

Understanding
Neurogenic
Bladder

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If you have just been diagnosed with a neurogenic bladder or are taking care of someone with a bladder disorder, you may find yourself learning new skills and making many decisions. You may feel overwhelmed by the information and the product choices at first. This book has been created to provide information to newly injured or diagnosed people, their caregivers, and their families. This guide provides a framework for discussions with your healthcare professional about the best ways for you to manage your bladder. In addition, Hollister professionals are available to provide information on their full range of Continence Care products, to answer your questions, and to provide you with educational information.

The Healthy Urinary System

Your urinary system is made up of the kidneys, ureters, bladder, urethra, and the internal and external sphincters.

Kidneys

The kidneys filter certain waste products from the blood to make urine. The kidneys typically produce 1-3 ounces of urine each hour. Urine is carried from the kidneys through tubes called ureters to the bladder, where it is temporarily stored until urination occurs.

Ureters

The ureters are narrow, hollow tubes that lead from the kidneys to the bladder. Each adult ureter is about 11-14 inches long. The ureters end in the lower portion of the bladder and are attached to the bladder in such a way that it helps prevent urine from flowing back up into the kidneys. Muscular contractions in the ureters push urine down from the kidneys to the bladder almost constantly.

Bladder

The bladder is a hollow organ with a muscular wall and two primary functions – the storage and emptying of urine. In a relaxed state, the adult bladder can hold about 16 ounces of urine before you feel a strong urge to urinate. The size and shape of the bladder and the amount of urine stored varies from person to person.

Emptying the bladder (also called voiding or urination) involves the coordination of both voluntary and involuntary muscles. When the bladder is emptied, urine leaves the body through a tube called the urethra. Voiding occurs when the bladder muscle (also called the detrusor) contracts and the sphincters open. Urine then passes through the urethra and leaves the body.

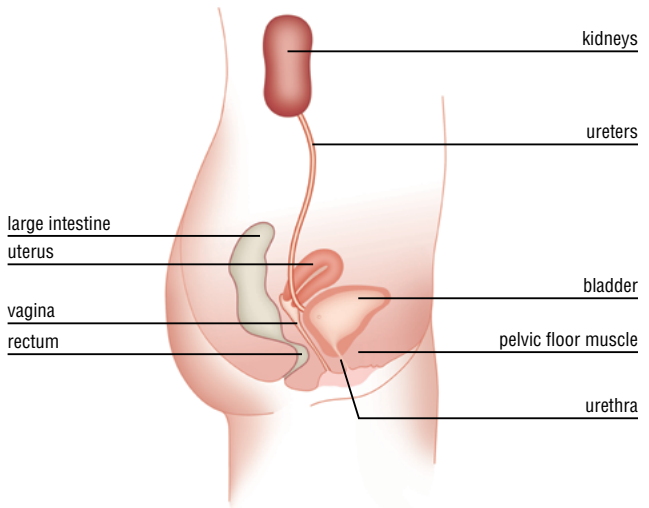
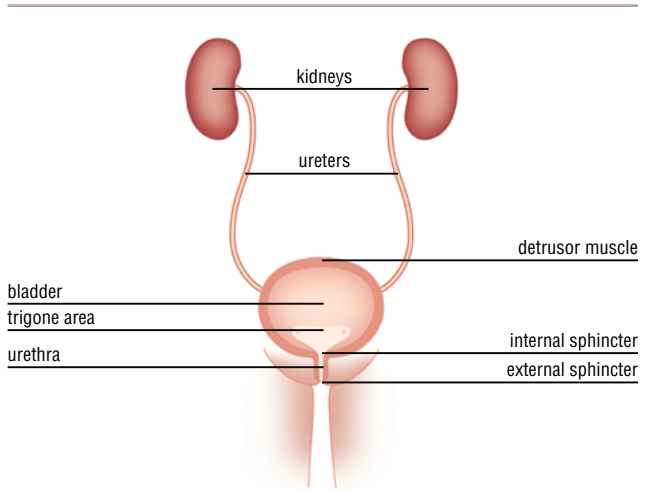
The Healthy Urinary System *(Cont'd)*

Urethra

The urethra carries urine from the bladder out of the body. It is a muscular tube lined with a mucous membrane. The opening of the urethra is called the meatus. The primary difference in female and male urinary tracts is the length of the urethra.

