Spinal Cord Injury - InfoSheet #11

Bladder Care and Management

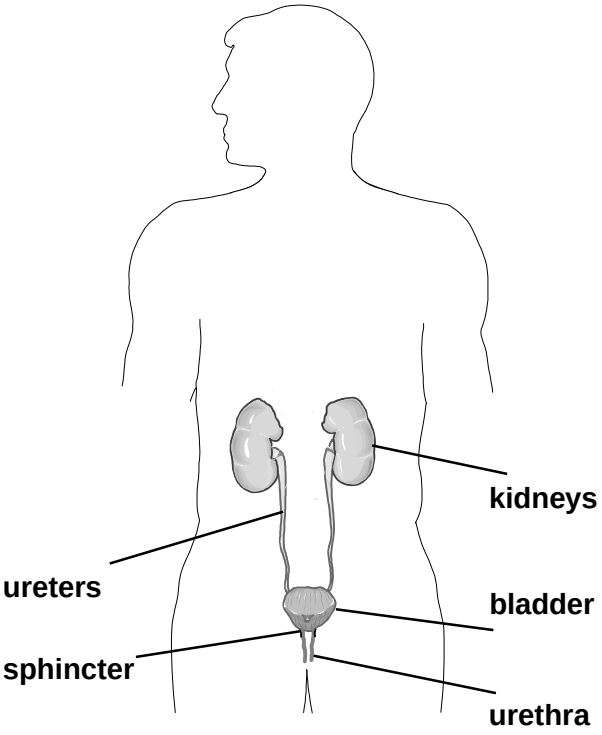
The Urinary System

The body's urinary system has three major functions. It makes urine in the kidneys; stores urine in the bladder; and removes urine from the body through the urethra. The kidneys filter waste products and water from the blood to form urine. The urine moves from the kidneys to the bladder through tubes, called ureters. The bladder temporarily stores the urine. The bladder is made of muscle and can stretch to hold about 2 cups of urine. The muscles (sphincters) at the neck of the urethra control the flow of urine from the bladder. When the sphincter muscles relax, the urine flows out through the urethra. The urethra is a slender tube that runs from the bladder to the outside of the body. Once the bladder starts to empty, it normally empties all of the urine.

How the Urinary System Works After a Spinal Cord Injury

Nerves near the end of the spinal cord (the sacral level of the spine) control how the urinary system works. The spinal cord injury usually does not affect how the kidneys work or how the urine collects in the bladder. The changes that usually take place after an SCI are how the bladder and sphincter muscles work.

After a spinal cord injury, messages can no longer travel normally between the bladder or sphincter muscles and the brain. Individuals usually can not feel when the bladder is full or they do not have the "urge" to urinate. The bladder muscles and sphincter muscles must work together so you have control of when you urinate (empty your bladder). These muscles also cause the bladder to empty completely.



What is a Bladder Management Program?

A bladder management program allows you to plan for bladder emptying in an acceptable manner when it is convenient for you. This helps you avoid accidents and prevent infections. Your level and type of injury affect the choice you and your doctor make for your bladder program. Because each person's injury is different, your doctor will probably conduct some tests to see how your bladder functions.

You also need to consider your hand function. How easy is it for you to do your own bladder program? Can you manage alone or will you need help?

During your rehabilitation you learn different ways to empty your bladder. The methods most frequently used are intermittent catheterization (ICP); indwelling catheter (Foley); and the condom external catheter for males. You may use just one program or a combination of methods. You will need to decide the method that works best for you.

How does level of injury affect your Bladder Management Program?

Generally there are 2 ways the bladder works after a spinal cord injury.

Spastic or Reflex Bladder means that when your bladder fills with urine, a reflex automatically triggers

the bladder to empty. The problem with a spastic bladder is you do not know when the bladder will empty. You are also at greater risk for sphincter dyssynergia [see explanation under problems].

Spastic or Reflex bladder usually occurs when the injury is above the T12 level. The choices in bladder management methods for an individual with a spastic/ reflex bladder include ICP, indwelling catheter (Foley), and condom catheter (males).

Flaccid or non-reflex bladder means one's reflexes may be sluggish or absent. You may not feel when the bladder is full. It then becomes over-distended or stretched. This can cause the urine to back up through the ureters to the kidneys. Stretching also affects the muscle tone of the bladder.

Individuals with injuries below T12/L1 usually have a flaccid bladder. The bladder management program most commonly used with flaccid bladder is ICP.

