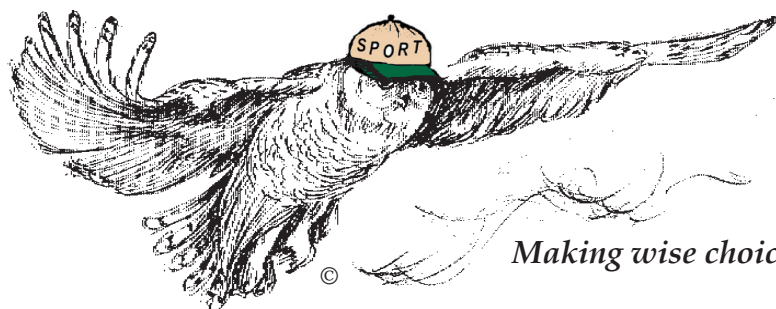


# *Spine Surgery*

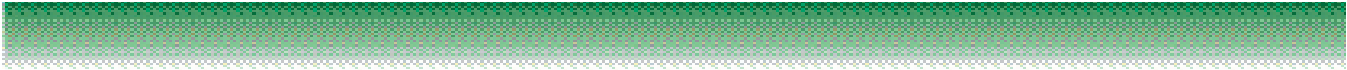
*A Guide for Patients*



*Making wise choices...*

## *S P O R T*

*Spine Patient Outcomes Research Trial*



Sponsored by the National Institute of Arthritis and Musculoskeletal and Skin Diseases (U01-AR45444-01A1) and the Office of Research on Women's Health, the National Institutes of Health, and the National Institute of Occupational Safety and Health, the Centers for Disease Control and Prevention

Written & compiled by Barbara Butler-Schmidt, RN, MSN  
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This booklet provides you and your family with basic information regarding your surgical laminectomy, laminotomy and/or spinal fusion.

It includes sections on learning more about your back, the surgical procedure, possible surgical complications, exercises and body mechanics, and basic tips for your recuperation at home.

Please read and discuss this booklet with your family, friends, or others before surgery.

The entire surgical health care team wants your hospital stay to be as comfortable as possible. Please feel free to share any of your concerns or questions with the professional staff members.

## Learning About Your Lower Back

A healthy low back means you can bend and stretch without pain. The following section describes the components of a healthy spine.

### A Healthy Spine

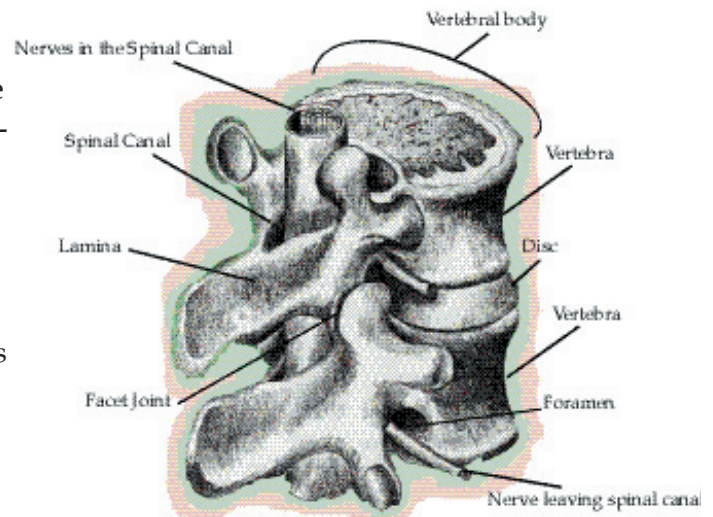
When the spine (or spinal column) is healthy, the parts fit together so you can move around without pain. The spine includes the following:

- **Vertebrae**, which are the bones that make up the spinal column. Parts of each vertebra include:
  - The **vertebral body**, which is the major portion of the vertebra.
  - The **lamina** of each vertebra, which forms the back of the spinal canal.
  - The **facet joints**, which are where two vertebrae meet. There are two joints, one on each side.

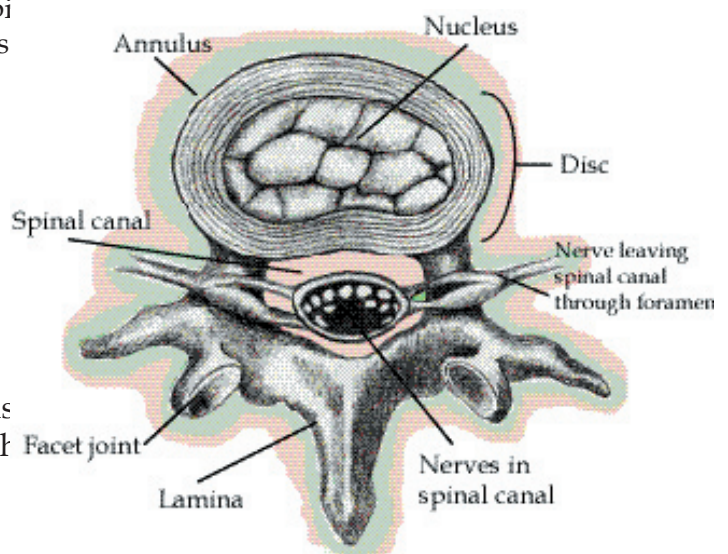
The configuration of the vertebrae forms spaces for the spinal cord and the nerves to go through. These spaces are:

