

All About Your Spine Surgery



This resource was made
possible with support from
the John E. Lonstein
Spine Care Fund

CONTENTS

WELCOME TO GILLETTE CHILDREN'S SPECIALTY HEALTHCARE

- 2 About This Manual
- 2 Important Phone Numbers
- 2 Family Resource Center

BEFORE SURGERY

- 3 Presurgical Discussion Form
- 4 About the Spine
- 5 About Surgical Procedures
- 6 Preparing for Spine Surgery
- 7 Planning for Afterward
- 8 Frequently Asked Questions
- 9 Glossary

AFTER SURGERY: In the Hospital

- 12 Postanesthesia Care Unit (PACU)
- 14 Postsurgical Nursing Unit
- 16 If You Go to the Pediatric Intensive Care Unit (PICU)

AFTER SURGERY: At Home

- 17 Managing Pain
- 19 Children and Pain: Additional Information for Caregivers
- 20 Relaxation Techniques
- 21 Caring for Incisions and Minimizing Scars
- 22 Diet
- 23 Bowel Management
- 24 When to Call Gillette

RESUMING ACTIVITIES

- 25 How to Move Safely and Comfortably After Surgery

ADDITIONAL INFORMATION

- 32 Medicine Advisory: Depakene or Depakote and Surgery
- 33 Donating Blood
- 34 Natural Rubber Latex Allergy
- 36 Gastrojejunostomy Tubes
- 37 Patients With Neuromuscular Scoliosis
- 38 About Body Casts
- 41 About Body Casts: Especially for Caregivers
- 43 About Postoperative Spinal Orthoses
- 45 About Halo Cast/Vests

WELCOME

to Gillette Children's Specialty Healthcare

At Gillette, we work to provide the best in medical and nursing care for our patients. We also strive to be sensitive to the needs and emotions of our patients and their families.

Although having spine surgery can be a difficult experience, no one expects you to go through it alone. This manual is just one of the ways in which we offer information and support.

About This Manual

This resource manual is intended to help spine patients, their caregivers, and their families understand spine surgery. It contains information you'll need at Gillette — and it will serve as a guide when you go home. The glossary (Page 9) defines the technical terms you'll be reading and hearing.

Although our spine patients range in age from infants to adults, most are teenagers who'll want to read about their surgery and follow-up care. To address those readers directly, we've used the term **you** in most parts of this manual. In the parts addressed to caregivers, however, we've used the term **your child or teen**.

Important Phone Numbers

Keep in mind that this manual provides only general guidelines. Your resource nurse or doctor will review pertinent information with you before we schedule surgery. If you have specific questions, however, be sure to ask.

For questions or concerns while you're in the hospital, ask your nurse, case manager or doctor. And please let us know if we can improve your Gillette stay in any way.

For questions or concerns after you're discharged, call your resource nurse. If your resource nurse isn't available, call:

- The Gillette triage nurse at 651-229-3890 (Monday – Friday, 7 a.m. – 7 p.m., and Saturdays, 8 a.m. – 4 p.m.)
- A Gillette inpatient nurse at 651-229-3820 (after hours Monday – Saturday, anytime Sunday, and all holidays)

For more information about situations that should trigger a call to Gillette, see Page 24.

Family Resource Center

Our Family Resource Center provides information about disabilities, lends recreational videos and reading material to inpatients, and offers a computer with Internet access. Located near the outpatient waiting area in our St. Paul Clinic, the center is open Monday through Friday, 7:30 a.m. until 4 p.m. Maps and general information about the Twin Cities are also available. Contact the Family Resource Center staff at 651-229-3938 or lporter@gillettechildrens.com.

Before Surgery: Presurgical Discussion Form

Initial Consultation

Spine Surgeon: _____

Surgeon's Administrative Assistant:

Name: _____ Extension/Direct Line: _____

Resource Nurse:

Name: _____ Extension/Direct Line: _____

If you're calling from outside the Twin Cities, use Gillette's toll-free number: 800-719-4040. Then enter the final four digits of the extension listed above.

Type of Surgery: _____

Levels of Fusion: _____

Expected Duration of Surgery: _____ Estimated Length of Hospital Stay: _____

Consultations or Tests Needed: _____

Presurgical Checklist

- Tell your doctor if you have other medical conditions, or if you're receiving treatment with medicines (such as Depakene/Depakote and/or baclofen) that might affect bleeding or anesthesia. (See *Medicine Advisory*, Page 32.) Your doctor might order additional tests or discuss options for managing your conditions or medicines.
- Read the preoperative packet we'll send you two weeks before surgery. It includes: the publications *Your Hospital Stay* and *Planning for Surgery*, an *At the Hospital* coloring and activities book (for children), directions to Surgery registration at Gillette, and information about whom to call if you become ill before surgery.
- Notify your primary-care doctor that you need surgery. Many insurers require your primary-care doctor to make a referral to Gillette.
- Make sure copies of the tests and consultation results listed above are sent to your surgeon.
- Schedule a physical with your primary-care doctor within seven days before surgery.
- Review and follow the suggestions under *Preparing for Spine Surgery*, Page 6.
- Follow the food, drink and medicine restrictions we give you. A Gillette nurse will call during the week before your surgery to discuss this and related information.
- Consider a preoperative enema (see *Preparing for Spine Surgery*, Page 6).

Before Surgery: About the Spine

The human spine is made up of 33 bony segments called vertebrae. They fit together, forming a flexible yet strong column that supports the back. The vertebrae, and the nerves that branch from the spinal cord, are named and numbered according to their location in the spinal column.

- The neck area has seven cervical vertebrae, named C1 – C7.
- The upper back and chest areas have 12 thoracic vertebrae, named T1 – T12.
- The lower back — between the thoracic vertebrae (where the ribs attach) and the pelvis — has five lumbar vertebrae, named L1 – L5.
- The area running from the pelvis to the end of the spinal column includes five sacral vertebrae, named S1 – S5.
- The lowest part of the spine is named the coccyx, or tailbone.

The spinal cord itself ends at the second lumbar vertebra, where it branches into a group of nerves.

Figure 1: These three views of the spine — from the left side, back, and front — show where the spinal vertebrae are located.

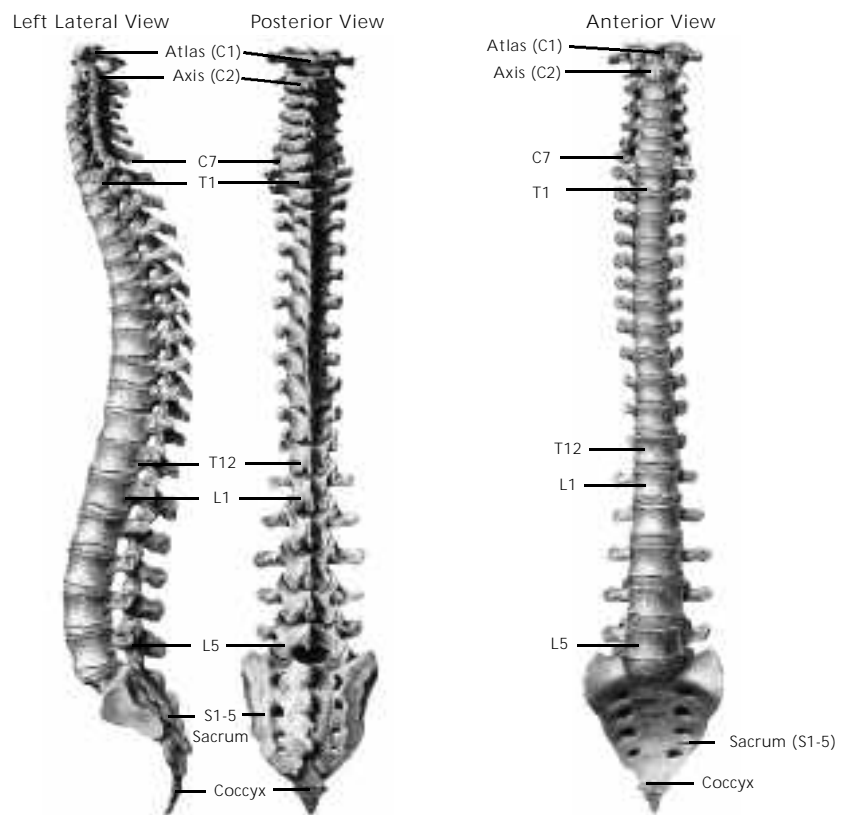
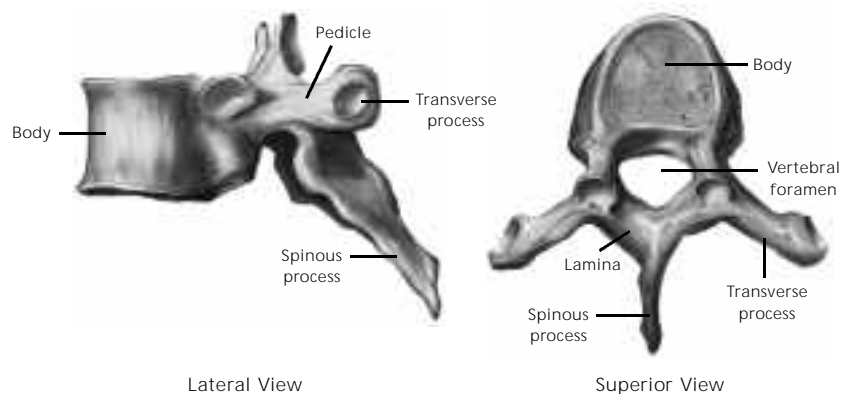


Figure 2: These diagrams show two views of the sixth thoracic vertebra.



Before Surgery: About Surgical Procedures

Spinal-fusion surgery involves joining two bones to make one unit. When spinal curves progress beyond 45 to 50 degrees, spinal-fusion surgery might be necessary. There are several methods of spinal fusions.

Front (Anterior) Fusions

Orthopaedic surgeons can stop some curves from progressing by fusing the front of the spine. A thoracic surgeon works with an orthopaedic surgeon to open the chest through the side. The surgeons insert screws and a smooth rod to hold the spine in place while fusion occurs.

Posterior (Back) Fusions

Orthopaedic surgeons correct some flexible curves by going through a patient's back. They then attach smooth rods to the spine with hooks, screws and wires.

Anterior/Posterior Fusions

Surgeons sometimes perform a two-step surgery in one day, generally beginning with an anterior fusion. A thoracic surgeon works with an orthopaedic surgeon to open the chest through the side, remove the discs between the vertebrae, and pack the disc spaces with bone for the fusion. Then an orthopaedic surgeon performs a posterior fusion.

Spondylolysis and Spondylolisthesis Fusions

To keep a joint from moving and enable the bones to grow together (arthrodesis), an orthopaedic surgeon fuses the spine by adding bone grafts and, sometimes, screws and rods to immobilize the vertebrae. These types of fusions most commonly are performed on L4/L5 – S1.

Fusions for Neuromuscular Scoliosis

Neuromuscular scoliosis is the term for curves resulting from an underlying disorder of the neurological or muscular system. For example, cerebral palsy, spina bifida (myelodysplasia), muscular dystrophy, spinal muscular atrophy, and spinal-cord injuries can cause neuromuscular scoliosis.

If curves get worse, and sitting — even with a support system — becomes difficult, surgery might be required. If patients have balancing curves above the pelvis, surgeons perform a posterior fusion. When the spine isn't flexible enough to achieve a balanced pelvis, surgeons perform an anterior/posterior spinal fusion.

Before Surgery: Preparing for Spine Surgery

Your overall health will affect the speed and quality of your recovery. Follow these guidelines.

Exercise

Before surgery, take part in regular physical activity, such as walking. Physical exercise tends to improve bowel function and helps you stay as healthy as possible. In addition, if you're physically active before surgery, you'll find it easier to regain your abilities afterward.

See *Resuming Activities*, Page 25, for information about exercising after surgery.

