What the pain is like:** Is it burning? Sharp? Dull? Stabbing? Spasms? Aching?

## Pain rating

How do you experience pain? Pain is personal and different for each person. We will ask you to use a pain rating scale to help us understand your pain and to set goals for pain control. You will be asked about your pain often. **Any time you have pain, tell your healthcare team.**

Use the scale and choose the number (0 to 10), description, or face that best matches the pain you feel now.

## Defense and Veterans Pain Rating Scale



Defense & Veterans Center for Integrative Pain Management v 2.0

## Pain medicine policy

**Pain management is important for your recovery. We want you to know about our policy on prescription pain medicines.**

- Your primary care doctor is responsible to manage your pain until surgery.
- If you have been on narcotic treatment for pain before surgery, your pain will likely be more difficult to control after surgery. Talk to the doctor who has been providing your narcotic medicine about reducing or eliminating your narcotic use before surgery.
- Patients treated by our neuromodulation surgeons may only receive narcotic pain medicine from 1 provider.
- After surgery, you will be given a prescription for pain medicine, based on your surgery.
- Our surgeons will manage your pain for about 2 weeks, depending on your surgery.
- If you have a pain management provider, you will return to that provider for follow up in about 1 to 2 weeks, depending on the type of surgery you had.

## Pain after returning home

- Our goal is to get your pain level to a 4 to 6 on a 10 point scale so you can work with therapy.
- You will have pain after surgery. It will be more the first week. We will prescribe medicines to help control pain, but you will still have mild pain after taking medicines.
- We will provide prescriptions at discharge for medicines, including pain medicines.

## Pain medicine refills

- Pain management will be addressed during your office or clinic visits.
- Be sure we have your correct pharmacy information. Only 1 pharmacy can be used for your pain medicine refills.
- **Ohio law does not allow more than a 7 day supply** of narcotic pain medicine.
- Should you need a refill between office visits, you will need to **allow 48 hours** for this to occur.
  - Under no circumstances will your prescription be refilled on a walk in basis in clinic or during weekend hours.
  - **You must call during clinic hours only, and before noon on Fridays.**
  - We do not refill prescriptions at night, on holidays, or over the weekend.
- Prescriptions are most often sent electronically to the pharmacy. In some cases, you will need to either pick up the hand written prescription at the office or the prescription may be mailed to you.
  - If your prescription is lost or stolen, a police report would be required to issue a new prescription.
  - If a prescription gets mailed and gets lost in the mail, we will not issue a new prescription.

## Risks of narcotic medicines

- Nausea or upset stomach
- Constipation
- Sexual dysfunction
- Depression
- Fatigue
- Increased sensitivity to pain
- Addiction and drug tolerance

## Help for constipation

- Drink plenty of fluids, unless you need to limit fluids for another reason.
- Include high-fiber foods in your diet each day. These include fruits, vegetables, beans, and whole grains.
- Get at least 30 minutes of exercise on most days of the week. Walking is a good choice.
- Take a fiber supplement every day. Read and follow all instructions on the label.
- Your doctor may recommend an over-the-counter laxative. Read and follow all instructions on the label. Do not use laxatives on a long-term basis.

If you have questions, please contact your surgeon's office.

# Home Care Instructions

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## Incision care

Most incisions are closed with skin glue or sutures or staples.

- Check your incisions at least 2 times each day for signs of infection. Contact your surgeon's office if you have:
  - Fever greater than 101 degrees F (38.3 degrees C)
  - Drainage from the wound
  - Opening of the wound
  - Increased redness and/or tenderness
- You have a bandage, also called a dressing. Change the bandage each day for 5 days starting on day 2 after surgery (day of surgery is day 0).
  - Use a sterile 4 X 4 gauze with paper tape or island dressing.
  - Always wash your hands before changing your dressing to help stop infection.
- If you have Steri-Strips, allow them to fall off on their own. If they haven't fallen off in a week, have your support person wash their hands and then peel them off.
- If you have sutures or staples, you will need to return to the office 10 to 14 days after surgery to have them removed. This may be done by a visiting nurse, family physician, or at the facility you are at for rehabilitation.
- The skin glue will look shiny and it sometimes will stick to your clothes. Cover it with a dry gauze pad and secure with tape as needed to prevent irritation.
- Check your skin often for signs of redness or swelling. Tell your doctor if you have more pain, numbness or tingling, or redness that does not go away.
- You may apply an ice pack to the surgery site for 20 minutes 3 times a day for comfort and to reduce swelling, if your surgeon recommends it. It is not recommended that you use heat or a heating pad after surgery.
- If you received an abdominal binder after surgery, please wear this when you are out of bed for 1 month.