- The **spinal canal**, which is a tunnel formed by the stacked vertebrae. The spinal canal contains a sac that holds nerves. These nerves carry signals between the brain and the rest of the body. When a spinal column is healthy the parts fit together without pressing on the nerves.
  - The **foramen**, which is a small opening between the vertebrae. This is where a nerve leaves the spinal canal.
- **Discs**, which act as cushions between vertebrae and allow movement. A disc has a soft, gel-like center (**nucleus**) and a tough outer wall (**annulus**).
  - **Ligaments**, which are bands of tissue that connect the vertebrae.

Parts of the Spinal Column



Cross-Sectional View of a Vertebra & Disc



# Learning about Your Low Back & Leg Symptoms

## Pressure on a Nerve

Your back and leg problems may be due to pressure on a nerve. If a nerve is pinched, you may have pain, tingling, or numbness all the way down your leg. Pressure may be caused by a damaged disc or by a bone growth. In either case, you may feel pain, burning, tingling, or numbness. Simply standing or sitting can cause these symptoms. If there's pressure on a nerve that connects to the sciatic nerve, you may feel these symptoms in your leg. That's because the sciatic nerve runs all the way from your pelvis to your foot.

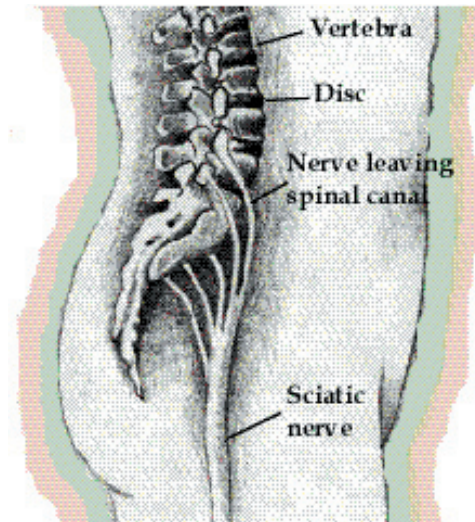
- **From a Damaged Disc**

Constant wear and tear as part of the normal aging process can weaken and damage a disc over time. The disc's soft center can begin to bulge. If the outside of the disc (annulus) tears, the soft center (nucleus) may squeeze through or herniate. This can lead to a pinched or irritated nerve.

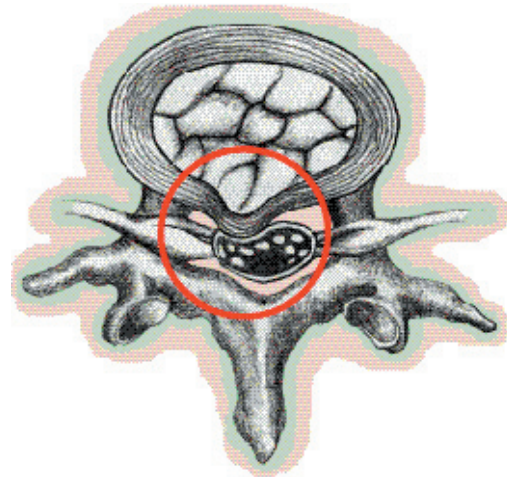
- **From Bone and Ligament**

As the spine ages and begins to wear out, the discs may thin. This moves the vertebrae closer to each other. Also, bone growths (**spurs**) can form on the vertebrae near the facets. This may cause narrowing (**stenosis**) of the foramen or the spinal canal. Bone spurs can then press against a nerve. Also, ligaments may thicken as they age and then press against a nerve.

