



## A Parent's Guide to Intermittent Catheterization



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# **Do you have a child who cannot urinate the usual way?**

## **This manual was written for you.**

Not being able to empty the bladder completely in the usual way is more common than you think. Every year, many children are born who for different reasons cannot urinate the way others do. Older children (and adults) can also experience problems urinating, due to illness, wounds, surgery or medication. For some, these problems are temporary, while others will experience them for the rest of their lives. Today, most people address this problem by doing *intermittent catheterization*. Basically, this means emptying the bladder by using a thin plastic tube called a catheter.

The information in this manual is based on the intermittent catheterization method and is intended as a complement to the instructions provided to you by your child's doctor or nurse. It can also be used as a reference for any questions you may have.

In this manual, we discuss how the urinary system works, what can go wrong, and how to catheterize your child as well as how to gradually involve your child in the procedure so that your child can perform self-catheterization as soon as it becomes possible.

We offer advice about how to show your child support and things you should remember as your child grows up and develops.

Once you have read this manual, we hope that you will feel a sense of confidence – catheterization is neither complicated nor difficult.

## **If you have more questions.**

If you have any questions about your child's catheterization, you should first ask your child's doctor or nurse. We at Astra Tech will be happy to answer any general questions about catheterization and can inform you about which catheters are available.

# Ways to help and support your child

Not being able to urinate the usual way is what is referred to as a hidden handicap. Needing someone's help to empty the bladder can be experienced as embarrassing, especially when your child grows older. For most children, being able to empty their own bladder without the help of an adult is very rewarding and an important step in their development. For this and many other reasons, it is important to allow your child to participate in catheterization at an early age and to encourage all signs of progress, both big and small. The ambition is to let your child learn as much as possible about the catheterization process, with consideration taken to his or her special condition.

Knowing that he or she is not alone in this situation can be comforting for your child (and for you as a parent). There are many different organizations and interest groups where you can meet other families in the same situation, as well as participate in different activities and sports. We can also reassure you that catheterization should not affect your child's school activities.

It can be helpful to inform other adults in your child's surroundings about his or her situation. Explain that catheterization is not strange, dangerous, or something that would normally prevent your child from functioning just like any other child. This way, you can work against prejudice, avoid common misunderstandings, and support your child's contact with the world around him or her.

# How does the urinary system function?

*The urinary system is one of the most vital systems in the human body. It is extremely important for your child's health that it functions properly.*



## From a glass of water to urine

When you drink a glass of water, the water goes down to the stomach. This is where the first breakdown of food and drink takes place.

The contents of the stomach then go out to the intestines, where the blood vessels absorb the liquid. Your blood provides oxygen and nutrients to the cells of your body and removes the waste from the cells. Most of the water is then transported to the kidneys, which filter the blood and return to your body the liquid and substances it needs to function properly. The excess liquids and the substances your body does not need leave with the urine, which is then transported from the kidneys via the ureters to the bladder.

The bladder collects and stores urine. When you feel the need to empty your bladder, the bladder sends a message to your brain that it should soon be emptied. When you urinate, the brain tells the bladder muscle to contract and the sphincter muscle (which seals the bladder) to relax, allowing the urine to flow out through the urethra. Normally we urinate about four to six times a day and occasionally at night.



*Whether you are a child or an adult, 65% of your body is water. Drinking water during the day is vital, since we lose water all the time in the form of sweat, breath, and urine.*

## **The organs in the urinary system**

The urinary system is made up of the kidneys, ureters, bladder, sphincters, and the urethra.

### **Kidneys** – *Purifying your blood*

You normally have two kidneys in your body. Their main function is to filter your blood to remove the excess water and waste products. The excess water and waste products are secreted as urine.

### **Ureters** - *Transport urine from the kidneys to the bladder*

The urine is transported from your kidneys to your bladder via two narrow tubes, called ureters.

### **Bladder** – *Store and empties urine*

The bladder is a muscle-lined sack that stores urine and empties urine. This muscle is called the detrusor muscle. It serves as a low pressure reservoir for the urine. Almost like a balloon in shape, the bladder is small when empty and expands as it fills up.

### **Urethra** – *Transports urine from the bladder out of the body*

In girls, the urethra is short and straight. It opens in the genital area just above the vagina.

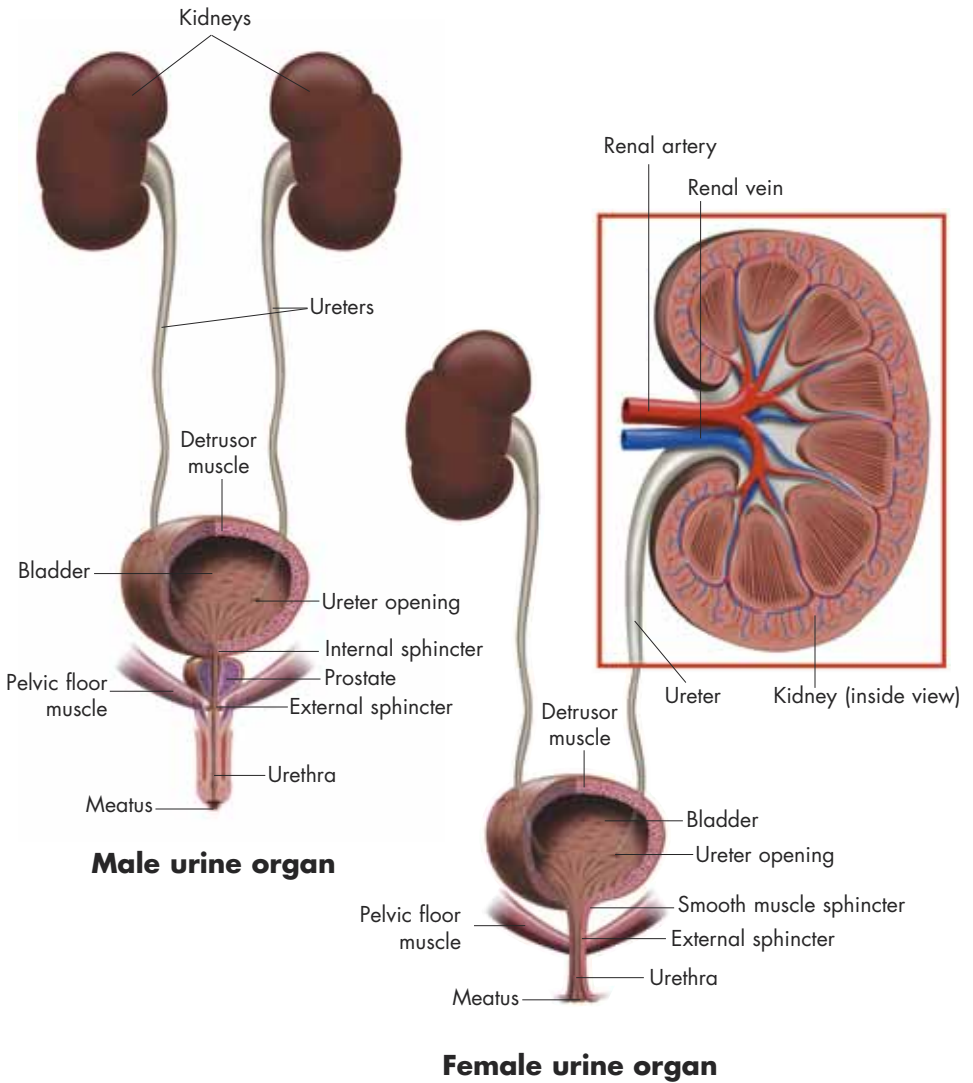
In boys, the urethra is long, S-shaped, and opens at the tip of the penis. In the urethra, the pressure is higher than in the bladder, which helps to keep the bladder under control.