To avoid problems, do not allow too much urine (over 400cc) to collect in your bladder if it is flaccid.

Urinary Tract Problems

Kidney (renal) failure used to be the leading cause of death for individuals with a spinal cord injury. Today with the improved methods of bladder management, there are fewer and less severe complications with the kidneys. The more common cause of death related to the urinary tract is now sepsis (a blood stream infection resulting from a symptomatic infection in the urinary tract) rather than kidney failure.

No matter what bladder management program you use, you need to

- **follow a regular schedule** and
- **empty your bladder completely each time.**

The loss of normal bladder function after spinal cord injury places one at increased risk for urinary tract infection (UTI), regardless of the type of bladder management used. A urinary tract infection can occur in the bladder, the kidney, or other parts of the urinary tract. Urinary tract infection remains the most common secondary medical complication following a spinal cord injury and it is certainly one of the most costly.

Urinary Tract Infection

Most persons with a spinal cord injury (80%) have bacteria in the urine that are identified by a urine culture. This is not considered serious unless it leads to signs or symptoms. Your doctor may be able to identify a serious UTI by its symptoms and a physical exam.

Bladder infection (cystitis) is the most common. Symptoms of a bladder infection may include going to the bathroom frequently, passing blood in the urine, cloudy and odorous urine, increased spasticity in the lower extremities, fever and chills. Depending on your level of injury, you may feel a burning with urination, or discomfort in the lower pelvic area, abdomen, or lower back.

Infection of the testicles (epidymitis) can have any of the symptoms of a bladder infection plus the scrotum is swollen, hot and red. An individual with an incomplete injury may feel pain in the testicles.

Treatment of UTI

Because symptoms are similar for any UTI, you must see your doctor for lab tests to determine the need for treatment. Research shows that UTIs that do not have symptoms usually do not need treatment with antibiotics. Use an antibiotic only when symptoms (fever, chills and pain) are present. Excessive treatment with antibiotics may lead to resistant strains of bacteria, which become more difficult to treat.

Medical Problems in the Urinary Tract

Other medical problems can develop in the bladder, kidneys, and ureters.

Dyssynergia occurs when the bladder contracts but the sphincter does not open. The urine can "back up" in the kidneys. This is called "reflux" action. Treatment includes medications or surgery to open the sphincter.

Kidney and **bladder stones** can form. They interfere with the function of the kidney/bladder and cause infection.

Incontinence or **urine leakage** may be a problem for some individuals. Treatment can include both drugs and surgery. Medications are often used to control bladder spasms and tighten the sphincter muscles.

Several surgical options are available for treating

incontinence, including various forms of urinary diversion. A new urinary reservoir ("pouch") is made from bowel tissue. The ureters are implanted into the new bladder "pouch". The urine is drained through an opening (stoma) in either the navel or stomach wall.

A new surgical method is bladder augmentation cystoplasty. Here the bladder is enlarged using bowel tissue. Since surgery involves both the urinary and gastrointestinal systems, recovery time is longer.

Bladder Cancer

Research in aging with SCI shows a small increase in the risk of bladder cancer among individuals with spinal cord injury who have been using **indwelling catheters** for a long period of time. In a study at Craig Hospital the rate of bladder cancer was only .2% in those seen over the first 10 years post-injury. But by 30 years post injury the risk was at 9%. If you've used an indwelling catheter for more than 10 years, have regular cystoscopic evaluations. Smoking also increases the risk for developing bladder cancer.

Treating Medical Problems in the Urinary Tract

Often problems in the urinary tract do not have any symptoms. This means they can go undetected until they become serious. Your routine physical exam and laboratory studies are the best ways to find problems early and treat them before they become serious. Your doctor can then treat problems before there are serious complications.

Keeping your Urinary System Healthy

Individuals with SCI are more likely to have UTIs or problems with the urinary system. To avoid problems and keep your urinary system healthy,

- **Empty your bladder completely**

After your SCI, you may not have the "urge" to urinate. Your bladder often does not empty completely. When the bladder does not empty completely, germs or bacteria are likely to grow in the urine left in the bladder. These bacteria can cause an infection in the bladder.

- **Use a "clean technique" catheterization**

Always wash your hands before and after doing the catheterization. Be sure your catheter and equipment are clean. (See instructions on next page for Cleaning Leg or Bed Bag).

