inthe**know**
CAREGIVER TRAINING

A CLIENT CARE MODULE:

UNDERSTANDING BRAIN AND SPINAL CORD INJURIES

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A Client Care Module:

UNDERSTANDING BRAIN & SPINAL CORD INJURIES

We hope you enjoy this inservice, prepared by registered nurses especially for caregivers like you!

Instructions for the Learner

If you are studying the inservice on your own, please do the following:

- Read through **all** the material. You may find it useful to have a highlighting marker nearby as you read. Highlight any information that is new to you or that you feel is especially important.
- If you have questions about anything you read, please ask your supervisor.
- Take the quiz. Think about each statement and pick the best answer.
- Check with your supervisor for the right answers. You need **8 correct** to pass!
- Print your name, write in the date, and then sign your name.
- Email In the Know at feedback@knowingmore.com with your comments and/or suggestions for improving this inservice.

THANK YOU!

After finishing this inservice, you will be able to:

Discuss how force, impact, and location relate to brain and spinal cord injuries.

❖

Describe the three basic stages of grief that may occur after a serious injury.

❖

Describe at least four complications of traumatic brain injuries and how you can help.

❖

Describe at least four complications of spinal cord injuries and how you can help.

❖

Demonstrate your understanding of brain and spinal cord injuries during your daily work with clients.

Inside This Inservice:

inthe**know**
CAREGIVER TRAINING

A Client Care Module:
Understanding Brain & Spinal Cord Injuries

INJURIES TO THE NERVOUS SYSTEM

When you think of brain or spinal cord injuries, does a particular face come to mind? Perhaps you picture Christopher Reeve who severed his spine by falling off a horse. Or, maybe you think of a football star who was tackled hard and never walked again. Or, perhaps you have a friend or family member whose brain or spinal cord was damaged in a car accident.

Like these examples, the majority of head and spinal injuries have the same cause: **impact!** This impact might come from hitting a windshield, landing on cement, or falling in the shower. No matter how the injury occurs, the same simple "formula" tends to be true: The force of the impact + the exact location of the injury = the severity of the injury.

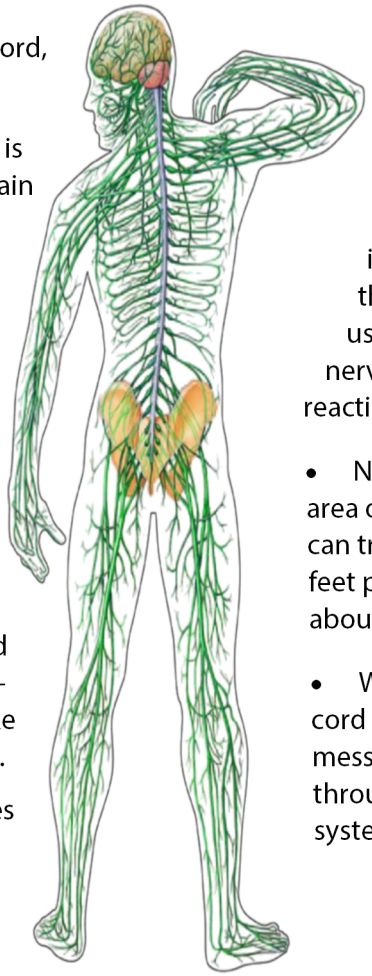
If the injury is mild and the person receives prompt medical attention, the effects of the injury may disappear within days or weeks. However, if the injury is severe or medical attention is delayed, it may result in permanent disability. In those cases, recovery from a brain or spinal cord injury can be a long and slow process requiring ongoing rehabilitation.

As a nursing assistant, you may provide care to clients who are overwhelmed by the emotional and physical effects of a *recent* injury—or clients who have been dealing with the effects of their injuries for *years*. Either way, the more you know about brain and spinal cord injuries, the better you'll be able to support your clients on a daily basis.

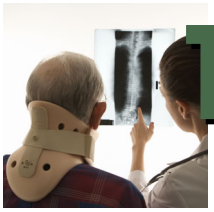
Keep reading to review information about the nervous system, brain injuries, spinal cord injuries, and the effects (either temporary or permanent) caused by damage to the nervous system. You'll also learn some practical ways to provide exceptional care to injured clients.

