Bladder Care and Management

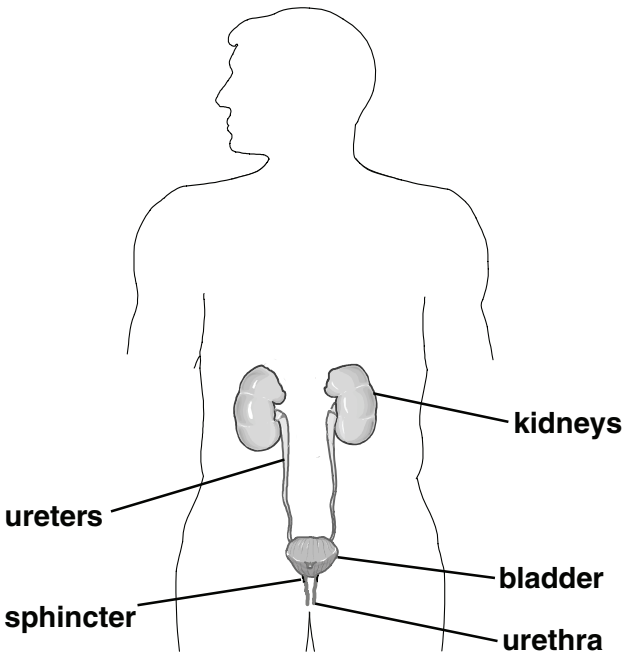
Spinal Cord Injury InfoSheet 11

Level - Consumer

The Urinary System

The 5 parts of the urinary system work to excrete waste (urine) and keep the chemicals and water in your body balanced. The kidneys are bean-shaped organs about the size of a fist. Urine is made in the kidneys and travels down two thin tubes called ureters to the bladder. The bladder is a muscular organ shaped like a balloon. The urine is stored in the bladder until it gets full. The sphincter muscles close tightly like a rubber band around the opening of the bladder to help keep urine in the bladder. As the bladder fills with urine, the sensation to urinate becomes stronger. At the point when the bladder reaches its limits, nerves from the bladder send a message to the brain that the bladder is full. To urinate, the brain signals the sphincter muscles to relax. At the same time, the brain signals the bladder muscles to tighten, squeezing urine out of the bladder. When all the signals work normally, the urine exits the bladder through the urethra.

5 Parts of the Urinary System



After Spinal Cord Injury

After a spinal cord injury (SCI), 3 parts of the urinary system continue to function normally. The kidneys continue to make urine, and urine continues to flow through the ureters and urethra. These functions are involuntary responses, meaning they act without the need for the brain to tell them to act.

The bladder and sphincter are voluntary muscles that need the brain to coordinate the emptying of the bladder. Such messages are normally sent through nerves near the end of the spinal cord (the sacral level of the spine). However, those messages may no longer travel through the spinal cord after an injury. This means that individuals with SCI may not feel the "urge" to urinate when their bladder is full. They also may not have voluntary control of their bladder and sphincter muscles.

The bladder is usually affected in one of two ways:

1. **Spastic (Reflex) bladder** is when your bladder fills with urine and a reflex automatically triggers the bladder to empty. One major problem with a spastic bladder is that you do not know when, or if, the bladder will empty.
2. **Flaccid (Non-reflex) bladder** is when the reflexes of the bladder muscles are sluggish or absent. If you do not feel when the bladder is full, it can become over-distended, or stretched. The urine can back up through the ureters into the kidneys. Stretching also affects the muscle tone of the bladder.

The sphincter muscles may also be affected after injury. **Dyssynergia** occurs when the sphincter muscles do not relax when the bladder contracts. The urine cannot flow through the urethra. This results in the urine backing up into the kidneys. This is called "reflux" action. The bladder also may not empty completely. Treatments include medications or surgery to open the sphincter.

