



Spine Program

Spine surgery patient education handbook

Table of contents

- 1 Welcome to the Inova Spine Program**
- 2 Patient resources**
- 3 Understanding the spine**
- 4 Risk factors and complications of spine surgery**
 - 4 Controlling risk factors
 - 4 Possible complications following spine surgery
 - 4 Blood clots
 - 4 Nerve damage
 - 4 Infection
- 5 Preparing for surgery**
 - 5 What you need to know before surgery
 - 5 Medications to avoid
 - 5 Home modifications and recovery needs
 - 7 Quitting smoking
 - 5 Dental care
 - 5 Patient-reported outcome surveys
- 6 Pre-surgical appointment and information packet**
 - 6 Inova Pre-Procedural Evaluation Clinic appointment and hospital contacts
 - 6 Enhanced Recovery After Surgery (ERAS) approach
- 7 Spine pre-surgical checklist**
- 8 Pre-surgical skin preparation instructions**
- 9 Incentive spirometer**
- 10 Common medication side effects after surgery**
- 11 Post-surgical pain management**
- 12 Expectations and planning for going home after your spine surgery**
 - 12 Length of stay expectations in the hospital after surgery
 - 12 Care companion after surgery
- 13 Hospital stay**
 - 13 Hospital registration and admission: pre-operative department
 - 13 When you wake up: post-anesthesia care
 - 13 Recovery in the hospital
 - 13 Hospital visitation guidelines
- 14 Post-operative mobility**
 - 14 Spine precautions
 - 14 Physical and occupational therapy
 - 14 Activity expectations
 - 14 Minimum activity recommendations
 - 14 Wearing your brace
 - 15 Post-surgical movements and safety
 - 15 Getting into/out of car
 - 15 Getting in/out of bed
 - 16 Bending, lifting, twisting
 - 16 Log roll
- 17 Recovering at home**
 - 17 Expectations
 - 17 Activities to avoid
 - 17 Activities allowed and encouraged
 - 17 Managing your pain at home
 - 18 Maintaining a well-balanced diet
 - 18 Preventing complications
 - 18 Caring for your incision
 - 18 Preventing constipation
 - 18 Preventing post-operative pneumonia
 - 18 Aspirin, NSAIDs and blood thinners
- 19 When to contact your surgeon**
- 20 Frequently asked questions**
- 20 Appendix**
 - 20 Inova Physical Therapy – outpatient locations
 - 20 Inova Comprehensive Pain Centers – locations
 - 20 Equipment options and home supplies

Welcome to the Inova Spine Program

We are honored to be your choice for spine surgery. Each year, more than 500,000 people in America undergo spine surgery. Good candidates for this type of surgery include:

- Patients with persistent pain who have not responded to other conservative therapies
- Individuals who suffer from acute pain caused by progressive neurological damage that interferes with walking, exercise, leisure, recreation or work

The goal of spine surgery is to relieve pain, restore independence and return people to their daily activities.

Inova's mission is to provide world-class healthcare – every time, every touch – to each person in every community we have the privilege to serve. Our most immediate priority is to help you have a positive experience and outcome.

Each of Inova's hospitals provides comprehensive spine care through an interdisciplinary team of skilled professionals. Our team includes orthopedic surgeons, spinal neurosurgeons, spine patient care navigators, anesthesiologists, physiatrists, skilled nurses, physical and occupational therapists, pharmacists, dietitians, and case managers. The team will work together to develop and implement treatment plans tailored to your needs.

We consider you, the patient, a vital part of the healthcare team. Learn all you can about your condition. Increase your knowledge about your spine surgery. Get prepared before, during and after you transition home and into your recovery.

Our commitment to you is to provide excellent care and include you in each step of the process. To help keep this commitment, we have a team of dedicated spine patient care navigators to assist you throughout your surgical process.

We want you to have the best experience and outcome possible. As part of that effort, it's important that you understand what to expect as you prepare for your surgery. Remember, these are general recommendations only. Your spine care team may add to or change them if necessary.

Inova's mission statement

Our mission is to provide world-class healthcare – every time, every touch – to each person in every community we have the privilege to serve.

Patient resources



In addition to this handbook, the Inova Spine Program’s website includes a patient resource center with educational materials and helpful information.

You can locate the Inova Spine Program’s Patient Resource Center webpage at Inova.org/SpineResources.

You can also access the resources contained in the Inova Spine Program’s Patient Resource Center webpage using the QR code below.



On the patient resource center webpage, you will find the pre-surgical patient education video and pre-surgical patient quiz. Please watch the video and take the quiz as soon as possible. This will help you and your care team prepare for your surgery. Once you’ve completed the online quiz, you will be sent a confirmation email with the correct answers. The results will also be sent to the hospital you select in the quiz and documented in your chart.

Should you have any questions about the information in this patient handbook, please contact our spine patient care navigators. Their contact information is on the Inova Spine Program’s website in the patient resource center.

Understanding the spine

Now that you and your surgeon have decided that spine surgery is the best option for you, it may be helpful to understand more about the spine.

Spine anatomy

Cervical spine

The neck region is the cervical spine. This region consists of seven vertebrae, abbreviated C1 through C7 (top to bottom). These vertebrae protect the brainstem and spinal cord, support the skull, and allow a wide range of head movement.

Thoracic spine

Below the cervical spine are 12 thoracic vertebrae in the middle of the back, abbreviated T1 through T12 (top to bottom). T1 is the smallest, and T12 is the largest. The thoracic vertebrae are larger than the cervical vertebrae. Rib attachments add to the thoracic spine's strength and stability.

Lumbar spine

The lumbar spine consists of five vertebrae, abbreviated L1 through L5 (top to bottom). The lumbar vertebrae are the largest in the spine and carry most of the body's weight. This region allows more range of motion than the thoracic spine does but less than the cervical spine does.