THE NERVOUS SYSTEM

- Both complex and delicate, the **nervous system** consists of the brain, the spinal cord, and *billions* of nerve cells.
- The main *function* of the nervous system is to allow communication between the brain and every other part of the body.
- Protected by the skull, the **brain** is the most important part of the nervous system. It serves as the "control center" for the entire body, making sure that all the other body systems work properly.
- The **spinal cord** is a thick bundle of nerves which runs down through the middle of the spine. The spinal cord manages all the messages coming to and from the brain. It also controls reflexes—actions that happen without thinking, like pulling your hand away from a hot stove.
- All along the spinal cord, delicate bundles of **nerves** spread out in different directions. From these bundles, individual nerves branch out to every part of the body. (Nerves are extremely thin *threads* of special neuron cells that communicate with each other with tiny electrical charges.)



- Messages, in the form of electrical impulses, travel between nerve cells and the brain. As "command central," the brain uses the information it receives from the nerves to coordinate every action and reaction in the body.
- Nerves also transmit messages from one area of the body to another. These messages can travel along nerve pathways at over 390 feet per second. (That's the same as driving about 265 miles per hour!)
- When someone suffers a brain or spinal cord injury, there is often a disruption in how messages are sent and/or received throughout some portion of the nervous system.



THINK about it!

Just like a car needs gasoline and regular tune-ups, the nervous system needs vitamins and nutrients to keep it running smoothly. When it comes to nutrition, the brain and nervous system benefit from:

- **Proteins.** They supply essential amino acids. Foods that fit the bill include lean meats, fish, eggs, and tofu.
- **"Good" fats.** Healthy fats provide essential omega fatty acids and are found abundantly in salmon, flax seeds, and walnuts.
- **B-Vitamins.** There are actually 8 different B-vitamins and all are important for smooth functioning of the nervous system. B-vitamins can be found in many foods, including milk, whole grains, nuts, yogurt, green leafy vegetables, liver, and cheese.
- **Water.** The messages sent between nerve cells and the brain can get "bogged down" if the body is dehydrated. On average, 8 glasses of water per day are recommended for optimal nerve health.

BRAIN INJURIES

Did you know that the human brain is mostly water? Luckily, it is surrounded by a very hard, protective shell: the skull. However, sometimes even the skull cannot protect the brain from injury.

A **traumatic brain injury** (or TBI, for short) comes from a direct blow to the head. The force of the blow causes the brain to move inside the skull or—if severe enough— breaks through the skull and damages the brain.

Men are twice as likely to suffer from a traumatic brain injury than women. Adolescents, young adults, and senior citizens have a high risk for a TBI—with people from 15 to 24 years most at risk.

Every year, nearly 1.5 million Americans experience a brain injury; 50,000 of them don't survive; and about 90,000 of them suffer permanent disabilities from their injuries. ***Currently, there are more than 5 million Americans living with the effects of a traumatic brain injury.***

So, how do all these injuries happen? The most common *causes* are:

- Car accidents.
- Falls.
- Sporting accidents.
- Gun shot wounds.
- Other physical violence.

Some common *symptoms* of head injuries include:

- Loss of consciousness.
- Dilated pupils or pupils of different sizes.
- Nausea and vomiting.
- Headache.
- Drowsiness.
- Dizziness.
- Irritability.
- Stiff neck.
- Slurred speech.
- Memory issues.
- Blurred or double vision.
- Confusion.

These symptoms can occur immediately after the injury or can develop slowly, over time. And, because some of the symptoms are a bit vague, they might be mistaken for signs of other medical conditions.

Every brain injury is different—and so is the recovery. It can take weeks, months, or even years to determine whether an injury has caused permanent brain damage.

Non-Traumatic Brain Injuries

- A **non-traumatic brain injury** is one that develops on a *cellular* level in the brain. This means that instead of a specific area of the brain being damaged, cells *throughout* the brain are affected.
- A non-traumatic brain injury is sometimes called an "acquired" brain injury, meaning that the person was not born with the condition.
- Causes include airway obstruction, electrical shock, infectious disease, and exposure to toxic chemicals or gases.
- The symptoms of an acquired brain injury are very similar to those of a traumatic brain injury.

