"Bladder Care and Management"

The body's urinary system is made up of 5 parts and has three major functions. 1) It makes urine in the kidneys; 2) stores urine in the bladder; and 3) removes urine from the body through the urethra. Urine is made when the kidneys filter out waste products and water from the blood. The urine moves from the kidneys through tubes, called ureters, to the bladder. The bladder temporarily stores the urine. Voiding, or urinating normally occurs when the bladder muscles contract,and the small sphincter muscles, acting as a valve, relax and allow urine to flow from the bladder through the urethra and out of the body. When the process is finished, the bladder is empty.

The Urinary System After a 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 can continue to flow through the ureters and urethra. These parts funcion because they work as involuntary responses, meaning they act without the brain telling them to act.

The bladder muscles and sphincter muscles are voluntary functions. Messages from the brain coordinate the bladder and sphincter muscles to completely empty 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 after injury:

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.

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.

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 can result in the urine backing up into the kidneys. This is called "reflux" action. The bladder may also not empty completely. Treatments include medications or surgery to open the sphincter.

What is a Bladder Management Program?
A bladder management program allows you to empty your bladder in an acceptable manner when it it is convenient for you. An effective managment program helps you avoid bladder accidents and prevent infections.

During your rehabilitation you learned different ways that you can empty your bladder. The most common methods are with intermittent catheterization (ICP); indwelling catheter (Foley); and an external condom catheter for men. You may use just one program or a combination of methods.

Only you and you doctor can decide which bladder management program works best for you. You need to consider your level of injury, lifestyle, loss of normal urinary system function, and your susceptibility to infection. Each person is different, so choose the method that enables you to be most independent and still protects your urinary system.

The Effect of Level of Injury on a Bladder Management Program?
Spastic (Reflex) bladder usually occurs when the injury is above the T12 level. The choices in bladder management methods for an individual with a spastic bladder include ICP, indwelling catheter (Foley), and condom catheter (men). Individuals with injuries below T12/L1 usually have a flaccid bladder. The bladder management program most commonly used with flaccid bladder is ICP.

No matter what bladder management program you use, you need to
" follow a regular schedule and
" empty your bladder completely each time.

Urinary Tract Infection

Individuals with SCI are at a high risk for urinary tract infection (UTI). In fact, complications due to UTI are the #1 medical concern and more likely to affect your overall health and health care costs.

The source of UTI is bacteria. Bacteria are a group or colony of tiny, microscopic single-celled life forms that live in the body and are capable of causing disease or infection.

It is normal for individuals with SCI to have bacteria in their bladder. Bacteria from the skin and urethra are easily brought into the bladder with ICP, Foley, and Suprapubic methods of bladder management. Also, individuals with SCI are often not able to completely empty their bladder. Bacteria are likely to grow in urine that stays in the bladder.

Most (80%) of persons with SCI have bacteria in their urine that can be identified by a urine culture. This is normal and is not considered a problem unless it you have the signs or symptoms of a UTI.

Do you have a UTI?

Bacteria reproduce and they can quickly multiply. When some bacteria multiply, they lead to infection.

Some of the symptoms of illness are fever, chills, nausea, headache, increased spasms, and autonomic dysreflexia (AD). Depending on your level of injury, you may also feel burning while urinating, and/or discomfort in the lower pelvic area, abdomen, or lower back. You may experience one symptom or more than one if you have a UTI.

There is a good chance that you have a UTI if you begin to show signs or symptoms of illness. However, you may also have another health problem, so it is highly recommended that you call your doctor immediately for advice on treatment if you have any symptom of illness.

Preventing Urinary Tract Infection

Individuals with SCI can help to prevent the occurance of urinary tract infection. The key is to work to prevent the spread of bacteria into the bladder(urinary system). You can do this in a number of ways.

Keep personal care supplies clean

Proper cleaning of urinary care supplies can help prevent infection. Before you start, you need:

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

Steps for Cleaning Leg and Bed Bags

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. Sediment in the urine can collect in tubing and connectors. This can make it harder for your urine to drain and can make it easier for bacteria to spread. Check your tubing and connectors every 2

to 3 days. 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 build-up, replace the tubing or connector.

Keep your skin clean

Clean skin is also an important step in preventing infection. First, always wash your hands before and after catheterization. Second, wash the area around the genitals with soap and water everyday. Research studies show that harmful bacteria usually remain 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. Finally, change your clothes and wash the area immediately after you have any urine leakage or a bowel accident.

Use proper techniques

Individuals with spinal cord injury can help prevent urinary tract infection by following proper steps when emptying the bladder. Another way you may be able to reduce the risk of bringing bacteria into the body is by using closed system catheters. A closed system helps protect against the spread of bacteria because your hands do not touch the catheter. You can also help prevent infection by completely emptying your bladder if you can. This helps prevent bacteria from being left in the body long enough to multiply.