### **Sphincters** – *Seal the urethra*

The urethra is surrounded by two small circular muscles called sphincters. The sphincter muscles are normally contracted – this seals the urethra so there are no leaks. When you go to the toilet, the sphincter muscles relax so your urine can come out. One sphincter muscle operates involuntarily, and the other voluntarily, which means we can control it.

### **Meatus** – *The external opening of the urethra*

In girls, the meatus is located between the labia, just above the vagina. In boys, it is located at the tip of the penis.





## **Nerve connections - communication between brain and bladder**

For the urination process to function as planned, the bladder and the brain need to communicate with each other. The following parts of the nervous system are involved in the urination process: the brain, the brainstem, the spinal cord, as well as some peripheral nerves.

### **Command centers**

#### **The Cerebral Micturition Center, CMC**

The CMC is located in the frontal lobe of the brain. This is where we actively make the decision to delay or allow bladder emptying. This is done by sending a signal to the pontine micturition center.

#### **The Pontine Micturition Center, PMC**

Located in the brainstem, the PMC coordinates the sphincter and the bladder muscles. It acts like an on/off switch. When you want to delay bladder emptying, the PMC sends signals down the spinal cord, through the sacral reflex center, to keep the bladder relaxed and the sphincter contracted. When you decide it is appropriate to urinate, the PMC allows the bladder to contract and the sphincter to relax.

#### **The Sacral Reflex Center**

The sacral reflex center is located in the lower part of the spinal cord. This is where the nerves that are important for bladder function, the peripheral nerves, branch out from the spinal cord.

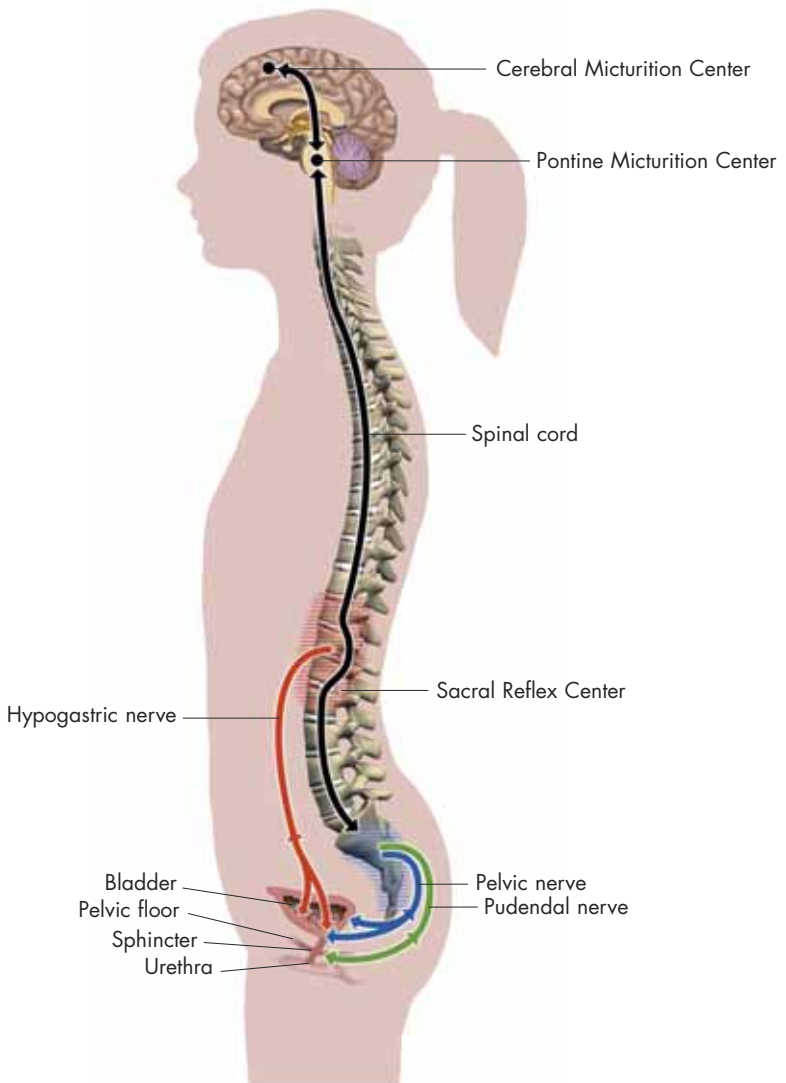
### **Peripheral nerves**

The PMC is helped by three nerves that originate from the spinal cord:

*The Hypogastric Nerve* is responsible for the active relaxation of the bladder muscle during filling. When the bladder is getting full, tension receptors in the bladder wall are activated and a strained feeling is registered in the PMC.

*The Pelvic Nerve* is activated in connection with bladder emptying. The pelvic nerve contracts the bladder muscle and makes emptying possible.

*The Pudendal Nerve* is responsible for the relaxation and contraction of the external sphincter muscle and the pelvic floor.



# What can go wrong with the urinary system?

## There are three main types of bladder problems:

1. Storage problems: Inability to keep urine in the bladder, for example, various forms of incontinence.
2. Emptying problems: Inability to empty the bladder completely.
3. A mixture of various forms of incontinence and retention.

## Reasons for intermittent catheterization

There are many conditions that affect the body's ability to store and empty urine. The most common reason why a child needs to be intermittently catheterized is that some of the nerves that control the bladder have been damaged. This is what is usually referred to as a neurogenic bladder.

### *Neurogenic bladder*

Neurogenic bladder is the loss of normal bladder function caused by damage to part of the nervous system. This nerve damage can be found at different areas in the nervous system (in the brain, the spinal cord, or the peripheral nerves). The nerve damage can be complete, where no signals can get through, or partial, where some signals can get through. The damage can be a result of a number of conditions. The most common conditions causing neurogenic bladder for children are congenital defects (defects that are present at birth) such as spina bifida. Other conditions that can affect the nerves are brain or spinal cord injuries, neurological diseases, surgery, or a tumor.

This damage can cause the bladder to be hypoactive (which means it is unable to contract and empty completely) or hyperactive (in which it contracts too quickly or frequently).

Nerve damage can result in impairment to either or both the bladder muscle and the urinary sphincters. The bladder muscle can be such that it

cannot contract (i.e. it is always relaxed) or hyperactive and the sphincters (especially, the voluntarily controlled one) cannot be controlled and are either too relaxed or too tight.

This results in one of the following four scenarios:

1. *A bladder muscle that cannot contract* (hypoactive bladder), *combined with a sphincter that is too relaxed*. This is the most common situation for people with spina bifida. The result is a constant dribbling of urine, but not always complete emptying of the bladder.
2. *A bladder muscle that contracts uncontrollably* (hyperactive bladder), *combined with a sphincter that is too relaxed*. This also results in unpredictable discharge of urine and incomplete bladder emptying.
3. *A hyperactive bladder combined with a sphincter that does not relax* ( a condition sometimes called detrusor-sphincter dyssynergia). This is a dangerous situation, because when the bladder contracts, the urine cannot get past the tight sphincter and may be forced through the small valves at the bottom of the ureters, back up into the kidneys.
4. *A bladder that cannot contract, combined with a sphincter that does not relax*. This leads to bladder expansion and possible overflow incontinence, which is leakage once the bladder becomes overfilled.

## **Other indications which require intermittent catheterization**

### **Outflow obstruction**

Outflow obstruction is a generic term for an obstruction during urination; something that is in the way of the urine flow. It is characterized by high pressure within the bladder and a weak flow when urinating.