SPINAL CORD INJURIES

The delicate spinal cord extends about 18 inches from the base of the brain to about waist level. It is protected by the bones of the spine, called *vertebrae*. It is possible for someone to *break* these neck or back bones without damaging the spinal cord itself. And, it's common for people to have "slipped disks" in their spines as they age. These are not spinal cord injuries.

A **spinal cord injury** (or SCI, for short) is defined as *damage to the spinal cord resulting in a loss of function*—such as mobility or feeling.

Across America, there are approximately 400,000 people living with a spinal cord injury. Every year, at least 12,000 more people experience an SCI—and the vast majority of them are men. In fact, for every ten cases of spinal cord injury, only two are women.

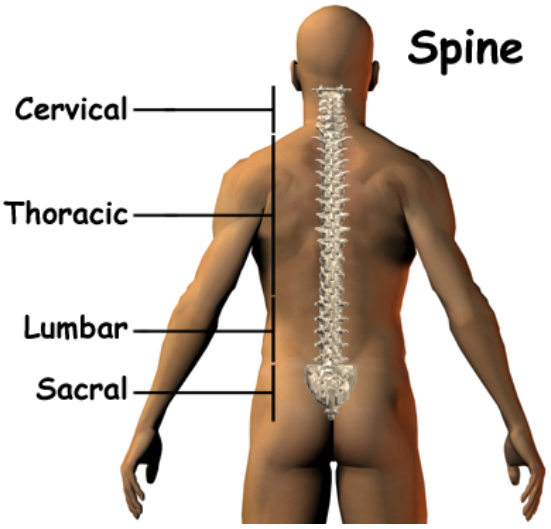
The causes of spinal cord injuries are similar to the causes of traumatic brain injuries, including:

- Car accidents.
- Falls.
- Violence (mostly gun shot wounds).
- Sporting accidents.

Loss of sensation and movement are the most common effects of spinal cord injuries. However, there are other physical changes that may result from an SCI, including:

- Bowel and bladder dysfunction.
- Sexual dysfunction.
- Loss of fertility (for men).
- Low blood pressure.
- A problem regulating blood pressure.
- A problem controlling body temperature.
- An inability to sweat below the point of injury.
- Chronic pain.

Immediately after an SCI, the spinal cord swells. This can cause changes within *every system in the body!* The swelling begins to go down after a matter of days or weeks. When this happens, some (or all) function may slowly return. Improvements may be seen for 6 to 12 months. Unfortunately, only a *small* percentage of people with a spinal cord injury recover all normal function.



LEVELS OF SPINAL CORD INJURIES:

There are eight vertebrae in the neck area. They make up the "cervical" spine.

Usually, an injury to one of the cervical segments of the spinal cord causes *quadriplegia* (also known as *tetraplegia*). With this type of paralysis, the person loses most or all function in all *four* limbs.

The next twelve vertebrae are in the chest area and are called the "thoracic" spine. The lumbar and sacral areas of the spine are each made up of five vertebrae.

If an injury affects the thoracic, lumbar, or sacral regions of the spinal cord, it can cause *paraplegia*—loss of function of the legs.

If there is no voluntary use of the affected limbs, the paralysis is considered "*complete.*" If the person has some voluntary use of his/her affected limbs, the paralysis is called "*incomplete.*"

TERMS YOU SHOULD KNOW

Here are some important words and phrases that you should know when providing care to clients with brain injuries:

Concussion. When the brain is battered or shaken inside the skull, the result can be a concussion. Early symptoms of a concussion include headache, dizziness, confusion, nausea, and vomiting.

Three Types of Brain Injuries:

1. **Mild**. A mild brain injury is one that causes *less* than 30 minutes of confusion or loss of consciousness. However, even mild injuries can have serious long term effects if not treated.
2. **Moderate**. If the altered consciousness lasts longer than 30 minutes but *less* than 24 hours, the injury is considered moderate.
3. **Severe**. A severe brain injury is one that leaves the person unconscious for *more* than 24 hours.