Bladder Management Methods

Although you probably lack the sensation, or "urge" to urinate, you still need to empty your bladder. If not, the bladder muscles stretch as the bladder fills, and urine backs up into the ureters and kidneys. This is called *Reflux*. Reflux damages the bladder, ureters and kidneys. Failure to empty the bladder to relieve pressure can result in serious health problems, even death.

Everyone is different, so you and your doctor will work together to choose a **bladder management method** that is convenient for you to empty your bladder. Keep in mind that an effective management program helps you avoid bladder accidents and prevent complications such as infections. You might also consider your mobility, finger dexterity, daily lifestyle, loss of normal urinary system function, and your susceptibility to infections.

If you have a Spastic (Reflex) bladder, your bladder management method will likely be an intermittent catheterization program (ICP), indwelling catheter (Foley or Suprapubic), or a male external condom catheter. ICP is usually the method of choice for individuals to empty a flaccid bladder. However, stimulated voiding (tapping on the bladder) and spontaneous voiding (occuring with SCI neuromuscular recovery) can be effective for flaccid bladder management, too. In either case, a condom catheter is needed.

Urinary System Care

As an individual with spinal cord injury, you are at risk for a number of potential urinary system complications. Proper bladder care is the best way to prevent problems and maintain your short- and long-term health. Following a self-care checklist is a great way to help you prevent potential complications.

✓ Drinking the proper amount of *water* is one of the most important factors for bladder care. You might first consider your bladder management method to determine how much water you typically need daily.

- Indwelling Catheter - it is recommended that each day you drink about 15 (8oz) glasses of water, which is about 3 quarts.
- Condom and Intermittent Catheterization - it is recommended that you drink between 8 to 10 (8oz) glasses of liquid per day, which is about 2 quarts.

There may be circumstances when you need to drink more water than is recommended. For example, you need to drink more water if you also drink beverages that contain sugar, caffeine or alcohol. You need more water because these drinks cause you to urinate more often, which means the body absorbs less water.

There may also be circumstances when you need to drink less than the recommended amount of water. You may need less water if you have another health condition such as congestive heart failure. Of course, you should always consult your doctor if you have any questions.

✓ Although a regularly scheduled ICP is preferred, there is really no "recommended" time between intermittent catheterization. If you drink the recommended amounts of water each day, you will probably catheterize every 3 or 4 hours. You will need to catheterize more often if you drink more liquids or if your bladder capacity is less than normal (13-16 ounces).

Generally speaking, it is ideal to drink most of your fluids between breakfast (6am) and dinner (6pm). This time frame allows you to get most of your daily intake of liquids and empty your bladder just before going to bed (10pm). This is beneficial because your body's organs usually slow while you sleep, you can usually sleep through the night without the need to catheterize before the next morning. If the 6-to-6 time frame does not suit your lifestyle, you can adjust the time frame to fit your schedule.

Using a "sterile" ICP technique can help you stay as germ-free as possible. Sterile ICP kits are one-time use catheters. These ICP kits are also known as "touch free" or "touchless," which refers to the ability to catheterize yourself without the need to touch the insertion tube.

Due to a revised reimbursement policy covering the use of intermittent catheters, most people who have insurance can now get a maximum of 200 intermittent catheters per month instead of the 4 catheters per month under previous policy. The change should allow most users to obtain the closed, sterile ICP kits. Ask your

health care provider or contact your insurance provider for more information.

Although a closed, sterile system is preferred for ICP, many individuals with SCI still use a "clean" catheterization technique.

Step by step ICP process for men:

1 Assemble all equipment: catheter, lubricant, drainage receptacle (container).
2 Wash your hands thoroughly with soap and water and clean the penis and opening of the urethra.
3 Lubricate the catheter.
4 Hold the penis on the sides, perpendicular to the body.
5 Begin to gently insert and advance the catheter.
6 You will meet resistance when you reach the level of the prostate. Try to relax by deep breathing, and continue to advance the catheter.
7 Once the urine flow starts, continue to advance the catheter another 1 inch. Hold it in place until the urine flow stops and the bladder is empty.
8 Remove the catheter in small steps to make sure the entire bladder empties.
9 Wash the catheter with soap and water. If the catheter is disposable, discard it right away. If it is reusable, rinse the catheter completely and dry the outside. Store the catheter in a clean, dry location.