Females

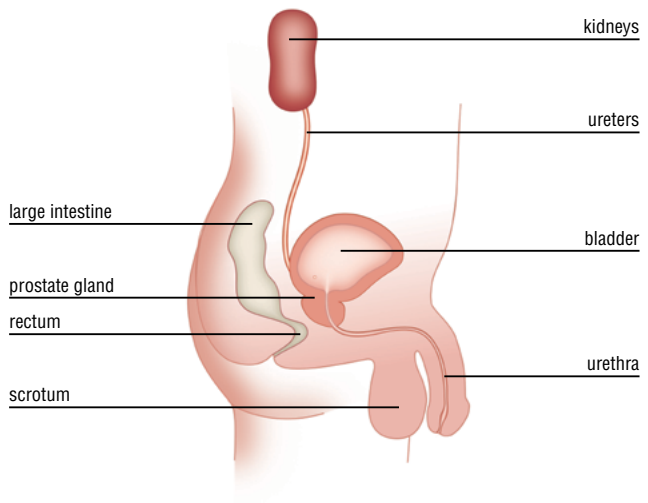
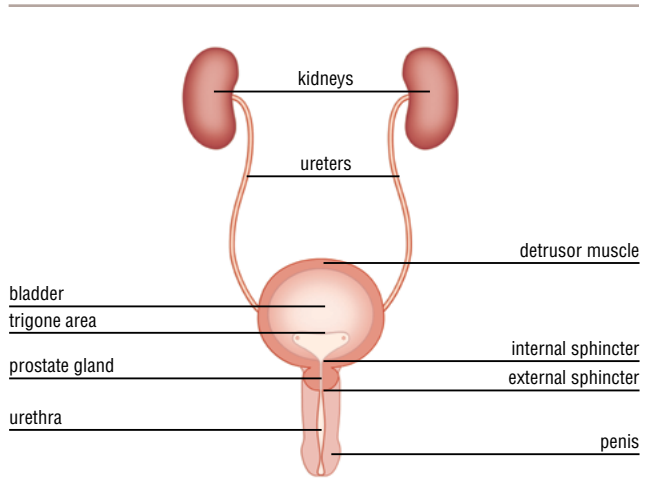
In females, the urethra is about 1 inch long and runs in a slight curve behind the pubic bone. The opening of the urethra is just in front of the vaginal opening. The female urethra is highly susceptible to infection since it is close to the vagina and the anus where bacteria are present.





Males

In males, the urethra is 8-10 inches long. It runs in an S-curve from the bladder through the prostate and the pelvic floor, and it ends at the tip of the penis.



The Healthy Urinary System *(Cont'd)*

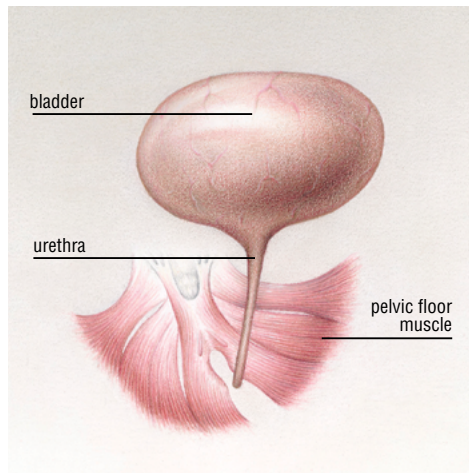
Sphincters

The urethra is surrounded by two ring-like muscles called the internal and external sphincters. The external sphincter is the one that is voluntarily contracted to control when you urinate.

The sphincters work best when the pelvic floor muscles are healthy and strong. The pelvic floor muscles consist of several small muscle groups that surround the urethra, vagina (in women), and rectum. They provide support to the organs of the pelvis, and they help to hold the urethra in place.

Nervous System

The process of urination involves coordination between the bladder, the sphincter muscles, and an intact nervous system. When the bladder is full, nerve impulses are sent to the lower portion of the spinal cord, and then to the brain to communicate that the bladder is full. At that time, the brain sends a message to the bladder telling it to contract in order to release the urine. A healthy functioning nervous system and brain are very important for proper coordination of this complex process.



Bladder Problems

Common Issues

Men may experience problems with urination as they age. In males, the prostate gland sits underneath the bladder and wraps completely around the urethra. The prostate can become larger, and this may block the flow of urine from the bladder.