Six Abnormal States of Consciousness:

1. **Stupor**. Clients in a stupor show some response to stimulation but slip back easily into a state where they cannot be aroused.
2. **Coma**. When in a coma, clients cannot be aroused at all and lack even the most basic responses—such as a response to pain.
3. **Persistent Vegetative State**. Clients who are in a vegetative state can be aroused—but they are unaware of their environment and can only perform certain *involuntary* actions like breathing and blinking. If a vegetative state lasts for longer than six weeks, it is considered "persistent."
4. **Minimally Conscious State**. This is similar to a vegetative state, but the client is *semiconscious* with occasional moments of awareness. For example, the client may attempt to communicate by speaking, writing, or giving hand signals.
5. **Locked-In Syndrome.** In this type of brain injury, the person is paralyzed and cannot speak. However, he or she is alert and *fully conscious*.
6. **Brain death**. When brain damage is severe and widespread, it can cause brain death. This means there is no measurable brain function. The client cannot live without life support machines and will not recover.

Here are some important words and phrases that you should know when providing care to clients with spinal cord injuries:

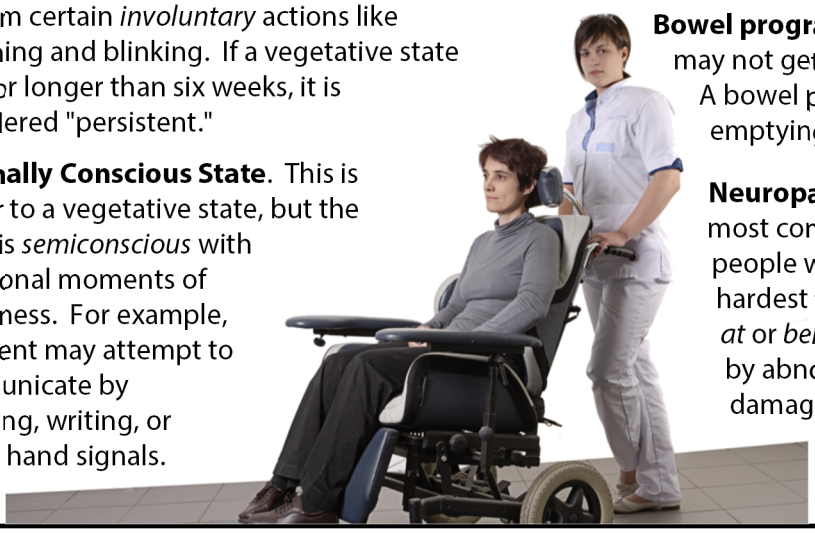
Paralysis. The inability to move all or part of the body due to damage to the nervous system.

Quadriplegia. Also called tetraplegia, it is paralysis resulting in the partial or total loss of use of all four limbs *and* the torso.

Paraplegia. Paralysis of the *lower* part of the body including the legs.

Bladder Training. The method by which the bladder is trained to empty *without* the use of an indwelling (Foley-type) catheter. It involves drinking measured amounts of fluid and allowing the bladder to fill and empty at timed intervals.

Intermittent Catheterization. The process of using a catheter for emptying the bladder on a regular schedule.



Bowel program. After a spinal cord injury, clients may not get the "urge" to have a bowel movement. A bowel program helps establish a habit of emptying the bowels at a specific time of day.

Neuropathic Pain. Nerve-generated pain is the most common type of chronic pain among people with spinal cord injuries—and it is the hardest to treat. Neuropathic pain is usually felt *at* or *below* the level of the injury. It is caused by abnormal signals from the nerves that were damaged because of the spinal cord injury.

EMOTIONAL EFFECTS OF TBI & SCI

In addition to dealing with their *physical* recovery, people who experience a traumatic brain or spinal cord injury face a period of *emotional* recovery. Whether they can no longer walk after an SCI or they have trouble speaking or thinking clearly after a TBI, they have lost part of themselves—part of the way they used to be. And, there's no way around it: losses are painful and often sad. They represent an *end* to something—and this ending creates an emotional wound.

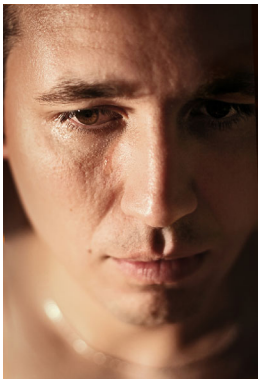
Physical injuries need time to heal...and so do emotional wounds. People who spend time grieving are doing what they need to do to heal their emotional wounds. Without this grieving period, an emotional wound may just "scab over."