For Ambulatory Teenagers

Walking one to two miles a day, three to five days a week, before surgery helps strengthen your body, giving it resources to heal afterward. If you're not walking regularly, begin by walking as far as is comfortable during one session. Walk that distance on three occasions before increasing your distance. Every third session you walk, add distance. You can walk outside or on a treadmill. When walking, swing your arms to help you breathe deeply.

Diet

Protein is very important for healing. We suggest increasing your consumption of protein six weeks before surgery. Most cookbooks have guides to serving sizes and amounts. If you're concerned about weight gain, trade servings of protein for servings of carbohydrates.

If you're fed by gastrostomy tube, tell the doctor who manages your feeding that you're having surgery, so appropriate changes can be made. It's not unusual for patients to lose 1 to 2 pounds during recovery.

See *Diet*, Page 22, for information about your diet after surgery.

Preoperative Enema

We suggest that you **use a Fleet enema the evening before surgery**. At your preoperative physical, discuss the topic with your primary-care physician. If your primary-care doctor recommends an enema, you can purchase one at your local pharmacy. Enemas are available without a prescription.

Before Surgery: **Planning for Afterward**

Be aware that constipation, urinary-tract infections and bladder infections are common following surgery. Often they occur after patients are discharged from the hospital. Contact your resource nurse (see Page 3) if you have questions.

Planning for Discharge

Your medical team — including doctors, nurses, therapists, social workers and other medical specialists — will discuss your progress and decide when you can leave the hospital. Our Child and Family Services staff can help you obtain any special equipment or services you'll need at home following surgery.

Before you leave the hospital, we'll give you specific discharge instructions — including instructions for recovering at home and scheduling follow-up appointments. For safety reasons, we strongly encourage an adult to ride in the back seat with the patient on the way home. Age-appropriate car seats are required. Gillette has E-Z-ON Vests to lend, which make it easier for children in body casts to ride flat.

Your nurse at Gillette will be available by phone to answer your questions when you return home.

Follow-Up Appointments

Most patients return for their first postoperative clinic visit four to six weeks after surgery. We check the incision and do postoperative X-rays at that appointment. If you live a long distance from us, your Gillette doctor might discuss a postoperative visit with your primary-care doctor, so you won't have to travel to Gillette.

Before Surgery: Frequently Asked Questions

Q: Will I be able to do everything after surgery that I did before surgery?

A: You and your doctor will discuss this topic at each appointment. Although you can resume most of the activities you did before surgery, you'll have to avoid collision sports (such as football or hockey) for the rest of your life. You might be able to participate in some contact sports, such as basketball or soccer. Talk with your doctor.

Q: Should I do something special with my hair before surgery?

A: If you have long hair, you might want to braid it. You probably won't feel like combing your hair the first few days after surgery.

Q: When may I go back to school?

A: Most patients who can walk (ambulatory patients) are ready to go back to school part-time — that is, for a couple of hours a day — about three weeks after surgery. Nonambulatory patients (people who use wheelchairs) usually return to school part-time at four to six weeks after surgery. As a rule of thumb, when you're able to control your pain with plain Tylenol, you're probably ready to return to school.

Before you're discharged from the hospital, ask your doctor for a:

- Recommendation about gym-class participation
- Written request to have more time to go from class to class (by leaving class five minutes early, you can get to your next class when the halls are empty)

Depending on the number of books you carry, how much they weigh and the limitations on what you can lift, you might arrange for help carrying books.

Q: When may I go swimming?

A: That depends on your particular surgery and recovery. Talk to your doctor.

Q: How much weight may I lift after surgery?

A: Generally, lift no more than 5 pounds (a gallon of milk). Ask your doctor for more specific guidelines. Restrictions depend upon the site of your incision and how long ago you had surgery.

Q: Is it true that I might get my menstrual period when I have surgery?

A: It's possible. It's also possible that you might skip one or more menstrual cycles after surgery. Your resource nurse will discuss this topic with you during your first postoperative follow-up appointment.

Q: When can I use a mechanical lift?

A: It depends on your particular surgery and recovery. Your doctor will discuss this topic with you before you're discharged from the hospital. (See *Patients With Neuromuscular Scoliosis*, Page 37.)

Q: What are the long-term effects of treatment?

A: Bracing and spinal fusion are two methods of correcting or arresting spine curves. In long-term (20-year) studies, patients treated with bracing or with surgery showed similar outcomes (i.e., similar degrees of degenerative disc changes). X-rays and examinations showed that the changes occurred in the area of the scoliosis. Patients in both groups reported some mild pain.

After surgery, the increase in curve progression and the rate of surgical complications was low. Patients treated with posterior spinal fusion or braces continued to experience gradual increases in pulmonary function. Studies of pregnant women — comparing women who'd never had scoliosis to women who'd been treated for scoliosis — showed no significant differences in back pain, increased curves, age at first pregnancy, and number of total pregnancies.

Before Surgery: Glossary

Adolescent scoliosis: A sideways curvature that appears after age 10 and before skeletal maturity

Adult scoliosis: Scoliosis of any cause that presents after skeletal maturity

Allograft: Donor bone added to patient bone to achieve a solid fusion

Anterior spinal fusion: A surgical approach from the side, near the ribs, that lets surgeons reach the front of spine

Autograft: Tissue that's transferred from one site to another in the same person (for example, the iliac bone from the pelvis is commonly used to provide more bone mass at the site of a fusion)

Autologous blood: Blood collected from a patient — often before elective surgery, if blood loss is expected — for later transfusion to that same patient

Autotransfusion: The practice and technique of transfusing previously drawn autologous blood back to the same patient during surgery

Bending X-rays: X-rays to check the flexibility of the spine

Cell Saver blood-recovery system: A machine that collects blood from a patient during surgery and returns it to the patient, if blood is needed

Cervical spine: The neck portion of the spinal column, which consists of seven cervical vertebrae between the skull and the rib cage

Cervico-thoraco-lumbar-sacral orthosis (CTLSSO), also called a Milwaukee brace: A brace that supports the entire spine; used to keep a spinal curve from progressing and used after some spine surgeries

Compensatory curve: In spinal deformity, a secondary curve — located above or below the structural curve — that develops as a way for the body to maintain normal bony alignment

Congenital scoliosis: Scoliosis caused by bony spine abnormalities that are present at birth

Decompensation: In scoliosis, the loss of spinal balance when the thoracic cage isn't centered over the pelvis

Disc: Tissue between the vertebrae that acts as a shock absorber or cushion during movement

Discectomy: Removal of all or part of the tissues that act as a shock absorber between the vertebral discs

Double curve: Two lateral curves (scoliosis) in the same spine: a double major curve involves two curves, which are usually the same size; a double thoracic curve consists of an upper thoracic curve and a larger, more deforming lower curve

Fusion: Surgery that joins two bones into one unit

Hemivertebra: A congenital (at-birth) anomaly of the spine, caused by incomplete development of one side of a vertebra

CONTINUED: Glossary

Hysterical scoliosis: A nonstructural deformity of the spine that develops as a manifestation of a psychological disorder

Idiopathic scoliosis: A spinal curvature of undetermined cause

Inclinometer: An instrument used to measure the angle of thoracic or lumbar prominence, also known as angle of trunk rotation (ATR)

Infantile scoliosis: A curvature of the spine that develops before age 3

Juvenile scoliosis: Scoliosis that develops between ages 3 and 10

Kyphoscoliosis: A sideways curve of the spine accompanied by kyphosis

Kyphosis: A posterior angulation of the spine in the sagittal plane, causing forward bending and excessive rounding (roundback); normal in the thoracic spine

Lamina: Flattened part of either side of the arch of the vertebra

Lordoscoliosis: A sideways curvature of the spine, associated with increased swayback

Lordosis: An anterior angulation of the spine in the sagittal plane, causing arching of the back (contrast to kyphosis); normal in the lumbar spine

Lumbar curve: A spinal curvature with an apex between the second and fourth lumbar vertebrae (L2 – L4)

Lumbar-sacral orthosis (LSO): A brace that supports the lumbosacral areas of the spine; used to keep a curve from progressing, to prevent movement, and to control pain when the lumbosacral area of the spine is injured

Lumbosacral: Pertaining to the lumbar and sacral regions (L5 – S1) of the back

Lumbosacral curve: A spinal curvature at the lumbosacral area (L5 – S1)

Neuromuscular scoliosis: A form of scoliosis caused by a disorder of the central nervous system, nerves or muscles

Nonstructural curve: Scoliosis that doesn't have fixed residual deformity

Orthosis: A brace that prevents movement of the spine or limbs

Pantaloon cast: A cast that extends from the middle of the chest to the hips

Pedicle: A bony projection that extends from the body of a vertebra, connecting the lamina on either side

Posterior fusion: A technique to stabilize two or more vertebrae by entering through the back and grafting bone to the vertebrae

Primary curve: The first (earliest) curve to appear

Risser cast: A cast, extending from the chin to the hips, that enables patients to sit and walk while wearing it

CONTINUED: **Glossary**

Risser sign: A sickle-shaped line of bone, which forms across the top of each side of the pelvis and shows a patient's degree of skeletal maturity (can be seen on X-rays)

Sacrum: A curved, triangular bone at the base of the spine, consisting of five fused vertebrae, which joins the lowest lumbar vertebra and the pelvic bones

Scoliometer: An inclinometer used to measure trunk rotation

Scoliosis: A sideways curvature that shapes the spine into a single curve (like the letter C) or into two curves (like the letter S)

Skeletal maturity: The age at which the spine finishes growing

Spinal-cord monitoring: Constant monitoring of patients during spine surgery to let the surgeons know of any neurological problems related to the surgery

Spinal instrumentation: Metal implants (rods, hooks, wires and screws) affixed to the spine to stabilize spinal deformity while the fusion matures

Spine: Vertebral column, sometimes called the backbone

Spondylitis: An inflammatory disease of the spine

Spondylolysis: A fracture (break) in vertebrae

Spondylolisthesis: A condition in which one vertebra slips forward onto the vertebra below, usually at L5 on the sacrum

Structural curve: A segment of the spine that has fixed (not movable) lateral (sideways) curvature

Thoracic curvature: A spinal curve in which the apex is between the second and 11th thoracic lumbar vertebrae

Thoracolumbar curve: A curve in which the apex occurs at the 12th thoracic or first lumbar vertebra

Thoraco-lumbar-sacral orthosis (TLSO): A brace used to support the thoracic and lumbar spine

Vertebral column: The flexible supporting column of vertebrae, separated by discs and bound by ligaments

Wake-up test: A test — part of spinal-cord monitoring during surgery — in which patients are awakened from anesthesia slightly and asked to move their toes

Witch hazel: An astringent found in most drugstores

After Surgery: **In the Hospital** Postanesthesia Care Unit (PACU)

After surgery, we'll take you to the PACU. The surgeon will meet your family, caregivers and significant others in the waiting room following surgery to discuss the procedure and let them know how you're doing. Requests from parents, caregivers and significant others to visit patients in the PACU will be honored when appropriate. A PACU nurse will coordinate the visit.

Medical Equipment

To help you recover from surgery, our staff uses medical technology. Each piece plays a role in helping your body heal. You might use some or all of the equipment (pictured in Figure 3 and described on page 13) in the PACU and Postsurgical Nursing Unit. Your doctor will discuss your specific needs with you.