Sacral spine

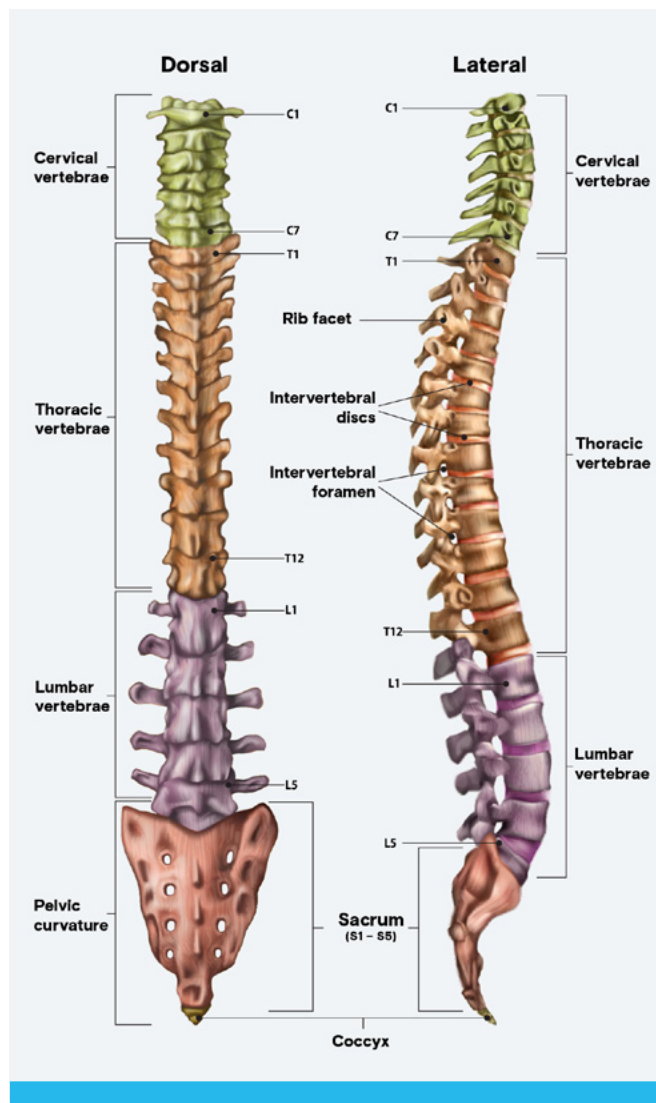
The sacrum is located behind the pelvis. Five bones, abbreviated S1 through S5 and fused into a triangular shape, form the sacrum. The sacrum fits between the two hip bones connecting the spine to the pelvis. The last lumbar vertebra (L5) articulates (moves) with the sacrum. Immediately below the sacrum are five additional bones, fused together to form the coccyx (tailbone).

Vertebrae

Each spinal vertebra is composed of many different bony structures. The vertebral body is the largest part of a vertebra.

Intervertebral discs

Intervertebral discs provide cushioning between the spine's vertebral bodies. They absorb and distribute the spinal stress you have at rest and while moving.



Risk factors and complications of spine surgery

With any major surgery, there are associated risks and potential complications. It is important that you understand the risks involved in having spine surgery, so you can better understand how to minimize those risks and prevent post-surgical complications.

Controlling risk factors

Certain health conditions, environmental factors and lifestyle choices increase the risk of complications following surgery. Conditions and factors that increase your risk for surgery include (but are not limited to):

- Obesity
- Smoking
- Heart and lung disease (e.g., coronary artery disease, COPD)
- Alcohol consumption
- Osteoporosis
- Tooth disease (e.g., periodontal and tooth decay)
- Immunosuppression by medication or disease (such as lupus or rheumatoid arthritis)
- Depression, bipolar disorder or other behavioral health conditions that require medication management
- Bleeding abnormalities or anemia
- Recent illness

While some risk factors may be unavoidable, there are many that can be addressed prior to surgery. Inova helps you optimize your modifiable risk factors through an Inova Pre-Procedural Evaluation Clinic appointment, which will be covered in the next section.

Possible complications following spine surgery

Blood clots

Blood clots, which typically originate in the lower leg venous system, can be a common complication following any surgical procedure. While most blood clots are small and minor, some blood clots can be devastating, with large clots that migrate and become emboli that can travel to the lungs, kidneys, heart and brain. Clots that travel to the lungs, known as pulmonary emboli, are the most common and can result

in sudden shortness of breath, cardiac disturbances and even death. They can occur several weeks after your procedure. To prevent the development of blood clots, it is important to get up and walk every hour. Additionally, doing ankle pumps every hour can help improve blood flow through your lower legs and feet.

To prevent clots from occurring, there are several things that you and the care team, will do in the post-operative period:

- Getting up and walking as soon as possible after surgery
- Performing ankle pumps
- Using sequential compression devices while in the hospital

Nerve damage

Nerve damage is another potentially serious complication of spinal surgery. Nerve damage can be caused by direct or indirect injury to the spinal cord. In addition, post-operative swelling around the spine and soft tissue can increase pressure on the nerve, causing tingling, numbness or weakness in the legs or arms. To assess for this, members of our team will evaluate your muscle strength and sensation in your extremities. They will also remind you to perform active range of motion exercises with your limbs.

It is important that you notify the nursing or physical therapy team immediately if:

- You experience new onset of muscle weakness
- You feel any new or sudden onset of tingling, numbness or burning pain in your limbs, as these may be signs of pressure on the nerve

In some cases, there will be a relative increase in numbness and/or tingling to a nerve after surgery because of manipulation of the nerve during surgery. These symptoms usually go away quickly.

Infection

Infection after spinal surgery is one of the greatest concerns. We follow gold standard infection prevention strategies before, during and after surgery. In addition, all spine surgery patients are prescreened for the presence of a few common bacteria (MRSA and MSSA). If the test is positive, patients are treated with special antibiotics before entering the hospital.