Step by step ICP process for women:

1 Assemble all equipment: catheter, lubricant, drainage receptacle.
2 Wash your hands thoroughly with soap and water and clean the vulva and opening of the urethra.
3 Lubricate the catheter.
4 Locate the urethral opening. The opening is located below the clitoris and above the vagina.
5 Spread the lips of the vagina (labia) with the second and fourth finger, while using the middle finger to feel for the opening.
6 Begin to gently insert the catheter into the opening. Guide it upward as if toward the belly button.
7 Once the catheter has been inserted about 2 - 3 inches past the opening, urine will begin to flow.
8 Once the urine flow starts, continue to advance the catheter another 1 inch and hold it in place until the urine flow stops and the bladder is empty.
9 Withdraw the catheter in small steps to make sure the entire bladder empties.
10 Wash the catheter with soap and water. If the catheter is disposable, discard it right away. If it is reusable, rinse the catheter completely and dry the outside. Store the catheter in a clean, dry, location.

✓ Change condom and Foley catheters regularly. Condoms are usually changed daily - every other day at the longest. As for a Foley, there is no real guideline for how often it should be changed, but changes are commonly made monthly. A Suprapubic catheter is typically inserted by a qualified physician or other health-care provider. A trained professional will also change the suprapubic catheter when needed. You and your doctor should discuss when changes should occur.

✓ Keeping personal urinary care supplies clean. Before you start, you need a:

- cleaning area such as a sink or wash pan;
- strong disinfectant solutions such as liquid bleach vinegar or Pine Sol;
- small funnel or syringe (not required, but it helps to clean inside the bag, connector & tubing; and
- place to hang leg and bed bag for drying.

Step by step process for cleaning urinary supplies:

1 Unplug the dirty bag, tubing and connector from the catheter.
2 Attach a clean bag, tubing and connector to the catheter.
3 Completely empty urine out of dirty bag.
4 Clamp the drainage valve closed.
5 Use a small funnel or syringe to pour a mixture of water and disinfectant solution through the connector and tubing into the bag (1 part disinfectant to 8 to 10 parts water - less water makes for a stronger disinfectant, but too strong a solution can damage your skin on contact).
6 Shake bag gently so solution cleans all parts of the inside of bag.
7 Open drainage clamp to empty solution from bag.
8 Wash off outside of bag with fresh solution.
9 Repeat steps 4-8 using water without solution.
10 Hang bag up to dry.

Clean your urine drainage bag each day, and check

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

✓ Keeping skin clean is another element for good health. First, always wash your hands before and after any bladder management method. To care for the indwelling catheter (Foley or Suprapubic), cleanse the urethral area (where the catheter exits the body) and the catheter itself with soap and water every day. After removing a condom, wash the entire genital area with soap and water before putting on a new condom. Finally, change your clothes and wash well immediately after any urine leakage or bowel movements.

✓ Getting a yearly medical check-up should be a part of your long-term care. The check-up should include a urologic exam to see that your urinary system is healthy. This usually includes a renal scan or ultrasound to determine whether or not the kidneys are working properly. The exam may also include an X-ray of the abdomen (KUB). This check-up helps your doctor ensure your urinary system is acting appropriately and identify other potential problems as early as possible.

Potential Urinary Complications

You can help prevent most complication with proper urinary system care. However, individuals with SCI are likely to develop a **urinary tract infection (UTI)** even with the best bladder care, Not only are you at high risk for UTI, but complications due to UTI are also the #1 medical concern that is more likely to affect your overall health and health care costs.

Bacteria are tiny, microscopic single-celled life forms that group together and form colonies. Different bacteria live in various systems of the body. Those bacteria living in the urinary system can quickly multiply and become the source of infection or disease.