As you work with neurologically impaired clients, keep in mind that:

- Grief is not a disorder, a disease, or a sign of weakness.
- The only "cure" for grief is to go through the grieving process. People must do this in their own way and at their own pace.
- There is no standard time period for the grieving process. Grieving takes time and cannot be rushed. People can't just "snap out of it."
- Grieving is hard work and can leave people physically and emotionally exhausted.
- The stress of grieving can make existing illnesses worse or cause new ones to develop.
- In the end, the process of grieving encourages people to take charge of their own lives and to move forward.

In addition, remember that:

- People with SCIs abuse alcohol at twice the rate of the general population.
- The loved ones of SCI and TBI clients experience loss and grief, too.
- Depression is a common medical problem for both the client and his family members. (Depression goes *beyond* the "normal" sadness and requires medical attention.)



There is no right or wrong way to grieve. Each person does it in his or her own way. However, there are three basic stages of grief:

Stage One: Shock

- In the beginning, a loss may seem unreal, like a dream. People go into shock...and become numb. This numbness is a *protective* mechanism that allows people to feel the impact of a loss slowly.

Stage Two: Adjusting

- During this middle stage, people begin to show signs of adjusting to their loss. They may go through a variety of intense emotions during this stage, including anger, despair, and guilt. These are all normal feelings.

Stage Three: A New Life

- People in this stage of grieving take steps to move on to a new life. They have found ways to fill the "hole" in their lives and are recovering from their emotional loss.

COMPLICATIONS FROM A BRAIN INJURY

People who suffer a brain injury may develop some or all of the following complications:

Cognitive Deficits

- Short attention span
- Confusion
- Memory loss
- Amnesia
- Inability to solve problems or use good judgment

☑ *The most common cognitive disability after a brain injury is short-term memory loss. This means that the person has trouble remembering any <u>new</u> information or experience.*

Motor Deficits

- Paralysis or weakness, possibly on one side of the body only
- Poor balance and/or coordination
- Muscle spasms
- Swallowing problems

Sensory Effects

- Long-term effects on all the senses: vision, hearing, smell, taste, and touch
- Loss of sensation or increased sensation to certain body parts

Language Difficulties

- Slow speech
- Difficulty understanding and/or speaking
- An inability to find the right words or form sentences that make sense
- Difficulty with reading, writing or working with numbers

YOU HELP YOUR BRAIN INJURED CLIENTS WHEN YOU:

- Practice patience! Let your client set the pace for all personal care.
- Remember that setbacks and frustration are a normal part of learning to live with a traumatic brain injury.
- Develop a <u>consistent</u> routine that meets the individual needs of each client—and then stick to it!
- Encourage your client to master simple tasks before going on to more complicated ones.
- Let your clients be as independent as possible. However, be ready to step in and help as needed.
- Assist your clients to set goals and/or working with them to meet goals set by physical, occupational, or speech therapists.
- Report any changes as your clients recover so that their plans of care can be adjusted.
- Use a calendar or clock to help orient your clients to time. Photos of family members and/or familiar places can help orient them to people and places.
- Too much stimulation can be frustrating after a brain injury. Keep the client's personal space tidy and try to minimize distractions.
- Keep conversations simple—without talking "down" to your clients. Use short sentences and ask only one question at a time. "Yes" or "no" questions might be easier for them to process.

MORE COMPLICATIONS FROM A BRAIN INJURY

Here are some additional complications that can occur after a traumatic brain injury:

Emotional/Personality Changes

Common emotional effects include :

- Irritability
- Anxiety
- Frustration
- Agitation
- Mood swings
- Clinical depression

Behavioral Issues

After a brain injury, behavioral changes may occur, including:

- Violence
- Inappropriate actions
- Emotional outbursts
- Lack of self-control
- Being impulsive
- Abuse of drugs or alcohol

Seizures

The most common long term effect for people with TBIs is a tendency for seizures. The problem can show up immediately after the injury or surface years later.

Coma

After a brain injury, a person may be in a coma and be both unconscious and unresponsive. After a few days or weeks, the person may gradually wake up from the coma. A persistent coma can lead to a vegetative state or death.