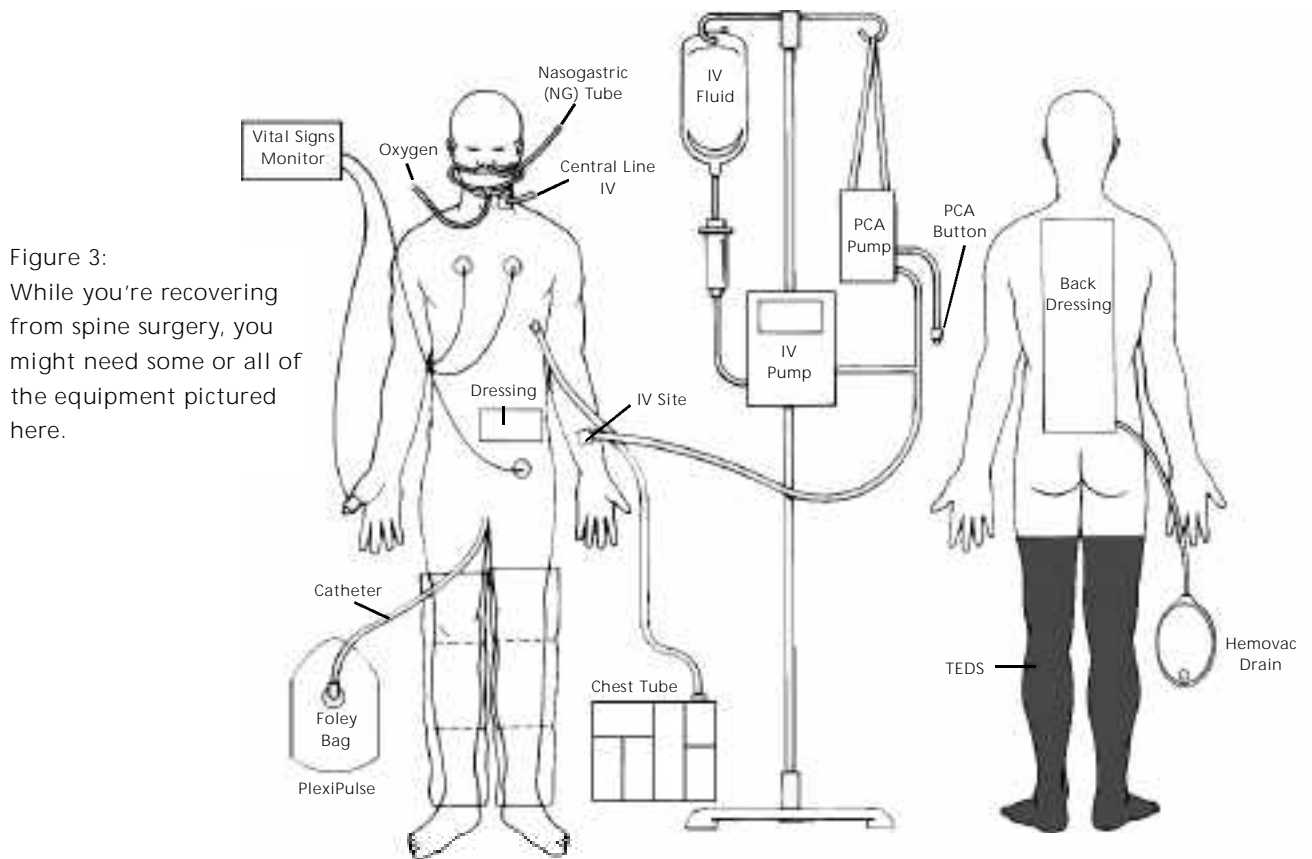


Figure 3:
While you're recovering from spine surgery, you might need some or all of the equipment pictured here.

CONTINUED: **In the Hospital**
Postanesthesia Care Unit (PACU)

- An **incentive spirometer** is a breathing aid. Used with deep breathing and coughing exercises, it helps keep your lungs healthy after surgery.
- A **patient-controlled analgesia (PCA) pump** is a machine that delivers pain medicine during the first few days of your recovery.
- An **intravenous (IV) pump** delivers the fluids that your body needs after surgery. We attach a bag of IV fluid to a tube that's inserted into a vein in your hand, arm or foot.
- A **vital-signs monitor** is a machine that keeps track of your heart rate and breathing status. We attach the monitor to your chest with small sticky patches and tape a wire to your finger or toe. A red light on your finger tells you that the monitor is working.
- **Oxygen**, used after surgery, makes it easier for you to breathe. Sometimes an oxygen mask covers your nose and mouth or is placed next to your face. In other cases, a small tube (called a nasal cannula) rests under your nose.
- A **sequential compressing device** (also called a PlexiPulse pump) increases circulation in the legs and helps prevent blood clots. You'll wear soft leg or foot wraps. The machine pumps air into air pockets in the wraps, then releases it.
- **TEDs** are white, elastic stockings that promote blood flow and prevent blood clots from forming in your legs. They can be used with or without a PlexiPulse pump.
- **Braces (orthoses)** support and protect your back. You might need to wear one after surgery.
- **Surgical drains** are tubes used after surgery. Types include:
 - Hemovac: This tube runs from your incision to a plastic container. It collects fluids and blood from around the incision, and it's removed when drainage decreases.
 - Chest tube: This clear, flexible tube is inserted into your lower chest. It drains air and fluids from around your lungs following anterior spinal fusion.
 - Nasogastric (NG) tube: This small tube runs through your nose into your stomach. It helps relieve gas and remove stomach fluids.
 - Foley catheter: This small tube, inserted into your bladder, drains urine for a few days after surgery. Your nurse will check it often.

After Surgery: **In the Hospital** Postsurgical Nursing Unit

In most cases, you'll go to the the Postsurgical Nursing Unit after you leave the PACU. A nurse will check on you frequently (often at first, and then every two to four hours, 24 hours a day). A nurse won't, however, be at your bedside all the time.

Preventing Complications

After surgery, your body is at risk of certain complications. We'll do many things to reduce those risks. Your nurse will check your temperature, pulse, breathing and blood pressure regularly. We'll also check your arms and legs for color, movement, sensation (sense of touch), circulation and pulse.

Breathing

Your nurse will listen to your lung sounds. We'll ask you to:

- Take a **deep breath** through your nose and hold your breath as you count to five. Then let your breath out slowly and completely through your mouth. Repeat five to 10 times.
- Take a slow, deep breath and fully expand your lungs. Hold your breath for a moment, then **cough** as hard as you can.
- Use an incentive spirometer. Your nurse will explain how to use the device.

Diet, Digestion and Pain Medicine

Your nurse will listen for bowel sounds through a stethoscope placed on your stomach. You won't be allowed to eat or drink anything until you have bowel sounds. After that, you may begin taking ice chips or small sips of water. We'll gradually add to your diet as you're able to tolerate food.

During surgery and before you resume eating, your IV will provide the fluids your body needs. As your recovery progresses, you'll begin eating solid foods. Once you're taking fluids, solid foods and pain medicines by mouth, we'll stop your IV.

Pain medicines and lack of activity can cause constipation. Before you're discharged, you'll need to have a bowel movement. We'll give you a suppository or enema to relieve gas and help your bowels move.

Surgical Dressing

Your nurse will check your surgical dressing (a large, bulky bandage that covers your incision) regularly. We'll remove it on or around the third day after surgery. At that point, you'll notice small strips of tape called Steri-Strips, which hold your incision together. We might change your Steri-Strips before you go home. They'll fall off by themselves about two weeks after they're applied.

Improving Comfort

You probably won't get out of bed on the day of surgery, but we'll change your position every two hours or so. We'll roll you from side to side like a log (logrolling) to avoid twisting your body. Your shoulders, hips and knees will move together.

While you're in bed, doing these exercises will help increase blood flow and relax your muscles.

- Ankle pumps: Bend both ankles up, pointing your toes toward your head. Then bend your ankles down, away from your head.
- Ankle circles: Make circles with your ankles, turning your feet clockwise and counterclockwise.
- Arm movements: Move your arms over your head, in front of you, and to your sides.
- Thigh squeezes: Tighten the muscles in the front of your legs. Hold for a few seconds, then relax. Repeat a few times.

CONTINUED: **In the Hospital**
Postsurgical Nursing Unit

While in Bed

Your pillow(s) should keep your neck and head in alignment. You may use folded blankets in place of pillows.

While lying on your side, put one pillow under your head. Keep your knees slightly bent, and put a pillow between your knees. Use a pillow to support your back and, if you like, hug another one. While lying on your back, place a pillow under your head and one or two pillows under your thighs. You might want to place one or two pillows under each arm. Use a firm mattress after you leave the hospital.

Figure 4: Use pillows to support your body and avoid pressure sores.



After Surgery: **In the Hospital**

If You Go to the Pediatric Intensive Care Unit (PICU)

You might need to spend time in the PICU after surgery if:

- You have difficulties after surgery
- You have a history of bleeding problems
- You're prone to bleeding because of medicines you're taking
- Your doctor wants you to be monitored closely
- You need equipment (such as a ventilator) that can be used only in a PICU

Sometimes doctors know before surgery that you'll need care in the PICU; sometimes they make that decision during surgery. Your doctor will decide when you can move from the PICU to the Postsurgical Nursing Unit.

Because patients in the PICU need a high level of care — and because the PICU's special monitors and equipment need close observation — your nurse will be at or near your bedside at all times. A pediatric intensivist and an orthopaedic doctor will help care for you. You'll be assigned to a PICU nurse and a respiratory therapist.

To help you recover from surgery, our staff uses medical technology. Each piece plays a role in helping your body heal. In addition to the equipment you might use in the Postsurgical Nursing Unit (see Page 13), you might use some or all of the following equipment in the PICU. Your doctor will discuss your specific needs with you.

Ventilators

A ventilator (or respirator) is a machine that gives oxygen. It can help you breathe, or it can breathe for you, enabling your body to rest and heal. A respiratory therapist will check on you frequently while you're using a ventilator and, for a short while, after you're no longer using it. While you're using a ventilator, an intensivist will order special medicines to help you relax and to manage pain.

You'll be unable to talk if you're using a respirator. Before surgery, you might want to arrange hand signals so that you can answer questions. (For example, holding up one finger means yes; holding up two fingers means no.)

Endotracheal Tube (ET Tube)

Some people call ET tubes breathing tubes. An ET tube is placed into your mouth and down your windpipe (trachea) while you're unconscious during surgery. The process is called being intubated. An ET tube connects to a ventilator, if needed. When we remove the ET tube, the process is called being extubated.

Suction Catheter

Your nurse or respiratory therapist might use a suction catheter to remove mucous from your ET tube, nose or mouth. Suctioning makes it easier to breathe.

Arterial Line Monitor

An arterial line monitor is similar to an intravenous (IV) tube (see **Intravenous Pump**, Page 13). During surgery, we place the monitor into an artery in your wrist and connect it to an IV bag. In the PICU, we attach it to a special type of vital-signs monitor, which gives more detailed information than the one in the Postsurgical Nursing Unit does. We also might use the arterial line to draw samples for laboratory testing.

Central Line Monitor

We might place a special IV, called a central line, into a vein in your neck during surgery. The line allows us to check your central venous pressure while you're in the PICU, determine when you need more IV fluids, and administer fluids and pain medicine. We also might use it to draw samples for laboratory testing.

Gastrostomy Tube (G-Tube)

If you already use a G-tube for feeding, after surgery it might be connected to a bag to help relieve gas and drain stomach fluids. A G-tube might be used instead of a nasogastric tube (see **Surgical Drains**, Page 13).

After Surgery: **At Home** Managing Pain

You can expect ups and downs with pain relief. It's common to have times when pain increases — especially when activity increases, too. Use the following strategies to help manage pain.

The Trip Home

About an hour before leaving the hospital, take a full dose of pain-relief medicine. If you have a long drive and pain relief is needed, take medicine as prescribed during the trip. You also might want to stop often. Repositioning promotes good circulation and comfort. Be sure to use seat belts! After you've had surgery, you might be more prone to injury if you're involved in a car accident.

Pain-Relief Medicine

Depending on the type of surgery you had and your pain tolerance, you'll probably need pain-relief medicine for a few days or weeks after surgery. Pain-relief medicine works best when given regularly (usually every four or five hours). Once pain becomes severe, regaining control of it can be difficult.

Pain might increase during sleep, so we advise waking patients up for scheduled medicines rather than waiting for them to wake up on their own. For minor pain, use mild pain-relief medicine, such as acetaminophen (Tylenol). Some people need stronger medicine, such as Tylenol with codeine, Valium, or adjustments to their intrathecal baclofen-pump dosage. Be aware that narcotics can affect bowel and bladder function.