Outflow obstructions can be caused by:

- *Injury to the urethra*
- *Narrowing of the urethra due to strictures\**
- *Inability to relax the sphincter muscle*

*\*Strictures can be scars after an injury, operation, or infection*

## **Congenital malformations such as bladder exstrophy**

Bladder exstrophy is an abnormality present at birth in which the bladder and associated structures are not formed properly. Rather than having a normal round shape, the bladder is flattened. The skin covering the lower part of the abdomen does not form properly, so the inside of the bladder is exposed outside the abdomen. There are associated deficiencies of the abdominal muscles and pelvic bones as well.

## **Reoccurring urinary tract infections**

Urine is a good growth medium for bacteria. The number of bacteria doubles every 30–60 minutes. It is therefore important that your child's bladder is emptied regularly and completely.

Under normal conditions the urinary tract has a built-in resistance to infections. One of the resistance mechanisms is natural emptying (voiding), which means that bacteria are washed out of the bladder.

## **Bacteria in urine does not always need to be treated:**

### **Non-symptomatic bacteriuria**

Sometimes we can have bacteria in our urine without having any problems or symptoms, this is called *non-symptomatic bacteriuria*. This is a situation that is quite common for children and adults who practice intermittent catheterization. The bacteria are present in the urine but do not attack the mucous membrane or the bladder wall. Non-symptomatic bacteriuria is usually not treated in children over the age of two in order to minimize the risk of developing resistance to antibiotics.

## Urinary tract infection (UTI)

A UTI occurs when the amount of bacteria in your child's urine is more than 100,000 bacteria per ml and he or she shows symptoms such as:

- *A decreased state of general health and well-being*
- *Needing to urinate often*
- *Burning sensation when urinating*
- *Cloudy or discolored urine*
- *Bad smell from urine*
- *Fever*
- *Tenderness over the bladder or lower back region*
- *Blood in the urine*

If your child has damaged feeling in the bladder area, you should monitor the appearance of his or her urine carefully since your child may not be able to feel the first warning sign of a urinary tract infection, which is pain while urinating. A UTI occurs when the bacteria attack the mucous membrane and then the bladder wall. UTIs are usually treated with antibiotics to prevent the infection from getting a strong foothold and spreading through the ureters to the kidneys, as this could cause kidney damage.

# **What is intermittent catheterization?**

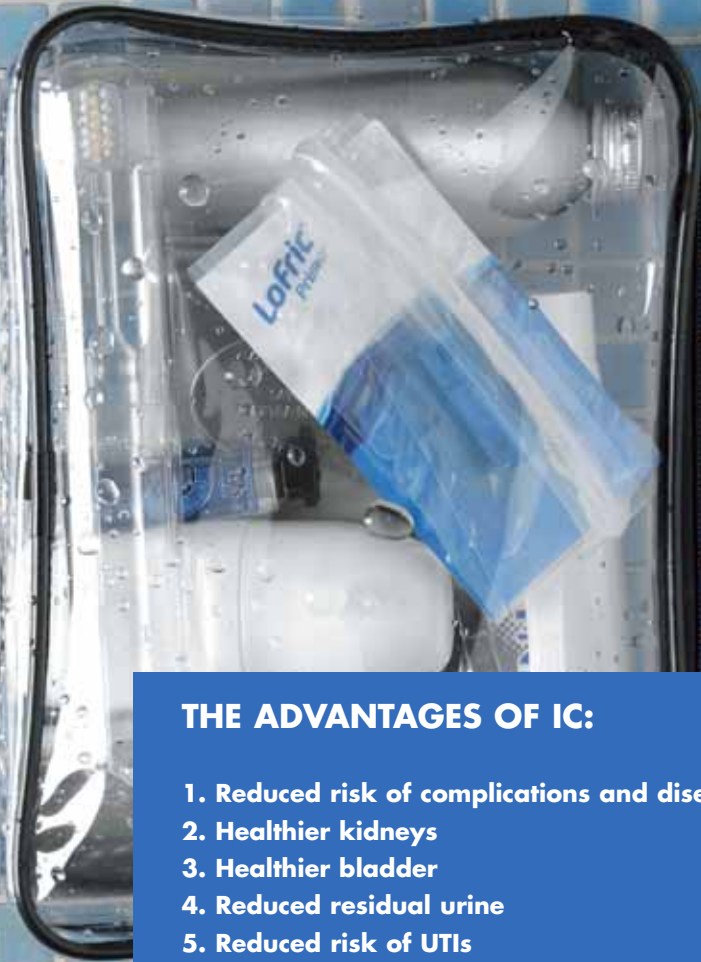
Intermittent catheterization (IC) involves periodically passing a small tube, called a catheter, along the urethra, into the bladder to allow all of the urine to flow out. This allows the bladder to be emptied completely when needed. Once the bladder is emptied the catheter is removed from the body.

Intermittent catheterization is not a new concept. Some data suggest that catheters have been used by many people, including the Ancient Romans and Egyptians. Today, IC is the preferred form of treatment for the management of incomplete bladder emptying.

## **Is it difficult?**

Although it can seem quite alarming at first, most people find learning to catheterize very easy. Almost everyone can perform IC. Handling a catheter by oneself is possible from around five years of age. Many people with limited mobility and hand dexterity perform IC regularly.

With some practice, emptying the bladder with IC can take only a few minutes. Before you and your child get used to it, it can be a little different, but your nurse will help you find the right technique and answer any questions you may have while you learn. Together you will quickly find your own style and position to accomplish this. It should become natural very quickly.



## **THE ADVANTAGES OF IC:**

- 1. Reduced risk of complications and diseases**
- 2. Healthier kidneys**
- 3. Healthier bladder**
- 4. Reduced residual urine**
- 5. Reduced risk of UTIs**
- 6. Improved continence**
- 7. Improved comfort**
- 8. Improved self-confidence and quality of life**



## **Will it be painful?**

Provided that you use the right type of catheter and follow the instructions that you have received from your doctor or nurse, your child is likely to feel some pressure but should not feel acute pain.

Some people find that their urethras can become very sensitive when first learning to catheterize. This should settle with time, but if it bothers your child too much, contact your doctor or nurse. It is possible that the child will feel extra pressure when the catheter passes the sphincter. Do not worry, this is normal. Ask your child to take a deep breath or cough, as this can relax the sphincter muscle.

## **Will it damage the internal organs?**

If you select the right type of catheter and carefully follow the instructions you received from your child's doctor or nurse, catheterization should not cause any damage to the bladder or urethra, even if it is carried out over long periods of time.

## **How will it affect my child's life?**

Using the right catheter is the next best way of passing urine. Once incorporated into the daily routine, IC will not prevent you or your child from living a normal life. The only difference is that he or she will use a catheter to empty the bladder.

Many users tell us that thanks to IC, they have regained their freedom and control. They agree that it was a little frightening at first but the psychological involvement quickly paid off.

## **How do we fit IC into our everyday life?**

You should create a routine that smoothly fits IC into your life. Try to find situations and times of the day that are convenient for carrying out IC, such as breaks and around lunch. This will allow your child to manage IC without interfering too much with school, play, or other activities.

If possible, leave some spare catheters at places where you and your child go often, such as school, work, vacation homes, or with relatives.

## **How many times a day should my child catheterize?**

This varies from child to child and will be decided when you are taught IC. It will depend on the amount of residual urine, the amount of urine left in the bladder after your child has urinated without a catheter, and the bladder's capacity to hold urine. How often your child should be catheterized can also be affected by the specific bladder problem and certain medications. At first, your doctor or nurse may ask you to keep a urine record. You can find an example of a urine chart that you could use on page 67.