For women, multiple pregnancies and vaginal deliveries can weaken the pelvic floor muscles that support the bladder and uterus causing problems such as urine leakage.

Men and women may experience problems with normal urination for a variety of reasons. Anyone who has problems with urine leakage or is not able to empty their bladder completely should consult their healthcare professional for diagnosis and treatment.

Neurogenic Bladder Disorder

A neurogenic bladder means that you have some type of bladder control problem caused by an injury or an illness of the nerves, spinal cord, or brain. The bladder, brain, and sphincter are not communicating well. Your bladder may empty too frequently, not frequently enough, or in an uncoordinated way. Your urinary sphincters may also work incorrectly. The way your bladder and sphincters behave depends on the location of the neurologic disorder in your brain, spinal cord, or peripheral nerves, and the extent of your disease or injury.

If your bladder empties too frequently, it may be described as overactive. Your body is unable to store as much urine as it should, and the bladder empties more frequently than a normal bladder. Symptoms may be urinating more than once at night, strong urgent desire to urinate, and increased frequency (voiding more than 8 times in 24 hours).

Some neurologic disorders prevent the bladder from emptying properly. Your bladder fills with urine yet you do not have the feeling to urinate or your bladder does not squeeze to make the urine come out. This type of

bladder disorder can also be described as underactive, flaccid or atonic bladder and it can result in urinary retention, or the inability of the bladder to empty.

Neurologic disorders or injuries can also cause the urinary sphincters to function improperly. They may not close or open at the right times; or may not close at all. In a condition called detrusor sphincter dyssynergia, the pelvic floor muscles contract and close the urethra when the bladder contracts, preventing the bladder from emptying. This can cause urine to flow up the ureters toward the kidneys, which can possibly damage the kidneys.

Bladder Problems *(Cont'd)*

You may experience these signs if you have a urinary tract infection:

More frequent urination than normal

Leakage of urine between normal voiding or catheterization

Increased muscle spasms (if you are spinal cord injured)

Fever

Back pain

Milky, cloudy, or darkly colored urine

Foul smelling urine

Urinary Tract Infections

If you have a neurogenic bladder disorder you may have occasional or frequent urinary tract infections (UTIs). Urinary tract infections occur when there is an increased amount of bacteria (or other microorganisms) inside the bladder lining, urethra, and kidneys. This may be the result of not emptying the bladder completely. In men, urinary tract infections can also include the genitals, particularly the prostate, seminal vesicles, epididymis, or testicles.

Timely Recognition

It is important to contact your healthcare provider at the first sign of a urinary tract infection.

Not everyone develops these symptoms. If you are not feeling well or you suspect you have an infection, contact your healthcare provider.

Your urine will be tested and medications will be used if an infection is present. Be sure to take all of the antibiotic prescribed, and to contact your healthcare provider if your symptoms return. If you experience frequent urinary tract infections, your healthcare provider may recommend additional tests or treatments.

Urinary Incontinence

If bladder control is lost and urine leakage occurs, it is called incontinence. Urinary incontinence can occur in people of all ages, and for a variety of reasons. Some, but not all, people with neurogenic bladder experience incontinence. The main types of urinary incontinence are stress, urge, mixed, overflow, and functional (See table below).

Type of Urinary Incontinence	Common Symptoms	Common Causes
Stress	Urine loss during activities such as coughing, sneezing, laughing or lifting.	Pregnancy, childbirth, menopause, pelvic radiation, surgical trauma.
Urge	A sudden need to urinate, occasionally with large volume urine loss. Can also exist without incontinence.	May be associated with pregnancy, childbirth, menopause, pelvic trauma, and neurologic disease such as Parkinson's disease and multiple sclerosis.
Mixed	Combination of stress and urge forms.	
Overflow	A frequent dribble of urine as a result of inefficient bladder emptying. Symptoms are similar to stress incontinence.	Many causes such as spinal cord injury, diabetes, neurological damage, Parkinson's disease, multiple sclerosis, or enlarged prostate.
Functional	Urine loss not associated with any pathology or problem in the urinary system.	Associated with physical or cognitive impairment such as immobility, Alzheimer's disease, or head injury.
Reflex	Reflex (spastic bladder) incontinence happens when the bladder fills with urine and an involuntary reflex causes the bladder to contract in an effort to empty.	This usually occurs when the spinal cord injury is above T12 level.

