



# Spinal Cord Injury Patient Education Handbook









The journey ahead for SCI survivors and caregivers can be challenging, but with dedication and support, anything is possible. Our Rehab team is here to inspire and guide you toward a successful recovery.



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## Meet your Rehab Interdisciplinary Team

The journey to recovery after a spinal cord injury (SCI) can be a daunting one. However, with proper rehabilitation, the possibilities for improvement are endless. Inpatient Rehabilitation can significantly enhance independence after SCI in areas such as self-care, mobility, communication, cognitive, and social skills. By working with rehabilitation specialists under the guidance of a rehabilitation physician, patients with a SCI can receive personalized treatment plans tailored to meet their unique needs. With the right mindset and support, the road to recovery can be a rewarding and fulfilling one.



- **Physiatrist:** A physiatrist is a doctor who practices physical medicine and rehabilitation. In the SCI Rehabilitation program, the physiatrist is involved with the evaluation and treatment of patients who have had a SCI. At the start of treatment, they work with each patient and his or her family to identify the patient's medical needs and determine treatment goals. Based on these needs and goals, the team develops and carries out a treatment plan to help you achieve the best possible outcome.
- **Case Manager:** Your care manager will assist you and your family to find any barriers and community resources needed for after your hospital stay. He or she will become involved with your care from the beginning of your stay and work with other agencies to coordinate your care. Your case manager will also set up training with your family.
- **Rehabilitation Nursing:** Rehabilitation nursing consists of registered nurses, licensed practical nurses, and certified nursing assistants who provide care 24 hours a day. They will help you become independent with activities of daily living (ADLs), manage your medicines, and ensure your safety and wound care.
- **Physical Therapist (PT):** The physical therapist will help you move, reduce pain, restore function, and prevent further disability. Your treatment plan may include helping you be mobile through gait training (walking) or using a wheelchair. You will also participate in transfer and balance training and an exercise program to help you get better.
- **Occupational Therapist (OT):** The occupational therapist will help you regain independence with activities of daily living (ADLs). These are the things you do every day to take care of yourself -- bathing, grooming, dressing, feeding, and preparing meals. Your OT will guide you through exercises to improve your ADLs after a SCI. They may also suggest equipment, changes to your home or workspaces, and ways to be safe in your home or community. Your OT will also address upper body function, cognition (thinking skills), and visual processing.
- **Speech Language Pathologist (ST):** The speech-language pathologist (also known as a Speech Therapist) will help you improve speech, language (talking, understanding, reading, and writing), cognition (thinking skills), and swallowing skills. The Speech Therapist evaluates and treats these disorders. The ST will also train you and your family on strategies to improve these skills in your home, work, and community.
- **Rehab Therapy Techs:** The rehab therapy tech assists the therapy team, per their delegation, with your care, which may consist of strength and range of motion (ROM) exercises, balance, or endurance tasks.
- **Respiratory Therapists:** Respiratory therapists specialize in airway management, mechanical ventilation, and treatment of chronic lung problems, such as COPD.
- **Pharmacists:** They recommend appropriate medications in collaboration with physicians, assess for reactions, and participate in rehab team meetings.
- **Dietitians:** Dietitians teach patients about healthy eating and special diets (low salt, low fat, low calorie) as well as educate about diabetes management.



# The Importance of Therapy and Inpatient Rehabilitation

## Goals of Therapy

Our goal is for you to receive three hours of specialized therapy per day during the week, and if needed, we will provide continued therapy on the weekend. The therapy is spread throughout the day between occupational, physical, and speech therapy. If you do not need speech therapy, the three hours will be spread between occupational and physical therapies. Our therapists use specialized neuromuscular re-education training and technology to help you gain as much function as possible.

## Weekend Therapy

Weekend therapy is provided and individualized to each patient. Many factors impact the frequency and time spent in therapy. On Friday each week, your therapist will discuss these factors with you and review your personal weekend therapy plan. On Saturday and Sunday mornings, your board will be updated with the time your therapy is scheduled. If your board is blank, this means you have no planned weekend therapy that day. If you have any questions regarding your weekend therapy plan, please ask any rehab team member.

## Interdisciplinary Team Conference

All team members gather weekly to review information on your functional limitations, skills, and strengths. These meetings help the team form a plan of care and a project on how much time is needed to reach your goals. Your case manager will take the information from these meetings and communicate with you and your family/caregiver so that you feel informed and prepared for continued rehabilitation or discharge to the community.