Drink plenty of fluids

Drinking the proper amount of fluids helps to "wash out" bacteria and other waste materials from the bladder. This can help prevent UTI and lessens the chance of other problems of the urinary system. How much fluid you need to drink each day depends on your bladder management program.

* Indwelling Catheter - it is recommended that individuals with indwelling catheters have a high fluid intake. Each day you should drink about 15 (8oz) glasses of liquid, 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. It is also a good idea to drink your fluids primarily between breakfast and dinner.

Make water your "Beverage of Choice!"
Drink all other beverages in moderation and limit drinks with sugar, caffeine & alcohol.

Empty your bladder on a regular schedule.
If you drink the recommended amounts of fluid and use ICP for your bladder management, you should empty your bladder at least every 3 to 4 hours during the times you are awake. Normally, the maximum the bladder can hold is between 13 and 16 ounces of urine. This means you can probably drink about 4 or 5 ounces of liquids per hour.

It is very important that you empty your bladder when needed. Remember, you may not feel the "urge" to urinate. Several things can happen when the bladder becomes full and is not emptied. Urine that remains in the bladder too long allows bacteria to grow. Also the bladder muscles stretch. This can damage the bladder muscles, making them more susceptible to infection. Another concern is that the urine will then back up into your kidneys. This is called Reflux and it also makes you more susceptible to infection and other health problems. If your bladder cannot hold the normal amount of urine or you drink more liquids, you will need to empty the bladder more often.

Have a regular urologic check-up
It is highly recommended that you have a complete medical check-up at least once a year. This exam should include a urologic exam to see that your urinary system is healthy. This usually includes a renal scan or ultrasound to help identify whether the kidneys are working properly. The exam may also include a KUB. This is an X-ray of the abdomen that can detect kidney or bladder stones.

If you have more than one or two urinary tract infections per year and become ill, 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, a doctor specializing in the treatment of the urinary system. Remember, any doctor you see should be familiar with the medical issues of individuals with SCI.

Know the warning signs of infection

There are often early signs of a urinary tract infection before symptoms of illness occur. You may have one or more of the following:
* sediment (gritty particles) or mucus in the urine;
* cloudy urine;
* bad smelling urine (foul odor); and
* blood in the urine (pink or red urine).

When early signs of infection appear, you can take additional steps to help prevent symptoms of illness.

1. Drink more water.
2. Stop drinking beverages with sugar, caffeine, and alcohol.
3. Catheterize more often.

Treatment of Urinary Tract Infection

Even with a regular bladder management program and proper prevention methods, you are still at risk for urinary tract infection. Treatment for a UTI almost always includes an antibiotic medication prescribed by a doctor. Antibiotics kill bacteria.

3 steps to taking antibiotics

1. If you are having symptoms of illness, provide your doctor with a urine sample before taking any prescribed medications. If your doctor does not ask you to provide a urine sample, it is a good idea for you to request that a sample be taken. This is recommended because it helps your doctor know that you have a UTI and not some other health problem. Plus, a urine sample allows your doctor to prescribe the antibiotic that is best able to kill the bacteria that is causing your UTI.

2. Only take antibiotics when needed. Research shows that UTIs that do not include symptoms of illness usually do not need treatment with antibiotics. Use an antibiotic only when symptoms are present. Excessive use of antibiotics leads to resistant strains of bacteria. This means bacteria become immune to antibiotic medications and can be much harder to kill.
3. Take medications as prescribed. Anytime your doctor prescribes a medication, it is very important to take the medication as directed. Do not stop taking the antibiotic simply because you no longer feel sick. You need to totally kill the bacteria and prevent the bacteria from becoming resistant.

Other Problems of the Urinary System

Kidney (Renal) failure used to be 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. They can be a problem because they interfere with the function of the kidney/bladder and can cause infection.

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. 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 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 routine physical exam and laboratory studies are the best ways to find problems early and treat them before they become serious.

Bladder Management Devices

There are other methods that can be used to help with bladder management. Portable ultrasound devices or bladder scanners measure the bladder volume. Functional electrical stimulation (FES) is used to signal muscles that control bladder continence. All of these products are still undergoing evaluation. Please consult with your doctor before use.

Conclusion

Improvements in care have reduced the incidence of renal failure to only about 3% of individuals that are 10 years post-injury. The real key to a healthy urinary system is taking all the proper steps to care of yourself. This includes learning how to care for your skin; making an effort to do your bladder program properly; and taking all the steps to prevent urinary tract infection. If you do not properly care for yourself, it is only a matter of time before your health, and especially that of your urinary system will suffer.

5 Parts of the Urinary System