Preparing for surgery

What you need to know before surgery

We ask that you watch the pre-surgical education video and complete the post-video quiz, both of which you can find online at Inova.org/SpineResources, to help ensure you are fully prepared for your surgery.

In addition, this patient handbook provides you with information that will make your recovery more successful.

Medications to avoid

Your medications will be reviewed by the providers at your pre-surgical evaluation appointment. You will be advised which medications to continue taking and which medications to stop taking. If you are on a blood thinner such as warfarin, Plavix, aspirin, Lovenox, Xarelto or Eliquis, discuss it with your surgeon and primary medical team prior to stopping.

Most spinal surgeries advise against the use of nonsteroidal anti-inflammatory drugs (NSAIDs) such as Advil (Ibuprofen) and Aleve (Naproxen) **up to two weeks prior to surgery** to reduce the risk of bleeding. Speak with your surgeon about when to stop taking these medications.

Home modifications and recovery needs

It is important to consider the limitations you may face following surgery. We recommend that you have someone remain with you for the first day after returning home. Depending on the type or extent of your spinal procedure, you may need assistance with dressing care, cooking, cleaning and driving. Please plan accordingly. There is a handout in the back of this book that provides a limited list of local services that you may find beneficial during recovery, including meal preparation and transportation companies. Additionally, you should modify your home environment to ensure it is safe and practical for you following surgery.

Below are some tips for home modifications:

- Place all daily bathroom and kitchen items within easy reach and higher than waist level

- Remove all throw rugs, electrical cords or wires that may cause you to trip or fall
- Rearrange furniture to create more open and wide walking pathways in the hallways and rooms
- Place a nonslip mat on the bottom of the shower or bathtub
- Check the stair rails to ensure they are secured and safe to use

Quitting smoking

Smoking before or after surgery can be extremely harmful to your health. Smoking significantly increases your risk for post-operative complications such as pneumonia, surgical site infections, heart attacks and stroke. The effects of these complications can be serious and even fatal. Therefore, we encourage patients to stop smoking, both before and after surgery. The earlier you quit, the greater your chances of avoiding surgery-related complications. Inova offers services for those seeking assistance with smoking cessation. For more information on these programs, refer to the resources section of Inova.org/SpineResources.

Dental care

If you have not had a dental checkup within the last six months, you should schedule now, before your preadmission testing. Dental checkups can help identify any potential dental infections or gum disease. Additionally, having dental work too soon after surgery could potentially allow bacteria from the mouth to enter the bloodstream and settle into surgical areas, causing complications such as infection.

Patient-reported outcome surveys

Inova participates in the American Spine Registry, a national database that collects post-operative outcomes of spine patients to improve care. The submitted data will be deidentified, which means any personal information that could be used to identify you is removed. You will receive surveys at standard intervals, beginning with your pre-operative baseline assessment of function. Please help us in continuing to improve the care of spine surgical patients by completing these surveys when you receive them.

Pre-surgical appointment and information packet

Inova Pre-Procedural Evaluation Clinic appointment and hospital contacts

To contact the Inova Pre-Procedural Evaluation Clinic (PEC) with any questions, visit the Inova Spine Program’s website to access the phone numbers in the “Contact Us” section. These phone numbers can change over time, and the website will have the most current contact information.

Your PEC contact information:

Enhanced Recovery After Surgery (ERAS) approach

ERAS is a multidimensional approach designed to improve your recovery. Information about ERAS will be provided at your pre-procedural evaluation in the PEC.

Elements of ERAS include evaluating the patient prior to surgery, pre-operative education, early mobility and multimodal pain management.

Your evaluation and treatment plan will be provided by a licensed practitioner and reviewed by your surgical team. Your PEC evaluation will include:

- Assessment of your overall health status
- Review of your medications
- Pre-operative testing and labs
- Review of your nutrition status
- Assessment of additional needs

At this appointment, you will receive an ERAS pre-surgical packet containing the following items:

- **Hibiclens antimicrobial soap (4% chlorhexidine gluconate [CHG])**
Hibiclens CHG solution kills most germs on your skin and reduces the risk of infection at your body’s surgery site.



- **An incentive spirometer**
An incentive spirometer is used for breathing exercises after surgery to prevent the development of post-operative pneumonia. You will be shown how to use it in the hospital. There are also detailed instructions in this handbook and at Inova.org/SpineResources.



Spine pre-surgical checklist

Pre-operative evaluation

- Obtain medical clearances if necessary (from cardiology, pulmonology, etc.)
- Get MRSA/MSSA screening
- Attend PEC appointment
- Complete pre-operative testing (as ordered by your primary care provider or in the PEC appointment)

Pre-operative education

- Watch the pre-surgical spine education video: Inova.org/SpineResources
- Take the post-video quiz: Inova.org/SpineResources

Patient-reported outcomes

- Complete your baseline patient-reported outcomes survey

Other preparation tasks

- Remove all nail polish
- Place all daily bathroom and kitchen items within easy reach and higher than waist level
- Remove all throw rugs, electrical cords or wires that may cause you to trip or fall
- Rearrange furniture to create more open and wide walking pathways in hallways and rooms
- Place a nonslip mat on the bottom of the shower or bathtub
- Check the stair rails to ensure they are secured and safe to use
- Arrange for pet care, if needed (you may not be able to bend over to fill a food bowl, clean a litter box, etc.)
- Consider adding grab bars in your shower for safety

The night before surgery

- Take your second shower using the CHG solution as instructed
- Do not eat anything after 11 p.m. (you may drink clear liquids up until four hours prior to your surgery time)

The morning of surgery

- Take your third and last shower using the CHG solution as instructed
- Remove all jewelry and body piercings
- Arrive two hours prior to your scheduled surgery time