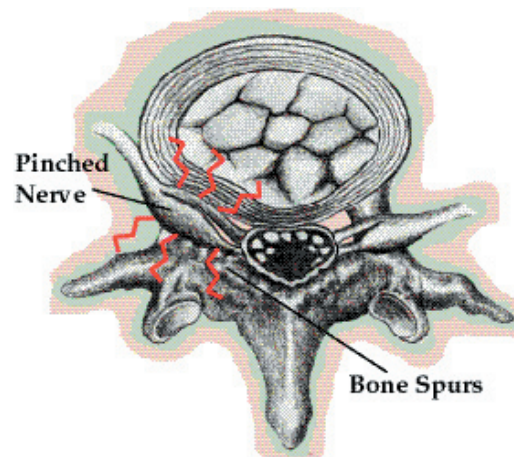
A View of the Lumbar Spine



Damaged Disc Putting Pressure on Nerves

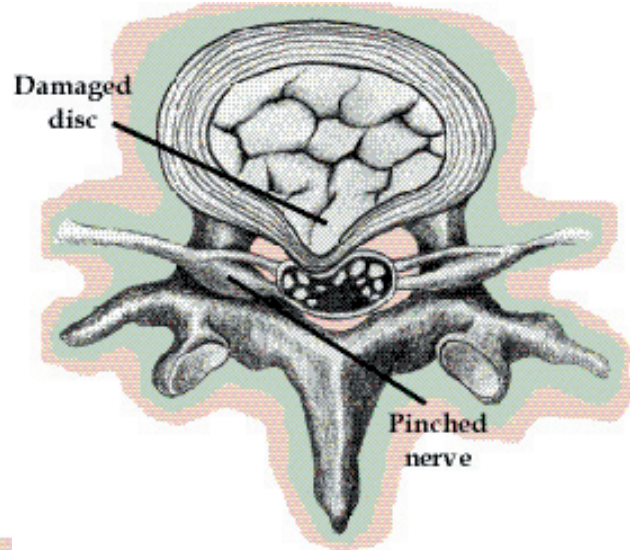


Bone Spurs Pressing Against Nerves

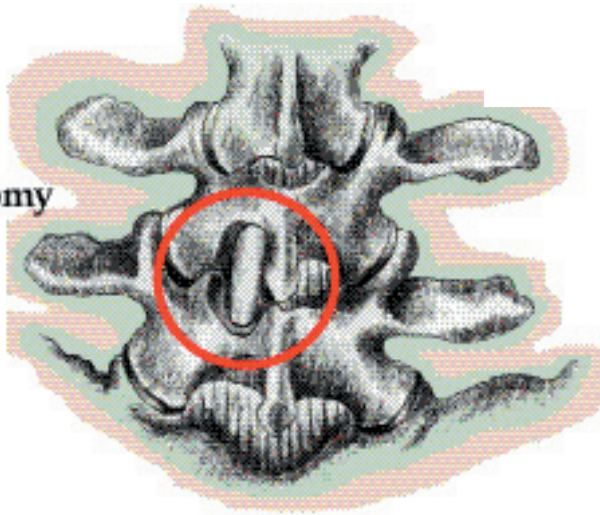


### What is a Laminotomy?

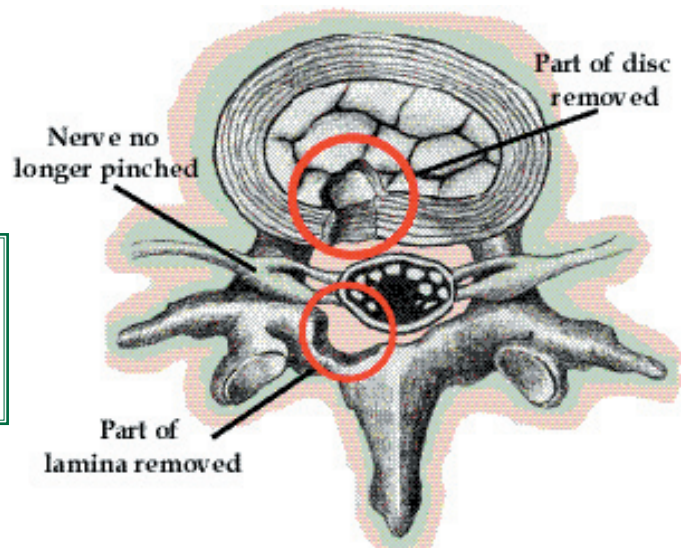
During a laminotomy, part of the lamina is removed from the vertebra above and below the pinched nerve. The small opening created is sometimes enough to take the pressure off the nerve. In most cases, disc material or a bone spur that is pressing on the nerve is also removed.