Be Careful With Medicines!

- Don't use nonsteroidal anti-inflammatory medications if you've had a spinal fusion. Such medicines can affect bone healing. They include ibuprofen (Motrin and Advil) and naproxen (Aleve).
- Don't use plain acetaminophen (Tylenol) and acetaminophen with codeine (Tylenol 3) at the same time.
- Because many over-the-counter medicines contain acetaminophen, always read labels to keep from using too much. Limit acetaminophen to five doses within 24 hours — and use it only if your doctor approves.

Ice and Heat

Muscle spasms are common after surgery. They're best treated with ice massage. Some people also find relief by alternating ice massage with warm heat. For ice massage:

- Freeze water in a Styrofoam cup. (Or use Cryogel cold packs, which are available at most pharmacies.)
- Peel back one-third of the cup to expose the ice.
- Rub ice on the affected area for 15 to 20 minutes. Although doing so might be uncomfortable at first, it has the most lasting effect on spasms.
- Use a cloth between the ice and your skin to keep skin from becoming too cold.
- Wait 30 minutes between applications.

For moist heat:

- Apply a warm, damp towel for 10 to 15 minutes.
- Don't use moist heat on or near an incision without your doctor's permission.

If you're wearing a cast, be sure to keep it dry.

CONTINUED: **At Home**
Managing Pain

Other Pain-Relief Methods

Music, stories, books, television, video games and other activities can help distract you from pain. Massage or a soothing touch — especially on areas of the body that are pain-free — can help as well. If possible, raise your incision above your heart by a few inches. That will reduce swelling and improve blood circulation. See **Relaxation Techniques**, Page 20, for more ways to relax muscles and provide comfort.

If Pain Increases

Swelling, activity, anxiety, infection and poor sleep can increase pain. If pain is worse than usual:

- Take another dose of pain-relief medicine if enough time has passed since the previous dose. (Never take more medicine than your doctor prescribes.)
- If you aren't already using it, try stronger pain-relief medicine, such as acetaminophen with codeine. (Take stronger medicine instead of — not in addition to — milder medicine.)
- Continue elevating your incision, because your circulation will be weaker than normal for some time after surgery.

You might have leg and back pain as you recover. If pain worsens, first review your daily activities. Discomfort often is your body's way of telling you that you need to rest. Increase activities gradually. Anticipate increases in activity and take pain-relief medicine an hour before exercising, standing or walking. It's better to use pain-relief medicine and be active than to limit activities to avoid pain.

Discontinuing Pain-Relief Medicine

Once you're comfortable — usually a few days after leaving the hospital — you can gradually change from strong to mild pain-relief medicine. One good way to do this is to begin using plain Tylenol during the day. If that proves sufficient, continue using Tylenol. If discomfort increases — especially at night — return to stronger pain-relief medicine. Pain should decrease every day after surgery, until eventually you can stop using even plain Tylenol.

After Surgery: **At Home**

Children and Pain: Additional Information for Caregivers

Sometimes children and teens don't react to pain as adults do. Children might:

- Cry, scream or moan
- Complain of pain
- Be irritable, whiny, crabby or negative
- Be inconsolable (unable to be calmed or distracted)
- Show a major change in behavior (for example, an active child might become quiet or withdrawn)
- Sleep restlessly or be unable to sleep
- Eat or drink very little
- Show changes in muscle tone (usually increased tightness or spasticity)
- Be unable to find a comfortable position
- Hold still, as if guarding against touch or movement
- Avoid play or favorite activities

If you think a child is in pain, you're probably right.



Face scale modified from Wong, D.L.: Whaley and Wong's *Essentials of Pediatric Nursing*, 1997, Mosby.

Figure 5: Use this pain scale to assess pain in children. Explain to children that each face represents people who feel happy because they have no pain or sad because they have some or a lot of pain. Ask children to choose the face or number that best describes their pain.

After Surgery: **At Home** Relaxation Techniques

Relaxation techniques can help you control anxiety and use your energy more efficiently. Relaxation is a learned response that takes practice. Eventually, you'll learn to recognize when you're tense — and when you should use relaxation techniques.

Deep Breathing

If you can, begin by lying on your back with your knees bent and your feet about eight inches apart. Turn your toes out slightly.

- Scan your body for tension.
- Place one hand on your abdomen and one hand on your chest.
- Inhale slowly and deeply through your nose into your abdomen, pushing against your hands as much as you comfortably can. Your chest should rise only a little — and only as your abdomen moves.
- When you feel at ease, smile slightly and inhale through your nose.
- Exhale through your mouth, making a quiet, shooshing sound (like the wind) as you gently blow out. Relax your tongue, mouth and jaw.
- Take long, slow, deep breaths that raise and lower your abdomen. Focus on the sound and feeling of your breathing. Continue deep breathing for five to 10 minutes, once or twice a day, for a couple of weeks. Then extend each session to 20 minutes. At the end of each session, scan your body for tension. Compare the tension you feel at the end of the exercise to what you felt when you began.

Figure 6: Lying on your back makes it easier to relax and breathe deeply.



Body Awareness

Focusing on different body parts can help with general relaxation. For this exercise:

- Position yourself comfortably.
- Close your eyes and think of your face muscles. Let them totally relax.
- Next, think of your neck and shoulder muscles. Let them totally relax.
- Relax all your muscles, moving from head to toes. Let all your body parts become loose and warm.

Imagery

Focus on pleasing thoughts and images. Close your eyes and picture a pleasant scene or favorite place. As you relax, imagine the sights, sounds and smells of the scene.

A Pleasant Environment

Environmental factors (the things all around you) can help you relax. To maximize relaxation:

- Play soothing music.
- Take rest breaks as needed.
- Turn down the lights and close the door, so you're in a quiet place.
- Wear loose, comfortable clothing.
- Try to keep interruptions and noise to a minimum.

These techniques can be especially helpful before you begin a task or during activities that tire you.

After Surgery: **At Home**

Caring for Incisions and Minimizing Scars

Avoid submersing yourself in bathtubs, pools, hot tubs, whirlpools or lakes until your doctor says it's OK to do so (at least 10 to 14 days after surgery, when your incision has healed). If water seeps into your incision, it could cause an infection.

You may, however, take showers. If you need to wash over your Steri-Strips, use soap and water or a solution of half water and half hydrogen peroxide. Pat your incision dry, using a clean towel. The Steri-Strips should fall off naturally. After two weeks, you may remove them if they become soiled or if they're still in place.

Watching for Infections

Check the surgical incision daily for signs of infection. (We'll show you how to do so.) A healing incision might look pink, but it shouldn't be inflamed or deep red. Symptoms of an infection include:

- Warmth, redness, draining or swelling at the incision site
- An ongoing fever above 100.5° Fahrenheit
- Tender, enlarged lymph nodes in the armpit or groin closest to the incision site
- Pain
- Numbness, tingling or weakness in your legs (Note: some numbness around the incision itself is normal)

If a cast covers the incision, stay alert for drainage (such as pus or a new stain coming from inside the cast) and a foul or musty odor. Never get the cast wet. Continue with bed (sponge) baths until the cast is removed.

Minimizing Scars

There are several types of scars.

- Keloid scars are wide, extending beyond the original incision.
- Hypertrophic scars are pink and raised.
- Other scars might have irregular contours.

Typically, scars remain raised, red and firm for eight weeks. After a year, they usually become softer, whiter and flatter.

To reduce scarring, shield your incision from sun exposure for a year. Use sun block to keep scars from darkening. If you can't avoid direct sunlight, wear white (which reflects light).

Your doctor might recommend pressure therapy (using silicone sheeting, gel or tape) for seven or eight weeks. Pressure therapy uses microscopic pressure to prevent scars from forming. Moisturizers and massage can help realign collagen fibers, making skin appear smoother. We'll let you know which therapies are right for you and when you should begin them.

Revising Scars

Plastic surgeons make scars as inconspicuous as possible — enough that, from a conversational distance (four to six feet), they're hard to see. But we can't completely remove them.

It takes about nine months to see how a scar will look when it's mature. Then, depending on the severity of the scar, your doctor might consider scar-revision surgery. Techniques for repairing or improving scars include laser treatment, dermabrasion and surgical revisions.

- Gillette's long-pulse dye laser penetrates the skin and blood vessels better than traditional lasers do, resulting in less-noticeable scars.
- Dermabrasion is a sanding technique similar to using a sandpaper wheel to achieve a smooth surface. It's used to resurface lumpy scars.
- Surgical revisions involve removing a scar and reclosing the wound. It's particularly effective on wide scars. Plastic surgeons should take part in discussions about treating scars with surgery.

After Surgery: **At Home** Diet

A good diet helps minimize issues — such as constipation and other intestinal problems — that are sometimes associated with surgery. For example, regularly eating a high-fiber diet is helpful. To avoid gas and bloating, increase the amount of fiber in your diet gradually.

The following foods are good sources of dietary fiber. If you have oral-motor or swallowing problems, be careful to avoid foods that can cause choking.

Cereals	Bran cereals, oatmeal, grits, Shredded Wheat, Chex cereals, Cheerios, Wheaties, Grape-Nuts, Fiber One, All Bran, Cracklin' Oat Bran
Breads	Bran muffins and whole-wheat, cracked-wheat, rye, oatmeal or eight-grain breads
Grains, flour and pasta	Unprocessed bran, whole-wheat flour, barley, brown rice, buck wheat, bulgur, cracked wheat, rolled oats, whole-wheat pasta, wild rice
Legumes	Black beans, chickpeas (garbanzo beans), kidney beans, lentils, navy beans, pinto beans, turtle beans, white beans
Nuts, seeds and coconut	Almonds, Brazil nuts, coconut, hazelnuts, peanuts, peanut butter, popcorn, pumpkin seeds, sesame seeds, sunflower seeds, walnuts
Fresh fruit	Apples, berries, pears, nectarines, apricots, peaches, melon, grapes, oranges, mangoes, papayas, plums, cherries, rhubarb, pineapple, kiwi
Dried fruit	Dates, raisins, apricots, peaches, pears, plums
Canned fruit	Apricots, cherries, mandarin oranges, grapefruit sections, peaches, pears, plums, pineapple, fruit cocktail
Vegetables	Celery, potatoes, green beans, broccoli, parsnips, peas, spinach, sweet potatoes, carrots, corn, beets, cabbage, eggplant, onions, zucchini, asparagus, tomatoes, lettuce (especially dark-leaf lettuce)

Beverages

Be sure to drink six to eight glasses of water a day. To avoid constipation, limit milk and dairy products to three or four servings every day.

Fruit juices don't have fiber, but they — especially prune juice — have components that can help manage constipation. (Peach, pear, papaya and citrus juices are other good choices.) Drinking plenty of fluids causes the intestine to contract, moving stool through the large intestine. Water and fruit juices are especially beneficial. But limit yourself to 4 to 8 ounces of fruit juice each day.

If you're drinking more than one or two cans (20 ounces total) of soda pop a day, try to cut back. The phosphorous in soda makes it more difficult for the body to absorb calcium.

After Surgery: **At Home** Bowel Management

Keep in mind that the bowel-management process is different for everyone. The goals of bowel management include:

- Emptying the lower bowel at regular intervals
- Preventing accidents between regular emptying
- Preventing constipation
- Promoting independence

A satisfactory bowel-management program requires trial and error, time, and patience. Ask your doctor which methods are best for you, and try various options until you find a successful one. And be sure to tell your doctor or nurse if a method isn't working. (See **Diet**, Page 22, for more information.)

Beginning a New Routine

When you start a new bowel-management routine, begin with an empty bowel. For example, you might use a mild laxative or small enema to clean the bowel. Don't go more than three days without having a bowel movement. If you need medicines (such as suppositories or laxatives), your doctor or clinic nurse can help you decide which ones to use.

Positioning

It's easier to have a bowel movement when you're sitting, rather than lying down. If your feet don't touch the floor when you sit on a toilet, put a box or footstool under them so that your knees are higher than your hips. Such a squatting position helps promote bowel emptying. If you can't sit on a toilet, try another position. Using a stander, for example, can make having a bowel movement easier. To prevent skin irritation, clean the skin well after each bowel movement.