## Showering

- Keep your wound clean and dry.
- You may be able to shower 3 days after surgery, if your wound has been dry and without drainage for at least 48 hours.
- When you are allowed to shower is up to your surgeon. Please refer to your After Visit Summary you receive at the time of discharge.
- You can wash your hair while you are in the shower.
- Keep your incision dry and out of the direct stream of water for the first 3 weeks.
- After your shower, pat the wound dry.

- Do not submerge your incision in a hot tub, bathtub, or pool until you are told it is okay.
- Do not sit down into a bathtub, pool, or hot tub for 6 to 12 weeks or until cleared by your surgeon.
- Have someone help you the first time you bathe at home.
- You may sponge bathe at the sink until you are comfortable or have help to shower.
- If you have a walk-in shower or tub shower, you may stand and shower as long as you feel steady and balanced.
- If you need to sit to bathe, you will need a shower bench. Make sure the shower bench is placed firmly in the tub. Have someone adjust the height of the shower bench, so it is as tall as it can be to allow you to rest your feet on the floor of the tub when you are sitting.
- Always be sure to turn on the cold water first to avoid burning yourself.
- Have a secure place for your soap to not drop it. Try soap on a rope or a deep soap dish.
- For easier reaching, it may be helpful to use a long handled sponge or bath brush, and a portable shower hose.
- You may not participate in scuba diving, use hot tubs, or use saunas after implantation of a pain pump/baclofen pump.

## Medicines

- Prescribed medicines should be taken only as directed. Take all medicine with food in your stomach unless otherwise directed. If you experience any abnormal reaction to the medicine, discontinue the medicine and contact our office.
- As your pain lessens, you should decrease the amount of pain medicine you are taking. We suggest you substitute the narcotics with over-the-counter Tylenol as your pain lessens.
- Do not stop taking your narcotics abruptly since this may cause withdrawal side effects.
- Narcotic pain medicines will not be refilled after normal working hours (8:30 a.m. to 4:30 p.m., Monday through Friday) or on weekends. Please allow 24 hours for refill of any medicines.
- Do not drive while taking narcotic medicines.
- Do not drink alcohol beverages while taking prescription pain medicines.
- You should resume the medicines you were taking before surgery after you get home, unless otherwise instructed. If you have any questions regarding these medicines, please contact your doctor.
- If you are prescribed stool softeners, take them as directed.

## Prevent blood clots

- Do your exercises every hour.
- You may be given a prescription for an anti-coagulant, also called a blood thinner, to prevent blood clots from forming. This medicine is often taken for 30 days, but your doctor will decide how long you need to take it.
- While you are on anti-coagulant medicine, do not take more aspirin or products with aspirin than what you are told by your doctor.

## Dental care after surgery

- It is best to avoid elective dental work for a period of time after surgery. Please ask your surgery team for recommendations.

## Waterbeds

- Do not use a waterbed after surgery until your doctor approves.

## Activity

- DO NOT lift over 5 pounds for 2 weeks after surgery.
- Limit bending or twisting.
- DO NOT do light activities, such as housework or sexual activity, for 2 weeks.
- DO NOT do heavy activity, such as jogging, swimming, or exercise classes, for 4 weeks.
- Avoid long periods of sitting upright on hard surfaces or car rides (more than 2 hours) for 2 to 4 weeks.

## Sitting

- Avoid sitting longer than 30 to 60 minutes at a time. Get up often to walk and change your position.
- During long car trips, stop every 30 to 60 minutes to get out of the car and move around. These breaks prevent stiffness and swelling, which could cause blood clots to form.

## Recommended activities

- **Exercises taught by your physical therapist and walking** are good activities to start.
- Do not do any sports until you have your doctor's okay. Talk to your doctor about the sports you may be interested in.
- Do not use exercise equipment, whirlpools, or spas until approved by your doctor.