## Sample Day in Rehab

6:00 a.m. – 7:40 a.m.: Begin getting ready for the day. This often includes showering, grooming, and getting dressed with the help of nursing staff or as part of your occupational therapy treatment.

7:40 a.m. – 8:30 a.m.: Eat your breakfast and take any medication that is ordered

7:00 a.m. – 12:20 p.m.: Attend Physical Therapy, Occupational Therapy, and Speech Therapy, and receive nursing treatments if necessary.

12:20 p.m. – 1:00 p.m.: Lunch and take any medication that is ordered

1:00 p.m. – 5:00 p.m.: Attend Physical Therapy, Occupational Therapy, and Speech Therapy, and receive nursing treatments if due.

5:40 p.m. – 6:30 p.m.: Dinner and take any medication that is ordered

After 6:30 p.m.: It is time to rest, relax, visit with family and friends, prepare for bedtime, and take any medications or receive nursing treatments that may be due.



*Important Note: Please remember that the above schedule is a sample schedule with approximate times only because we individualize a patient's day based on his or her specific needs.*

## Spinal Cord Injury Overview

It is important for you to know the type of spinal cord injury you have; knowing this information will help you to better understand your course of treatment.

### Defining Spinal Cord Injury (SCI)

A spinal cord injury (SCI) occurs when the spinal cord or its nerve roots within the spinal canal are damaged by severing, stretching, or compression. A SCI can ultimately result in either temporary or permanent loss of movement and/or feeling. The loss of movement or feeling happens to different severities in different places in the body depending on the specific location and injury.

You can think of the spinal cord as the “electrical cable” that connects the brain to the rest of the body. If an electrical cable is cut or damaged, the flow of electrical current will be impaired or possibly even absent, depending on the severity of the cut in the cable. Similarly, if the spinal cord is cut or damaged, the signals to and from the brain and the rest of the body could be disrupted. This ultimately results in changes in movement and feeling.

When the spinal cord is disrupted, it can affect motor, sensory, and autonomic nervous activities.

- Motor function pertains to movement ability. Normal motor function is indicated by the successful transmission of signals from the brain to the body.
- Sensory function involves experiencing sensations like touch, pain, and temperature. Normal sensory function is indicated by the successful transmission of signals from the body to the brain.
- Autonomic nervous function controls involuntary actions. This system operates independently of conscious control. Hence, it is often termed the "automatic" nervous system.

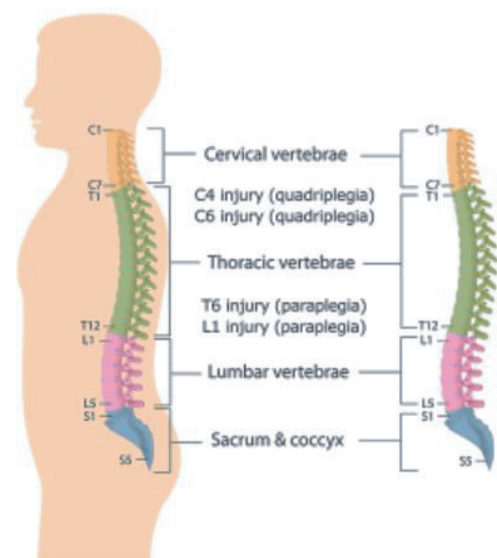
Spinal cord injuries can be divided into two types:

1. Complete
2. Incomplete

With complete injuries, there is a total absence of function below the level of injury, resulting in no sensation or voluntary movement.

Alternatively, individuals with an incomplete injury may retain some movement or sensation in areas they cannot move beyond the level of injury.

The classification of spinal cord injury (SCI) is pivotal for prognosis and rehabilitation. Typically, complete injuries tend to have less recovery, whereas incomplete injuries often show improvement.



## Anatomy of the Spine

The spinal cord, a neural structure, extends from the base of the brain down the middle of the back to the waist level. It transmits nerve fibers from the brain to nerve cells located at each level of the cord.

These segmental nerve cells send out fibers through the spinal nerves, which exit at each vertebral level to connect with specific body areas. The spinal nerves are comprised of both motor and sensory components.

Surrounding the spinal cord are rings of bone known as vertebrae, which collectively form the spinal column, providing support for the body. The spinal column consists of seven cervical vertebrae, enabling flexibility for head movement. In the chest region, the thoracic spine connects with the ribs, comprising twelve vertebrae. Additionally, the lumbar spine consists of five vertebrae, with the lowest lumbar vertebra articulating with the sacrum, which in turn attaches to the pelvis.