## **What happens if my child doesn't catheterize as often as we were told to?**

If you miss catheterization once or twice, do not worry. However, make sure that it does not happen often, as this may cause both urinary tract infections and urinary leakage. If the pressure in the child's bladder becomes too high, there is a risk that the urine will move up to the kidneys, which could cause serious injury.

## **How long will my child have to catheterize?**

The length of time your child will have to catheterize depends on his or her specific condition. Your child's need for catheterization could be temporary (for a short time after an operation or injury, while his or her bladder regains its normal function), or permanently. But, whatever the reason, catheterization will help to manage and improve your child's bladder health.

## **How will others react?**

The fact that your child uses a catheter is not obvious. Unless they are told, nobody will notice. However, it might be helpful to discuss this with somebody you are close to, family, relatives, teachers, and certain close friends. It can be useful if they can assist or perform catheterization on your child if necessary.

# Catheterization and your child

Teaching your child to urinate using a catheter is a process. This is why you should encourage your child to participate and learn how to catheterize as early as possible. Just remember to stay calm and to be methodical. Always train your child on his or her terms.

Certain diseases can cause learning disabilities, which may mean that the child will not be able to manage the catheterization process as early or as independently as would otherwise be the case.

## 0-2 years

Although children of this age are not usually continent and use diapers, your doctor might want you to use intermittent catheterization to ensure that your child's bladder is completely emptied to avoid infections and kidney damage.

Newborns are often catheterized in the same position, regardless of whether it is a boy or a girl. The important thing is to completely empty the bladder. If you put a pillow under your child's back you will give his or her body an angle which makes it easier to ensure that the bladder is completely emptied.

It is important to keep to a schedule. Carefully follow your doctor's instructions on how often your child should catheterize.



You do not normally need to empty the bladder during the night. It is usually enough to empty it 4–6 times per day. However, newborn babies' urine volumes can vary considerably.

When your child is a little older and can sit upright, you should carry out catheterization in a normal position for urinating. This way, gravity helps you to empty your child's bladder completely. You can let your child play with a catheter while you empty his or her bladder.

It is a good idea if more than one adult learns how to catheterize your child, so that you can get help and support when needed.



## 2-4 years

At this stage the aim is to work towards continence. Toilet training is an important milestone, which has physical, emotional, and social implications. Preparation for toilet training should start early.

### Learning in steps

By dividing the procedure into smaller steps and setting goals accordingly, you give your child a chance to reach these goals and "grow" with the task. As your child gets more experienced and secure with a step you can add a new step. This will help develop your child's self-confidence.

Examples of different steps can be: remembering when it is time to catheterize, gathering supplies, washing their hands, moving to the toilet, preparing the catheter, undressing, inserting the catheter, making sure the bladder is empty, removing and disposing of the catheter, getting dressed, washing their hands etc.

To avoid confusion while your child is learning, make sure that all adults performing catheterization use the same routines.

When your child is young, you can acquire a "pee-pee doll" on which he or she can practice catheterization. Allow your child to play with the catheter. Let him or her help you pull it out.

You can build a reward system for each achieved step. You can begin by rewarding your child for co-operation. After a while, you can reward your child each time he or she performs the task by him or herself. Finally, you can change the reward to be for accident-free days. Astra Tech offers some teaching aids as well as a rewards system.



## On the toilet

It is also important to train your child to sit on the toilet. It is important that your child can feel secure and relaxed when sitting on the toilet. Your child will need both hands in order to participate in the intermittent catheterization procedure and can therefore not sit holding on to the toilet seat. A customized toilet seat and a small bench as a foot rest can be very useful accessories. As long as your child needs it, you can sit on a stool in front of him or her. Allow your child to start participating by removing the catheter by him or herself. You can also allow him or her to help you wet the catheter to activate the slippery surface.

For girls, it is important that they familiarize themselves with their genital area using a mirror, so that they learn where the urethra is located and what they look like "down there". It is easier to sit on a bed or the floor than on the toilet. The important thing in this case is to find a suitable seating position.



## 4-8 years

The most important thing at this age is motivating your child to carry out the entire catheterization process, or as much as possible, by him or herself. This means dressing and undressing, remembering the time, gathering supplies, washing his or her hands, moving to the toilet, preparing the catheter, inserting the catheter, making sure that the bladder is empty, removing and disposing of the catheter, and washing his or her hands.

Using a "pee-pee doll", you can show your child how to handle the catheter. The best way is to make a drawing that explains how urine leaves the bladder. You can also let your child feel his or her way to the urethra before he or she inserts the catheter him or herself.

Even after your child has learned to urinate using a catheter, your help is still important, both in the morning and in the evening. Most importantly, to make sure that your child's bladder is completely emptied, thereby avoiding bacteria growth.

Girls can sit on the toilet. If your child has a poor sense of balance, you can try using a special seat or cushion. Boys can either stand up or sit down. The procedure can also be performed while sitting in a wheelchair. You can also practice using catheter kits such as LoFric Ready-Kit, which require a slightly different technique, but are practical for times when you do not have access to a toilet.





Some children will not be able to carry out the entire catheterization process on their own, but they should still participate as much as possible in the preparations. Remember to always talk to and inform your child about what is happening.

It might be helpful for your child to use different accessories when performing the catheterization, like mirrors, lights, etc. But as your child grows, becoming more experienced and secure in the routine, it is important to find ways of slowly letting this increased competence replace his or her dependence on the accessories.





## **Some important considerations**

### **Privacy**

For your child's integrity and development, it is also important that he or she learns that urinating is a private matter, which should, if possible, be done at a toilet with a closed door and with as few people as possible involved.

### **When can my child begin using a catheter by him or herself?**

The age ranges shown in this guide are merely guidelines. Exactly when your child is mature enough to catheterize him or herself depends on the individual. For example, different levels of cognitive and motoric impairments will affect when a child will be ready to progress from one step to the next.

### **Change size as your child grows**

As your child grows and becomes older, you will need to change to a larger and longer catheter. If your child is impatient and feels that it takes too long to empty his or her bladder, it can be because the catheter is too small. In order to minimize the risk of a urinary tract infection or residual urine in the bladder, the catheter must not be too thin or too short. If you are uncertain, talk to your child's doctor.

It is important to note that on hydrophilic catheters, to facilitate the handling of the catheter, the slippery coating does not go all the way to the funnel end (the colored part where the urine flows out). Do not insert the uncoated part of the catheter into the urethra, as this causes friction and can lead to trauma or infections.

### **How to support your child**

Many children who cannot urinate the usual way may also be physically

handicapped or have other functional impairments. It is often easy to pay greatest attention to visible disabilities. But a hidden disability may also be difficult, particularly when your child grows older. It is a good idea to start involving your child in the catheterization process from an early age, encouraging all progress, large and small.

For most children, no longer needing diapers is a very big step. The same is true of being able to empty the bladder without the help of an adult. It may help your child to know that he or she is not the only one with this problem. Many organizations for the disabled arrange special activities for children. Physically disabled people who are active in sports, for example, may serve as positive role models and encourage your child to try something new.

### **You are the one responsible**

As a parent, you are the one who must teach catheterization to those adults who take care of your child when you are not around. Explain how important it is that your child is catheterized as many times as necessary, and why the bladder must be emptied properly and completely. You are also the one who will teach your child intermittent catheterization.

As long as the child needs your help you are responsible for ensuring that catheterization is carried out on time, correctly, and the right number of times. It might also be good to have some control even as your child starts to assume responsibility.

As your child grows, do not be afraid to let go. Even if it may feel faster and easier to catheterize the child yourself, you are doing your child a favor by teaching him or her the procedure, as this will increase his or her self-confidence and autonomy.

