

# Bladder Management

A clear understanding of the principles and skills involved in bladder management will help you prevent complications such as a urinary tract infection.

Before your injury, waste products were removed by your kidneys which in turn sent urine trickling down the ureters into the bladder. Your bladder stretched as it filled, sending a message to the spinal cord. The spinal cord then sends a message to the bladder (to contract), to the bladder neck (to relax and let the urine out), and to the brain (to tell you to relax your sphincter muscle to empty the bladder).

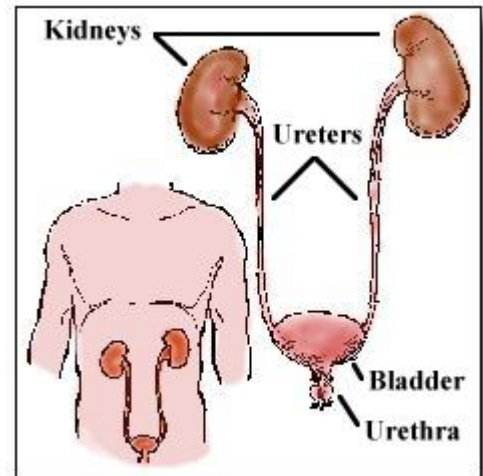
Your kidneys and ureters are not directly affected by a spinal cord injury. However, the bladder, bladder neck, and external sphincter muscle are directly affected.

Because of your injury, you no longer have the sensation or voluntary control to empty your bladder. Depending on your type of injury, your bladder may be spastic (bladder empties frequently) or flaccid (bladder fills and fills). In either case you need to regularly and completely empty your bladder throughout the day just as you did before your injury. This will prevent infection and other complications. The difference is that you will empty your bladder using a catheter. Every four hours a small tube is inserted into your bladder, the urine is drained out, and the catheter is removed. This is called intermittent catheterization (or "cathing"). This will allow the bladder to fill and empty as it did before your injury.

The amount of urine drained from your bladder should not be more than 400 cc's (about two cups). If the bladder overfills (more than 400 cc's), the muscles in the bladder will stretch, interfering with bladder retraining. When volumes can be kept under 400 cc's you can increase to every six hour cath. If you are having trouble getting wet between cath times, cath every four hours, avoid caffeine, and limit fluids to 2000 cc's per day, or approximately three 8 oz. cups of fluid at each meal. Your doctor may also order Ditropan, a medication that helps your bladder hold more urine.

## Why is a Bladder Program so Important?

A poorly managed bladder program causes complications that can eventually damage your kidneys. Urinary tract infections were at one time the leading cause of death in spinal cord injured persons. Today, due to good bladder management, you can have a normal life span, but it's still important to recognize when you have a urinary tract infection. A urinary tract infection can involve the bladder, the kidneys, or both.



The symptoms of a [bladder infection](#) are:

- fever (101° F, or 38.5° C)
- foul smelling urine
- cloudy or dark urine with sediment
- increased spasms
- headaches
- wet between intermittent catheterizations
- a general feeling of sickness
- autonomic hyperreflexia (discussed later on this page)

Depending on your symptoms, your doctor may choose to either treat or only monitor a bladder infection. Usually the first step is to cath more often and drink more fluids. In particular, it's helpful to drink cranberry juice and water. The use of antibiotics is avoided if possible because if used too often, germs in your body can become resistant. This means that antibiotics may not work when you need them to fight a bad infection.



Of course, the best course of action is to prevent infections by using a good bladder program. Urinary suppressants, such as [Macrochantin](#) or [Bactrim](#) may help to prevent urine infections. However, you should not take these medications at the same time you are being treated with antibiotics for a urinary tract infection.

Vitamin C makes the urine acidic which helps prevent bacteria from growing and causing an infection. Drinking two quarts of fluid each day will help flush your kidneys and bladder.

If your urine just has a strong odor and dark appearance, your urine is not infected, just too concentrated. Try increasing your fluid intake which may mean you will need to cath more often.

Sometimes a bladder infection will go up the ureters and infect your kidneys. Because the kidneys have a rich blood supply your blood may also get infected, resulting in a serious illness.