YOU HELP YOUR BRAIN INJURED CLIENTS WHEN YOU:

- Remember that the brain tires easily after an injury. Alternate periods of mental or physical activity with rest breaks.
- Help clients avoid high-stress activities in the last few hours before bedtime. Even watching television or being on a computer may be too stimulating. (Overstimulation can lead to agitation—or even to rage.)
- Remember that emotional outbursts or intense mood swings are common after a brain injury. Stay calm during such times and praise your clients when they keep control over their emotional responses.
- Do not challenge or confront a client who is behaving aggressively. Speak slowly and calmly. Avoid touching angry clients unless you know from past experience that touching them is safe.
- Be a good role model. If you get angry or aggressive because of a client's violence, it will only make the situation worse.
- If a client becomes violent around other clients, do your best to protect the other clients (and yourself) from harm.
- Keep clients safe during a seizure. Help the person lie down and turn on one side. Loosen any clothing around the person's neck and cushion the head. Don't put anything in the person's mouth during the seizure. Make sure he or she has plenty of room—with no dangerous objects nearby that could cause injury. But, don't *restrain* the person. Get help ASAP.
- Report <u>any</u> physical, emotional, or mental changes as your clients recover from their brain injuries so that their plans of care can be adjusted accordingly.

COMPLICATIONS FROM A SPINAL CORD INJURY

People who suffer a spinal cord injury may develop some or all of the following complications:

Motor Deficits

- Paralysis
- Muscle spasms
- Joint and muscle contractures
- Breathing difficulties
- Swallowing problems

Sensory Effects

- Loss of sensation to certain body parts
- Pain, including
  - Neuropathic pain—*generally sharp, shooting, or burning nerve pain*
  - Musculoskeletal pain—*usually a dull or aching pain that is worsened by movement and reduced by rest*
  - Visceral pain—*often starting in the stomach area as a burning, cramping, and constant pain*

Toileting Deficits

- Loss of control over bladder function
- Loss of control over bowel function

Skin Problems

- Edema
- Pressure Sores
  - Stage 1: The skin is not broken but is red—and stays red when touched.
  - Stage 2: The skin is slightly broken and looks like an abrasion or blister.
  - Stage 3: The sore looks like a deep crater and nearby tissue may be damaged.
  - Stage 4: The damage extends to the bone.

YOU HELP YOUR SPINAL CORD INJURED CLIENTS WHEN YOU:

- Are supportive, especially when your clients are feeling angry or depressed.
- Take your time when moving or positioning clients who are paralyzed. Rapid, rough movements can trigger muscle spasms, so go slow and be gentle.
- Remember that people with spinal cord injuries can experience several types of pain. It can be difficult to determine the cause of the pain—and the appropriate treatment. Take note of what activities or positions seem to bring on your client's pain. Document your observations along with your client's *description* of the pain, such as burning, shooting, sharp, or aching.
- Remind your clients that pain is harder to treat if they are rundown, stressed out, or sleep-deprived. Help them get into a routine of healthy eating and sleep habits.
- Ask your supervisor if your client would benefit from a wheelchair seating evaluation. Poor posture and/or improper wheelchair technique can lead to severe pain.
- Measure I & O carefully and be sure to monitor urinary catheter bags. If they start to get full, empty them! Don't wait for the end of your shift. Report signs of a UTI immediately.
- Help your clients with any bowel program they may have. Remind them to do their bowel program at the same time every day. Report constipation and/or rectal bleeding right away.
- Keep your clients' skin clean and dry, and help them change position *at least* every 2 hours. Because prevention of a pressure sore is *much* easier than treatment, watch closely for skin that is red or discolored. In addition, report any rashes, cuts, blisters, or dry, flaky skin.

MORE COMPLICATIONS FROM AN SCI

Here are some additional long term complications that can occur after a spinal cord injury:

Cardiovascular Disease

The incidence of cardiovascular disease for people with an SCI is 200 times greater than for the general population. After a spinal cord injury, people have a higher risk for heart disease because they:

- Have a difficult time getting aerobic exercise.
- Tend to be overweight or obese.
- Have a lower level of "good" cholesterol.

You can help by encouraging your clients to exercise, if able, or by assisting them with range of motion exercises. In addition, help them maintain a healthy weight by limiting high fat and high sugar foods—and providing plenty of nutritious foods instead.

Osteoporosis

Within days after a spinal cord injury, a person begins to experience rapid bone loss. While this process levels off after two years or so, the bone loss causes osteoporosis in virtually every SCI survivor. This puts them at risk for fractures, especially of the legs.