Bring to the hospital

- Driver's license or state-issued picture ID
- Health insurance card and insurance copay (if applicable)
- Advance directive, living will or durable power of attorney
- Current medication list
- Current allergy list
- Imaging (e.g., X-rays or MRI scans)
- CPAP settings (Inova prefers to use Inova CPAP machines in the hospital; can accommodate personal devices if requested)
- Preissued neck or back braces
- Clothing (loose-fitting, elastic/stretchy, comfortable) and well-fitting, rubber-soled shoes and/or slip-on shoes
- Eyeglasses, hearing aids, dentures, etc., with storage cases
- Cell phone charger

Do not bring to the hospital

- Jewelry, money (unless needed for copay) or any other valuables
- Medications from home (unless otherwise instructed by your care team)

Pre-surgical skin preparation instructions

To reduce your risk of infection at the surgery site, it is very important to clean your skin at home with a special germ-killing cleanser before surgery. Follow the instructions below to safely clean your skin with 4% chlorhexidine gluconate (also known as CHG).

Where to find CHG

If you are seen in Inova's PEC, you will be provided with CHG. Otherwise, you can purchase CHG solution at your local pharmacy. Ask the pharmacist for assistance. You do not need a prescription to buy CHG antimicrobial solution. Some brand names for CHG are Hibiclens, Hibistat, Exidine and Hex-A-Clens.

You will need two to four ounces of the solution for each shower.

CHG cautions

- If redness or skin irritation occurs from using CHG, stop using the solution and contact your surgeon.
- Do not apply CHG to your face, hair or genitals.
- Only use the CHG solution in the shower. Do not use it in a bathtub. If it is not possible for you to shower, contact your surgeon's office for further instructions.

CHG and hair removal

- CHG may irritate recently shaven skin. Do not shave or use hair removal products for 24 hours prior to surgery.
- If you choose to shave before the 24-hour window, please shave before applying the CHG solution to avoid skin irritation and hair clippings sticking to your skin.
- If hair removal is necessary for your procedure, it will be done by the surgical team in the operating room.

How to use CHG at home

- Use the CHG solution in the shower. Do not use in a bathtub.
- **Use CHG two evenings before your surgery and on the morning of your surgery, for a total of three showers at home.**

How to clean the skin with CHG solution

1. For your first evening shower, wash yourself with your regular soap and shampoo.
2. Before applying the CHG solution, ensure that you have completely rinsed the regular soap and shampoo from your hair and body.
3. With the shower water turned off, apply the CHG solution to your body with your hands. Avoid your face, hair and genitals.
4. Clean the surgery site for about three minutes. If you cannot reach the surgery site, have someone help you. Ensure that person has thoroughly clean hands.
5. Once you have finished applying the CHG to your skin and three minutes have passed, turn the water back on and rinse the CHG solution off your body.
6. Completely dry the skin with a fresh, clean, dry towel.
7. Do not use lotions, powders, perfumes or deodorants.
8. Dress in fresh, clean pajamas or clothing.
9. Repeat the process outlined above for your second evening shower.
10. For the shower taken on the morning of your surgery, follow the instructions above but **do not use** regular soap or shampoo – only use the CHG solution.

If you have questions or concerns prior to your procedure, speak with your surgeon.

Incentive spirometer



An incentive spirometer is a device that helps patients breathe deeply after surgery. After surgery, a combination of anesthesia and pain medications can make you drowsy, leading to shallow breathing. Additionally, you are likely to have some pain. When people experience pain, they may hold their breath or be hesitant to take deep breaths.

Using your incentive spirometer will help expand the lungs, prevent pneumonia and improve lung function by:

- Keeping the lungs clear
- Strengthening the muscles used in breathing
- Preventing respiratory issues

Using an incentive spirometer

When using your incentive spirometer, remember you are pulling in through your mouth. It will not work if you blow into it or breathe through your nose. Follow the instructions below for proper use. If you feel dizzy at any time, stop and rest. Try again later.

1. Sit upright and hold the incentive spirometer at eye level. Breathe out (exhale) normally. Then, breathe in (inhale) normally. Relax and exhale.
2. Hold the device upright and not tilted. Place your lips tightly around the mouthpiece. Slowly exhale fully.
3. With your lips sealed tightly around the mouthpiece, inhale slowly and deeply through your mouth. As you take a breath, you will see the piston or disk rise inside the large chamber. Hold your breath long enough to keep the object raised at the targeted volume for three to five seconds. After three to five seconds, exhale slowly through your mouth. Rest for a few seconds.
4. Repeat the exercise 10 times every hour. You may split the exercises up to avoid hyperventilating.
5. After each set of 10 breaths, try to cough. Coughing will loosen or clear any mucus in your lungs.
6. Repeat these steps every hour that you are awake, or as instructed by your healthcare provider.

Note: Some spirometers have an indicator to let you know if your breathing is effective. If you are breathing too fast, the indicator will rise above the indicated level. If you are breathing too shallowly, the indicator will not rise at all.

For a demonstration of how to use an incentive spirometer, watch the video on the spine patient resources webpage: [Inova.org/SpineResources](https://www.inova.org/SpineResources).

Common medication side effects after surgery

Antacids

Used to minimize acid and protect the stomach

- Headache
- Loose stools
- Upset stomach

Antacid supplements and/or medications:

Antibiotics

Used to fight infection

- Allergic reactions
- Loose stools
- Stomach pain
- Upset stomach

Antibiotic medications:

Antinausea medications

Used to minimize acid and protect the stomach

- Dizziness
- Headache
- Profuse sweating
- Uneasy feeling in the chest or queasiness
- Uneasy feeling in the stomach

Antinausea medications:

Constipation medications

Used to prevent constipation

- Confusion
- Dizziness
- Drowsiness
- Dry mouth

- Stomach cramps
- Upset stomach
- Loose stools

Constipation medications/stool softeners:

Muscle relaxant medications

Used to reduce muscle spasms

- Confusion
- Dizziness
- Drowsiness
- Dry mouth

Muscle relaxant medications:

Pain medications (opioids)

Used to reduce pain

- Confusion
- Constipation
- Dizziness
- Drowsiness
- Nausea

Pain medications:

If you experience minor side effects, do not stop taking **any** medication(s) without first consulting the prescribing physician.