## Sexual activity

- Many patients are concerned about safe positions for sexual intercourse following surgery.
- It may take several weeks before you feel ready for sexual activity. Do NOT resume sex until cleared by your surgeon.
- A few tips before engaging in sexual activity:
  - Take a mild pain medicine about 20 to 30 minutes before sex. This can help prevent minor aches. Avoid taking medicines so strong that they mask your pain.
  - Have pillows and rolled towels nearby. They can be used for body support.
  - Relax. Do a few easy stretches within a safe range of motion.
  - Communicate. Your partner should know about any precautions you may have. Be open with your partner about your level of comfort, your concerns, and your anxieties.
  - Patient on bottom and partner on top is typically safest after neuromodulation surgery.

## Call your doctor right away

As your incision heals, check it every day. Please report any of these signs to your surgeon's office:

- Bleeding, drainage, redness, or swelling from your incision area.
- Severe swelling in the arms or legs.
- Feeling of flu-like symptoms. These are nausea, general body aches, or temperature over 101 degrees F (38.3 degrees C) for longer than 24 hours.
- Severe headache associated with vomiting or light sensitivity.
- Any change in sensation of your arms, hands, legs, or feet (e.g., increase in numbness, tingling, and pain).
- Any loss of bladder or bowel control.
- Urinary tract infection, such as a fever, burning when urinating, or needing to urinate more often.
- Increased leg pain, swelling, warmth or redness, increased heart rate, shortness of breath, or chest pain).
- Not able to walk on your heels or toes, numbness/tingling, weaknesses of the arms or legs, or loss of bowel or bladder control.

**If you experience pain, swelling, and/or redness behind your knees or calves, go to your nearest emergency department as these can be symptoms of a blood clot in your legs.**

**CALL 911 or go to your nearest emergency department if you: have shortness of breath, are not able to swallow, or have chest pain.**

# Nutrition and Wound Healing

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## To help your wounds heal, follow these healthy behaviors

### Increase the amount of calories that you eat

- Talk to your healthcare provider about the amount of calories you should eat.
- Eat 4 to 6 small meals a day.
- Eat a variety of healthy foods to support wound healing. Your healing body needs: protein, the amino acid L-arginine, vitamin A, vitamin C, and the mineral zinc. A balanced diet naturally contains these nutrients.

### Increase your protein intake

- Your body needs extra protein to heal.
- Eat foods rich in protein with every meal and snack.
- Good sources of protein include: meat, poultry, fish, eggs, dairy, beans, nuts, and soy foods.
- **Eat at least 2 to 3 servings each day.** A serving equals 2 to 3 ounces of meat, 1 cup of cooked beans, 1 egg, or 2 tablespoons of peanut butter.
- Protein supplements, like ready-to-drink nutrition beverages, can help you get enough protein. Ask your provider for recommendations.

### Get enough of the amino acid L-arginine

- L-arginine helps your body make protein.
- Good sources of L-arginine include: fish, red meat, poultry, pork, soy, whole grains, beans, and dairy products. The best sources are meat like poultry and pork.
- Most patients get enough L-arginine if they **eat at least 2 to 3 servings of protein a day.**

### Get enough vitamin A

- Good sources of vitamin A include: eggs, sweet potatoes, carrots, peas, broccoli, kale, spinach, collard greens, liver, pumpkin, winter squash, cantaloupe, apricot, papaya, and mango.
- **Eat at least 1 serving a day.**

### Get enough vitamin C

- Good sources of vitamin C include: citrus fruits, orange juice, tropical fruits, such as guava, papaya, and mango, red and green peppers, broccoli, spinach, collard greens, strawberries, tomatoes, and peas.
- **Eat at least 1 serving a day.**

### Get enough of the mineral zinc

- Good sources of zinc include: meat, poultry, some seafood, like lobster and crab, liver, eggs, milk, whole grains, tofu, and fortified cereals.
- **Eat 1 to 2 servings a day.**

## Ask your provider if you need to take supplements to support wound healing

- For most patients, eating a balanced diet naturally provides enough nutrients. In some cases, your provider may recommend that you take an L-arginine or zinc supplement.
- After your wound has healed, talk to your provider about taking a daily multivitamin for your age and gender.