You can help by:

- Assisting them with resistance exercises. (Ask your supervisor or a physical therapist to show you how to perform the exercises properly.)
- Reminding them to get more Vitamin D—by sitting in the sun for a few minutes every day and/or by eating green, leafy vegetables.
- Encouraging them to give up cigarettes and alcohol. Both speed up bone loss.

Deep Vein Thrombosis (DVT)

A deep vein thrombosis, or DVT, is a blood clot that forms in a vein deep in the body. Most DVTs occur in the lower leg or thigh.

A DVT in the thigh is at risk for becoming dislodged and traveling to the lungs. Once there, it can obstruct blood flow to the lungs. This is a serious—and often deadly—complication.

You can help by:

- Performing range of motion exercises on your SCI client's feet, ankles, and legs.
- Helping apply elastic stockings (or TED hose) as ordered. Be sure you have the correct size for each client. Stockings that are too tight can cut off blood flow and actually cause a DVT.

Pneumonia

After a spinal cord injury, signals from the brain may be blocked from reaching the respiratory muscles. The higher the level of injury, the greater the loss of respiratory muscle control. If a person loses control of all the muscles needed for breathing, he or she must be put on a ventilator.

Regardless of the level of injury, all SCI survivors are at risk for respiratory complications, including pneumonia. Remember: pneumonia is the leading cause of death for all persons with spinal cord injury.

You can help by observing for, and reporting, any of the following symptoms of pneumonia:

- Shortness of breath
- Pale skin
- Fever
- A "heavy chest" feeling
- Coughing
- Increased congestion

You can also remind your clients to do breathing exercises, such as breathing out forcefully to strengthen their respiratory muscles.

IT'S AN EMERGENCY!

Have you ever heard of *autonomic dysreflexia*? This condition, also called *hyperreflexia,* occurs when part of the nervous system goes into a dangerous "overdrive." People who have a spinal cord injury *above* the mid-thoracic area are at risk for this serious medical emergency. For example:

Ted has a cervical SCI. One day, his urinary catheter bag fills up more quickly than usual and, as a result, urine stops draining from his bladder. The nerves in his bladder try to send an ***"Empty Me!"*** *message to his brain, but the message hits a dead end at the level of his injury.*

Since the message can't reach Ted's brain, a reflex in his nervous system is activated, resulting in narrowing of his blood vessels. Soon, Ted has a pounding headache, his cheeks are flushed and his forehead is sweating. He complains of nasal congestion and nausea. Ted's nursing assistant checks his vital signs and finds that his pulse is only 52 and his blood pressure is 220/118. The CNA calls for emergency help right away!

Autonomic dysreflexia (or AD, for short) can be triggered by many things, including:

- An overfull bladder
- A urinary tract infection
- Constipation
- Hemorrhoids
- Pressure sores
- Ingrown toenails
- Tight, restrictive clothing
- Sexual stimulation
- Menstrual cramps

Treatment needs to occur quickly, so if you notice signs of this condition, get help right away!

You can help prevent AD in your SCI clients by:

- Encouraging frequent changes in position.
- Offering a balanced diet and adequate hydration.
- Making sure your client is compliant with all medications.
- Emptying urine collection bags in a timely manner.
- Observing for skin irritations during personal care.
- Helping with bowel programs, as ordered.

A True Story by an SCI Survivor!

While I was out on one of my first day passes from the rehab center, doing some shopping, I spotted a tiny little girl looking at me curiously. When I passed her, she piped up and asked, *"Why are you in a stroller?"* Her father was horrified, and frankly, I would have been more upset at his reaction if I did not find her question so darn cute. I asked her if she could remember before she walked that her mom and dad pushed her around in a stroller, and she said she did. I then explained that I hurt my back and my legs forgot how to walk, so I pushed myself around in this thing that was called a wheelchair. She seemed satisfied with that, but said *"You should get someone to push you. Then you can have a nap."* Never were words so true.

Allison, www.dreamblvr.com

FREQUENTLY ASKED QUESTIONS

Q: How can I help prevent traumatic brain injuries?