Call 911 or visit the nearest emergency room if you experience serious side effects such as trouble breathing or severe confusion.

Post-surgical pain management

Pain is expected after spine surgery. While we cannot eliminate your pain, our ERAS program treats pain using a variety of approaches aimed at reducing your pain to tolerable levels that allow you to continue your activities of daily living.

Types of pain management

The most effective approach to managing pain includes a combination of therapies.

Oral medications

- Acetaminophen
 - Frequently used to help decrease the need for opioids
- Nerve pain medications (gabapentin, Lyrica)
 - Used to reduce nerve-associated pain (e.g., pins and needles)
- Muscle relaxants (Robaxin, Flexeril)
 - Used to reduce muscle spasms
 - Can help alleviate pain experienced with transitions in body position (e.g., lying to sitting, sitting to standing)
 - Best to take first thing in the morning to help you through the busiest times of your day
- Opioids
 - Used for pain relief as needed

- Can have side effects such as constipation, confusion, sleepiness and slowed breathing
- Prolonged use increases risk for addiction

Local and regional anesthetics (Exparel, OnQ pumps, nerve blocks, lidocaine)

- Used to provide localized numbness/pain relief by blocking the nerve impulses that carry pain signals
- May be used during your procedure to help reduce pain at the incision site

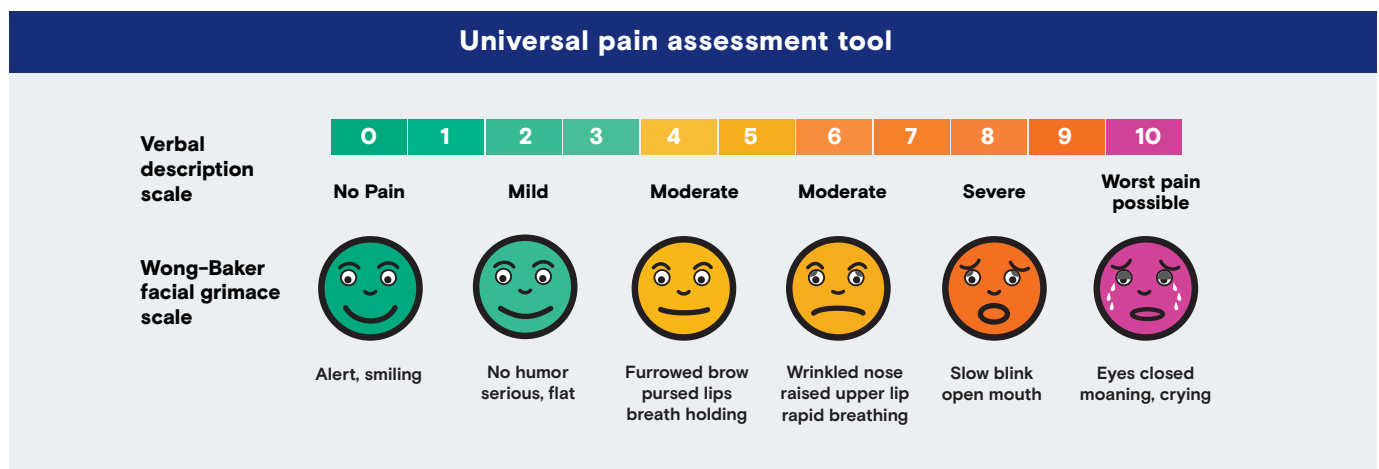
Alternative pain management

- Ice on and off for the first 24 to 48 hours; may be used beyond this timeframe for comfort as needed
- Positioning (pillow under knees, keeping spine aligned)
- Relaxation techniques (deep breathing, listening to favorite music)
- Distraction techniques (movies, friends)

Pain management scale

We want to partner with you to identify an appropriate pain management plan. We ask that you:

- Give a description and location of your pain (what it feels like and where)
- Rate your pain on a scale of zero (0) being no pain to 10 being the worst pain possible to help us determine the best pain management course for you



Expectations and planning for going home after your spine surgery

Undergoing spine surgery is your first step to recovery. While this can be overwhelming and exciting, it is important to consider your limitations in activity during the immediate recovery period, so you can plan appropriately. Limitations can include lifting, walking, standing for extended periods, driving and strenuous household chores such as vacuuming. Understanding some of the options available to you can help you develop the best post-operative plan. To help plan your care after your hospital stay, review the points outlined below.

Length of stay expectations in the hospital after surgery

It is important for you to have realistic expectations about how long you will stay in the hospital. This will help you plan for, and feel comfortable with, returning home. Below are the expected lengths of stay by procedure type. These are general guidelines. Discuss your specific stay with your surgeon, as every person and every procedure varies.

Care companion after surgery

Upon returning home, we recommend that you have someone stay with you for the first few days. Getting around may be difficult, and you may need help with daily tasks in the house. Depending on your surgery, you may also need assistance with your incision care.

If you live alone or are unable to find someone who can stay with you during this time. Refer to the Appendix at the end of this handbook for a list of

home aid options. This list is not all-inclusive, and Inova does not promote or affiliate with any of these optional services and equipment. This list is provided for your convenience only.