Diagnosing Bladder Disorders

Diagnosing bladder disorders involves a complete urological evaluation. A physical examination will be done and your health history will be discussed. You may be asked questions about your fluid intake and urinary output, if you experience urine leakage, medications you are taking, and your past medical history. Your healthcare provider and a variety of specialists may assist in the diagnosis.

There are several types of examinations and tests used to diagnose different types of bladder conditions including:

- Urinalysis
- Ultrasound (Sonography)
- Cystoscopy
- Urodynamic Exam
- Cystometrography

Further information about these studies is listed in the glossary.

Management and Treatment

Medications

People with neurogenic bladder often benefit from the use of one or more medications that help their bladder store urine more effectively, or that help the bladder and the sphincters operate better. Anticholinergics are medications that are commonly used to help decrease bladder spasms, and can help reduce urinary incontinence. Anticholinergic medications are available in pill form and in patches that are worn on the skin. Botulinum toxin (Botox) injections may help with overactive bladder symptoms. Other medications are available; ask your healthcare provider which medications might be best for you.

Fluids

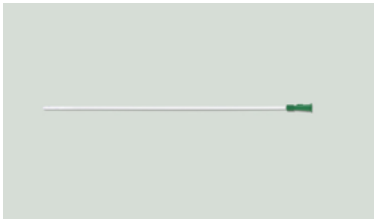
All of us need to drink enough fluid to promote healthy kidney function. The amount and type of fluids you should drink depend on your unique situation and the type of bladder problems you have. If your bladder tends to empty frequently or leak urine, you may find it best to limit your intake of beverages containing caffeine (coffee, tea, and carbonated drinks) because caffeine can increase bladder activity causing your symptoms to worsen. Alcoholic beverages can also stimulate the bladder to empty, so you may want to limit these as well.

If you are prone to frequent urinary tract infections, your healthcare provider may recommend you increase the amount of water you drink. If nighttime urination is a problem, stop drinking fluid the last few hours before you go to bed.

Some people believe that cranberry juice helps prevent infection, however clinical studies have not shown this to be effective. In addition, it should not be taken if you are on warfarin. Be sure to discuss any special dietary or herbal remedies you are considering with your healthcare provider.

Management and Treatment *(Cont'd)*

Catheters



A catheter is a small hollow tube which is inserted into the bladder to drain urine when the bladder can't empty on its own. If the catheter is intended to stay in the bladder for hours, days or longer, it is called an indwelling catheter. If the catheter is inserted to drain the bladder, and then removed, it is called an intermittent catheter.

Intermittent Catheterization

There are a wide variety of intermittent catheter products available. Understanding the different features will help you choose the catheter that is right for you.

Intermittent catheterization is a way to empty the bladder completely. People who use intermittent catheterization as a method of emptying their bladder are taught by a professional to catheterize on regular intervals to prevent bladder overdistention. For some, this may require inserting a catheter four to six times each day. Supplies may be carried discreetly in a pocket or bag. To learn the procedure, you must learn where the catheter is inserted and how to use the product. You must also be able to reach your urethra (at the tip of the penis for men and in front of the vagina for women) and manipulate the catheter. You can drain the urine through the catheter and into the toilet or receptacle such as a urinal, or drain the urine into a disposable bag. Women can't always see their urethra and may learn to do the procedure by touch or by using a mirror. People of all ages can learn intermittent catheterization. The procedure can also be performed by a trained caregiver or family member if you are unable to perform the procedure yourself.

Intermittent Catheterization *(Cont'd)*

Intermittent catheterization is the insertion and removal of a catheter several times a day to empty the urinary bladder.

Two different techniques are practiced: clean and sterile. Your healthcare provider will help you choose the most appropriate method for you.

Intermittent catheterization can be done using two main methods.

Clean technique is performed using a single-use sterile catheter, good hand washing, and soap and water cleansing of the urethral area with daily hygiene. Additional cleansing may be required if the area has been contaminated in some way, especially with stool.

Sterile Technique is performed using a method that does not allow hands to directly touch the catheter before or during catheterization. Hands are washed and the genital area is cleaned. Sterile gloves are used if using a standard straight sterile catheter. Sterile technique may also be performed using a closed or “no touch” catheter system. Sterile “No Touch” hydrophilic catheters may have a protective tip and sleeve which helps provide the user with an easy to use catheter that also offers protection against contamination. Most offer an integrated collection bag to collect urine.