### Spinal Cord Injury Potential Complications

Please be aware that every case of spinal cord injury (SCI) is distinct, with varying impairments and secondary complications. Consequently, the factors outlined in this section may not be applicable to every individual with SCI. The intention of this section is to offer a thorough list of potential complications and considerations relevant to your SCI case.

#### Autonomic Dysreflexia (AD)

Autonomic Dysreflexia (AD) is a potentially life-threatening condition that can begin secondary to pain or discomfort below the level of lesion (even if the individual cannot feel the pain or discomfort). It develops in individuals with a neurologic level of SCI at or above the sixth thoracic vertebral level (T6).

Pain or discomfort can be caused by a variety of stimuli, including but not limited to: a full bladder (that cannot be emptied due to a kinked/blocked catheter), irritated bowel (constipation, gas, or irritated hemorrhoids), irritated skin (cut, ingrown nail, pressure ulcer, exposure to extreme heat or cold), a broken bone, sexual activity, and menstruation in female patients.

The reason that AD can happen after SCI is because SCI changes the way that autonomic reflexes occur in the body. Patients with lesion levels at or above the T6 level are prone to AD. AD can be life threatening since, when AD begins, blood pressure can elevate to dangerously high levels. Blood pressure values will continue to be elevated as long as the cause of the pain or discomfort below the level of the lesion is still present.

Symptoms of AD may include extreme headache, piloerection (hairs standing up), stuffy nose, blurred vision, anxiety, sweating, and flushed skin above the lesion level.

If you are having an episode of AD, then the following strategies are important to implement:

- Take your blood pressure and check for elevation (you will need to know your normal baseline blood pressure in order to determine this).
- Sit up, do not lie down.
- Check for stimuli that may be causing the problem – loosen tight fitting clothing, check your catheter, check to see if your bowel is full, and check for cuts or sores that you may not have been aware of.
- If you are unable to identify the cause of your AD or if your blood pressure continues to rise, then call 911.

Steps to prevent AD include:

- Maintain a consistent, hygienic bladder program as well as a consistent bowel program
- Daily skin checks and pressure relief strategies
- Avoid any injuries to your skin, such as cuts, sunburns, and bruises
- Wear comfortable clothing
- Utilize safe transfer techniques

## **Orthostatic Hypotension (OH)**

Orthostatic hypotension (OH) occurs when blood pressure decreases when one transitions from a supine (lying on one's back) posture to a more upright position, such as sitting or standing.

Symptoms experienced during a bout of OH may include fatigue, weakness, lightheadedness, dizziness, blurred vision, and neck pain. OH may also result in fainting. It is important for SCI patients to be aware of OH and its symptoms so they can alert their healthcare providers when they are experiencing symptoms and work to prevent potential injuries that could result from suddenly fainting and other potential adverse events.

## **Muscle Tone- Spasticity and Flaccidity**

Flaccidity often precedes spasticity immediately following a spinal cord injury. Flaccidity is essentially a lack of muscle tone/activation, which results in a limp, floppy appearance of the affected muscles.

Spasticity is intermittent or sustained muscle activation that happens involuntarily after a specific type of nervous system injury. SCI is one type of nervous system injury that results in spasticity.

Spasticity can be problematic because it can cause pain, deformity, and muscle spasms. Untreated spasticity can also result in decreased physical function and an inability to participate in certain activities.

Spasticity is managed in a variety of ways:

- Maintaining flexibility can help reduce spasticity and prevent loss of range of motion. Stretching at least twice daily can also help reduce muscle stiffness.
- Splints and braces also help. They can continuously stretch a muscle so that it doesn't lose flexibility.
- Oral medications may be prescribed, such as baclofen or tizanidine, to treat spasticity.
- Botulinum toxin (BOTOX) shots if the spasticity affects only one part of the body.
- Medication pumps may help some people since medicine gets directly to the spine.

## Pressure Injuries

A pressure injury is an area of skin and, potentially, underlying tissue that is damaged due to decreased blood flow to that skin and underlying tissue. SCI patients are more susceptible to pressure injuries than the general population due to the paralysis and sensory loss that often result from the SCI. These impairments can result in an inability to properly change positions and offload weight throughout the day, as well as recognize when an area is injured due to prolonged pressure.

In addition to paralysis and sensory loss, there are other risk factors for developing a pressure sore as a SCI patient. These risk factors may include decreased muscle mass, being underweight or overweight, poor nutrition, skin that is exposed to moisture (from urine, stool, sweat, and water) for long periods, aging, spasticity, and depression.