Procedure	Expected length of stay in hospital
Lumbar surgery with no fusion	Same-day discharge
Lumbar surgery with one-level fusion	Same-day discharge or one-night stay in the hospital
Lumbar surgery with anterior/oblique/lateral fusion (ALIF, OLIF, XLIF)	One-night stay in the hospital
Lumbar surgery with fusion (two or more levels)	One- to two-night stay in the hospital
Cervical surgery with one-level fusion	Same-day discharge
Cervical surgery with fusion (two or more levels)	One- to two-night stay in the hospital
Posterior cervical fusion surgery	One- to two-night stay in the hospital

Hospital stay

STAGE 1: Hospital registration and admission – pre-operative department

- When you arrive at the hospital, go to the registration desk and check in.
- After you have registered, an identification (ID) bracelet will be placed on your wrist. To help keep you safe throughout your hospital stay, you can expect all staff members who interact with you to first check your ID bracelet to verify your name and date of birth before they administer any treatment or medication.
- A surgical care team will prepare you for your surgery in the pre-operative area. Here you will be put in a gown, surgical cap and slippers. We will start IV fluids. You will see your surgeon and anesthesiologist, who will answer any questions.
- You will be asked to participate in identifying your surgical site. This is done so you can help us ensure that we are performing the correct surgery, at the right location.
- Your care team will escort you to the operating room.
- Companions will be escorted to the surgery waiting area where they can monitor your progress on a patient tracking board.

STAGE 2: When you wake up – post-anesthesia care

- After your surgery, you will be taken to the post-anesthesia care unit (PACU) for one to two hours to recover.
- The care team will provide pain medication and monitoring while you awake from anesthesia.
- You can expect to be connected to several pieces of equipment such as an IV, oxygen mask, heart monitor, urinary catheter and pulse oximeter. This is part of the normal and required recovery process.
- Once you are awake and recovered from anesthesia, you will be transferred to an appropriate spine care unit if you are remaining in the hospital. The care team will update your family and/or caregivers about your recovery and new bed assignment. If you are leaving the same day of

surgery, you will be discharged directly from the PACU after you have met your discharge goals.

STAGE 3: Recovery in the hospital

- You will be expected to get up and ambulate (walk) on the day of surgery. Your care team will assist you with ambulation.
- You may be evaluated by a physical and/or occupational therapist (PT and OT). They will make recommendations for equipment and services that may be beneficial for your recovery.
- You will be expected to use your incentive spirometer every hour while you are awake.
- Your surgical team will assess your pain and will work with you to develop an effective pain management regimen.
- A case manager is available to help coordinate and facilitate your discharge needs.
- Depending on your procedure, you may have the following present immediately after surgery:
 - Fluids administered through an IV to keep you well hydrated and to administer pain and other medications as needed
 - A urinary catheter to drain your bladder (usually removed the day of or the morning after surgery)
 - Drains to remove fluid from the surgical site
 - Sequential compression devices on your legs to prevent post-operative blood clots
 - An incentive spirometer to encourage deep breathing every hour
- We will let you rest when possible, but your sleep and rest will likely be interrupted throughout your stay to allow us to:
 - Check your vital signs regularly
 - Monitor your fluid intake and diet tolerance
 - Check your pain status and administer medications
 - Perform early morning lab work

Hospital visitation guidelines

Visitation guidelines may change. Find the most up-to-date information on visitation at:

[Inova.org/Visit](https://www.inovaspine.org/visit).

Post-operative mobility

After surgery, it is important to take precautions with your spine and be careful with your movements.

Spine precautions

Spine precautions (or limitations) help keep your spine in alignment. Your surgeon determines the extent of these limitations (i.e., how much you may lift, bend or twist). The acronym **BLT** is a helpful way to remember common limitations after surgery:

B = Bending **L** = Lifting **T** = Twisting

Physical and occupational therapy

While in the hospital, you may be evaluated by a PT and/or OT. They will work with you on modifying your daily activities and positioning to accommodate your post-operative restrictions. They may make recommendations on services or equipment that could benefit you. The goals of physical and occupational therapy are will be to teach you how to:

- Get in and out of bed safely
- Bathe/toilet
- Move from sitting to standing and then to the bedside chair safely
- Do other home- or work-related activities that are important to you
- Walk safely
- Do your post-surgical exercises
- Climb stairs
- Perform hand hygiene at the sink
- Get dressed
- Get in and out of a vehicle

Activity expectations

Early ambulation after surgery will reduce your risk of complications such as pneumonia and blood clots in your legs, and will help reduce the time you spend in the hospital. While in the hospital, you can expect the following:

- **You will get out of bed the day of surgery with the help of a member of your care team**

- A member of your care team will assist and stay with you during toileting to ensure your safety

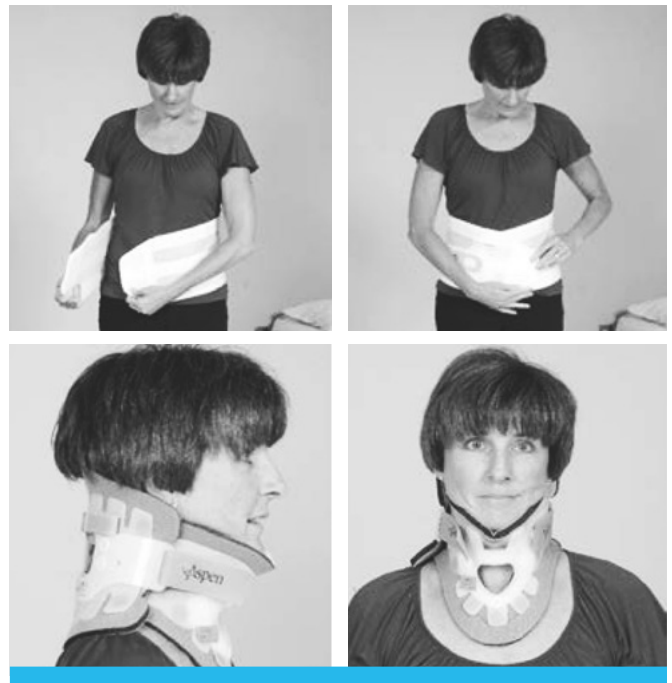
Minimum activity recommendations

Day of surgery	Out of bed to chair
Day after surgery	Walk 50 feet in the hallway
By discharge	Walk 100 feet in the hallway

Wearing your brace

Your surgeon will decide if you need a brace after surgery and how long you will need to wear it. Braces help support your neck or low back muscles. They are also intended to limit excessive movement after surgery.