### **Other responsible adults**

It may also be a good idea to tell relatives and other adults involved with your child about the situation. Explain that there is nothing strange about catheterization. It is neither dangerous, nor does it normally prevent your

child from functioning like everyone else. This way, you can avoid prejudice, ordinary misunderstandings, and support the child in his or her social surroundings.

### **In school**

Even if your child is able to manage intermittent catheterization on his or her own, you should inform the teacher(s) and school staff. It is not entirely necessary for the other children to know anything about this. Your child's "private parts" are a private matter. Using a catheter is more intimate than changing a diaper, so remember to teach your child to always lock the bathroom stall door. If possible, your child should have a personal toilet, with a lockable cabinet for his or her equipment.

### **Your child and his or her friends**

Young children ask questions that are often direct and demand clear answers. As your child gets older, catheterization often becomes a more sensitive topic. Let your child decide how much he or she wants to tell friends and classmates.

### **Medical personnel**

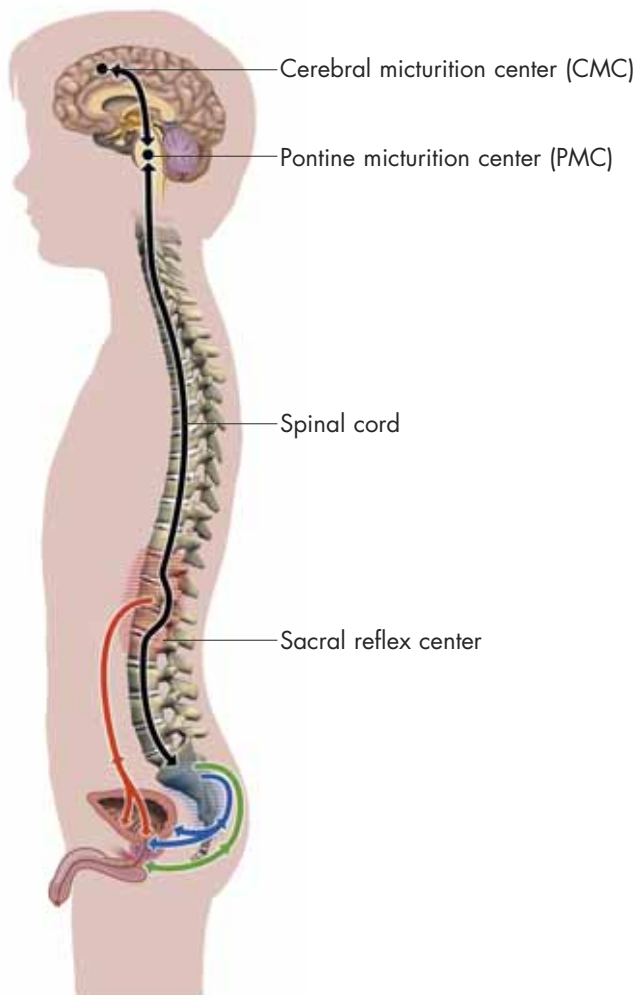
When you and your child visit a pediatric medical center or doctor's office, it is a good idea to mention that your child is catheterized.

## **Boys' Anatomy**

# Boys' Anatomy

*These diagrams are to help you visualize the cause of your child's bladder problems, with the help of your doctor. Feel free to draw and write on these pages as you wish.*

## The micturition cycle



Personal notes:

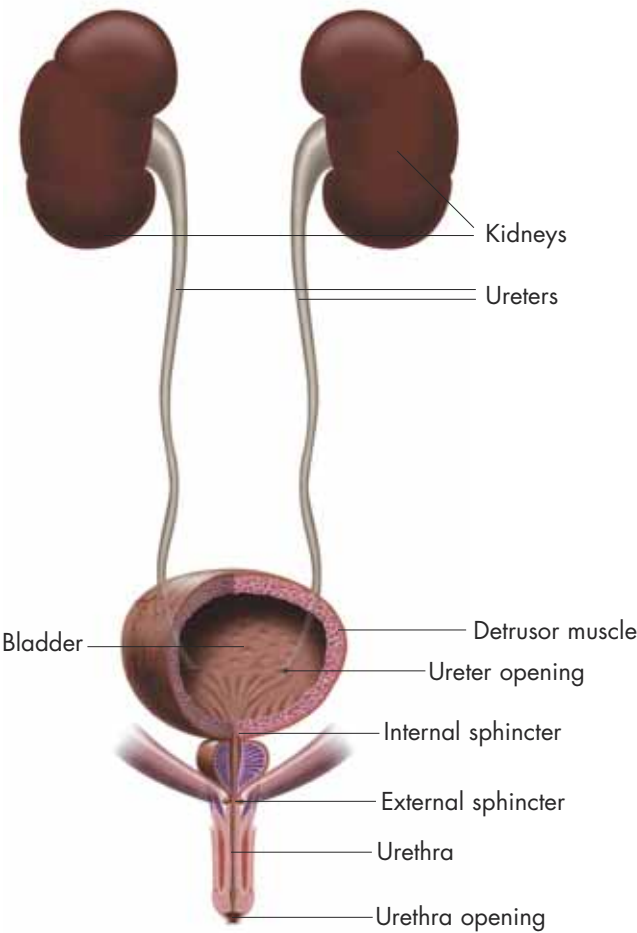
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**The urinary system**



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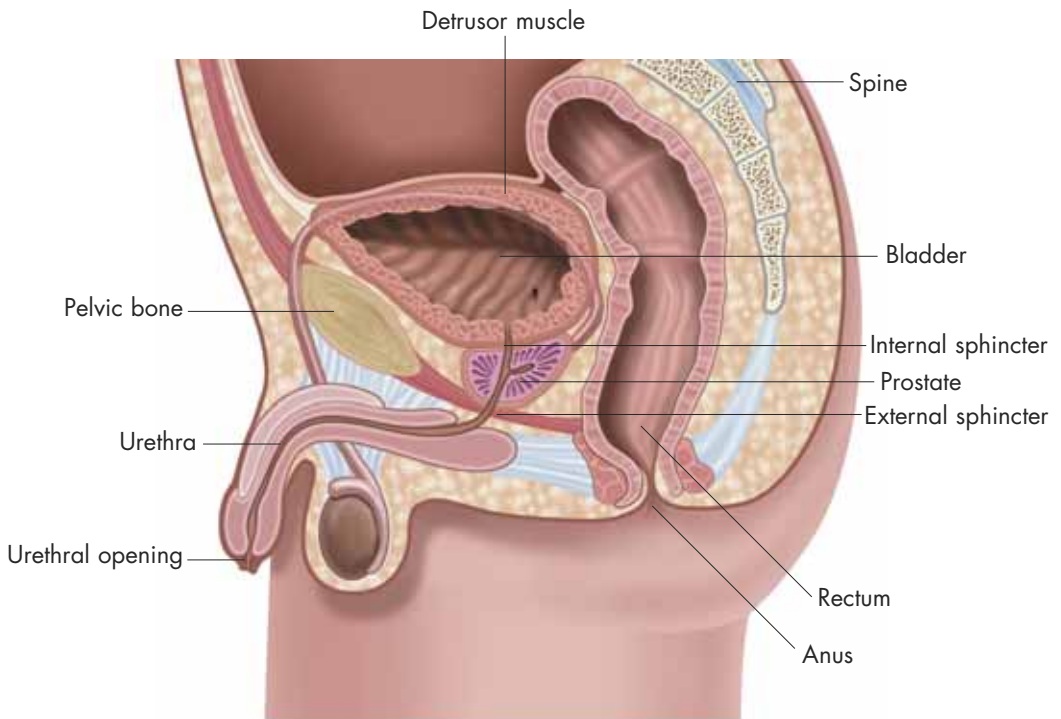
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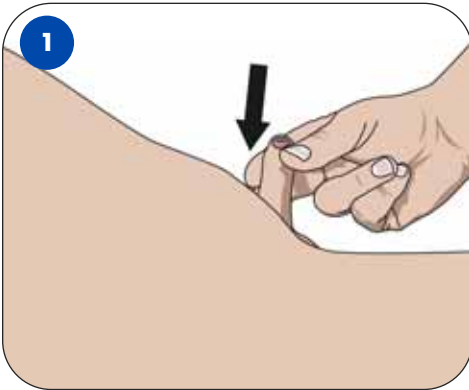
## A cross section of the male anatomy