**Laminotomy**

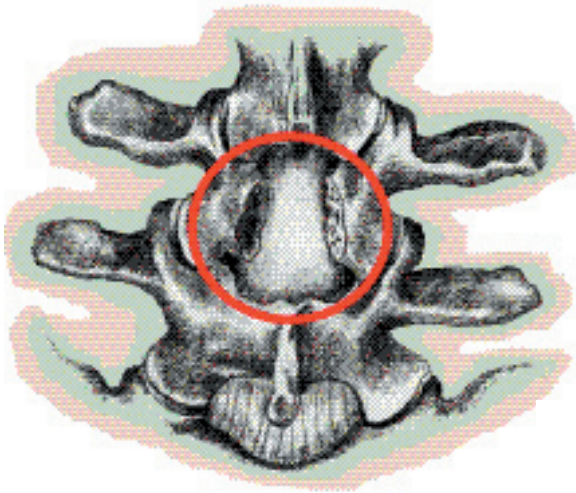
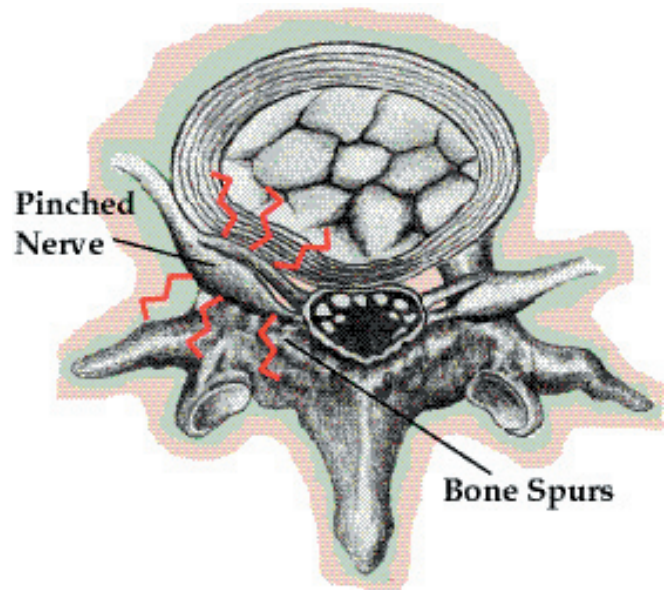


Part of the lamina is removed from the vertebra below the pinched nerve.

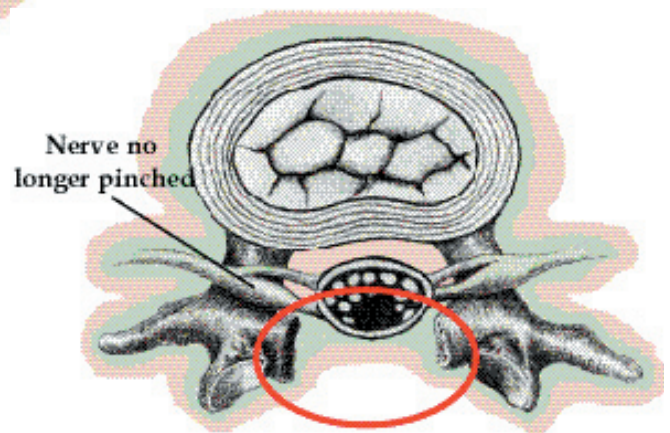


### What is a Laminectomy?

A laminectomy is the surgical removal (or decompression) of a portion or of the entire lamina from the affected vertebra. If needed, your surgeon can also remove any bone spurs or disc matter still pressing on the nerve. The removal of this bony covering is most often performed to relieve the symptoms of a narrowing of the spinal canal due to spinal stenosis. After a laminectomy, the opening in the spine is protected by the thick back muscles and ligaments.



The entire lamina is removed from the affected vertebra.

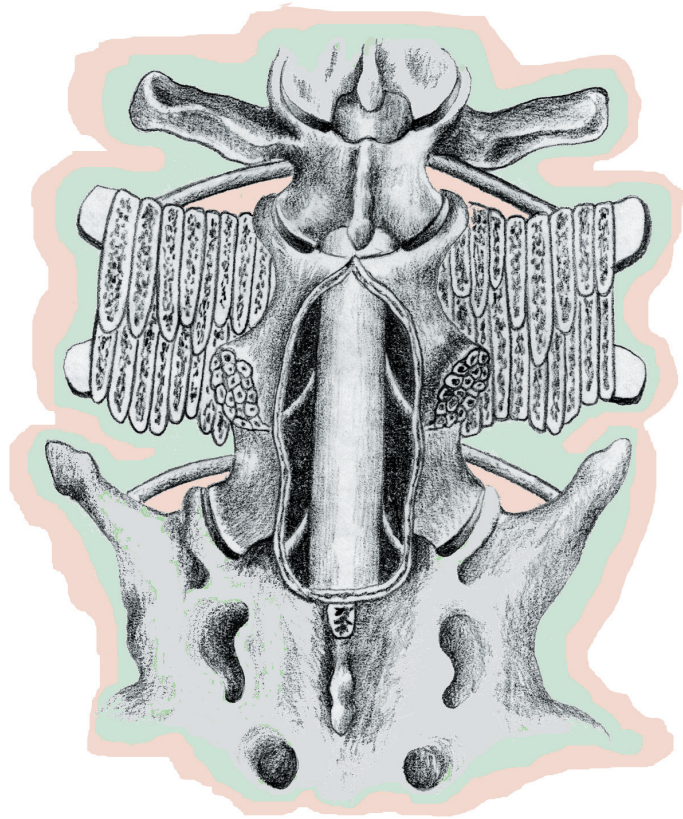


Entire lamina and bone spurs removed

### What is a Spinal Fusion?

Laminotomy and laminectomy are each a procedure to remove pressure on a nerve or to decompress the nerve. In addition to your laminectomy (or decompression), a spinal fusion may also be performed.