## Drink plenty of fluids unless directed otherwise by your provider

- Drink at least 64 ounces a day. Remember to drink a glass of water or milk with each meal and snack to get enough fluids.

## Manage your blood sugar

- High blood sugar makes it harder for your wounds to heal. Check your blood sugar level as directed if you have diabetes or if you have a history of high blood sugar.

## Sample menu to support wound healing

Meal or Snack	Food
Breakfast	2 scrambled eggs cooked in 1 teaspoon olive oil
	1 to 2 slices whole wheat toast with 1 teaspoon butter
	1 cup sliced strawberries or orange
Snack	1 container Greek yogurt with less than 10 grams of sugar
Lunch	½ sandwich with:
	3 ounces baked meat or poultry
	1 slice cheese
	Tomato, onion, and lettuce
	1 teaspoon lite mayonnaise
	1 cup sliced vegetables, such as bell peppers and carrots with:
	¼ cup hummus
1 small orange	
Snack	1 cup cottage cheese
	½ cup pineapple chunks
Dinner	4 ounces beef chuck roast
	1 cup cooked broccoli with 2 teaspoons olive oil or butter
	1 medium baked sweet potato
Snack	¼ cup any type of nuts
	1 cup diced cantaloupe

This sample menu may not meet all of your calorie, protein, vitamin, and mineral needs for your age, gender, medical condition, and the severity of your wound. **Please discuss your diet and supplements with a dietitian or other healthcare provider.**

# Other Important Information

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## Short-term disability or Family Medical Leave Act (FMLA) paperwork

- We will gladly complete FMLA or short-term disability forms to cover the period right after your surgery.
- As the patient, you are responsible for obtaining the needed documents from your employer to provide to our office.
- Please allow 10 business days for our office to complete these forms. We also ask that you provide as much information as possible when you fax or drop off paperwork to the office.
- Please be sure to provide the best phone number to reach you, in case we have questions about your paperwork.
- You may also attach the FMLA paperwork as an attachment to an Ohio State MyChart message if you use MyChart.

## Contacting your surgeon and care team

- Office hours are Monday through Friday 8 a.m. to 4:30 p.m.
- Call 614-293-8714, fax 614-293-4281, or send a MyChart message to your surgeon.
- If using MyChart:
  - Do not use MyChart for emergencies.
  - Allow up to 72 hours for a response from the care team.
- If calling over the weekend:
  - You may be called by a resident physician.
  - It may take several hours for your call to be returned.

## Long-term disability or Workers' Compensation

If you need long-term disability forms, work capacity forms, or determination of permanent disability, we suggest that you are seen by Occupational Medicine.

- Proper completion of the paperwork needs a special set of skills and knowledge of the disability guidelines.
- Incorrect completion of the forms could impact your case in a serious way.

**If your case is covered by Workers' Compensation/Bureau of Workers' Compensation(BWC), our surgeons will not serve as your "physician of record." After a work injury, you should already have a doctor of record who will not change.**

# It takes us all to stop a fall

Your safety is very important to us while you are in the hospital. By knowing your risks, we can create a plan to keep you from falling. Following these actions will help us work to keep you safe!

## Call for help

- Use the call light to ask for help before you get up or start to walk.
- If something isn't close to you, use your call light to ask staff for help. Many patients fall when they're reaching for something.
- Please wait for your care team to come help you.

## To keep you safe

- Avoid slips and trips – watch out for items on the floor.
- We may need to stay with you in the restroom for your safety.
- Your nurse or PCA will check on you regularly. This is a great time to use the restroom, even if you don't feel the need to go at the time.
- Use your glasses, walker or cane to move around safely.

Some falls may only cause bumps and bruises, but some can lead to serious problems such as broken bones, head injuries or bleeding.

If you're at an increased risk of falling in the hospital, staff may need to be with you when you stand and walk.

## Risks for falling:



Certain medicines



Numbness or tingling in feet



Had a recent fall



Attached to an IV



Forgetful or confused



Recent surgery



Use the restroom often



Dizziness or low blood pressure



Unsteady on your feet



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