Male External Catheters

Men who have urine leakage from the penis may benefit from the use of a male external catheter. This device is like a condom, applied to the shaft of the penis. The male external catheter is worn discreetly under the clothing and connected to a leg bag or a bedside drainage collector.

Other Types of Catheters

“As a quad, moving to an indwelling suprapubic catheter was incredibly liberating and allowed me a degree of freedom I couldn’t have enjoyed using intermittent catheterization.”

Ian, living with C -5 injury 17 years



Other Types of Catheters

If you are unable to insert and remove a catheter to drain your bladder, you may need to use an indwelling catheter. This type of catheter is held in the bladder by an inflatable balloon and it provides continuous drainage. Complications of indwelling catheters may include urinary tract infections, blood infections (septicemia), urethral injury, bladder stones, and/or blood in the urine (hematuria)*. Long-term indwelling catheters are replaced once a month or as recommended by your healthcare professional.

A suprapubic catheter is an alternative for individuals who have difficulty managing intermittent catheterization, such as those with paralysis of the arms or those for whom a urethral indwelling catheter is not an option. A suprapubic catheter is an indwelling catheter that is placed directly into the bladder through the skin above the pubic bone. This catheter must be placed by a urologist during outpatient surgery or an office procedure. The tube must be changed periodically as recommended by your healthcare professional.

With indwelling catheters, a drainage bag is required. There are two main types of drainage bags. One type is a leg bag that attaches by straps to the leg. A leg bag is usually worn during the day since it fits discreetly under pants or skirts, and is easily emptied into the toilet. The other type of drainage bag is larger. It may be used during the night and is usually hung on the bedside.

*Citation:

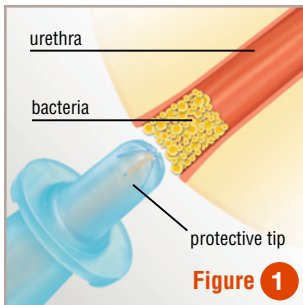
AU Hollingsworth JM, Rogers MA, Krein SL, et al. Determining the noninfectious complications of indwelling urethral catheters: a systematic review and meta-analysis. *Ann Intern Med.* 2013;159:401-410.

Choosing Your Intermittent Catheter

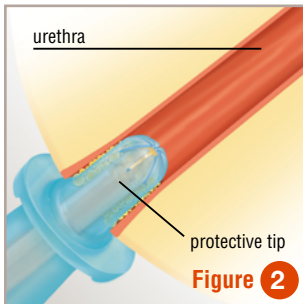
Size and Design

Catheters come in a variety of sizes, materials and styles. Catheters are sized on the “French” scale, abbreviated Fr., a measure of diameter. 1 French is 1/3 of a millimeter. The higher the number, the larger the catheter. The most common sizes used by adults are 12 Fr and 14 Fr, and it is generally best to use the smallest size that you can. Your healthcare provider will prescribe the proper size for you.

Intermittent catheters are available in different lengths. Generally, men use longer length catheters, about 16 inches, and women and children use shorter lengths of 6 or 8 inches. For men, women and children, the catheter is inserted into the urethra until the tip of the catheter enters the bladder and urine begins to flow. The exact distance is different for every person.

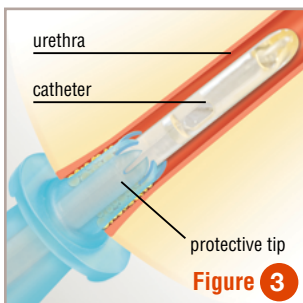


Intermittent catheters are available with straight and Coudé (Tiemann) or bent tips. Most people use a straight tip. The Coudé (Tiemann) or bent tip may be needed if you have an obstruction, such as an enlarged prostate or a stricture.

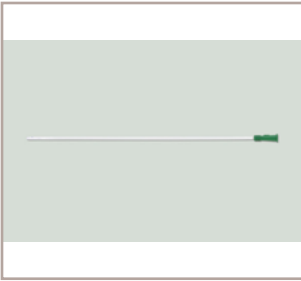


Protective Tip

Some sterile catheters have a special, protective tip that covers the tip of the catheter. The catheter is advanced into the protective tip, and then the protective tip is inserted into the urethra (figure 1). The protective tip prevents the catheter from coming into contact with the germs that are in the first 15 mm of the urethra (figure 2). The protective tip protects the catheter from becoming contaminated, and helps reduce the risk of contaminating the catheter (figure 3).