Remember, the spine is made up of vertebrae that stack up like blocks, one on top of the other, with a disc in between each vertebra. This allows motion (See "Learning About Your Lower Back," p. 4). A fusion may be done to eliminate the motion between several of the vertebrae. Bone from your hip (iliac crest) is packed around the vertebrae where the movement is no longer desired. The bone gradually grows together, bonding the involved vertebrae together, much as a fractured bone would heal. This limits the motion that may have been one of the causes of your back and/or leg pain. It takes approximately six months or more for a spinal fusion to form solid bone.



**Spinal Fusion**

## Potential Surgical Complications

Laminectomy, laminotomy and spinal fusion are major operations. Your physician will review the risks and possible complications of the surgery you are having, including the risk that the surgery may not achieve the desired result of decreasing your back and leg pain. It is necessary to acquaint you with any possible complication(s). Some complications may prolong your hospital length of stay and can be a threat to your overall medical health.

Prior to surgery, you will be asked to review, read and sign a surgical consent form indicating that you are aware of these and other potential complications of your surgical procedure and hospitalization. You will also have the opportunity to ask questions. The following are some complications that could possibly occur:

- **Dural Leak**  
The outer membrane covering the nerves in the spinal canal is known as the *dura mater*. Sometimes during surgery this membrane is punctured, resulting in a leakage of spinal fluid. Headaches are sometimes associated with a cerebrospinal fluid leak. The repair is usually done at the time of surgery and further surgery is rarely needed.
- **Paralysis**  
Very rarely, paralysis can occur due to injury of nerves or the spinal cord. This may not be reversible.
- **Bleeding**  
Blood loss can occur during surgery. Generally this occurrence does not require a transfusion, but occasionally it is necessary, particularly with more extensive spinal operations.
- **Hematoma**  
A hematoma is swelling due to bleeding in the tissues of the surgical area. Although this is a rare occurrence, surgical drainage of the hematoma is sometimes necessary.
- **Continued Pain / Sensory Loss / Failure to Improve**  
Pain can be caused by nerve inflammation or irritation, and usually decreases with time. If the severity of the pain is unusual, continues or worsens, and is associated with significant changes such as numbness or weakness, please call your surgeon.
- **Pneumonia**  
Activity and pulmonary stimulation by deep breathing in the early post-operative period assists in preventing the development of pneumonia or lung problems.
- **Urinary Tract Infection or Difficulty Voiding**  
Infection may occur in the post-operative period and will be treated medically by your physician. Difficulty voiding in the early post-operative period may be treated by the insertion of a urinary catheter.
- **Ileus / Constipation**  
A slowing of bowel activity which may cause abdominal discomfort, nausea and/or vomiting.
- **Infection**  
Antibiotics are often given at the time of surgery to assist in preventing infection. If you have unusual drainage from your incision, redness, or a fever above 100 degrees Fahrenheit or 38.5 degrees Centigrade, call your surgeon.
- **Recurrent Symptoms**  
Recurrent herniation and spinal stenosis can occur following surgery.
- **Fusion Failure**  
There is a chance the bone won't heal.
- **Other Complications**  
There may be other complications, including death, associated with your surgery that will be discussed with you by your physician.

**If you have any questions concerning complications, listed or otherwise, please ask your physician.**

## General Exercises after your Operation

After surgery there are a few simple exercises and movements you can do that will aid your recovery and prevent post-operative complications. They should be done throughout your recovery period while in the hospital and at home. One of your health care providers will assist you in learning these exercises.