A **kidney infection** may include all the symptoms of a bladder infection plus:

- high fever (104°F or greater)
- excessive sweating
- chills
- nausea
- vomiting

This is a serious condition and must be treated immediately. Kidney infections are usually treated in the hospital with intravenous (IV) fluids, IV antibiotics, a Foley catheter, and Tylenol for fever.

[Bladder and kidney stones](#) come from waste products or other materials that become solid. Stones will often form from calcium or pus from an infection. Drinking enough fluids to flush out the urinary tract, keeping active, and staying free of infections will help prevent stones from forming.

**Reflux** is the reversed flow of urine from the bladder to the kidneys. This causes infection and damages the kidney. When this happens, the ureters enlarge and the kidneys become clogged with extra urine. Reflux can result if your bladder is overfull or you crede' without having a catheter in your bladder to drain the urine.

**Autonomic hyperreflexia** (A.H.) is a problem that needs to be corrected immediately. It is an emergency condition causing very high blood pressure. If left untreated, the blood pressure may rise high enough to cause stroke or death. Autonomic hyperreflexia only occurs in people whose injury is above the level of the T6 (Cervical l7, Thoracic l-6). It is a group of symptoms your body uses to warn you that something is wrong below the level of your injury. The most common cause is an overfilled bladder or bowel. This leads to over stimulation of your nervous system.

If you experience any of the symptoms of autonomic hyperreflexia, immediately sit up or raise the head of the bed. This causes a temporary drop in your blood pressure.

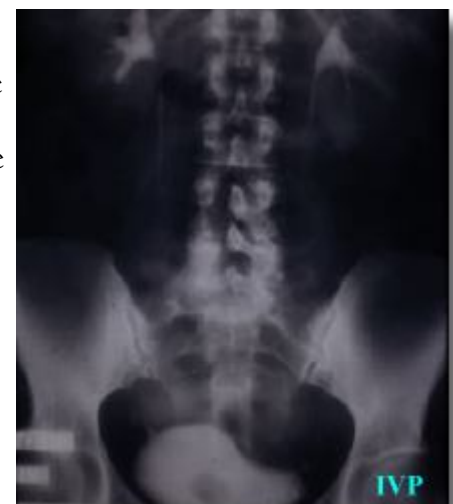
Next, try to empty your bladder by catheterization, or if you have a Foley or suprapubic catheter, make sure it is not kinked. If it is not kinked and you're still having symptoms of A.H., irrigate the catheter by squirting 30 cc's of normal saline or sterile water into the catheter. If you are unable to irrigate the catheter, change it.

If your bladder is empty and symptoms of A.H. remain, check for a full bowel, change position, and check if you are sitting or lying on a foreign object. If you can not find a cause and are still experiencing A.H., go to the emergency room for treatment.

## Tests

There are several tests which can be done routinely to help you manage your bladder:

- An **ultrasound** is a test using sound waves that gives a picture of your bladder and kidneys. It is an inexpensive and painless test done on a yearly basis.
- **Culture and sensitivity** testing shows whether an infection is present, what type it is, and which medication will cure it.
- **Urinalysis** of a urine sample gives an overall look at kidney and bladder function.
- A **KUB** is an x-ray of your **Kidneys, Ureters, and Bladder** done on a yearly basis to detect stone formation.
- A **cystoscopy** is done to look for bladder stones and any abnormalities in your bladder. The cystoscope is a special tube inserted through the urethra. This lets the doctor see the inside of the bladder.
- An **intravenous pyelogram (IVP)** is an x-ray procedure. Before the x-ray is taken a special medicine (a contrast media) is injected into a vein. This medicine gives a clearer picture of your kidneys, ureters, and bladder. From this test the doctor can detect changes or damage to your urinary system.
- A **cystometrogram (CMG)** is a test which shows the response of your bladder to being filled. It tells the doctor if the bladder



contracts when it is filling, how full the bladder is when it contracts, how strong the contractions are, and whether the bladder neck tightens. This test is done by pumping air through a catheter and into the bladder. A machine attached to the catheter traces a graph showing the bladder's response. These tests are often ordered or performed by a urologist, a doctor who specializes in the urinary system. A CMG is done when a patient has recurrent infections, leaking urine between caths, or an abnormal renal ultrasound.