Areas where bones can easily be felt through the skin, called “bony prominences,” are at the highest risk for pressure sores. Common bony prominences that can be affected include the back of the head, the elbows, shoulder blades, sacrum/tailbone, and heels.

SCI patients can avoid pressure injuries by implementing the following strategies:

- Perform regular pressure reliefs. This is when you shift your weight to relieve an area of pressure and work to redistribute pressure. When seated in a wheelchair, pressure reliefs should happen every 15-30 minutes and last at least 30 seconds (and ideally 90 seconds).
- If you are unable to independently perform pressure reliefs, then make sure your caregiver can effectively facilitate this process.
- Therapists can instruct patients regarding pressure relief strategies given a specific set of impairments in a specific patient.
- Complete regular skin checks—checking the skin twice daily, at minimum, is a good strategy.
- Use a mirror to independently check your skin in hard-to-see areas.
- Keep skin clean and dry by regularly bathing using mild soaps, drying skin completely after bathing, and immediately washing and completely drying skin following stool or urine leakage.
- Get a seating evaluation at least every two years to ensure that the setup and cushioning system in your wheelchair is the best it can be for you.
- Avoid sheering the skin when transferring in and out of bed, your wheelchair, etc.
- Lifestyle choices can have a huge impact on pressure sores – staying hydrated, giving your body proper nutrition, and quitting smoking can all help to prevent the formation of pressure sores. Consult your provider regarding appropriate hydration and nutrition if you have questions.

## Heterotopic Ossification

Heterotopic ossification translates to “bone formation in an abnormal place.” These abnormal bony formations usually occur between the muscle and the joint capsule and can be caused by trauma, dislocations, neurological damage (including SCI), and other mechanisms.

## Osteoporosis

Osteoporosis is a condition that involves decreased sturdiness in the bones, which can ultimately predispose individuals to fractures. The changes in the nervous system after a SCI have a direct effect on bone integrity, as bone relies on normal input from the nervous system for normal bone integrity to be maintained. Since SCI often affects a patient’s ability to achieve an upright, standing position, this decreases opportunities for gravity to act on the body and for the bones of the body to experience loading. This can ultimately lead to bone loss. Both pharmacological and non-pharmacological strategies are used to maintain bony integrity after SCI. One example is therapeutic exercise implemented by a physical therapist.

## Chronic Pain

Chronic pain is a common problem for patients who have sustained a SCI. Pain can be from nociceptive or neuropathic sources:

- Nociceptive pain refers to pain that is coming from any structure in the body, excluding nerves. For example, a patient who does not have function in their legs but does have function in their arms will rely on their arms for many functional tasks. This situation can lead to overuse of the joints in the arms, which can ultimately lead to pain and injury.
- Neuropathic pain refers to pain coming from a damaged or dysfunctional nervous system. For example, when the nervous system is damaged, it can become hypersensitive, and pain signals can be amplified. Another example of neuropathic pain is when normal sensations (like a washcloth touching the skin) become painful.



## Psychosocial Implications

The consequences of SCI can sometimes affect an individual’s psychological and social well-being following the injury. SCI is a unique diagnosis in that it can change the course of one’s life very quickly. Being aware of the mental and emotional load that SCI can place on patients can facilitate tackling these inherent psychosocial challenges moving forward. In addition, SCI patients often require caregiver support from family and friends, which can place a great deal of demand on caregivers. Thus, support for both the patient and caregiver is often warranted in the area of psychosocial health. In general, the prevalence of anxiety and depression is higher in the SCI population versus the general population. Accordingly, patients (and their caregivers) should seek support as needed.

## **Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE)**

A DVT is a blood clot that forms in the deep veins of the body and commonly affects the deep veins of the legs and pelvis. A PE is another type of blood clot that can result from a DVT that “breaks loose” and travels from the leg or pelvis upward and into a pulmonary artery near the lungs. DVT and PE are more common in SCI patients due to many factors that are at work when a patient has a SCI. Both pharmacological (medications) and mechanical approaches (compression stockings and leg pumps) are used to prevent the formation of DVT and resultant PE.

## **Staying Healthy with Spinal Cord Injury**

Knowing how your body has changed can help you adjust to life with an SCI. Staying healthy will be more challenging than it once was. However, you can prevent some health challenges related to your SCI. Prevention may mean lifestyle changes. Taking control of your health is vital. Lifetime health and wellness can help manage your SCI.

### **Heart and vein disease**

People with a SCI have some increased cardiovascular risk factors.

They often have:

- Lower levels of good cholesterol.
- A higher percentage of body fat.
- A higher level of glucose intolerance.