- **Coughing and Deep Breathing**  
To help prevent complications, such as congestion or pneumonia, deep breathing and coughing exercises are important. Inhale deeply through your nose; then slowly exhale through your mouth. Repeat this a few times and then cough. You may be instructed on the use of an incentive spirometer. This bedside device assists you in deep breathing exercises.
- **Ankle Pumps**  
While lying in bed, push your feet downward toward the foot of the bed and then pull them upward towards your face. Do several of these ankle pumps on both feet every hour while you are awake to stimulate the circulation in your lower legs.
- **Ankle Circles**  
When lying in bed, move the feet in a circular pattern to the right and then to the left. Do several of these every hour while awake. This also promotes circulation in the lower legs.
- **Quad Sets**  
While lying in bed, tighten your thigh muscles and push your knees downward into the bed. Hold this tightened position for five counts and then relax. Repeat this several times an hour while awake. This will not only stimulate leg circulation, but it will increase your leg strength.
- **Gluteal Sets**  
While lying in bed, tighten your buttocks. Hold this tightened position for five counts and then relax. Repeat this several times an hour while awake.
- **Hamstring Sets**  
While lying in bed with your legs out straight, push your heels into the bed. Hold this tightened position for five counts and then relax. Repeat this several times an hour while awake.

**Specific exercises might also be given to you by your physician.**

## Some Tips for Turning Over In Bed

- **Turning**

Prior to surgery, one way of turning over in bed that you might want to familiarize yourself with is called “logrolling.” After your surgery your nurse will assist you.

While lying on your side, the upper knee is bent and a pillow is placed between your legs so that your legs remain in proper alignment and help to decrease the strain on the back muscles. The nurse will assist you in sliding your body over to the side of the bed opposite of the direction in which you want to turn. (Figure 1)



Figure 1

You then roll over onto your side in one movement – like a log rolling over. Your legs and upper trunk turn at the same time (Figures 2 & 3).

In a short period of time you will be able to turn yourself in this manner without assistance. This is the way you should continue to turn at home during your recovery.



Figure 2



Figure 3

## Some Tips for Getting Out of Bed

- Getting Out Of Bed

Generally you are able to get out of bed the day of surgery. One way to turn while getting in and out of bed that also helps to prevent twisting or straining your back is the following:

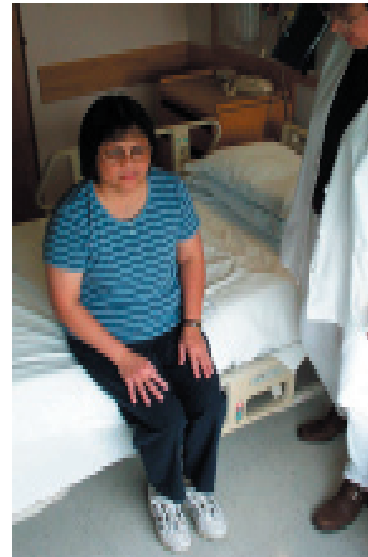
First, you logroll onto your side as you have been doing (See "Turning," pg. 11). Then slide to the very edge of the bed, keeping the pillow between your legs.



Next, cross your upper arm over your body and place your hand onto the bed. Using your elbow and hand, push your torso off the bed, keeping your back straight. At the same time lower your legs down onto the floor so that your body remains in a straight plane.



Now you will be sitting at the bedside. When you first get up, you may feel dizzy and light-headed, so go slowly. Keep your eyes open, look ahead, and take slow deep breaths. Your nurses will stay with you.



To stand up, slide or bring your body to the edge of the bed. Put your hands on the bed next to your hips. Push up with your arm and leg muscles, keeping your back straight.



## Home Care Instructions

These home care instructions are intended for the first weeks after your hospital discharge. Remember that some days you will feel better than others.

- **Wound Care**

It is normal to have some soreness in and around your incision. The soreness may be more noticeable when you are active. Remember to pace yourself and take pain medication as directed.

Some physicians advise that a transparent film dressing be placed over the wound before showering. You may shower with this in place. Blot dry after showering and remove the film dressing. After 7-10 days you may shower with the transparent film dressing off.

You may have small strips of tape called steri strips over the incision. Usually your doctor will tell you to let the steri strips fall off naturally. When you shower, let the shower stream hit your shoulders and flow down. Do not let the shower stream beat directly on your incision until it is healed (three to four weeks).

Tub bathing at home should be avoided for a few weeks. If the incision is covered with water, the chances of infection may be increased and wound healing delayed.

Do not use hot tubs until your physician approves.

- **Support**

Rest on a firm surface at home. If you plan on using a waterbed after surgery, consult your physician.

Your doctor may prescribe a brace or corset; wear it when up and about at home. Your physician will tell you when you may discontinue using it.

Wear low-heeled supportive shoes at home. Avoid sloppy, loose slippers. These will only increase your chance of falling and do not encourage correct posture. Take up throw rugs at home to prevent slipping on them.

- **Diet/Elimination**

Eat well-balanced meals at home. Drink six to eight glasses of liquid a day (unless your doctor advises otherwise).

Your fluid intake, in addition to eating plenty of fresh fruits and vegetables, will assist in avoiding any problems with constipation. Scheduling a certain time of day for your daily bowel elimination is very helpful for keeping regular, as are daily walks.