A well-managed bladder program will help you feel healthier and give you a normal, full lifetime. If you have any questions about your bladder management program, be sure to ask your primary nurse, doctor, or urologist.

## Alternative Bladder Programs

Intermittent catheterization is the best type of bladder program. However, there are other alternatives to intermittent cathing.

A **Foley catheter**, is a catheter that stays in your bladder and is connected by tubing to a leg bag. Foley catheters are *not* the treatment of choice. If left in the bladder they can result in regular urinary tract infections and formation of kidney stones.



A **suprapubic cystotomy** is a surgical opening made into the abdominal wall and bladder. A catheter is passed through the opening into the bladder and is connected by tubing to a leg bag. This procedure is not recommended because it is a constant source of infection and kidney stone formation.

An **ileo-diversion** is a surgical procedure used to make an artificial bladder from a loop of bowel. The ureters are removed from the bladder and attached to a piece of the disconnected bowel. One end of the loop of bowel is sewn closed. The other end (called a stoma) is brought to the outside of the abdomen. A special bag is worn over the stoma to collect the urine and protect the skin. The bag may be attached by tubing to a leg bag. This procedure is not recommended for most spinal cord injured patients.

An **external sphincterotomy** is a surgical procedure that can be done on men. The external sphincter muscle is cut to let the urine drain freely from the bladder. An external catheter is connected to a leg bag to collect the urine.

**Credé** is a technique of pressing on the lower stomach over the bladder to push urine out. This is very dangerous unless done at the end of an intermittent catheterization program while the catheter is still in place. Otherwise, urine can be pushed back up the ureters into the kidneys causing kidney damage.

## How to do an intermittent catheterization

### Part I

The following pictures show the steps for intermittent catheterization. A sterile technique is used when you are in the hospital and when you have a urinary tract infection. The clean technique is what you normally will use at home. If you have quadriplegia we will work with you on special ways to insert the catheter.

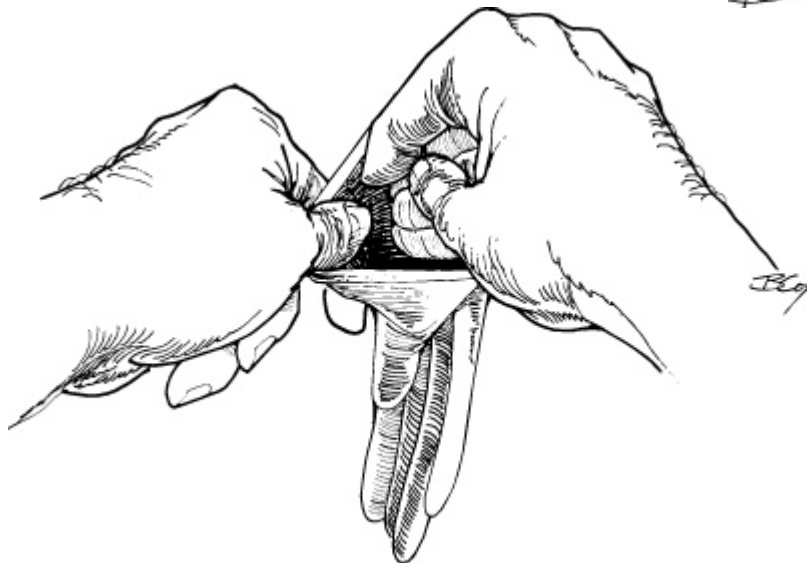
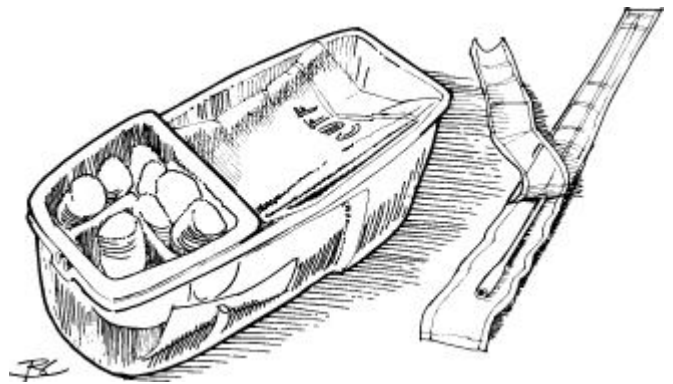
Learning how to cath yourself gives you more independence and privacy. It may take time and patience, but it is well worth the effort. We always teach one other person in your family in case you become ill and cannot cath yourself.