Choosing Your Intermittent Catheter *(Cont'd)*



Catheter made from PVC

Catheter Materials

Intermittent catheters are usually made from PVC (polyvinyl chloride) or other medical grade material. PVC is slightly stiff and catheters made from this material are often preferred for their ease of insertion. Catheters are available with variations in stiffness. Your healthcare provider will help determine the correct catheter stiffness for you.



Hydrophilic catheter

Lubrication

Lubrication is used to help the catheter slide easily through your urethra. This makes the procedure more comfortable and also helps prevent damage to the urethra. Non lubricated intermittent catheters require gel lubricant from a separate package or tube. Pre-lubricated gel intermittent catheters have lubrication inside the package. Hydrophilic coated catheters have a special coating that becomes slippery when moistened with water.



Closed system catheter

Types of Catheters

Closed System Catheters

Some intermittent catheters are closed system catheters. This means the urine is drained into an attached collection bag instead of a toilet; so use and disposal are easy and discreet. The urine collection bag may have a handle for greater convenience and ease of use; the handle can be hung on a wheelchair if needed.



No Touch System

Closed systems are pre-lubricated either with a gel in a reservoir or with gel dispersed in the bag. The advantage of these catheters is improved safety and convenience. Closed system, pre-lubricated catheters support the aseptic technique where the user never needs to touch the catheter directly.

Not touching the catheter reduces the risk of causing harmful bacteria to enter the bladder. These catheters may also be more convenient to use because there is no need to add separate lubrication.



Catheter kit

“When I switched from using the older, user-lubricated straight catheters to the newer hydrophilic-coated straight and closed-system catheters, it greatly improved both my health and quality of life”

Bill, living with T-7 paraplegia, 15 years



Straight Catheter

Catheter Kits

Some intermittent catheters come packaged with all of the supplies you need for the catheterization procedure; gloves, underpad, drape, and antiseptic wipe. These packages are called kits. Kits are ready to use, convenient, and contain the sterile products recommended to help reduce the risk of urinary tract infections.

No Touch Systems

“No Touch” Intermittent catheters are designed to minimize the transfer of bacteria from the individual’s hands, skin near the urethra and from the environment. A protective introducer tip helps to avoid contact between the catheter tube and the urethra. A protective sleeve provides areas for gripping without touching the catheter. Sterile “No Touch” hydrophilic catheters have a protective tip and sleeve which helps provide the user with an easy to use catheter that also offers protection against contamination. Most offer an integrated collection bag to collect urine.

Straight Catheter

A straight catheter is a hollow flexible tube that may be made of silicone, plastic, or latex. The insertion end has oval shaped holes in the catheter walls so the urine may drain from the bladder into the catheter. The insertion tip may be rounded, tapered, or slightly bent (Coudé). The non-insertion end may be slightly flared or may include a plastic funnel. Catheter length and diameter varies. Your physician will determine the appropriate size catheter for you.

Frequently Asked Questions

Q: What is intermittent catheterization?

A: Intermittent catheterization is the emptying of the bladder at repeated intervals with the use of a catheter. This can be done by the individual (self-intermittent catheterization), or it may be done by someone else (assisted intermittent catheterization).

Q: How do I learn intermittent catheterization?

A: Intermittent catheterization can be learned in the hospital, in a clinic setting, or at home under the guidance of your healthcare professional. Women may need to use a mirror during the first few months of self-catheterization to facilitate the insertion of the catheter. Your healthcare professional will provide you with teaching materials such as a video, education booklet, product instructions, and samples.

Q: How often should I catheterize?

A: This depends on how much you drink during the day and, more precisely, how much urine you excrete. Normally, catheterization is done up to 4-6 times each day.

Initially, intermittent catheterization is done on a schedule. If you are unable to feel when your bladder is full, the right time is always before the bladder empties itself or “overflows” – that is, before incontinence occurs. The right time for emptying your bladder will be based upon your own experience. Keeping a urination journal (record of fluid intake and urination) is helpful to learn about your intermittent catheterization needs.

In all cases, you want to catheterize enough times so the bladder does not become overdistended.

Q: What size catheter should I use?

A: Your healthcare professional will determine what size catheter is right for you. It should be small enough to prevent injury to the urethra and large enough to allow for the flow of urine.

Q: What features should a catheter have?