Medicines

Stool softeners prevent stools from hardening. You may use them regularly. A suppository is medicine that's inserted into the rectum. The medicine stimulates the bowel, causing it to contract and move stool out of the intestine. Suppositories should touch the rectal wall after they're inserted. Laxatives are also medicines that stimulate the bowel. They come in pills and liquids.

Manual Stimulation and Evacuation

To stimulate the bowel by hand, put on a medical glove and insert a finger one-half to one inch into the rectum. Use a gentle circular motion for one minute. Doing so relaxes the sphincter (rectal muscle) and allows stool to move through the intestine.

If other techniques aren't successful, you might need to remove stool from the rectum with a gloved finger. Enemas are usually one of the last treatment choices. An enema injects liquid into the intestine through the rectum, stretching and irritating the bowel. The irritation causes the bowel to contract and empty.

After Surgery: **At Home** When to Call Gillette

Be sure to call us right away if the following situations occur. (See Pages 2-3 for phone numbers.) And feel free to call if you have additional questions or concerns regarding surgery and related care. We'll take your call 24 hours a day.

Incision

- Your incision opens in any way
- You have questions about caring for an incision

Pain

- Pain is severe and unrelieved with rest, ice or medicine
- You develop calf pain, swelling, redness or tenderness
- Your pain requires medicine more than five times a day
- For no apparent reason, your pain becomes severe after a fairly long period of comfort
- Your pain gets worse and there is new redness, swelling or thick drainage in the area of surgery
- The location of pain changes for no apparent reason
- There is pain in an area covered by a cast, but not in the area of surgery
- Pain becomes severe and isn't relieved by the methods discussed in *Managing Pain*, Page 17

Skin

- Redness doesn't go away within an hour after relieving pressure
- Skin breaks down or becomes infected

See *About Body Casts*, Page 41, *About Halo Cast/Vests*, Page 38, and *About Postoperative Spinal Orthoses*, Page 46, for more information on skin care.

Other Symptoms

- Abdominal pain or distention, vomiting or diarrhea
- An ongoing fever above 100.5° Fahrenheit
- Chest pain or shortness of breath
- Throat irritation or severe pain
- Pain or burning when urinating
- Tingling, weakness or numbness in arms or legs that doesn't go away after you change positions
- An unusual headache
- A bowel or bladder problem

Casts and Orthoses

- Severe pain, numbness or burning (inside or below the cast) that's unrelieved with medicine, elevation or rest
- Swelling or tightness (under the cast) that's unrelieved by elevation and rest
- Difficulty moving toes or fingers
- Toes or fingers that are cold or discolored
- A new stain seeping through from inside the cast
- A foul odor coming from inside the cast
- Broken, blistered or irritated skin around the cast edges
- A cracked, broken or loose cast
- A foreign object inside the cast
- Signs of infection (redness, tenderness, drainage, pain and swelling) around the pin sites of a halo cast
- Loose halo-cast pins or a clanking noise
- Pain from a halo cast that's unrelieved by pain medication

Be Safe!

To protect your back and reduce discomfort, it's important that you change positions correctly — both in the hospital and after you go home. Move slowly and carefully. **Most importantly, avoid bending, twisting and lifting.** Such movements can cause back pain and delay healing.

Your medical condition — including, but not limited to, the reason you had spine surgery — will play a large role in determining your abilities after surgery. Some people will be able to do all of the activities discussed in this section. Others will be able to do some of them. (For example, if you were unable to stand or walk before surgery, you'll return to your normal activity level afterward.) Patients improve their levels of activity at different rates. It will take three to six months before you can fully resume your previous level of activity. Talk with your doctor about which activities are right for you.

Before you leave the hospital, a nurse will teach you how to perform your daily activities safely at home, work and school. Do only simple tasks at first. Your doctor will let you know when you can resume recreational and home-maintenance activities.

Rolling From Side to Side

Whenever you turn over in bed, roll like a log. Don't sit up first. To roll from side to side, bend your legs and push with your feet. Move your shoulders, hips and knees together, without twisting your back. Your upper trunk should stay lined up with your lower trunk. Contracting your abdominal muscles will make it easier to move your body as one unit.

Getting Out of Bed

The first or second day after surgery, you'll sit on the edge of your bed and then stand. To get out of bed, follow these steps:

- Gently roll to your side.
- Push yourself up, slowly, onto the elbow on that side.
- Bend your knees, keeping your legs together. Let your legs swing over the edge of the bed.
- At the same time, use your elbows and hands to push yourself up to a full sitting position. (A bedside armchair might help if you have difficulty pushing yourself up.) Keep your back straight.
- After you're sitting in a balanced position, scoot your hips forward until both feet touch the floor.
- Keep your back straight and come to a standing position using your thigh muscles. (See **Preparing to Stand**, Page 26.)

Don't get out of bed by sitting up and swinging your legs over the side. That puts strain on your back.

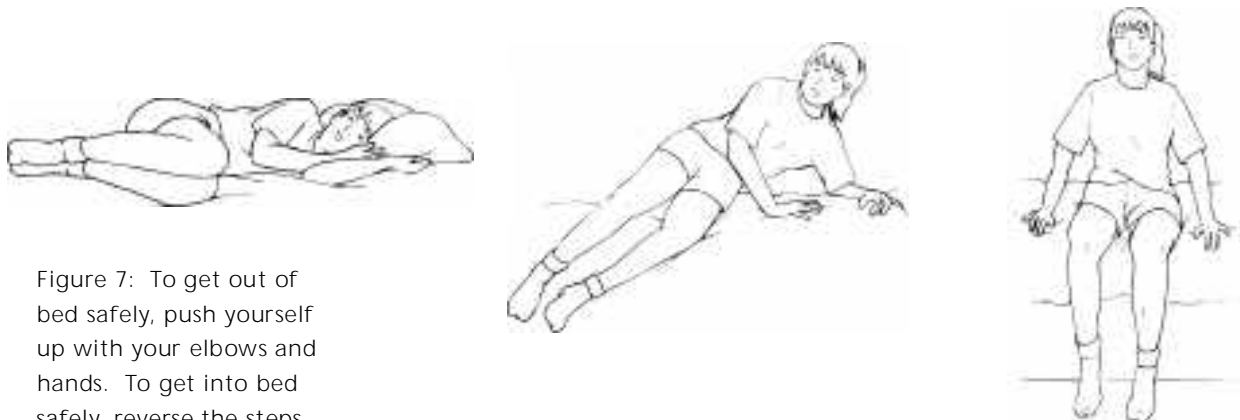


Figure 7: To get out of bed safely, push yourself up with your elbows and hands. To get into bed safely, reverse the steps for getting out of bed.

Getting Into Bed

Before getting into bed, place your bedcovers and pillows near enough that you can reach them when you lie down.

- Sit on the edge of the bed (see **Preparing to Sit**, below).
- Prepare to lie on your side by resting on your elbow and slowly raising your legs. Don't twist your back.
- Continue to ease into a lying position. You should end up on one side, with your knees bent toward your chest (in the fetal position).

Preparing to Stand

Before you attempt to stand, slide as close to the front of your seat as you can. Then:

- Make sure you can touch the floor with both feet.
- Place one foot slightly behind the other.
- Keep your back straight.
- Lean forward at the hips and push up using your arms and legs. Use an armrest, rail or other sturdy surface for support if you need help balancing.
- Use your thigh muscles to help you rise and stand.

Standing

Maintain good posture while you're standing. Don't stoop or curve your spine forward.

- Position your feet so that they're pointing forward and shoulder-distance (about 10 inches) apart.
- Stand with your head erect and shoulders back.
- Let your arms hang freely.
- Keep your abdomen flat, buttocks firm, and knees slightly bent.

As you stand, maintain all of your spine's normal curves. Curves are lost when you bend forward or arch backward.

Keep your center of gravity (weight) in line with your feet and legs. To make standing easier:

- Shift your weight from one foot to the other.
- Place one foot on a footstool (about 3 inches high) if you'll be standing for a long time. It also might help to lean on a tall stool.
- Make sure your work surface is no more than 2 or 3 inches below your elbows.
- Wear shoes with heels no higher than 1 inch.

Preparing to Sit

First, choose a firm, hard chair. If it doesn't offer adequate support to your lower back (lumbar region), use a lumbar support (4 to 6 inches thick).

- Move backwards toward the chair, feeling for the seat with the back of your legs.
- Use your thigh muscles to lower yourself onto the chair.
- Keep your back straight.

Sitting

Don't sit for more than 20 or 30 minutes at one time. Take frequent short breaks by shifting position, standing or walking.

- While sitting, maintain your spine's normal curves. Don't arch or lean forward.
- Rest your feet on the floor. Don't dangle them.
- Avoid twisting as you reach for objects. Move your trunk as a unit.
- Support your elbows on a surface, such as an armrest, a table or a lap pillow.

Firm chairs are more comfortable than low, soft ones. Because sitting puts more strain on your back than walking does, it's best to decrease the time you spend sitting and increase the time you spend walking.

Figure 8: Be sure to use proper posture when sitting.



Walking and Climbing Stairs

Walking helps your muscles relax. In the hospital, you'll work up to walking short distances four to six times a day, adding distance gradually. When you return to see your spine surgeon (three to six weeks after surgery), we expect that you'll be walking one to two miles a day.

Before you're discharged, you'll need to walk up and down a flight of stairs. Limit your use of stairs, however, especially if surgeons took a bone graft from your hip. While climbing stairs, use the handrail, maintain good posture, and let your leg muscles do the work. If you're tired, take one step at a time. Place both feet on each stair, rest, and then resume your climb. Otherwise, climb as you normally would.

Figure 9: Use a handrail when climbing stairs.



Getting Into and Out of a Car

Be careful not to twist or rotate your back. While you're sitting on the car seat, turn your entire body and swing your legs into or out of the car. Place your arms on the seat or the body of the car if you need support. Don't lean on the car door — it could swing, throwing you off-balance and increasing your pain.

When traveling by car, stop every 30 to 60 minutes. Get out of the car and walk around for a few minutes.

Figure 10: Be careful not to twist your body when getting into or out of a car.



Sitting On and Getting Up From the Floor

To sit on the floor, begin by dropping to one knee (so you're squatting). Keeping your back straight, lower the other knee. Assume a side-sitting position, then bring your legs forward.

To get up from the floor, bring your legs to the side and assume a side-sitting position. Keeping your back straight, roll onto one knee while placing your other foot on the floor. Using your thighs, begin to rise. Straighten your bent knee and place that foot on the floor.

Personal Grooming, Showers and Baths

Because most sinks are low, some personal grooming activities — such as brushing your teeth, fixing your hair or shaving — might be uncomfortable. Follow these tips:

- If your sink is lower than your waist, kneel on the floor or on a low footstool in front of the sink.
- If your sink is waist level or higher, support your upper body with a bent forearm. Place one leg slightly behind you.
- Wash your hair while standing or sitting in a shower.
- Use a bath mat or slip-resistant strips on the shower floor. Make sure the floor is dry before you step onto it.
- If you must wash your hair at a sink, use a spray nozzle to avoid bending forward.
- Maintain the lumbar curve in your back by bending slightly at the hips and knees, if necessary. Don't stoop.
- To avoid twisting and bending, use soap-on-a-rope, a long-handled scrub brush, or a hand-held shower nozzle to extend your reach.
- The most difficult areas to wash, without bending forward, are your legs and feet. When washing your legs and feet, or putting on socks and shoes, use a footstool. Or cross one foot over the opposite knee.
- When sitting on a toilet, keep your back tall. Avoid twisting as you wipe.

If you need assistance, ask someone for help.

Before taking a tub bath, your Steri-Strips must have come off. You should also practice getting up from the floor before taking a tub bath. Remember to bend your knees and keep your back straight. If you have any doubts that you can get out of the tub, ask someone to help you.