As an individual with SCI, you should watch for early signs of an infection that include:

- sediment (gritty particles) or mucus in the urine;
- cloudy urine;
- bad smelling urine (foul odor); and
- blood in the urine (pink or red urine).

Then, you might avoid the onset of an infection by:

1 drinking more water;
2 avoiding beverages with sugar, caffeine and alcohol; and
3 emptying your bladder more often.

Antibiotics are used to treat an infection. Antibiotics are prescribed by a doctor and essentially kill the "bad" bacteria causing the infection.

You should always follow your doctor's advice on treatment of UTIs. On the other hand, many doctors do not know that individuals with SCI have special considerations when it comes to he use of antibiotics for UTIs. Your doctor needs to know four facts:

1 Most (80%) individuals with SCI have bacteria in the urinary system at any given time. The presence of bacteria is common because bacteria from the skin and urethra are easily brought into the bladder with ICP, Foley, and Suprapubic methods of bladder management. Also, many individuals with SCI are not able to completely empty their bladder, leaving some bacteria in the urine remaining in the bladder.

2 Whereas bacteria identified in a urine culture is commonly cause for treatment by doctors, antibiotics are only recommended for treatment of UTIs if you actually develop one or more of the following symptoms of infection:

- fever;
- chills;
- nausea;
- headache;
- change in muscle spasms;
- autonomic dysreflexia (AD); and
- depending on your level of injury, you may also feel burning while urinating or discomfort in the lower pelvic area, abdomen, or lower back.

3 - When you show symptoms of illness, it is then highly recommended that you get immediate advice on treatment. The first treatment recommendation is to provide your doctor with a urine sample prior to prescribing a treatment. This allows your doctor to first rule out any other health problems. Plus,

your doctor would be able to prescribe the most effective antibiotic to treat the specific infection (bacteria type). Finally, antibiotics should be taken exactly as prescribed and for a sufficient duration to fully kill the bacteria.

4 Use of antibiotics as a prevention method for UTIs should be avoided unless there is an overriding medical need to prevent an infection. Although there are some circumstances when prevention of infection may be needed to avoid unwanted medical complications, antibiotic resistance is a growing medical concern. It is an even greater concern for individuals with SCI and others more prone to infection. Each time you take an antibiotic, the bacteria have the opportunity to change in some way that reduces or eliminates the effectiveness of that antibiotic to kill the bacteria in the future. So it becomes harder and harder to get an effective antibiotic when you actually get sick from a bacterial infection.

Whereas bacteria found in the urinary system can cause illness, there are also "good" bacteria found in your digestive system. These bacteria are actually beneficial in maintaining the natural balance of organisms (microflora) in the intestines.

Anytime you take antibiotics, you kill both the good and bad bacteria. Killing these bacteria in the digestive system Maintaining this proper bacterial balance can help individuals with spinal cord injury maintain a predictable bowel management routine.

Therefore, *probiotics* are sometimes recommended by doctors during and after a course of antibiotics to replenish and restore the numbers of beneficial bacteria lost to antibiotic use. Probiotics are dietary supplements containing potentially beneficial bacteria or yeast. A popular dietary source for probiotics is yogurt, but other dairy products such as cheese, milk, sour cream and kefir also offer probiotic benefits. A probiotic suppliment (pill) is another option.

There is some debate as to whether or not *cranberry juice compounds* can somehow help prevent bacterial infections. When it comes to urinary tract infections in the general population, there is evidence that compounds in the juice block some types of bacteria from sticking to the cells in the body. This would make it easier for the body to flush out the bacteria. However, there is also evidence to show that cranberry compounds offer no benefit in reducing the number of bacteria in the urine of individuals with spinal cord injury. In other words, cranberry juice compounds may benefit people without SCI but may not necessarily benefit individuals with SCI.