A: The catheter material should:

- Be biocompatible (not cause allergic reactions)
- Be flexible and accommodate the urethral contours
- Be made from a material that does not change shape when the temperature varies
- Provide atraumatic (gentle and comfortable) insertion
- Be ready to use (easy to handle and not requiring any extra equipment)
- Provide a “touch-free” application to reduce the risk of infection (insertion right from the package without the need to actually touch the catheter)

Frequently Asked Questions *(Cont'd)*

Q: Can I perform catheterization during pregnancy?

A: Your healthcare professional will advise you as your pregnancy progresses but intermittent catheterization can be safe during pregnancy.

Q: What are the signs of infection in the kidneys or bladder?

A: The signs of an infection in the kidneys or bladder, or urinary tract infection (UTI), are listed on page 10.

Q: How much fluid should I drink?

A: It is generally recommended that adults drink 8-10 glasses of fluid each day. Your needs may be different. Avoid drinks with caffeine as they can irritate the bladder. Alcohol may make the bladder fill more often.

Q: What do I do if I cannot pass the catheter into my bladder?

A: Usually if you cannot pass the catheter it is due to a spasm at the sphincter. Relax, take a deep breath, or cough. Hold the catheter gently against the closed sphincter. It will usually open after a few seconds. NEVER FORCE THE CATHETER as you can cause injury to the urethra. If you cannot pass the catheter after 3 or 4 tries, call your healthcare provider or go to the accident or emergency room. The healthcare provider will have special catheters available to catheterize you. If this problem occurs often you may need to use a catheter with a bent or Coudé tip.

Q: Why do I have large amounts of urine when I catheterize at night?

A: During the day when you are sitting, fluid collects in your legs. When you are sitting you may notice that your feet and ankles become swollen. When you lie down at night all this fluid enters your blood stream, is filtered through your kidneys and fills up your bladder.



To reduce large amounts of fluid try these options:

- Lie down for an hour during the day, preferably in the afternoon
- Catheterize before going to bed for the night
- Catheterize in the middle of the night
- Limit your fluid intake after 6 pm

Q: How do I catheterize on a trip?

A: Unfortunately planes, buses, and trains do not have wheelchair accessible bathrooms. You can catheterize under a jacket, sweater, or small blanket over your lap using a closed system catheter. Some individuals insert an indwelling catheter for trips and then remove them as soon as possible. When traveling, be sure to carry your catheter supplies in your carry-on luggage. Most airlines will allow an extra carry-on bag for medical equipment. Some airlines designate the first class toilet for people with disabilities. Check with the airline when making travel arrangements.

Glossary of Terms

Aseptic Intermittent Catheterization The process of performing intermittent catheterization using sterile equipment and inserting the catheter in a way in which the catheter is not directly touched with the hands.

Bladder A hollow organ with a muscular wall that has two functions, the storage and emptying of urine.

Bladder Control The ability to control urination.

Bladder Neck The gathering of muscles where the bladder meets the urethra.

Catheter A thin hollow tube that is passed into the bladder through the urethra to drain urine from the bladder.

Catheterization The process of inserting a tube into the bladder to drain urine.

Clean Intermittent Catheterization Insertion of a new, sterile catheter into the bladder with clean, gloved hands at regular intervals.

Continence The ability to control the timing and process of urination and bowel movements at a socially accepted time and place.

Cystometrography A test that measures the changes in pressure that take place within the bladder following continuous injection of fluids through internally placed catheters.

Cystoscopy An internal evaluation of the bladder, urethra, or prostate that is performed by inserting a small, rigid, or flexible instrument that contains a light and magnification lens.

Detrusor Muscle The muscle in the bladder wall which has three tissue layers that allows for bladder expansion when filling with urine, and contraction of the bladder to empty.

External Sphincter	A round voluntary muscle surrounding the urethra that opens and closes to hold urine in or let it drain out of the bladder.
French	A measurement of catheter diameter. Abbreviated: Fr 1 French (1 Fr) = 1/3 mm.
Health History	A comprehensive look at your medical history including information such as existing diseases, previous health problems, injuries, medications, and surgical procedures.
Incontinence	The involuntary loss of bladder or bowel control which results in the accidental expelling of urine or stool.
Infection (Urinary)	A condition resulting from the presence of bacteria in the bladder tissues.
Intermittent Catheterization	Insertion of a hollow tube into the bladder to drain urine at timed or regular intervals.
Internal Sphincter	An involuntary muscle located at the bladder opening.
Kidneys	Two bean-shaped organs which lie internally on either side of the spinal cord whose purpose is to filter waste from the blood which converts to urine.
Kidney Infection	A urinary tract infection that involves the kidneys. Also called pyelonephritis.
Meatus	The opening of the urethra in both men and women.
Neurogenic Bladder	A bladder that does not function properly as the result of nerve damage.
Nocturia	The act of getting up frequently during the night to urinate.