CONTINUED: How to Move Safely and Comfortably After Surgery

Dressing

Before dressing, gather the clothes you plan to wear (including socks and shoes), so you don't have to make multiple trips to your closets and drawers. Select comfortable, loose-fitting clothes and slip-on shoes. Sit on the edge of a bed or chair to dress.

Wear button-front shirts, or put your arms through the sleeves of pullovers before you draw them over your head. As much as possible, avoid twisting and bending. While you're recovering from surgery, avoid using bottom drawers or closet floors to store your clothes.

Reaching

Work within a comfortable range of motion (between the top of your head and your fingertips). Avoid stretching. Instead of standing on your toes to reach overhead items, use a stepstool. Balance your weight on one hand when reaching across a bed, counter or car hood. When reaching:

- Place your feet shoulder-distance apart.
- Put one foot slightly ahead of the other.
- Contract your pelvic muscles to stabilize your lower back.
- Use a reacher tool to retrieve objects, especially if squatting is difficult for you.

Figure 11: Balance yourself with one hand if you have to reach across a table, counter or other surface.

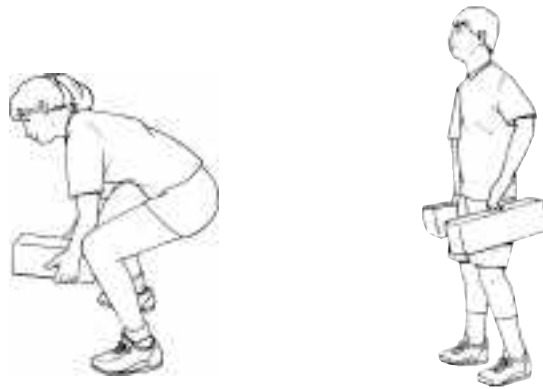


Lifting and Carrying

Ask someone to help with heavy or bulky items, or use a pushcart or dolly. Use both hands to carry items. Hold your load at waist level, with your elbows slightly bent, and set it down frequently. Even after you're fully recovered from surgery, continue using these techniques for safe lifting:

- Avoid twisting.
- Before lifting, get close to the item — straddling it with your knees, if possible. Place one knee on the floor if you need more stability.
- Bend your knees and hips at the same time. Keep your back straight.
- Use your legs, not your back, to supply most of the lifting force.
- As you lift, straighten your knees and hips, keeping your abdominal muscles tight and your elbows close to your body.
- Breathe deeply. Don't hold your breath.

Figure 12: Lift or carry no more than 5 pounds until your doctor tells you differently.



Pulling and Pushing

To push or pull, follow these steps:

- Bend your knees and hips, using your leg muscles (not your back muscles) to push.
- Place one leg behind the other for better leverage.
- Lean toward the object you're pushing.
- Push squarely in the direction of the object being pushed.
- Avoid twisting.

If you must pull an object, begin by facing it. Put your hands around the sides (rather than across the top) of the object. Pull only for short distances, using your legs and body weight as a counterbalance. To pull open a door, get close to it and use both hands.

Figure 13: If you have a choice, push rather than pull.



Driving

If you drive, you may resume doing so as soon as you're comfortable and certain that you can react quickly by braking or swerving. Practice driving in a long, quiet driveway or an empty lot at first. On long trips — whether you're the driver or the passenger — stop every one to two hours and walk around for five to 10 minutes.

Traveling

At airports, the metal rods and wires in your back might trigger metal detectors. To prevent confusion, obtain a card from your nurse that explains your condition.

Exercise and Recreation

We encourage you to increase, rather than decrease, your level of activity. Be cautious during activities, however, so the amount of stress to your back is minimal. Ask your doctor about activities, and write your doctor's instructions on the activity checklist you'll receive at your first postoperative visit. Some restrictions can last from six months to one year, depending on how your fusion heals.

Additional Information: [Medicine Advisory:](#)
Depakene or Depakote and Surgery

If you take the antiseizure medicine valproic acid (brand names Depakene or Depakote), you might have a higher risk of increased bleeding during surgery. That's because valproic acid can thin the blood.

If you take Depakene or Depakote, please tell your Gillette doctor or nurse. You might need tests to measure blood clotting and related properties before scheduling surgery and again the week before you undergo surgery. The tests might include:

- Albumin
- Complete blood count (with platelet count)
- Fibrinogen
- Partial prothrombin time
- Platelet function
- Prothombin time
- Thrombin time

Some lab tests are specialized and require lab equipment unavailable in a doctor's office. You can undergo such tests at Gillette or at your local hospital.

If your test results fall outside the normal range, you might need medicines other than Depakene or Depakote shortly before and after surgery. Talk to the doctor who prescribed Depakene or Depakote. If a substitute medicine isn't appropriate, it might be possible to change your surgery plan.

Additional Information: Donating Blood

Patients undergoing surgery sometimes need blood transfusions during the procedure. Talk with your doctor before surgery. If needed, your doctor will complete a blood-donation request form and fax it to the Red Cross. Outside of using blood from the Red Cross, there are two options: autologous donations and directed donations.

Autologous Donations

Generally, you may donate your own blood before surgery. There are a few restrictions. If you have anemia, bleeding disorders, certain heart conditions and some cancers, or if you recently had or currently have an infection, you usually aren't eligible to donate. Donors also must weigh at least 110 pounds.

You can give blood weekly beginning six weeks before surgery and continuing until one week before surgery. (The week off gives your body time to replenish the blood you've donated.) Because you might develop mild anemia, you should take an iron supplement as prescribed by your physician.

Directed Donations

Your family and friends can donate blood specifically for you. (Studies show, however, that such directed donations aren't necessarily safer than blood from blood banks.) When family members or friends donate, the blood must be irradiated to prevent a possible immune-system reaction in the person receiving the blood.

Directed donors must know their blood type and yours. If you or your donors don't have that information, you can be tested at a hospital lab before setting up an appointment to donate at the Red Cross. The Red Cross needs four to seven business days to process donations.

Once donated blood is delivered, we'll take a blood sample from you and perform a type and cross-match test. The tests help ensure that blood is safe for a particular patient. Such tests must take place no more than 72 hours before surgery at the hospital to which the blood is sent. Donated blood is good for 35 to 42 days. If surgery is postponed and can't be rescheduled during that time, you'll need new donations.

For more information or to schedule an appointment, call the Red Cross donation coordinator at 651-291-4606 or 800-652-9742, ext. 4606 (toll-free).

Cost

There is a fee for collecting, testing and distributing autologous and directed donations. Many times — especially in the case of directed donations — insurance companies won't cover the cost. Check with your health-insurance provider.

Additional Information: Natural Rubber Latex Allergy

Caution!

If you experience a severe rash, or swelling of the face, mouth or throat after contact with latex products, call 911 immediately.

Anyone who uses latex products can develop an allergy to its proteins or to chemicals used when the product is made. Itching, flushing, watery eyes or a rash often accompany a latex allergy. Hives or swelling might occur in the area the latex touches. More seriously, latex can cause severely low blood pressure and swelling of the airway (which interferes with breathing). That's called an anaphylactic reaction, and it can cause death if untreated.

An allergic reaction can occur suddenly, even if you've been exposed to latex products previously without any problems. A reaction is more likely to occur when latex comes in contact with mucous membranes, such as those in the mouth, urinary tract or rectal area.

Patients with a high risk of developing a latex allergy include those who have:

- Been diagnosed with spina bifida or a spinal-cord injury
- Had six or more surgeries
- Used catheters for a long time
- Food allergies to avocados, bananas, kiwis, papayas, passion fruit, chestnuts, peaches or tomatoes
- Been exposed to frequent use of latex gloves and other products
- Extrophy of the bladder

Gillette uses nonlatex gloves, catheters and other medical equipment for all latex-allergic and high-risk patients. If you're in the high-risk group, we recommend using nonlatex products routinely at home, work and school — even if you haven't had a reaction to latex. A latex allergy identification card is available from your Gillette nurse. If you've experienced a latex reaction, your doctor might want you to carry a bee sting kit and wear a medical-alert bracelet.

The list on the following page identifies some common items made of latex and suggests alternatives. If you're not sure whether a product contains latex, contact the manufacturer.

CONTINUED: **Natural Rubber Latex Allergy**

Might Contain Latex	Safe Alternatives
Art supplies: paints, glue, erasers, fabric paints	Elmer's (school glue, Glue-All, Glu-Colors, carpenters wood glue, Sno-Drift paste), FaberCastel art erasers, Crayola products (except for rubber stamps, erasers), Liquitex paints
Rubber balloons	Mylar balloons
Balls: Koosh, tennis, bowling	Plastic or vinyl
Carpet backing, gym floor, basement sealant	Provide barrier (cloth or mat)
Clothes: appliqué on T-shirts; elastic on socks and underwear; soles on sneakers and sandals	Cloth-covered elastic and neoprene (from Decent Exposures, Nolatex)
Elastic on clothing, diapers	Cloth, Velcro
Feeding supplies	Selected Gerber, Evenflo, MAM and Ross nipples and Mead Johnson bottles
Handles on racquets, tools	Use vinyl or leather handles, or cover with cloth or tape
Pacifiers	Soothies (Children's Med Ventures), Binky, Gerber, Infa, Kip, and MAM
Latex paint	Avoid skin contact and inhaling fumes
Rubber bands, bungee cords	Plastic bands, string
Toys, such as Stretch Armstrong and pre-1993 Barbies	Disney dolls (Mattel), many toys by Fisher Price, Playschool, Discovery, Trolls (Norfin)
Water toys and equipment: beach thongs, masks, bathing suits, caps, scuba gear, goggles	Items made of PVC, plastic, nylon
Zippered plastic storage bags	Waxed paper, plain plastic bags

Additional Information: Gastrojejunostomy Tubes

Some patients have conditions that put them at risk of complications during and after surgery. In such cases, gastrojejunostomy tubes (commonly called J-tubes) are often used to give nourishment after surgery while bypassing the mouth and stomach. A nurse will contact you before surgery if you need a J-tube.

How J-Tubes Address Feeding Intolerances

The type of surgery, length of time under anesthesia, and use of narcotics (medicines) for pain can interfere with how well your stomach and upper part of the small intestine function. That interference might lead to a feeding intolerance for an extended period of time after surgery.

Stomach problems, however, don't affect the lower part of the small intestine (the jejunum). Feedings given by a soft, flexible tube placed into the jejunum generally are well-tolerated following surgery. The tube might be surgically placed into the small bowel through a gastrostomy or as part of a special X-ray procedure.

Feeding Through a J-Tube

J-tubes provide a continuous drip of prepared commercial formula. A feeding pump controls the rate and amount of the feedings. Keep in mind that you:

- Shouldn't let formula hang for longer than 24 hours
- Should store open formula in the refrigerator for no more than 48 hours (after that, throw it away)
- Should use liquid medicines with a J-tube, because it's smaller than a gastrostomy tube and therefore will clog more easily

Always flush (cleanse) tubing after giving medicine through the J- or gastrostomy tube. Ask your doctor which tube to use for each medicine.

Caring for a J-Tube Site

- Keep the site clean and dry.
- Keep the tube properly stabilized to prevent leaking and to keep it in place.
- If your J-tube doesn't have internal and external attachments to keep it in place, a nurse will show you how to secure it with tape.
- Replace the J-tube only if your doctor instructs you to do so.
- Avoid pinching the J-tube if it has a double lumen tube.