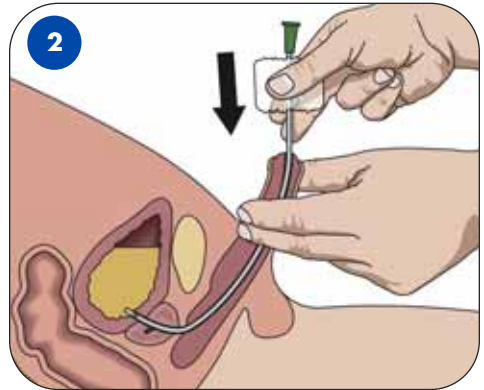
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# How to catheterize boys

## 0-2 years

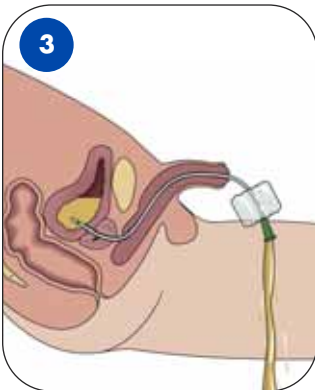


Hold his penis up towards the stomach. This way the urethra is straightened, making it easier to insert the catheter. If your child is not circumcized, gently pull the foreskin back. Do not squeeze too hard as this can block the opening of the urethra.

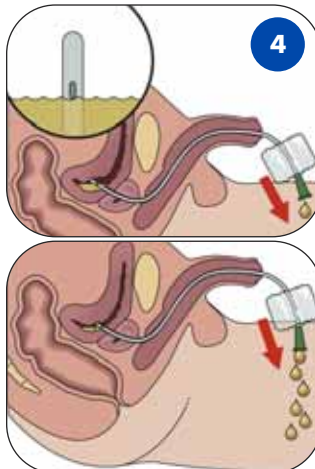


Insert your LoFric catheter slowly and smoothly into the opening of the urethra and up into the bladder until the urine starts to flow.

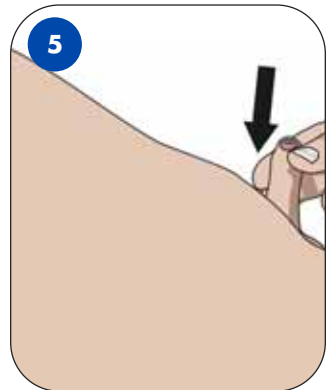
**Hint:** Upon insertion, some resistance may be felt at the sphincter. Use gentle but firm pressure until the muscle relaxes. It may also be helpful to cough a couple of times as this can relax the sphincter muscle.



Point your child's penis and the funnel end of the catheter down towards the toilet. When the urine starts to flow, gently push the catheter in slightly to make sure that the drainage holes are well into the bladder.



To ensure complete emptying of the bladder, start removing the catheter gradually and slowly, so that all urine will be emptied.



When the bladder is empty, hold the penis up towards the stomach again and withdraw the catheter slowly.

**Hint:** Pinch or fold the catheter so that the last few drops remain in the catheter.

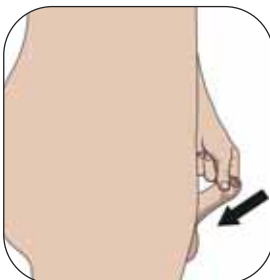
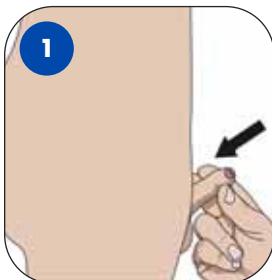


1. Wash your hands with soap and water.
2. Wet the catheter.
3. Clean penis in a circular movement from the opening of the urethra towards the base of the penis.

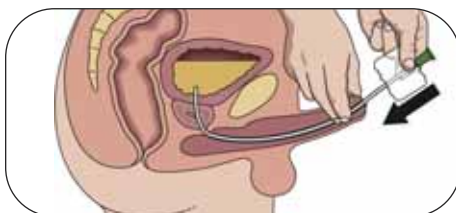
4. Catheterize as shown below.
5. Throw away the catheter.
6. Wash your hands with soap and water.

## 2-4 years

## 4-8 years

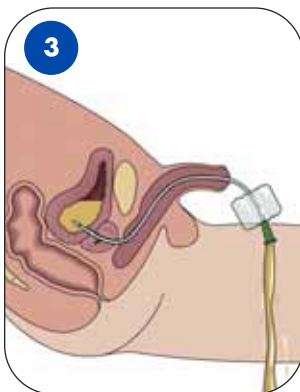


Hold his penis up towards the stomach. This way the urethra is straightened, making it easier to insert the catheter. If the penis is not circumcized, gently pull the foreskin back. Do not squeeze too hard as this can block the opening of the urethra.

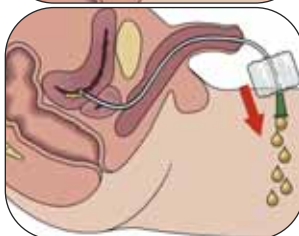
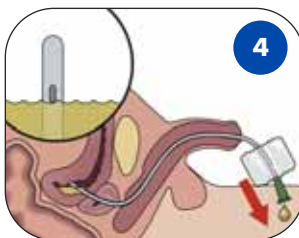


Insert your LoFric catheter slowly and smoothly into the opening of the urethra and up into the bladder until the urine starts to flow.

**Hint:** Upon insertion, some resistance may be felt at the sphincter. Use gentle but firm pressure until the muscle relaxes. It may also be helpful to cough a couple of times as this can relax the sphincter muscle.



Point your child's penis and the funnel end of the catheter down towards the toilet. When the urine starts to flow, gently push the catheter in slightly to make sure that the drainage holes are well into the bladder.



To ensure complete emptying of the bladder, start removing the catheter gradually and slowly, so that all urine will be emptied.



When the bladder is empty, hold the penis up towards the stomach again and withdraw the catheter slowly.