Glossary of Terms *(Cont'd)*

- Overactive Bladder** A condition in which the bladder is squeezing down too frequently causing incontinence or a frequent urge to pass urine.
- Overflow Incontinence** The involuntary expelling of urine that occurs when the bladder is overfilled (overdistension of the bladder).
- Pelvic Floor Muscles** Several small muscle groups that surround the urethra and rectum. They support the organs of the pelvis and help to maintain continence.
- Prostate Gland** A small organ in males located below the neck of the bladder encircling the urethra.
- Reflex Incontinence** Reflex (spastic bladder) incontinence happens when the bladder fills with urine and an involuntary reflex causes the bladder to contract in an effort to empty. This usually occurs when the injury is above T12 level.
- Reflux** The backward flow of urine from the bladder back through ureters and sometimes into the kidneys.
- Stress Incontinence** The involuntary expelling of urine associated with physical stress such as coughing, sneezing, climbing, or lifting.
- Sterile Intermittent Catheterization** The process of performing intermittent catheterization in a completely sterile setting using sterile gloves, forceps, gown, and mask.
- Suprapubic Catheter** A catheter that is inserted through the skin above the pubic bone and into the bladder for continuous drainage of urine.
- Trigone Area** A triangular shaped area of smooth tissue within the detrusor muscle that makes up the bladder wall. The ureteral openings into the bladder and the internal opening of the urethra are located in the trigone area.

- Ultrasound** A scan which can be used to identify the shape and position of the urinary organs and other abdominal organs.
- Underactive Bladder** A bladder with an overly large capacity that overfills. Loss of sensation due to this filling action results in a bladder that does not contract forcefully enough, and small amounts of urine dribble from the urethra.
- Ureters** Two hollow tubes that carry urine from the kidneys to the bladder.
- Urethra** A muscular tube that carries urine from the bladder to the outside of the body.
- Urge Incontinence** The involuntary expelling of urine associated with a strong desire to void (urgency).
- Urinalysis** An examination of the contents of urine to determine the presence of infection, to diagnose metabolic disease (e.g., diabetes), and to obtain information about kidney function.
- Urinary Incontinence** The involuntary expelling of urine.
- Urinary Tract Infection (UTI)** An illness caused by the presence of bacteria in the urinary tract.
- Urinate** To pass urine through the urethra outside of the body. It is also called voiding.
- Urine** Liquid waste filtered from the blood by the kidneys.
- Urinary Retention** The inability to empty urine from the bladder, which can be caused by neurogenic bladder or obstruction of the urethra.
- Urodynamic** Measurement of the functional sequences within the lower or upper urinary tract.
- Voiding** (See Urinate)

Support and Information Networks

The following are some support and information networks to assist you in answering your questions.

The American Urological Association

www.auanet.org
1.866.RING.AUA
(1.866.746.4282)

Christopher and Dana Reeve Foundation

www.crfp.org
1.800.225.0292

The Miami Project to Cure Paralysis

www.miamiproject.miami.edu
1.800.STANDUP
(1.800.782.6387)

National Association for Continence (NAFC)

www.nafc.org
1.800.BLADDER
(1.800.252.3337)

National Rehabilitation Information Center

www.naric.com
1.800.346.2742

Paralyzed Veterans of America

www.pva.org
1.800.232.1782

The Simon Foundation for Continence

www.simonfoundation.org
1.800.23SIMON
(1.800.237.4666)

National Multiple Sclerosis Society

www.nationalmssociety.org
1.800.344.4867

Spina Bifida Association of America

www.sbaa.org
1.800.621.3141

Spinal Cord Injury Information Network

www.spinalcord.uab.edu
1.205.934.3283

Seekwellness

www.seekwellness.com
1.800.840.9301

United Spinal Association

www.unitedspinal.org
1.800.962.9629

Wheel:Life

www.wheel-life.org

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