Additional Information: Patients With Neuromuscular Scoliosis

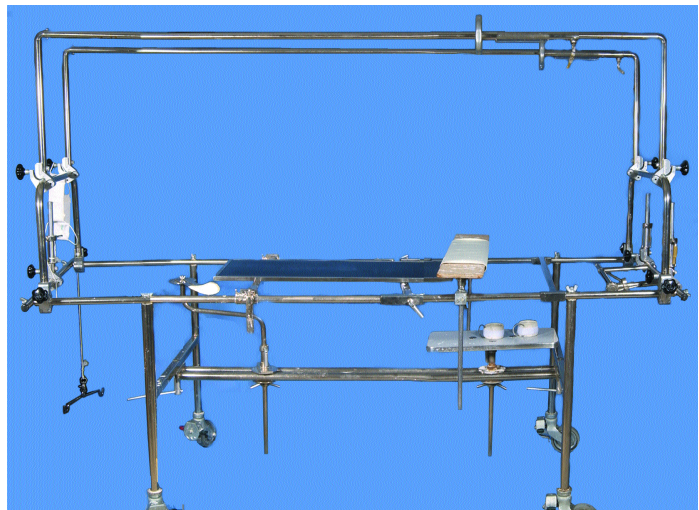
If you're having spine surgery because of neuromuscular scoliosis, keep these additional issues in mind.

Traction X-Rays

Before surgery, you might need a traction X-ray to determine the flexibility of your spinal curve and your spine's ability to straighten. A traction X-ray also helps your doctor plan surgery.

You'll lie on a table (see photo) with two belt-like straps around your waist. A technician will apply traction to your spine by pulling on the straps of the head halter under your chin. The procedure takes about 10 minutes.

Figure 14: A traction X-ray gives your doctor important information for planning surgery.

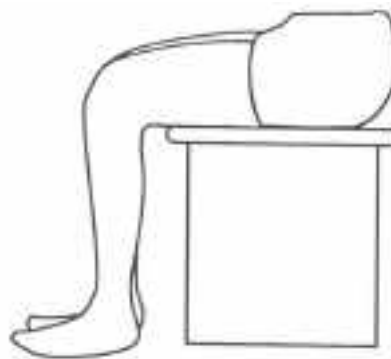


Transfer Guidelines

Following fusion to the sacrum, your doctor might recommend restricting the amount you bend at the hips. Typically, patients are allowed to flex their hips 90 degrees.

If hip flexion is limited to 90 degrees, you might need to change your method of transfer. Don't use a mechanical lift, because a sling flexes beyond 90 degrees. Teens and larger children might need two people to help with transfers. Avoid using extreme shoulder motions. These restrictions generally are temporary until healing is complete.

Figure 15: This diagram shows 90 degrees of hip flexion. Lifting a leg would increase the flexion to more than 90 degrees.



Additional Information: [About Body Casts](#)

After surgery, you might need a plaster body cast. If so, the cast won't be completely dry for 24 to 48 hours. Don't sign, decorate or cover the cast for at least one day after it's applied. Don't stand or walk in the cast, unless your doctor approves.

In addition, be aware that wearing a body cast can affect breathing, appetite, behavior, and bowel and bladder habits.

Types of Body Casts

If you need a spica, or body, cast (see Figure 17), we'll apply it around the trunk of your body to stabilize your spine. Spica casts sometimes include bilateral leg extensions. Your doctor will discuss how far down your legs the cast will extend.

Minerva casts (see Figure 18) are used after some spine surgeries to keep the neck or upper back from moving. Depending on your surgery, you might need a pantaloon or Risser cast instead of a spica or Minerva cast. If so, your doctor will discuss the situation with you.

Figure 16: This is a spica (body) cast.



Figure 17: This is a Minerva cast.



Inspecting the Skin

When you're wearing a body cast, you'll need to check your skin at least twice daily to make sure it isn't irritated. Ask someone to help you check areas you can't see.

Pressure sores form most often on the heels and near the tailbone. Use a flashlight at the edges of the cast to look under the cast and check the skin underneath. If there are any reddened areas, change position to remove pressure. (Someone will have to help you change position.) If the area stays reddened for 30 minutes after pressure is removed, a pressure sore might be developing. Report pressure sores to your clinic nurse.

Your toes should be pink and warm to the touch. You should be able to move them freely, without numbness, tingling or pain. Press on the nail bed to make sure it turns pink again when the pressure is released.

Circulation

Check your cast daily to make sure it's not too tight or too loose. If you feel tightness, pain, tingling or numbness, if you can't move your toes, or if there's swelling, elevate your legs above your heart for an hour or more. If the problem persists, contact your clinic nurse. A cast that has become too tight could damage nerves or cut off the blood supply to your legs. Be sure that no crumbs or small items (such as toys or coins) have fallen inside the cast.

Keeping the Cast Clean

Keep the cast as clean and dry as possible. If it gets wet, it might soften or crack and lose its proper position. If your skin remains wet, skin breakdown and infection could occur. If you develop diarrhea and soiling occurs under the cast, you might need cast repairs to prevent skin breakdown. Call your clinic nurse right away if such situations occur.

If your cast becomes dirty, use a slightly damp — not wet — cloth to clean the area. Keep the cleaned area uncovered until it's completely dry. Lightly dabbing white shoe polish on the stained area will make the cast whiter and cover dirt. Decrease odor by rubbing a small amount of dry baking soda into the soiled areas of the cast.

Positioning

Keep the head of your bed raised at all times. You can lie on your back, sides or stomach, as long as your head is raised and your cast is supported. It might be comfortable to sit in a beanbag chair or reclining wheelchair.

Turning and Lifting

You might use a hospital bed with a trapeze. The trapeze makes it easier for your caregiver to turn and transfer you. In addition, pulling up on the trapeze lets you relieve pressure.

Bathing

Take sponge baths, being careful not to get the cast wet. Use plastic wrap and towels to protect the cast. Have someone help you wash all skin not covered by the cast. Clean skin near the cast edges with witch hazel. It helps toughen the skin and protect it from irritations. Don't use lotion or powder at the edges of the cast. They can cake and make the skin softer, causing more irritation. Ask someone to rub exposed ankles, knees, elbows and heels with lotion if they become dry or irritated.

Cast Petaling

To prevent skin irritation from the rough edges of the cast, we'll petal the cast before you leave the hospital (fold petal-shaped waterproof tape strips over the cast edges to make it smooth and comfortable). But we can't petal the cast until it's completely dry. Your nurse will teach your caregiver how to petal the cast at home.

Itching

If you experience severe itching underneath the cast, use a hair dryer — set on cool only — to blow air into the cast. Don't place anything in the cast. Objects might scratch or irritate your skin, leading to infection.

Clothing

A cast is quite warm, so you won't have to wear heavy clothing. Skirts, dresses, large sweat pants and shorts are usually comfortable.

You can wear large underwear over the cast. For casts with a bar between the legs, open the sides of pants and panties and sew Velcro on the seams. Or simply place a small blanket over your lap. In cold weather, cover your toes with a large sock that fits over the foot of the cast.

Bedpans

A special type of bedpan, called a fracture bedpan, works best when you're wearing a body cast. It has a flattened end that can be placed under the buttocks. Lie on the side opposite the fracture or surgery site. Ask someone to help you place the bedpan under the buttocks. Be sure your head is elevated so urine flows down and away from the cast.

A urinal is used like a bedpan, but it's a bottle instead of a pan. Boys usually use urinals.

Activities

While you're wearing a cast, you'll be less active than usual. Try to keep your schedule as normal as possible, within guidelines your doctor sets. For example, you can go outside in a reclining wheelchair. Keep your bed or wheelchair in a room near family members and friends. Keep a television, food, water, a bell and a bedpan or urinal within reaching distance.

Cast Removal

Before you leave the hospital, we'll help you make plans for cast removal. When you return to have the cast removed, bring your shoes, clothes, braces and wheelchair. Ask your doctor or nurse if you should take pain-relief medicine before the cast is removed. Although the cast saw is noisy, cast removal is a safe procedure. The noise just comes from the saw vibrating through the cast. You might want someone to stay with you during the removal.

Additional Information: About Body Casts: Especially for Caregivers

This section expands on the information covered in **About Body Casts** (Pages 41-43). We've added tips that pertain to young children. And we discuss activities that children and teens in body casts will be unable to perform, including those related to personal hygiene. If you're a caregiver, be sure to read both sections. In addition, be aware that wearing a body cast can affect breathing, appetite, behavior, and bowel and bladder habits.

Cast Petaling

Your child or teen's nurse will teach you how to petal the cast, overlapping the petal strips. You'll also receive extra materials for replacing petals at home if they loosen or wrinkle. There are several steps to petaling a cast:

- Cut waterproof tape into 2 1/2-inch strips.
- Round off one of the ends to prevent the tape from rolling.
- Tuck the square end inside the cast smoothly.
- Bring the rounded edge over the cast outside.

Turning and Lifting

The added weight of a cast (6 to 10 pounds) and the inflexibility of the body in the cast make moving and turning patients a challenge. We'll show you proper lifting, turning and transfer techniques before discharge.

Be careful to protect your own back when moving your child or teen. Bend your knees, keep your back straight, tighten your stomach muscles and let your legs do most of the lifting.

It's important to properly move and turn people who are wearing casts. Alternate between turning the patient from side to side and back to front, unless your doctor says differently. Turn the patient every two to four hours during the day, and at least once at night to prevent pressure sores. Use pillows, blankets or rolled-up towels placed under bony areas (e.g., knees and ankles) for support and to prevent too much pressure on the skin. When turning a patient, support the ankle, knee and hip joints to avoid breaking the cast. Don't use the bar between the legs to move your child or teen.

Diapers

Use disposable diapers for children who aren't toilet-trained. Change the diaper as soon as it becomes wet. Change loose petals and pad the cast with dry, disposable diapers as needed. You can make padding by cutting diapers in half and taping the edges. Tuck edges inside the cast, plastic side toward the cast and absorbent side next to the skin. Place a sanitary napkin inside the diaper for extra absorbency.

Bedpans

When your child or teen needs to use a bedpan, place a disposable diaper around the edges of the cast. Put the absorbent side out and the plastic side against the cast. Remove the diaper immediately after your child or teen uses the bedpan.

A special type of bedpan, called a fracture bedpan, works best because it has a flattened end that can be placed under the buttocks. Turn your child or teen to the side opposite the fracture or surgery site. Place the bedpan under the buttocks, and turn your child or teen back onto the bedpan. Check to be sure the bedpan is positioned properly between the thighs.

Be sure to elevate the head so urine flows down and away from the cast. You can prop up your child or teen using folded blankets or pillows.

A urinal is used like a bedpan, but it is a bottle instead of a pan. Place the urinal between the legs. Make sure it's tilted so urine doesn't drain out. Urinals are usually used for boys.

CONTINUED: About Body Casts:
Especially for Caregivers

Note: Children in a body cast shouldn't drink more than three cups of milk a day; teens should drink no more than four cups. An excess amount of protein and calcium can cause calcium stones in people who are inactive. Drinking plenty of other fluids is a good way to prevent calcium stones. Cranberry juice is especially helpful. Before meals, place a large smock or shirt over the cast to prevent food and crumbs from falling into it. See **Diet** on Page 22 and **Bowel Management** on Page 23.

Activity

Let your child or teen take part in as many activities as possible, within guidelines your doctor sets. Special activities might make wearing a cast easier.

- Take your child or teen outside in a wagon, stroller or reclining wheelchair to get some fresh air.
- Place items such as toys, a TV, food, water, a bell, and a bedpan or urinal within reaching distance.
- Place your child on a rug or blanket on the floor to play.
- To avoid isolation, make sure your child or teen is in a room near family and friends.
- Hold small children as often as possible. The closeness and touching will soothe them.
- Try to keep your activity schedule as normal as possible.

Clothing

A cast is quite warm, so children and teens won't have to wear too much. Dress babies or very young children in oversized sleepers with snaps at the crotch and legs. In cold weather, cover the toes with a large sock that fits over the foot of the cast.

Equipment

While your child or teen is wearing a body cast, rent a wheelchair with a reclining back and extended leg rests. During the hospital stay, your nurse can direct you to Gillette staff who help patients rent equipment. Depending on your child's size and age, you might need to rent a hospital bed for your home. In addition, you might need to make special transportation arrangements. You'll also need extra supplies for toileting.

Safety Tips

Protect your child or teen from rolling or falling at all times. Be sure your child or teen is secure when lying or sitting on a couch, bed or car seat; use child-safety rails. The weight of the cast might cause your child or teen to feel off balance, which could lead to falls.