**Hint:** Pinch or fold the catheter so that the last few drops remain in the catheter.

# Recommended positions for boys

## 0-2 years



## 2-4 years



## 4-8 years

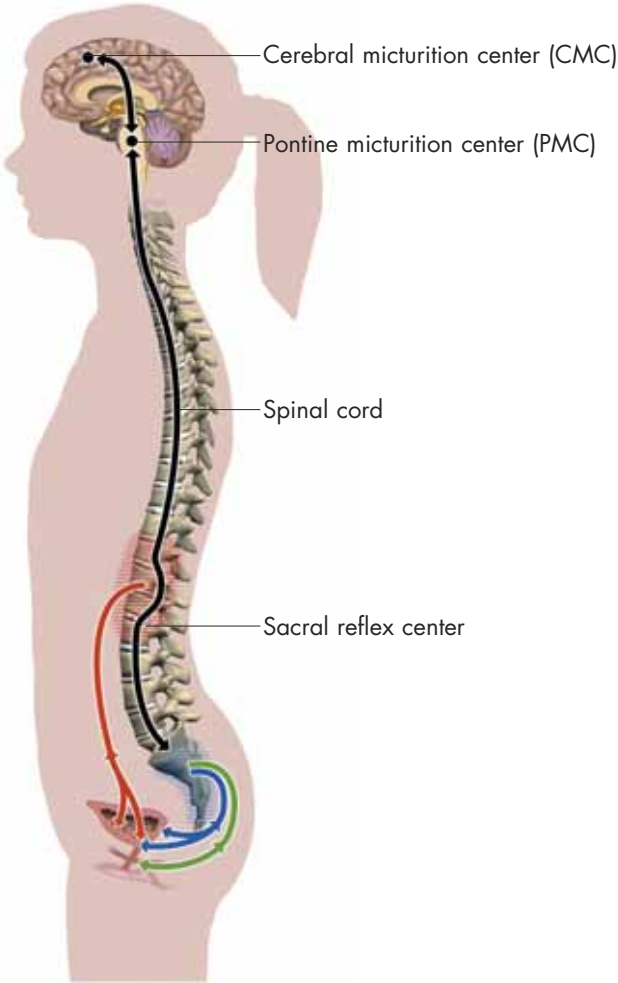


## **Girls' Anatomy**

# Girls' Anatomy

*These diagrams are to help you visualize the cause of your child's bladder problems, with the help of your doctor. Feel free to draw and write on these pages as you wish.*

## The micturition cycle



Personal notes:

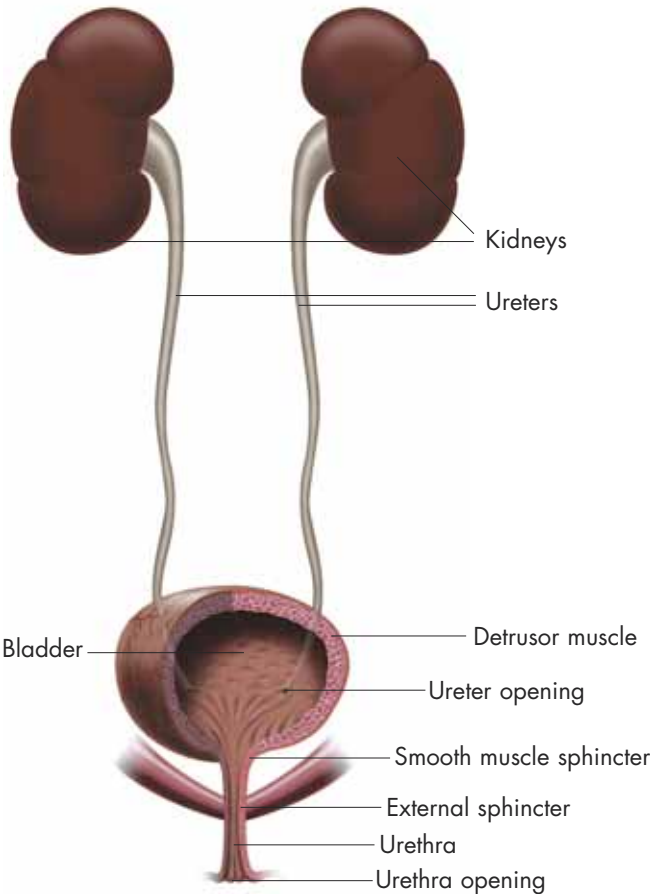
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**The urinary system**



Personal notes:

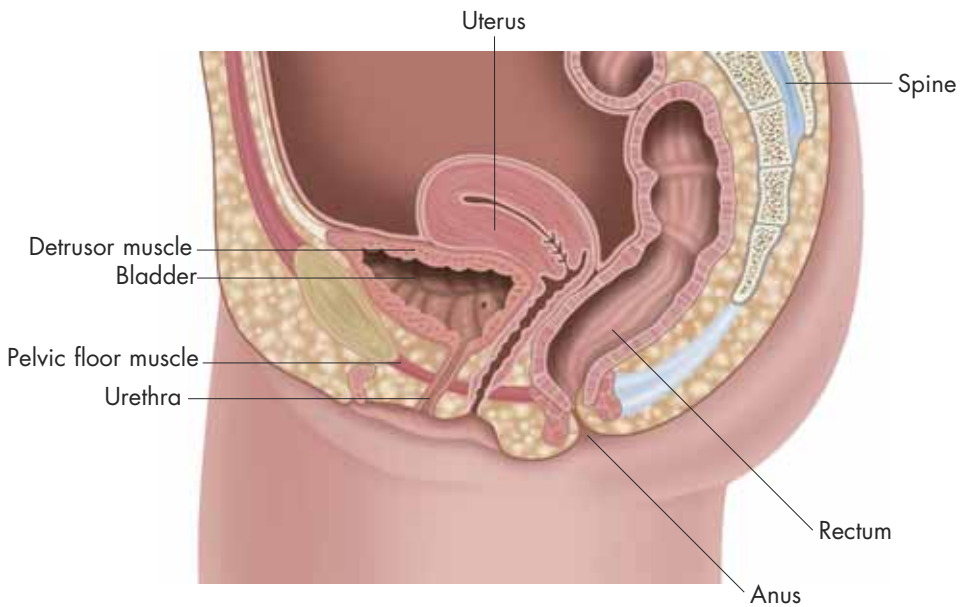
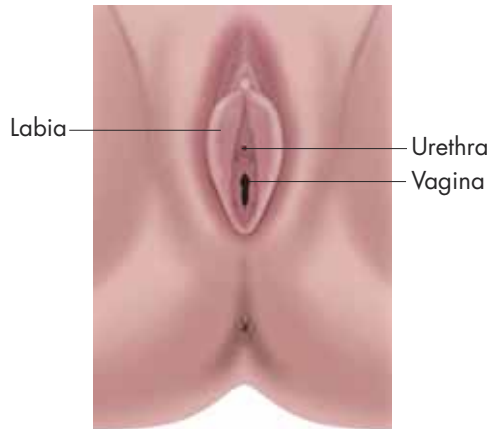
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## A cross section of the female anatomy



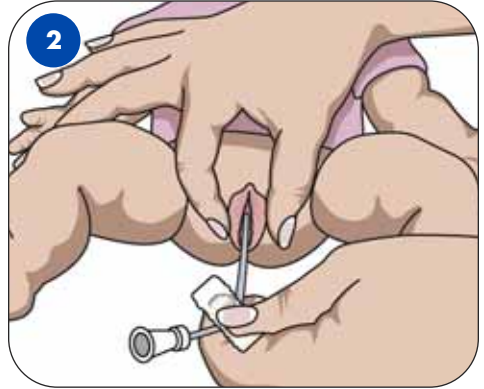
Personal notes:

# How to catheterize girls

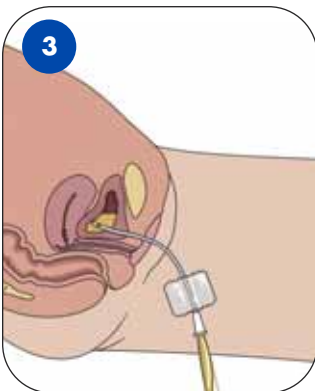
## 0-2 years



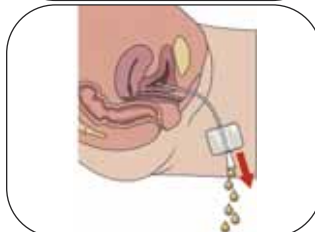
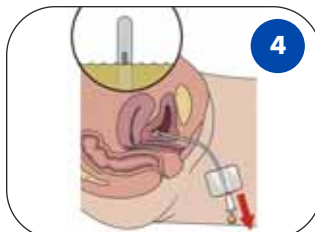
Take the LoFríc catheter out from the package. With your thumb and index finger of one hand, spread the labia (the outer skin on either side of your girl's urethra) apart and lift it gently upwards. You should now be able to see the opening of the urethra.