Whether you use sterile or clean technique, the first thing you need to do is get the area ready. First loosen or remove clothing, get into position. If you are a woman, place a mirror so you can see your meatus (a medical term for urinary opening). Wash your hands with soap and water.

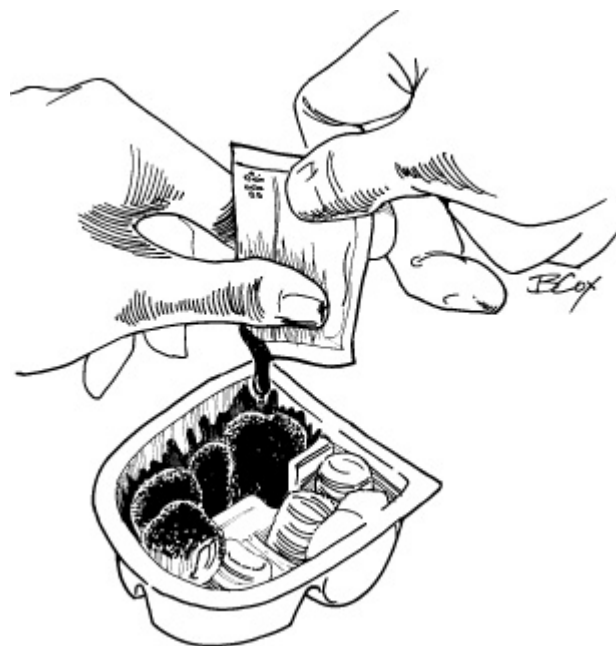
Equipment: Sterile: urinary cath kit and catheter

#### Step 1 Open cath kit and catheter package

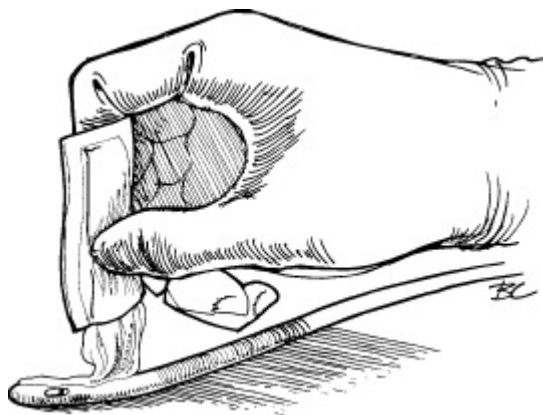
**Step 2** Put sterile gloves on being very careful not to touch outer surface with your bare hands