Although the benefits of cranberry juice are debatable, there is no harm in drinking it. The only recommendation is that you drink the all-natural, sugar-free juice to avoid unnecessary additives.

If you become ill with two or more UTIs per year, it can be an early sign of other problems with the urinary system. A complete urologic examination may be necessary to find out if you have a more serious problem. You may then choose to see a urologist, which is a doctor specializing in the treatment of the urinary system. Finally, you should do your best to see a doctor familiar with the medical issues of individuals with SCI if you do have frequent infections.

Kidney (Renal) failure was once the leading cause of death for individuals with SCI. Today, improved methods of bladder management have resulted in fewer and less severe complications with the kidneys. A 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).

Kidney and **bladder stones** can form in the urinary system. Such stones usually hinder the kidney/bladder functions and can cause infection. Most individuals with lower levels of injury will notice pain associated with a stone. Those with higher levels are not likely to feel the pain. Blood in the urine is also a common sign that a stone has developed. If you have reoccurring or prolonged symptoms of AD that seem to be without cause, it may also be a sign that you have a stone.

Urine leakage or incontinence is 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 urine leakage. A new urinary reservoir ("pouch") is made from bowel tissue. The ureters are implanted into the new bladder

"pouch." The urine is drained with a catheter through an opening (stoma) in either the navel or stomach wall. Another 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 is another concern for some individuals with spinal cord injury. Research in aging with SCI shows a small increase in the risk of bladder cancer among individuals with SCI who have been using indwelling catheters for a long period of time. Smoking further increases this risk. If you have used an indwelling catheter for at least 10 years, it is strongly recommended that you have regular cystoscopic evaluations.

Treating other problems of the urinary system is important. Many times these problems do not have any symptoms. This means they can go undetected until they one-day become serious. Your annual physical exam and laboratory studies are the best ways to find problems early and treat them before they become serious.

Conclusion

The keys to a healthy urinary system are taking all the proper steps to prevent complications and identifying any complications as early as possible for treatment. This includes learning proper bladder management techniques as well as proper bladder care. If you learn these skills, you help improve your chances for lasting long-term health.

Resources

Bladder Cancer
A pamphlet that discusses the higher risk of bladder cancer in individuals with SCI.
www.craighospital.org/SCI/METS/bladderCancer.asp

H20: Hydration
A pamphlet that reviews the importance of drinking enough water & the problems that occur with dehydration.
www.craighospital.org/SCI/METS/h2o.asp

Bladder Cancer: Who's at Risk?
An article from PN/Paraplegia News, April, 2ooo that reviews results fo a recent bladder cancer survey by individuals with SCI.
http://www.pvamagazines.com/pnnews/magazine/article.php?art=815

Bladder Management
Pamphlet reviewing the urinary system and methods for voiding for individuals with SCI.
http://sci.washington.edu/info/pamphlets/bladder.asp

Living Well: Bladder Management
An article from PN/Paraplegia News, March, 2001, focusing on common conditions plaguing the gastro-urinary system after SCI & treatments.
http://www.pvamagazines.com/pnnews/magazine/article.php?art=699

Bladder Management (33 minute video)
This video outlines the importance of bladder management on QOL. The types of bladder management programs and techniques are illustrated (Male and female anatomical models utilized to demonstrate proper techniques). Prevention and treatment of UTI Risks for stone formation are also discussed. 55.2 mb download or watch on streaming real media.
http://www.spinalcord.uab.edu/show.asp?durki=97417

Additional Information: For more information on bladder management, go to www.spinalcord.uab.edu/show.asp?durki=21544 or contact the Office of Research Service via the information below.

Published by:
Office of Research Service
619 19th Street South - SRC 529
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Please check out our website at www.spinalcord.uab.edu

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This publication is supported by grant #H133N060021 from the National Institute of Disability and Rehabilitation Research, Office of Special Education and Rehabilitative Services, U.S. Department of Education, Washington, DC. Opinions expressed in this document are not necessarily those of the granting agency.