These risk factors for heart and blood vessel diseases make it even more important to stay healthy. They can lead to heart attacks, strokes, and other issues.

To lessen your risk of getting heart and vascular disease, you'll need to:

- Manage high blood pressure, high cholesterol, diabetes, and stress.
- Quit smoking.
- Lose weight.
- Eat a healthy diet.
- Be more active.

### **Diabetes**

People with an SCI have higher glucose intolerance and risk of becoming diabetic.

Type 2 diabetes occurs when the body has high blood sugar levels. When sugar builds up in the blood, it can cause several health issues.

Steps to help reduce the risk of diabetes include:

- Staying at a healthy weight.
- Eating the right foods.
- Exercising if you can.
- Keeping blood pressure under control.

## Edema

After a SCI, your legs may swell. This swelling, called edema, can worsen over time.

Edema can:

- Increase the weight of the legs.
- Change how your limbs look.
- Cause chronic skin issues, like sores and infections.

It's vital to control edema in its early stages. Often, you simply need to elevate your legs and wear compression stockings.

You may need medicine or other treatments to control swelling if your edema worsens.

## Lung care

Depending on the level of the injury, your SCI may impact your lungs. People with more severe SCIs may have problems breathing or coughing. These lung changes can increase the risk of pneumonia. Often, assisted cough can help clear the lungs of secretions. Sometimes, you may need medicines or treatments to prevent lung issues.

## Weight management

The many changes to the body's metabolism after a SCI can make staying at an ideal weight difficult. People with a SCI may have issues with being underweight or overweight.

Being underweight can increase the risk of health problems and inhibit healing. Taking in more calories from healthy foods can increase weight. You may need shakes or drinks to gain weight in a healthy way.

Some people gain too much weight after a SCI. Besides changes in metabolism, exercise is harder. Some options include pushing a manual wheelchair or using a hand cycle. Changing your diet is a good way to lose weight if exercising after your SCI is difficult.

A dietitian or nutrition expert can offer ways to adjust your diet to maintain a healthy weight.



## Exercise and Fitness after SCI

Whether or not you were enthusiastic about exercise and physical activity before your injury, you should know that regular physical activity is very important for your health. Doing exercise appropriately becomes even more important when you have a SCI so that injury and adverse events can be prevented. Physical therapists are experts in prescribing exercise programs and giving recommendations for recreational activities that you will be able to perform safely and effectively.

After sustaining a SCI, activities that you participated in before your injury may have to be modified. Adaptive sports, like any other form of physical activity, can work to promote lifelong wellness and give you a sense of identity and belonging within a community of people who share a passion for the same activity or activities.

There are many different types of adaptive sports and recreational activities, such as outdoor recreation (adaptive fishing, kayaking, snow skiing, etc.), performing arts (adaptive dance groups, for example), individual sports (wheelchair races or hand cycling, for example), and team sports (wheelchair basketball, wheelchair tennis, sled hockey, and quad rugby).

If you were not physically active before your injury but would like to participate in adaptive activities, you should speak with your doctor and physical therapist about finding an activity that fits your abilities, goals, and lifestyle.



## Bowel and Bladder Care after a Spinal Cord Injury

### Bladder

SCI can affect your ability to control urination – some patients have difficulty holding urine in while others have difficulty getting urine out, depending on the specific injury to the spinal cord. Inappropriate bladder management can have undesirable consequences; however, there are many strategies available to keep your bladder and kidneys healthy. Different bladder management options each have their pros and cons – your doctor can help you select the best bladder management strategy for you and your needs.

When urine is passed uncontrollably, this is called “urinary Incontinence”. When urine cannot be passed, this is called “urinary retention.” The reason that SCI impacts bladder function is because the bladder is under the control of the nervous system. When the spinal cord is injured, the messages to and from the brain and bladder are disrupted.

Bladder management is a term that describes several strategies that promote effective management of bladder dysfunction associated with SCI.