- **Keep Skin Clean and Dry**

Research studies show that harmful bacteria usually remains on the skin in the genital area of individuals with SCI. This may be related to skin moisture, urine leakage, pH, local skin temperature, personal hygiene, and/or neurogenic bowel management. If you have urine leakage or a bowel accident, change your wet, soiled clothes immediately. Clean the area around the genitals with soap and water everyday.

- **Drink plenty of liquids**

A steady intake of fluids helps "wash out" bacteria and waste materials. Drinking the recommended amount of liquids helps avoid problems and lessens the chance of stones forming.

How much fluid you need to drink each day depends on your bladder management program. With an indwelling catheter, you need to keep your fluid intake high. This means drinking 15 - 8 oz. glasses or 3 quarts of liquids each day. If you do intermittent catheterization, you need to drink 8 to 10 - 8 oz. glasses or 2 quarts between breakfast and dinner.

> The recommendation is to make **water** your **"beverage of choice"**. Make it your #1 beverage and drink all other beverages in moderation. **Limit carbonated beverages** to 1 per day.

- **Keep Bladder Pressures Low**

While you need to drink the recommended amount of fluids, you also need to empty your bladder on a regular schedule. With ICP, your goal is to limit the amount of fluid that collects in the bladder to 8 ounces or less (400cc). This means you can intake about 4 oz each hour while awake. Drinking more than this causes the bladder to overstretch, making you more susceptible to infection or reflux. You need to catheterize more frequently if you drink more.

- **Take Medications As Prescribed**

There are different times that your doctor may prescribe medication to treat problems related to your bladder management program. It is very important to take only the medication that is prescibed and to finish taking all the medicine as directed.

➢ **Have a Regular Urologic Check-up**

If you have infections and get ill more than once or twice a year, this alerts you that something may not be right with your bladder management program.

Check with a urologist to see how your bladder is working. A regular urologic exam that includes renal scan and KUB is recommended. The renal scan checks to see how your kidneys are functioning. The KUB is simply an X-ray of the abdomen that can detect kidney or bladder stones. These tests may be done once every 6 months, annually, or every 2 years, depending on your medical history.

New Treatments

There are several new treatments and methods being used in bladder management that are still undergoing further investigation.

Portable ultrasound devices or bladder scanners measure the bladder volume.

Functional electrical stimulation (FES) is used to signal muscles that control bladder continence. This device is designed to restore bladder control for people after a spinal cord injury.

For further information on these products, contact:
Bladder Manager, Diagnostic Ultrasound Corp
1-800-331-2313
http://www.dxu.com.

FES Information Center
1-800-666-2353
http://feswww.fes.cwru.edu/

The key to the remarkable improvements in individuals with SCI maintaining kidney function is paying close attention to their program and taking care of the bladder. Only 3% of individuals now show any evidence of deterioration of renal function 10 years after injury.

"Individuals who have the least problems are those who learn how to care for their skin and bladder. They make an effort to do their bladder program properly. Those who do not care and do not follow their bladder program the right way run into more trouble."

Daily Cleaning of Leg or Bed Bag

Clean your drainage bag each day to prevent infections and odor. Sediment in the urine can collect in tubing and connectors. This makes it harder for your urine to drain. It may increase your chances of getting a UTI.

Check your tubing and connectors every 2 to 3 days. If you see mineral build up after the regular cleaning, soak the tubing and connector in bleach solution for 6-8 hours. If this does not remove the build-up, replace the tubing or connector.

Supplies needed:

Clean bed bag or leg bag with plastic connector and piece of latex tubing
Sink or wash pan
Liquid Bleach
Small funnel or a syringe (not required, makes it easier to clean inside the bag, connector & tubing.
Clothes hanger for drying

Steps to Clean Leg or Bed Bag

1. Unplug the dirty bag, tubing and connector from the catheter or condom.
2. Attach a clean bag, tubing and connector to the catheter or condom.
3. Empty urine from the dirty bag.
4. Take the clamp off the bag.
5. Pour liquid bleach solution through the connector and tubing into the bag (use small funnel or syringe) **2 teaspoons bleach to 1 quart [4cups] water** or 1 part bleach to 10 parts water.
6. Shake bag gently so bleach solution touches all parts of the inside of bag.
7. Empty bleach solution from bag. Wash off outside of bag with fresh bleach solution.
8. Pour clean water through the system to rinse.
9. Hang on coat hanger to dry.

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