A: There are a number of ways you can help reduce the risk of a traumatic brain injury for your clients, including:

- Making sure they wear seat belts whenever they ride in a motor vehicle.
- Keeping children safe in cars by buckling them into age-appropriate child safety seats.
- Preventing falls by making the client's living area safe. This includes removing throw rugs and clutter; using non-slip mats in the bathtub; encouraging the client to use grab bars and handrails; and keeping the area well lit while the client is awake.

Q: Do people with spinal cord injuries have a shortened life expectancy?

A: Unfortunately, yes. However, things have improved. 75 years ago, most people who suffered a spinal cord injury died within a few weeks. Now, if people with SCIs survive the first 24 hours, they have an 85% chance of living for at least ten years.

The most common cause of death after a spinal cord injury is pneumonia, followed by heart attacks. Sadly, suicide is also a leading cause of death among people with spinal cord injuries.

Q: Will there ever be a "cure" for brain and spinal cord injuries?

Researchers are certainly hopeful! When it comes to brain injuries, they are looking for ways to reduce the amount of damage caused by a traumatic injury—such as giving certain medications within minutes or hours of the injury. Researchers are also exploring how to make undamaged portions of the brain take over for injured areas more quickly and completely.

Scientists are optimistic about treatments for spinal cord injuries, too. They are working on a number of ways to "cure" SCIs so that you can't tell by looking at someone that they have survived a spinal cord injury. So far, some studies have proven that the spinal cord can regenerate and, in studies with animals, researchers have successfully restored function to paralyzed limbs.

Q: I have heard that people with spinal cord injuries shouldn't smoke. Why?

A: Well, smoking is a bad habit for anyone, but *especially* for people with spinal cord injuries. In addition to putting them at risk for lung and heart disease, smoking can cause problems ranging from skin complications to a higher risk of bladder cancer. In fact, SCI survivors who smoke have more frequent and more extensive pressure sores than those who don't smoke. And, the pressure sores take longer to heal.

FIVE KEY POINTS TO REMEMBER!

Here are some important points to remember about TBI and SCI. Can you find the page numbers where these issues were discussed?

1. The majority of brain and spinal core injuries are caused by impact. (On page _____)
2. It may take years to determine if a brain injury has caused permanent damage. (On page _____)
3. Depression is a common complication of both TBI and SCI. (On page _____)
4. Many people with a TBI need a consistent daily routine to help them function. (On page _____)
5. Range of motion exercises help prevent several SCI complications. (On page _____)

EMPLOYEE NAME
(Please print):

_____

DATE: _____

- ***I understand the information presented in this inservice.***
- ***I have completed this inservice and answered at least eight of the test questions correctly.***

EMPLOYEE SIGNATURE:

_____

SUPERVISOR SIGNATURE:

_____

Inservice Credit:	
☐ Self Study	1 hour
☐ Group Study	1 hour

File completed test in employee's personnel file.

inthe**know**
CAREGIVER TRAINING

A Client Care Module:
Understanding Brain & Spinal Cord Injuries

Are you "in the know" about brain & spinal cord injuries? <u>Circle the best choice or fill in your answer. Then check your answers with your supervisor!</u>

1. **True or False**
   A brain or spinal cord injury may disrupt how messages are sent throughout the nervous system.

2. **True or False**
   Senior citizens have the highest risk for traumatic brain injury.

3. **True or False**
   A "slipped disk" is one example of a spinal cord injury.

4. **Fill in the Blank**
   If a brain injury leaves a person unconscious for more than _____ hours, the injury is considered severe.

5. **Your client had a spinal cord injury six months ago and is now a paraplegic. You should be <u>most</u> concerned because he:**
   A. Is still sad about his accident.
   B. Continues to ask for help with his bowel program.
   C. Has lost ten pounds since his injury.
   D. Smokes two packs of cigarettes every day.

6. **True or False**
   People who have had a serious brain or spinal cord injury are at risk for depression and substance abuse.

7. **You should tell your supervisor <u>immediately</u> if your TBI client:**
   A. Seems confused about the time.
   B. Has a seizure.
   C. Gets tired easily.
   D. Yells at you for no reason.

8. **True or False**
   Both brain and spinal cord injuries can cause paralysis and muscle spasms.

9. **True or False**
   Heart disease is the number one cause of death for people with an SCI.

10. **True or False**
    If your SCI client experiences headache, flushing, sweating, nausea, and abnormal vital signs, it may indicate a medical emergency.