- **Intermittent catheterization** - This strategy involves inserting a catheter into the bladder intermittently throughout the day (the catheter does not remain inserted). It is usually done about 4-6 times per day, with the goal of each catheterization being 500mL (comparable to the amount of fluid in a plastic water bottle) or less.
  - This strategy is a poor option for those with small urinary bladders or those who drink a lot of fluids (and require more frequent trips to the bathroom), if you are unable to catheterize yourself and do not have help available, your bladder is overactive (which can lead to incontinence), or if you have pain with insertion or removal of a catheter.
  - This strategy prevents the patient from having to wear a leg bag all the time. Of note - you will need to partially undress each time you catheterize, and you may need to take medication to decrease bladder overactivity if using this strategy.
- **Indwelling catheter**- This strategy ensures constant protection against the problems associated with urinary retention as well as urinary incontinence. The catheter and urine collection bag remain in place at all times with this strategy. These catheters are changed approximately once every month. This strategy is desirable in that it eliminates the need to insert and remove a catheter several times per day, it allows the patient to drink more fluids worry-free, and it does not require undressing to make catheterization possible.
  - This strategy is undesirable in that a urinary bag will always be attached to you, women may find it difficult to keep the area around the catheter clean, issues may exist with a patient’s sexuality if this type of catheter is used, and these types of catheters may predispose patients to more bladder infections.

Your doctor can help you determine which bladder management strategy is right for you and your lifestyle. Your doctor can also help determine if your current strategy is working well or not and when to consider new strategies.

## Bowel

Similar to the bladder complications that can result from SCI, SCI can also affect your ability to control your bowels. Some patients have difficulty controlling when they have a bowel movement, causing stool to be passed at an undesirable time. Others may have difficulty moving their bowels, making it hard to pass stool at all. A good bowel program can help to manage dysfunctional bowel patterns that are often seen with SCI. SCI affects an individual's bowel control because the spinal cord helps to send signals to the muscles that control when and how bowel movements are passed. The muscles that control when and how bowel movements are passed include the rectum, sphincters, and pelvic floor muscles.

In general, injuries above the T11/T12 level lead to tight muscles, which ultimately lead to constipation. Injuries at or below the T11/T12 level may produce loose muscles, which ultimately lead to stool incontinence.

The completeness of your cord injury also impacts bowel function: In general, individuals with incomplete injuries tend to have more muscle strength and sensation (for the muscles that control their bowels). Therefore, these individuals may have fewer problems with their bowels.

A bowel program is an overall strategy designed by a doctor or nurse that helps to establish normal bowel habits. This plan will be designed specifically for you and your needs.

The main goals of a bowel program include supporting the patient in having daily or every-other-day bowel movements, preventing unplanned bowel movements, emptying your bowel around the same time each day, and allowing the patient to move their bowels in a timely manner.

There are **four parts to a bowel program** – timing, diet, medications, and techniques.

- Timing – the bowel program should be done every day or every other day.
- Diet – getting enough fiber and drinking enough fluids. Focusing on a diet with plenty of fruits and vegetables, as well as drinking plenty of water, is recommended.
- Medications—Many medications can help patients pass stool (if they are constipated). Some medications that patients may already be taking can cause constipation. Ask your doctor if you have concerns related to your current medication regimen worsening any constipation that you may have.
- Techniques:
  - Digital rectal stimulation – This technique involves moving your fingertip in a circular motion around the rectum/anus. When performed for 20 seconds every 5-10 minutes, this technique can help to stimulate a reflex that aids in emptying the bowels.
  - Digital removal of stool – this technique involves inserting your finger into your rectum and actively removing stool from the rectum using your finger.
  - Enema – this technique can be performed with several devices. All of them work to flush water into the rectum, which in turn aids in having a bowel movement.

Since everybody's injury is different, some individuals may not benefit from a bowel program. There are surgical options for patients who cannot perform a bowel program or who are not benefiting from one. Maintaining bowel function is very important because bowel dysfunction can result in many different complications.

## Sexuality After Spinal Cord Injury

A spinal cord injury changes many parts of the body. This is especially true for those body parts that are at or below the level of the injury. Your SCI has most likely changed your sexual function. This can be changes in sensation, the ability to achieve orgasm, the ability to get an erection, or the ability to maintain an erection.

Sexual arousal is the body's response to your desire for sex. This includes an increase in heart rate, blood pressure, and breathing rate and can include an increase in blood flow to the genitals to ready your body for sex.

- Women have an increase in vaginal lubrication to ready the vagina for easier, safer penetration.
- Men get an erection.

People without SCI are usually aroused through two pathways.

- Reflex pathway—Arousal that occurs in response to sensual touching.
- Psychogenic pathway—Arousal that occurs from psychological, sexual sensations such as sexual thoughts, sights, smells, or sounds that turn you on sexually.