If all these routines are in place and you still have a problem with constipation, discuss the need for stool softeners or laxatives with your doctor.

## Home Care Instructions

- **Intimacy**

As your back heals, you may resume sexual activity whenever it is comfortable for you to do so. If you have specific questions about positions, etc. talk with your nurse, physical therapist or physician.

- **Activity/Exercise**

The most important exercise that you can do at home is walking. Walking, using proper and erect posture, will hasten your rehabilitation. Increase walking time and distance daily as tolerated.

Don't forget to exercise during your recovery at home. Exercises will be reviewed with you before your discharge. Remember to pace yourself and increase activities gradually. It is normal to tire easily during the first few weeks after you return home. Take a nap and rest several times during the day if you feel tired.

You may use the stairs at home, as tolerated. Avoid clutter on the stairs – this decreases your chance of falling.

Some doctors may prefer that you limit your periods of sitting at home to mealtimes and toileting. Sit in a straight-backed chair for your meals. Avoid sitting in low, soft furniture. Such chairs and sofas do not provide adequate back support and are difficult to get out of. A small pillow or rolled-up towel placed on or about your waistline provides back support and may be used whenever you are sitting. This pillow provides support to the back and encourages correct posture.

Continue to utilize the same method of turning, getting up and down, and out of bed as practiced while hospitalized.

- Avoid twisting or bending at the waist.
- Avoid lifting anything greater than five pounds (e.g., a bag of sugar).

Returning to driving is often decided on an individual basis by your physician. Keep in mind that if you do get permission, you still cannot drive until you are off your pain medications and are recuperated enough to be comfortable acting in an emergency.

Follow the proper body mechanics taught in the hospital and in the last pages of this booklet.

## Tips for Keeping Your Back Safe

Good body mechanics (how to move) help keep your back safe. They assist with your recovery. They will also help protect your back in the future. The next few pages will explain good body mechanics and how to achieve them.

### What are Good Body Mechanics?

Each time you bend, twist, reach, or move in any way, pressure is put on a part of your spine. Discs may be compressed, bones rotated, and muscles tightened. Good body mechanics put the least amount of pressure on your spine. If you maintain good posture when you sit, stand, sleep, and move, you can help keep your back healthy.



DO keep your ears, shoulders and hips in line with each other.



DON'T slump or slouch. It pushes your spine out of line.

### Keys to Good Body Mechanics

To move your body safely, follow a few simple rules. Whether you sit, stand, or move around, the keys to moving safely are the same. To help protect your back, follow these tips:

- Always try to keep your ears, shoulders, and hips in line with each other.
- When you move, tighten your trunk muscles to support your spine.
- When you bend, bend at your hips and knees, not at your waist, as much as possible.
- When you turn, do not twist your shoulders or waist. Instead, turn your whole body, pivoting your feet if needed.

## Tips for Keeping Your Back Safe

Follow these guidelines until the movements become natural to you. Also, improve your strength and motion by exercising as directed.

Most people do not have perfect posture all the time. You may not be able to follow this advice continuously. However, these suggestions are simple and can significantly decrease the accumulation of stresses on your spine. Sitting, standing, and lying down properly even 50% of the time can significantly decrease the accumulation of stress. By doing so, your back may be safer if you suffer an unexpected strain. These tips are easy and have no negative side effects. Do your best.

### Lifting Safely

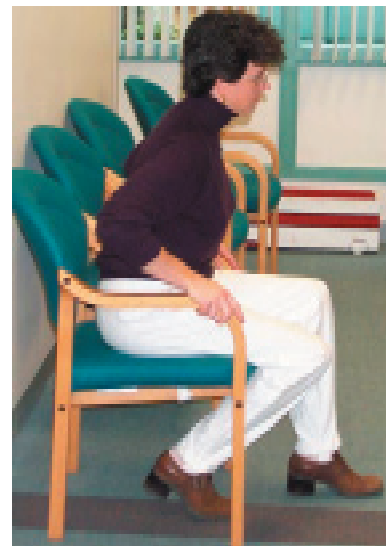
- Get close to the object. Lower your body by bending at the hips and knees. Keep your ears, shoulders, and hips in line with each other.
- Hold the object close to your body.
- Press down with your feet. Allow your legs to lift your body and the object.



## Tips for Keeping Your Back Safe

### Sitting and Standing Up

- To sit, back up until the front of the chair touches the back of your legs.
- Tighten your trunk muscles.
- Using your leg muscles, lower your body onto the chair. Then, scoot back into the chair
- To stand up, scoot forward to the edge of the chair. Place one foot a little behind the other. Use your leg muscles to raise your body from the chair.