**Step 3** Pour betadine over cotton balls. (right)



**Step 4** Apply lubricant to the end of the catheter (below)

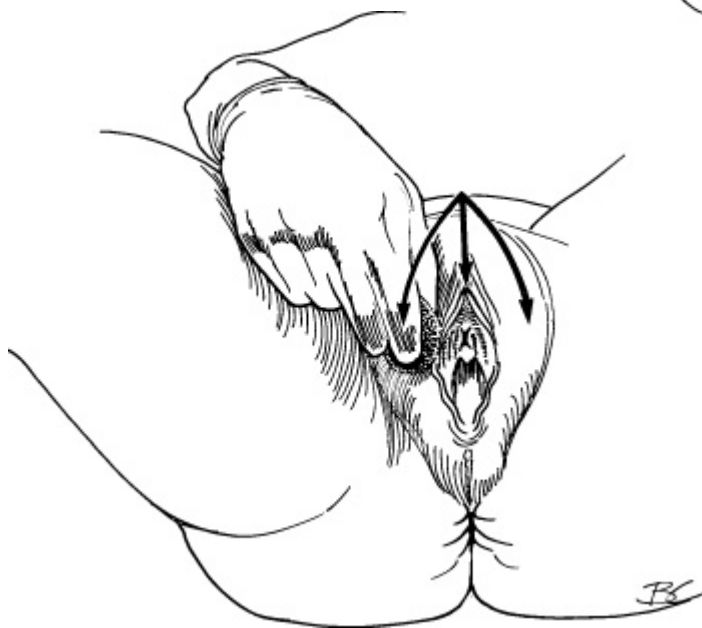
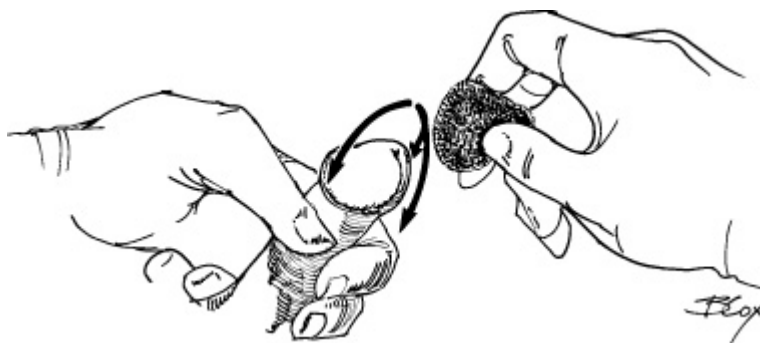


## Part II

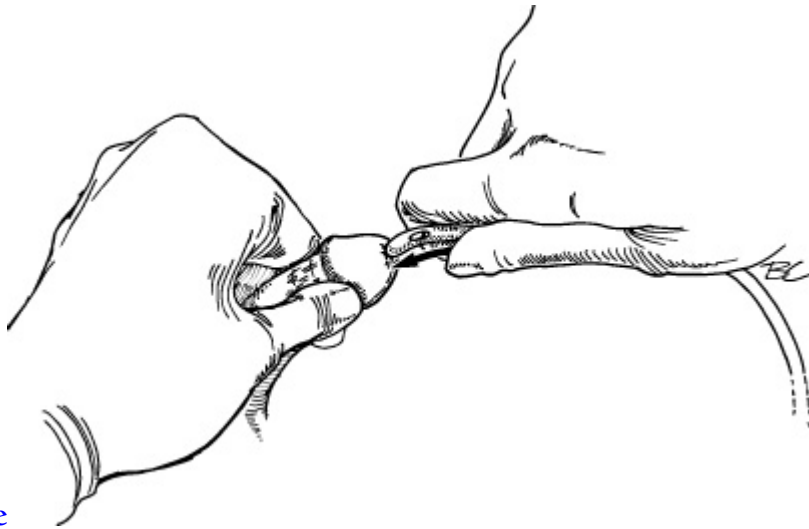
**Step 5** Clean the area around the meatus with the cotton balls soaked in betadine.

**Male** use a circular motion for the first two cotton balls (right)

**Female** Use one cotton ball to the left side, one to the right and one to the middle (below)



**Step 6** Insert lubricated catheter into the meatus until you see a flow of urine, then insert one more inch. When urine flow stops slowly remove catheter.



**Male**



**Female**

**Step 7** Wash urinary area and hands with soap and water. Throw away all disposable equipment.

### **Clean Technique**

Equipment: catheter, lubricant, washcloth with soap and water, a container or leg bag for urine collection and if female, a mirror

To prepare, loosen or remove clothing, get into position and if female, place a mirror so you can see your meatus (urinary opening).

1. Pour soap and water over washcloth and wash hands or wash with disposable wipes
2. Wash the urinary area with the soapy washcloth or disposable wipes
3. Apply lubricant to catheter

4. Insert catheter into the meatus until you see a flow of urine, then insert one more inch. When flow stops slowly remove the catheter
5. Wash your hands and urinary area with soap and water or disposable wipes
6. Wash the catheter with soap and water and then dry and store it in a clean place until the next use.

As you become more comfortable with cathing, you may find it easier to cath into the bathroom toilet. When traveling, it's often more convenient to carry disposable wipes for cleansing, a clean catheter in a baggy, and a small container of lubricant. You can either transfer to a toilet or carry a leg bag to collect the urine. To drain urine into the toilet or other container in inaccessible bathrooms, a good solution is an extension tube connected to the catheter.