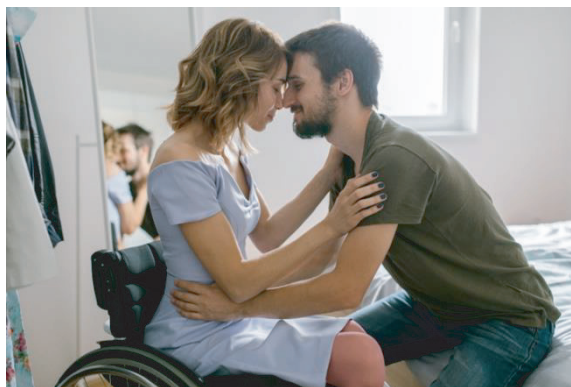
After injury, one or both of your pathways for arousal may be blocked.

Most people with SCI can be aroused by sensual touching. Try stimulating your body in sexual ways to find out if you become aroused. Does masturbation feel good? Does oral sex? You might also enjoy touching areas like your neck, ears, nipples, and inner thighs. Some people with SCI may be aroused by psychological sexual sensations.

### **What can I do if I cannot get aroused after injury?**

Talk to your doctor. Changing your medications may help with the problem. Often, spasticity medications, pain medications, or antidepressants are contributing factors. If not, here are other actions that might help address the problem.

- Women—having your partner perform oral sex may help increase vaginal lubrication enough for penetration. Using a water-based lubricant is another option. Men—most men can get an erection with sensual touching after you take a medication like sildenafil, tadalafil or vardenafil. If cannot, talk to your health professional about other options, which might include a constricting ring, vacuum suction device, injection of medications into the penis, or a surgically implanted penile prosthesis.



## Returning to Work or School After a SCI

Returning to work after a SCI is a significant step that requires careful planning and consideration. Here are some key things to consider:

- **Medical Clearance:** Before considering a return to work, it's crucial to get medical clearance from your healthcare provider. They can assess your recovery, cognitive functions, and readiness to resume work responsibilities.
- **Gradual Return:** If allowed by your employer, a phased or gradual return to work can be beneficial. This might involve working part-time initially, taking on lighter duties, or working from home to reduce stress and fatigue.
- **Workplace Accommodations:** Communicate with your employer about potential accommodations. This might include changes to your work schedule, modifying your workspace, or using assistive technology.
- **Stress Management:** Returning to work can be stressful, particularly if you feel pressure to perform at pre-injury levels. To manage stress levels effectively, practice stress management techniques such as mindfulness, meditation, or light exercise.
- **Monitoring Symptoms:** Continuously monitoring symptoms is essential. If you experience setbacks, such as headaches, dizziness, or cognitive impairments, consider adjusting your workload or seeking additional medical advice.
- **Support Network:** Maintain a support network, including friends, family, therapists, or support groups. They can offer encouragement and advice, helping you navigate the challenges of returning to work.
- If a patient cannot return to work within 12 months of a SCI, they may consider applying for Social Security Disability benefits. To learn more, visit (<http://www.ssa.gov>) or call 1-800-772-1213.

### To return to secondary school (college or university):

- **Registration with the Resource Center:** Patients should register with their university's resource center for students with disabilities. These centers offer accommodations such as extra time for tests and note-takers. Patients will need to provide documentation of a SCI to confirm eligibility.
- **Consider Online Classes:** Taking an online class can serve as a steppingstone before returning to a community college or university. Online courses allow therapists to monitor learning styles, develop compensatory strategies, and support the patient's academic journey in a therapeutic environment.

Scan the QR code below for additional information on returning to work:



## Driving After Spinal Cord Injury

Driving after a SCI may not be possible for every individual with a SCI, but it is certainly possible for some. Vehicles can be modified in a way that accommodates your specific needs and allows for safe, functional driving. Over time, your functional abilities may improve, which can allow for safe, functional driving.

Some important signs to look for that may indicate that you are ready to drive again include:

- You do not need narcotics to control pain while you are driving.
- You have adequate vision for driving or your vision can be corrected to the degree that it allows for driving.
- You can control the muscle spasms and tightening caused by your injury.

Your doctor can make a referral to a driving rehabilitation specialist who will complete a full driving assessment with you. This assessment will include everything from your strength and range of motion to your actual driving abilities and what kind of adaptive equipment you may need in your car.

Assistive technology is available to help you transfer in and out of your vehicle as well as manage your assistive device once you are in your driver's seat. Assistive technology also helps individuals modify their gas, brake, and steering controls. After SCI, many individuals may end up having to control their gas and brake systems with their hands rather than their feet. Know that there are many programs that can help to pay for the often expensive assistive technology/adapted vehicles required for many individuals with SCI to regain their driving abilities.