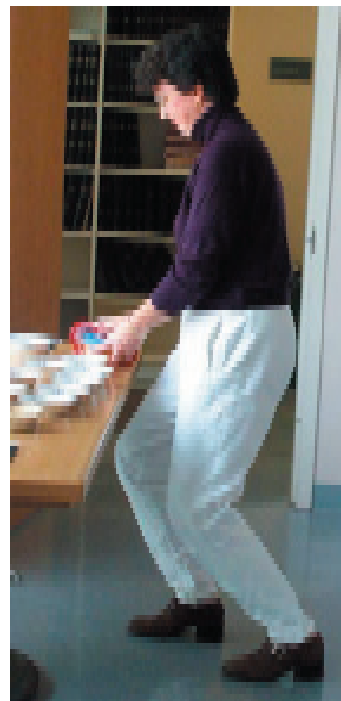


## Tips for Keeping Your Back Safe



### Standing and Turning

- Stand with one foot slightly in front of the other.
- Keep your knees relaxed and your trunk muscles tight.
- To turn your body, move your feet. Do not twist your body at the waist or shoulders.

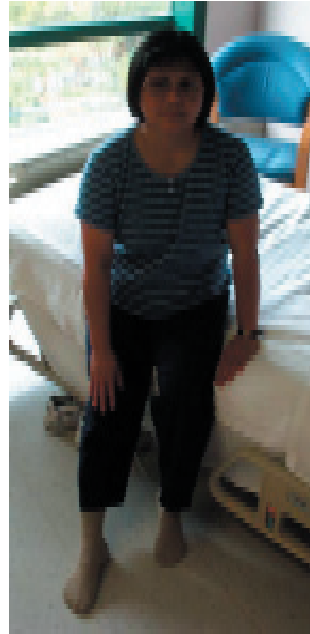


## Tips for Keeping Your Back Safe

### Getting Into and Out of Bed

Getting into and out of bed can strain your back. Learn how to do it right. Follow these steps to get into bed. Reverse them to get out of bed.

- Back up until the edge of the bed touches the back of your legs. Tighten your trunk muscles. Bend forward slightly at the hips. Use your leg muscles to sit on the edge of the bed.
- Using your arm for support, lower your body onto its side.
- As your upper body moves down, lift your feet onto the bed. Roll onto your back without twisting at the waist.



## Tips for Keeping Your Back Safe

### Safe Sleeping Positions

- Lie on your back with a small folded towel to support the hollow of your lower back. Add a pillow under your knees if needed.
- Lie on your side with your knees slightly bent.
- Keep a pillow between your knees.



### Improving Strength and Motion

Take walks regularly. Walking helps to keep your back muscles and the rest of your body strong and flexible. Initially, short, frequent walks are better than 1 or 2 long walks per day. Your doctor may also have you do certain exercises. These exercises can help stretch and strengthen your muscles. Do all exercises exactly as you are told. In some cases, you may also visit a physical therapist (PT) for treatment. Talk with your health care provider about what exercise program is best for you. Always tell your health care provider if exercise causes new or lasting pain.



## **Your Surgical Checklist/Personal Notes**

Use the checklist below as a reminder for what to do before and after your surgery. Ask your health care provider to check the boxes that apply to you. After your surgery, keep referring to the CareMap you were given. Be sure to keep walking. Try to walk a little more each week. If you have been given instructions by the physical therapist, follow this guide to assist advancement in your walking program. That way, you can ease back into activity safely.

### **Before Your Surgery**

- ☐ See your doctor.  
Discuss any test that your doctor orders.
- ☐ See other recommended health care providers.
- ☐ Stop smoking.
- ☐ Stop taking aspirin, ibuprofen and other anti-inflammatory medications a week before surgery (unless told otherwise).
- ☐ Stop eating and drinking before surgery as instructed.
- ☐ On the day of surgery, take medications as directed. You can jot them down here. When you get your call from the Same Day Program nurse (between 3-6 pm), s/he will ask which medications you have taken.

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### **After Your Surgery**

- ☐ Your first follow-up visit will be at six weeks.
- ☐ Complete your physical therapy program, if one is prescribed.
- ☐ Ask your doctor or nurse to list which activities you should not do (and how long to avoid them).

### **How To Reach Your Surgeon**

SPORT  
Institution: \_\_\_\_\_

Surgeon: \_\_\_\_\_

Phone: \_\_\_\_\_

Nurse: \_\_\_\_\_

Phone: \_\_\_\_\_

SPORT @ the Dartmouth Spine Center  
Dartmouth-Hitchcock Medical Center  
Lebanon, NH 03755  
603-650-BACK (2225)  
Toll Free: 1-888-794-BACK (2225)  
8:00am-5:00pm  
Monday -Friday (E.S.T.)

At other hours, call: 603-650-5000  
and request the doctor on call or your surgeon.

### **Questions/Notes**