If you are asked to wear a brace, you should wear a thin layer of clothing between your skin and the brace. Your brace should fit snugly but should not be so tight that it causes pain, tingling or numbness. If you experience these symptoms after wearing your brace, contact your surgeon and discontinue using the brace until you receive further advice. Always be sure to follow your surgeon's instructions when wearing the brace.

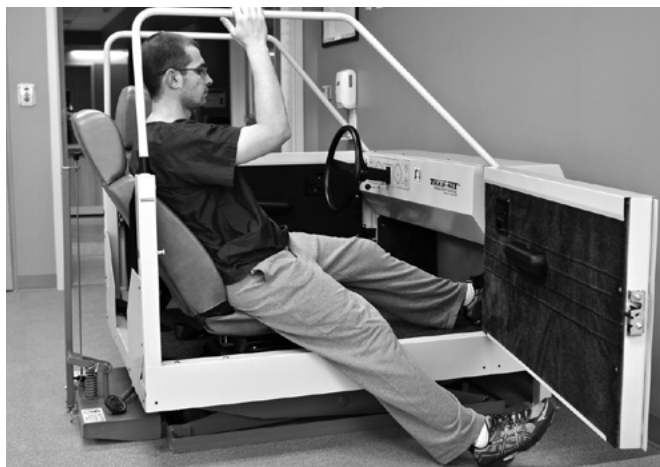


Post-operative mobility, cont.

Post-surgical movements and safety

Getting into/ out of car

Lower yourself onto the seat, scoot back, then bring in one leg at a time. Reverse the sequence to get out.



Getting in/out of bed

Lower yourself to lie down on one side by raising your legs and lowering your head at the same time. Use your arms to assist moving without twisting. Bend both knees to roll onto your back if desired. To sit up, start by lying on your side and use the same movements in reverse. Keep your trunk aligned with your legs.



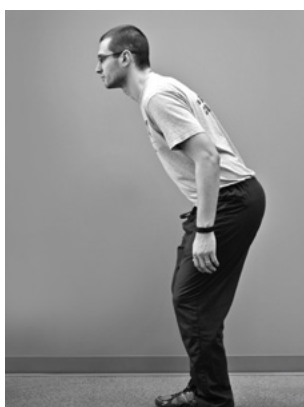
Post-operative mobility, cont.

Bending

Bend at your hips and knees, not your back. Keep your feet shoulder-width apart.

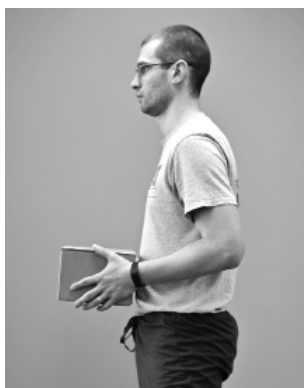


If you have to bend, follow the example in this photo.



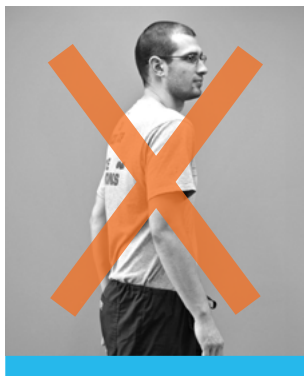
Lifting

Don't lift more than 10 pounds and be sure to carry the item close to your body.



Twisting

Avoid twisting or bending your back. Pivot around using your feet and bend at your knees if needed when reaching for items.



Log roll

Lying on your back, bend your left knee and place your left arm across your chest. Roll in one movement to the right. Reverse for rolling to the left. Always move your back as one unit.



Recovering at home



- You will not be able to drive immediately after surgery. Your surgeon will tell you when you may resume driving.
- Avoid sitting or standing for more than one hour at a time. Change your position often.
- Avoid excessive stair climbing.
- Avoid soft or low chairs, sofas, rockers or waterbeds, as they will be difficult to get out of.
- Avoid sexual activity. You will need to consult your surgeon first.
- Avoid lifting anything from below waist level or above shoulder level.
- Do not lift any objects more than five pounds in one hand or 10 pounds in two hands (a gallon of milk).

Activities allowed and encouraged

- Do as much as you can for yourself safely. Be sure to follow the spine precautions.
- Walk frequently at home, getting up to stretch your legs at least every one to two hours. Use your brace and/or walking aid if recommended.
- Perform the exercises as recommended by your PT and OT.
- Get frequent periods of rest throughout the day, so you do not over-tire your muscles.

Expectations

Returning home does not mean that you are ready to resume normal activities right away. Upon discharge, you should expect to frequently walk and perform basic self-care/hygiene activities independently or with minimum assistance.

Activities to avoid

- No smoking. It decreases circulation and can slow down the healing and fusion process.
- No drinking alcohol while on opioid pain medication or muscle relaxants.
- No baths, hot tubs, swimming pools or submerging in water until your surgeon agrees to it.

Managing your pain at home

A certain amount of pain or discomfort can be expected until the inflammation and nerve sensitivity have subsided. Gradually use less pain medication by increasing the amount of time between taking pills. Try to use alternative methods of reducing pain or discomfort such as ice packs and repositioning yourself. Do not place ice packs directly against your incision. Use a towel or sheet to cover the ice pack.

Recovering at home, cont.