Scan the QR code for additional information on driving:



## Adaptive Equipment and Durable Medical Equipment (DME)

For many SCI patients, wheelchair selection is a critical step in the process of learning to live with SCI. Your healthcare team will be able to help you select the best wheelchair based on your needs and goals. It is worth noting that you should always pick the best wheelchair for you and your needs and then think about insurance coverage and finances. Your wheelchair will be your primary means of mobility, so picking the best chair for you is very important. There may be financial programs/resources available to assist you in financing your wheelchair – ask your healthcare about resources that may be available to you.

Wheelchairs can either be manual wheelchairs or power wheelchairs – your healthcare team can point you in the right direction as far as which type of wheelchair will best suit you and your needs.

- **Manual wheelchairs**
  - If you have the ability to propel a manual wheelchair with your arms, then a manual wheelchair is a great option. These wheelchairs are lighter, easier to transport, and provide a form of exercise when compared to their power wheelchair counterparts. Therapists are experts in training SCI patients on the proper technique for propelling wheelchairs. Proper technique for manual propulsion is important because it allows for more efficiency and reduced fatigue as well as a reduced risk of injury.
- **Power wheelchairs:**
  - Power wheelchairs are great for SCI patients who cannot propel manual wheelchairs or for those who wish to reduce the strain on the arms so that they can perform other essential tasks during the day (transferring bed to chair, using arms for reaching for objects such as pots and pans, etc.).
  - In general, there are three types of power wheelchairs: rear-wheel, mid-wheel, and front-wheel. Each type of power chair has its pros and cons.
- **Power-assisted wheelchairs:**
  - This type of wheelchair has characteristics of both a manual and a power wheelchair. These wheelchairs are essentially manual wheelchairs with a motor attachment. The purpose of the motor is to help the patient propel the wheelchair more quickly and easily, and it allows the patient to negotiate difficult obstacles such as steep ramps. Power-assisted wheelchairs can take some of the strain off of the arms, which can help to prevent injury.

You should strive to develop basic skills to assess and maintain your personal wheelchair. Wheelchair breakdowns are not only frustrating but can also result in extra costs and even injury. Routine assessments and maintenance can help prevent wheelchair breakdowns.



## Discharge from Inpatient Rehabilitation

### Going Home After Spinal Cord Injury

**Discharge Plan** - During your hospital stay, your healthcare team will teach you and your support system how to take care of your needs after you leave the hospital. Before you leave the hospital, you and your support system will be given your discharge instructions.

This information will include:

- Follow-up appointment with your doctor
- Important phone numbers
- Directions for how to care for yourself
- A list of your current medicines and any new prescriptions
- Information on what you can do to help your recovery
- Medical equipment and follow-up therapy information



### Support of your family and caregivers

Spinal cord injury recovery can be difficult and confusing for survivors and caregivers. By increasing your knowledge about what a spinal cord injury is and what to expect, you can feel more in control and less overwhelmed. Spinal cord injury recovery is a difficult process, and it can be hard to know how to help someone who had a spinal cord injury. It takes constant, dedicated work for survivors to regain function and independence, which can be physically and emotionally draining. That's why it is critical for spinal cord injury survivors to have a loved one there to support them through the ups and downs of recovery.

## SCI Resources

### **The Reeve Foundation Peer & Family Support Program (PFSP)**

This group's aim is to offer a peer-to-peer mentoring program for those experiencing a spinal cord injury. There is also information for friends, family members, and caregivers. You can gain emotional support and find local and national resources which may help with your recovery process. By matching you with a mentor of a similar age, location, type of paralysis, length of paralysis, etc., the PFSP allows you to gain wisdom and insight into the life experiences of the mentor.



### **Inspired Spinal Cord Injury Support Community**

This is an interactive forum where members discuss any and everything related to spinal cord injuries. Members include survivors, spouses, family members, caretakers, and others who have a connection to the spinal cord injury community. Most topics are open for members and non-members to view and topics are arranged by category so visitors can more easily find information about the topic they are interested in. The website was founded by SCI survivors and fosters a positive and supportive environment while addressing challenging topics.



### **United Spinal Cord Injury Association**

This association's website lists various chapters which share the same beliefs and promote the independence, recovery, and healthy living of people who have suffered spinal cord injuries. Divided geographically, it lists the addresses and times of meetings for people who share mutual interests and common experiences regarding spinal cord injuries.



### **Spinal Cord injury Fact sheets – Model Systems Knowledge Translation Center**

Provides easy-to-understand fact sheets for people living with spinal cord injury (SCI), and those who support them. The center conducts knowledge translation research and disseminates free research-based resources to help improve rehabilitation outcomes and quality of life for people living with SCI.