Cast Removal

Before your child leaves the hospital, we'll help you make plans for cast removal. When your child returns to have the cast removed, bring your child's shoes, clothes, braces and wheelchair. Children might feel some discomfort when the cast is removed. Bring pain-relief medicine along. Ask the doctor or nurse if your child or teen needs a dose of pain-relief medicine before the cast is removed.

We encourage you to stay with your child or teen during the procedure. The cast saw is noisy and might be frightening. Reassure your child or teen that the saw is just vibrating through the cast and that it's a safe procedure.

Additional Information: [About Postoperative Spinal Orthoses](#)

After surgery, you might need to use a spinal orthosis (brace) for support or protection. Your orthosis is custom-molded and made of lightweight plastic. It has pads, straps and, sometimes, metal supports that meet your specific needs.

Ordering an Orthosis

An orthopaedic specialist will order your brace from Assistive Technology at Gillette. In most cases, we'll make a plaster mold of your body within three days after your surgery. We'll wrap you in a thick layer of plaster. After the plaster wrap dries (in three to eight minutes), we'll remove it. We'll then make your orthosis from the plaster mold, according to your doctor's specifications. You may select a decal or color transfer to decorate your brace.

Fitting Your Spinal Orthosis

To ensure a proper fit, you'll need a series of fittings, which typically takes one to two days. During the fittings, orthotists will:

- Suggest ways to put your brace on and take it off
- Check to see that the orthosis applies the pressure and support your doctor prescribed
- Check to see that the brace relieves unwanted pressure
- Make the orthosis as comfortable and attractive as possible

Skin Care

Check your skin often for pressure areas. A pressure area is any red or pink mark that shows on your skin when your orthosis is removed. If an area remains red for more than 30 minutes after you remove your orthosis, notify your orthotist.

While wearing an orthosis:

- Avoid using lotion, creams and oils on skin that's under the orthosis. They soften skin and can lead to breakdown.
- Always wear a wrinkle-free T-shirt or body sock under your orthosis to protect your skin. Change it daily.
- Keep your skin dry. Moisture can cause skin breakdown, infections and body odor.
- Use witch hazel to stimulate and toughen skin under your orthosis.
- Notify your doctor immediately if open sores or blisters develop.

Caring for Your Orthosis

Wash the plastic areas of your orthosis every day with mild soap and warm water or with rubbing alcohol.

Wipe pads, straps and metal uprights. Strap the orthosis together to maintain its shape as it dries. Always keep your orthosis away from extreme heat. Let it dry thoroughly before you wear it again.

Adjusting to Your Orthosis

It takes most patients a week to adjust to wearing an orthosis. Wear it for the amount of time your doctor prescribes.

Follow-Up Appointments

During follow-up appointments, we check to see that your orthosis functions well and is meeting your orthotic needs. Make follow-up appointments according to your doctor's recommendation. If you live a distance from Gillette, we'll schedule time for you to see an orthotist during your first follow-up meeting with your orthopaedic surgeon. After four to six months, you'll need an appointment to check your spinal fusion and make sure your orthosis is functioning the way your doctor prescribed. At that time, we might adjust your brace-wearing schedule.

Figure 18: A spinal orthosis supports and protects the back after surgery.



Additional Information: [About Halo Cast/Vests](#)

A halo cast/vest is sometimes used after spinal surgery or spine fractures because the vertebrae heal best when movement is limited. The cast/vest fits snugly to support the healing spine. Once your doctor checks the fit, only your doctor or medical personnel should adjust or remove it. Never let anyone use the bar that attaches the halo to the cast/vest when lifting or turning you.

Keeping the Cast Dry

- Take an umbrella or raincoat when you leave home.
- Don't spend time in or around water.
- Place a plastic bag or poncho over the cast while shampooing.

If a child isn't toilet-trained, caregivers should put waterproof tape on the edges of the cast.

Letting the Cast Breathe

A cast is porous, which means air can pass through it to the skin. Paint and decals will seal the pores and prevent the cast from breathing. Limit the number of decorations. Never cover the cast with plastic material for long periods of time.

Keeping the Cast Clean

If the cast becomes dirty, use a lightly damp (not wet) cloth to clean the area. Keep the area uncovered until it is completely dry. Use a very small amount of white shoe polish on the stained areas to cover any dirt that doesn't wash off.

Halo Pin-Site Care

- To make pin care easier, prepare a tray with all the needed supplies.
- Perform pin care daily, or more often if there are signs of infection.
- Clean pin sites with diluted hydrogen peroxide solution (half hydrogen peroxide and half water), using a sterile cotton-tipped applicator. Use the rolling motion we'll teach you in the hospital.
- If crusting is present, wrap the pin sites for 20 minutes with gauze that has been soaked in normal saline solution. Remove crust with a sterile cotton-tipped applicator that has been soaked in normal saline. Use the rolling motion. Avoid vigorous cleaning, which can cause irritation.

Halo Vest Care

The vest is made of hard plastic and lined with fleece. Keep the lining dry. The fleece will mat and cause irritation if it gets wet too often. You can wash the plastic part of the vest with a cloth that's been dampened in clear water.

Bathing

Clean under the cast/vest once a day, using a damp washcloth to reach under the edges of the cast/vest. Use a long-handled sponge or tongs to reach your back and buttocks. Dry skin with a clean, dry washcloth. Don't use soap near the cast/vest, because it might cause skin problems. To clean feet, soak them in a tub or bowl of water.

Shampooing

Shampoo hair as often as needed, but at least twice a week. If you hang your head over the edge of the bed, someone can pour water over your hair and collect the water and soap in a large wastebasket. Once a week, someone should trim hair about one-half inch around each pin site. Dry the metal parts of the halo and do pin care after shampooing.

Toileting

Learning to go to the bathroom takes practice. An elevated toilet seat may be easier to use. Or use a urinal or bedpan. (If a child isn't toilet-trained, change the diaper as soon as it's wet or soiled.) Keep your head higher than your feet to help drain urine or stool away from the cast. Caregivers should use waterproof tape to pad and petal the cast's bottom edges, which will protect them from soiling. (See Page 43 for more information on cast petaling.)

Skin Care

Do skin-care routines twice a day. Check all areas where the bones are close to the skin and cast, such as the tailbone, shoulder blades, collarbones, hips and ribs. Check skin on the back, stomach and sides.

- Check skin for sores or redness and sniff for any foul odors. Use a flashlight to see the skin under the cast and a mirror to help with hard-to-see areas.
- Press down gently, holding the skin away from the cast to see more of the area.
- Place your fingers under the cast as far as possible and feel for any skin changes and for ridges or bumps that could cause pressure.
- Put a small amount of witch hazel on the skin over the bony areas to cool and toughen the skin and prevent body odor. Use your fingers to rub circles over the bony areas.
- Don't put thick pads over any sores or use any ointments or salves on sores or skin.
- Change positions every two hours, rotating among stomach, back and sides. (Ask a caregiver to help you move.)
Relieve pressure to reddened spots by lying on the opposite side. That way your body can pull away from — and air can flow under — the cast.

You can help stop itching by using a hair dryer — set on low/cool only — to blow air under the cast. You or a caregiver also can use a 24-inch-long piece of stockinet that's slightly dampened with witch hazel. Thread it through the front of the cast. With one end at the top and the other end at the bottom, gently move it back and forth. Use care, because forcing it through can cause skin burns. Never use sharp objects to scratch under the cast.

Halo Removal

When the pins are removed, continue to do pin-site care for one week or until the sites have formed scabs. This will keep the pin sites clean until they heal. To help healing, massage pin sites for 30 seconds, four times a day, until they're completely healed.

Follow-Up Medical Care

Typically, your Gillette or primary-care doctor will want to see you within six weeks after discharge. At that appointment, we usually take an X-ray to check the spine's position.

Wearing Your Halo Cast/Vest

The added weight of a cast will affect your balance and upper mobility. Use a walker or a cane, or hold on to stair rails or another person's arm when walking on ice or irregular surfaces. Weakness from bed rest also affects balance.

As your strength and confidence increase, it might be possible to kneel on one or both knees to pick up objects, but do so cautiously. You can get a reacher from occupational therapy to extend your reach and help you pick things up.

Exercise

Exercise as many muscles as possible. Walking is the best exercise. It builds strength and promotes healing. Use isometric exercises, such as ankle pumps and quad sets, to exercise muscles that are immobilized by the cast/vest (see **Improving Comfort**, Page 14, for a description of such exercises). Your doctor might order an overhead trapeze to help you get in and out of bed. Use it to increase your upper-arm strength.

Travel

Traveling by plane with your halo cast/vest is OK. However, metal detectors at the airport will sound an alarm. To avoid delays, obtain a card from your nurse that explains your condition. Vibrations and movements on trains, buses and subways can make riding them uncomfortable.

School

Depending on how well you adapt to the halo cast/vest, you might have to arrange for homebound schooling. If you return to school, consider starting with half days and gradually increasing the time you spend there. In addition, you might want to leave classes early to avoid crowded halls. Ask someone to carry your books.

Use a music stand to hold books and other reading material at a comfortable height. Read paperbacks instead of hardcover books. If you're lying on your back, pile up pillows or use a lap tray to hold your papers. Ask your therapist about prism glasses, which allow you to read comfortably with a book resting on your chest.

Clothing

When you're in a cast, large, roomy clothes will be most comfortable. Sweat suits and jumpers are good choices. Shirts that open in the front, tops with raglan or dolman sleeves, pleated and wrap-around skirts, and gathered pants with elastic waists work well. Velcro closings and snaps make clothing easier to put on and take off. In addition, you can alter clothing by removing collars and opening shoulder seams.

Remember that, when your clothes rub against the cast, they'll wear out more quickly than usual. Wearing a T-shirt over the cast will protect your good clothes. Clothes made of natural fibers will feel cooler. Shoes or boots with low heels and soles with good traction are necessary for safety. Slip-on shoes are easiest. If you wear a bra, sew in an extension, get one that is a size larger than you normally wear, or try a tube style.

Nutrition

- Eat foods high in fiber and drink lots of fluids to avoid constipation, which can be caused by pain medications and inactivity. If nutrition and increased activity don't alleviate constipation, consult your doctor for a stool softener.
- The cast might limit the amount of food you can eat in one sitting. Eat small, more frequent meals.
- Neck immobility can cause swallowing difficulties. Cut food into small pieces and chew thoroughly. Drink from a straw, elevate your plate and set food farther away so it's easier to see.
- Try to maintain your current weight. Gaining too much weight will put more pressure on the skin and can cause sores under the cast. Losing too much weight will cause the cast to be too loose.

Comfort

Pins and bars can vibrate, causing headaches or tension, so avoid loud music and noises. Wrapping pins with a cloth will keep them from conducting extreme heat or cold. Your doctor will write a prescription for pain-relief medicine to take at home. Take the medicine as directed.

Sleeping

A small, soft pillow under your neck usually relieves strain on neck muscles and pressure on the pins. If sleeping is difficult when lying flat, try a recliner or several extra pillows in bed, or hold a pillow on your abdomen.

Socializing

Feel free to socialize, but be careful not to do too much. Avoid places that are busy or crowded. Be sure to ask for help from your relatives, friends and classmates.



St. Paul (Main) Campus
200 University Avenue East
St. Paul, MN 55101
651-291-2848
800-719-4040 (toll-free)

Burnsville Clinic
305 East Nicollet Boulevard
Burnsville, MN 55337
952-223-3400
866-881-7386 (toll-free)

Duluth Clinic
Lakewalk Center
1420 London Road
Duluth, MN 55805
218-728-6160
800-903-7111 (toll-free)

Minnetonka Clinic
6060 Clearwater Drive
Minnetonka, MN 55343
952-936-0977
800-277-1250 (toll-free)



New Brighton Clinic
550 County Road D
New Brighton, MN 55112
651-636-9443
800-578-4266 (toll-free)

www.gillettechildrens.org