Maintaining a well-balanced diet

A nutritious and well-balanced diet will aid the recovery process by promoting wound healing and helping prevent constipation. Your daily diet should include food from all basic food groups: dairy products, meats, whole grains, fresh vegetables and fruits. Consume plenty of fluids, but avoid alcohol.

Preventing complications

Caring for your incision

- Follow your surgeon's specific dressing change instructions as discussed in your discharge paperwork.
- Do not attempt to remove the Steri-Strips (small pieces of tape across the incision), sutures, staples or skin glue. The Steri-Strips and glue will fall off on their own, usually between 10 and 14 days after surgery. Your surgeon will discuss when to remove the sutures or staples, if needed.
- Initially, keep your incision clean and dry. When you are allowed to shower, be sure to dry your incision site well after showering by dabbing a clean, dry towel over it.
- Do not apply any creams, gels or lotions to your incision without your surgeon's approval.

Preventing constipation

Constipation is a common problem following surgery, due to a combination of pain medication and poor mobility. Constipation means you have bowel movements fewer than three times per week or strain to pass hard, dry stool. To prevent constipation, you will be instructed on what stool softeners to purchase. Most are available over the counter. Some examples of over-the-counter items that may help include the following:

- Miralax
- Milk of Magnesia
- Citrucel
- Flaxseed
- Fiber One products
- Metamucil

Other actions to help relieve constipation:

- Increase fiber intake (whole grains, fruits, vegetables)
- Increase fluid intake
- Drink coffee
- Take frequent walks
- Use warm compresses across the abdomen (avoiding fresh incision) to help soothe abdominal pain

Speak to your surgeon prior to taking or using a laxative to avoid diarrhea and dehydration.

Preventing post-operative pneumonia

Post-operative pneumonia is not an infectious pneumonia. It develops from poor ventilation to the lungs due to shallow breathing from anesthetics and narcotics, combined with the tendency for people to hold their breath through pain. Continue to use your incentive spirometer 10 times an hour while you are awake to reduce the chance of developing post-operative pneumonia.

Aspirin, NSAIDs and blood thinners

Do not take any aspirin, NSAIDs or other blood thinners without speaking with your surgeon first.

When to contact your surgeon



If you do not already have a post-operative appointment scheduled with your surgeon, please arrange to see your surgeon in two weeks, or as otherwise advised.

Post-operative symptoms

You may experience various symptoms for the first week after returning home. It is important that you are aware of some of these signs and symptoms, which may signal a more serious problem such as an infection or blood clot.

Emergency symptoms

If you experience any of the following symptoms, go to your nearest emergency room or call 911:

- Increased neck swelling/pressure
- Inability to swallow liquids
- Sudden shortness of breath or difficulty taking deep breaths
- Chest pain
- Loss of bowel and/or bladder control
- Increased or sudden weakness or numbness in extremities
- Confusion/altered mental status unrelated to opioid use

Urgent symptoms

If you experience any of the following urgent symptoms, contact your surgeon's office. If you are unable to reach your surgeon, seek medical attention:

- Increased swelling, pain or redness around the incision site
- Any change in color, odor or amount of drainage from the incision
- Fever greater than 101.5 °F (three to four days after surgery)
- Severe pain, swelling, heat or tenderness in the calf, back of the knees or groin area
- Severe stomach pain or nausea accompanied by vomiting
- Increased swelling in ankles or feet

Frequently asked questions



When can I drive?

Most surgeons restrict driving until you are seen and cleared at your follow-up appointment. The typical time frame of restriction is between two and four weeks for spinal fusions. Driving is prohibited while taking opioids.

When can I return to work?

Your surgeon will make the recommendation on when to return to work based on the type of surgery you had and the requirements and duties of your job.

When can I shower?

Your surgeon will decide when you may shower depending on the type of surgery and incisional closure used. Do not take tub baths or sit in hot tubs, pools or other standing water until cleared by your surgeon.

Appendix

Inova Physical Therapy – outpatient locations

For a list of current Inova Physical Therapy outpatient locations, visit [Inova.org/Our-Services/Rehabilitation-Services/Outpatient-Locations](https://www.inova.org/Our-Services/Rehabilitation-Services/Outpatient-Locations).

Inova Comprehensive Pain Centers – locations

In some cases, pain management can continue to be an issue even after recovery. If your pain continues, speak with your surgeon about whether a consultation at one of the Inova Comprehensive Pain Centers is right for you. To learn more, visit [Inova.org/Our-Services/Inova-Comprehensive-Pain-Centers](https://www.inova.org/Our-Services/Inova-Comprehensive-Pain-Centers) or call **571.472.6880**.

Equipment options and home supplies

These services are not required and may not be right for you. Your care team will assess your specific needs at the hospital. You may be able to predict your needs prior to this assessment. This abbreviated list is designed to help you consider your needs after surgery. The items listed below are available at select Inova pharmacies in our hospitals. You are welcome to purchase these items at other pharmacies and retailers in the community, or you may purchase them online. Most items on the following pages are under \$75.

Appendix, cont.

Dressing aids

Reacher

This product is for picking up items from the floor or a high shelf. During most stages of recovery, it is unsafe for you to bend down to pick things up. Although a patient may want to try, a reacher is a much safer alternative.



Sock aid



Shower safety

Shower mat



Tub transfer bench with legs, portable



Tub/shower seat with back



Appendix, cont.

Toileting needs and safety

Bedside commode with arms and a detachable commode, portable



Toilet riser with arms, portable



Versa frame

This portable product attaches behind the toilet seat and comes with arms, so you can balance when sitting or getting up from the toilet.



Walking aids

Front-wheeled walker



Other considerations

- Extra pillows
- Extra washcloths
- Heating pad (ask surgeon)
- Help with pets
- Ice packs (ask surgeon)
- Pill organizer
- Sleeping pillow wedge (ask surgeon)



InovaSpine.org