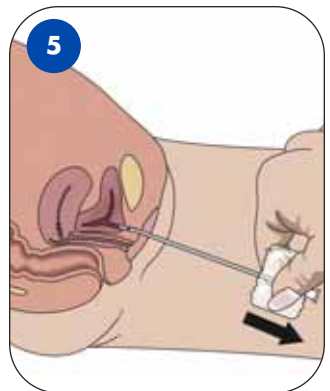
With your other hand, slowly insert the LoFríc catheter into the opening of the urethra and up into the bladder until the urine starts to flow. Make sure the funnel end is pointing downwards into a toilet, container, or drainage bag.



When the urine starts to flow, gently push the catheter further in slightly to make sure that the drainage holes are well into the bladder. You can now let go of the labia to free up your other hand.



To ensure complete emptying of the bladder, start removing the catheter gradually and slowly, so that all urine will be emptied.



When the bladder is empty, withdraw the catheter slowly.

**Hint:** Pinch or fold the catheter so that the last few drops remain in the catheter.

1. Wash your hands with soap and water.
2. Wet the catheter.
3. Clean the genital area from front to back.
4. Catheterize as shown below.
5. Throw away the catheter.
6. Wash your hands with soap and water.

## 2-4 years

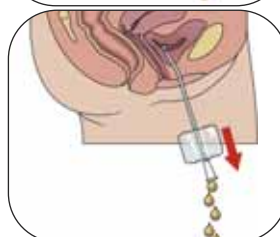
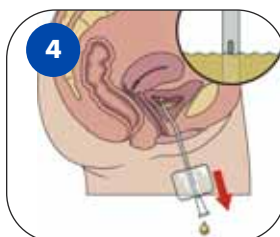
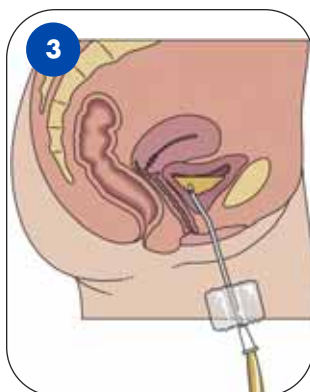
## 4-8 years



Take the LoFric catheter out from the package. With the index and middle finger of one hand, spread the labia (the outer skin on either side of your girl's urethra) apart and lift it gently upwards. You should now be able to see the opening of the urethra.

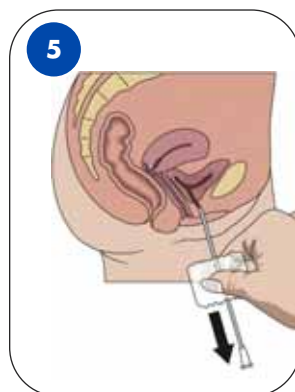


With your other hand, slowly insert the LoFric catheter into the opening of the urethra and up into the bladder until the urine starts to flow. Make sure the funnel end is pointing downwards into a toilet, container, or drainage bag.



When the urine starts to flow, gently push the catheter further insightly to make sure that the drainage holes are well into the bladder. You can now let go of the labia to free up your other hand.

To ensure complete emptying of the bladder, start removing the catheter gradually and slowly, so that all urine will be emptied.



When the bladder is empty, withdraw the catheter slowly.

**Hint:** Pinch or fold the catheter so that the last few drops remain in the catheter.



# Recommended positions for girls

## 0-2 years



## 2-4 years



## 4-8 years



## **How to catheterize a child with a Mitrofanoff**

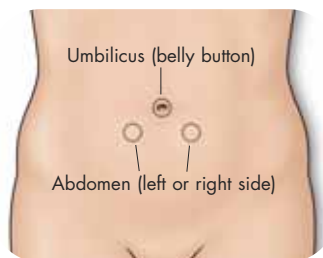
# Mitrofanoff and catheterization

## What is a Mitrofanoff?

If your child has difficulty performing intermittent catheterization via the urethra for either anatomical or psychological reasons, an alternative route for catheterization may be with a Mitrofanoff (sometimes also called a Monti).

A Mitrofanoff is a channel created with your own tissue, which allows emptying of the bladder. This is sometimes done during an operation to enlarge your child's bladder (bladder augmentation). The new bladder is connected to an opening on the skin called a *stoma* (the appendix or a piece of the small intestine is used for this). A catheter is then inserted via the Mitrofanoff stoma to drain urine from the bladder.

The position of the stoma varies, but generally, it is placed at the belly button, or at either side of the abdominal wall, depending on whether your child still has an appendix. This illustration to the right shows the most common locations for a stoma.



## Catheterizing through a Mitrofanoff

If your child is both old enough and physically able, it is best for him or her to perform catheterization. While this may seem overwhelming at first, it will quickly become easier with practice.

Your child's nurse or doctor will discuss with you how frequently your child should catheterize, but this is usually at least every four hours and before going to bed. Leaving this longer may lead to leakage and can increase the risk of infection. For catheterization, the child needs a longer catheter. A LoFric 16 inch catheter is a good length for both girls and boys.

## **Caring for your child with a Mitrofanoff**

You should keep the Mitrofanoff clean by showering and washing it daily, and drying by gently patting with a towel. Do not rub, as this can make it sore.

Passing a catheter into the Mitrofanoff can sometimes cause soreness, but this should stop when the catheter is removed. If it continues or it becomes red and inflamed, or you are concerned, you should seek advice from your doctor.

### **You should also notify your doctor or nurse if:**

- Your child's urine contains blood
- He or she has a temperature and is sweating
- The urine has a bad odor
- They are leaking between catheterizations
- You are unable to insert or withdraw the catheter

## **Bladder irrigation**

A Mitrofanoff is usually formed using a small section of the appendix. If the appendix has been removed, then a small portion of the bowel would be used. If a section of the bowel is used, it will continue to produce mucus and you may therefore need to wash it out.

Irrigation is done by fitting a catheter-tip syringe on the end of the catheter and pushing fluid into the bladder. Your doctor or nurse should have explained this procedure to you. We also have a special Stoma Guide that explains in more detail the steps necessary for irrigating your child's bladder. Please call us at (877) 4-LOFRIC (456-3742) to order the guide.

## **Useful advice**

This section aims to address some questions you may have about catheterizing through a stoma, but if you have any concerns, please do not be afraid to discuss them with your child's doctor.

## Frequently asked questions

### *Will my child need to wear special clothing?*

No, but most people wear a small dressing over the stoma to prevent underwear from rubbing against it. This can also be beneficial if you find that mucus leakage from the Mitrofanoff leaves stains on your child's clothing.

### *Will my child need to eat a special diet?*

No, but a healthy, well-balanced diet with plenty of fresh fruit and vegetables will provide lots of vitamin C to help keep the urine clear and the bladder healthy.

### *Can my child bathe and shower as normal?*

Yes, although he or she should wear a waterproof, adhesive dressing over the stoma before soaking for a long time.

### *What about holidays?*

Always check with your doctor before going away, and be sure to take a sufficient supply of catheters with you. Remember to catheterize before leaving on a long trip.

### *Can my child return to school?*

Your child should be able to return to school once he or she has recovered from the operation, but you should discuss this with your doctor.

It may be helpful for your child to carry a catheterization card and a Medic Alert bracelet or necklace in case of emergencies.

### *Can my child still play sports?*

Of course. He or she will need only to avoid deep water diving and contact sports with a risk of abdominal injury. They should wear a waterproof, adhesive dressing over the stoma when swimming.

### *What if my child is wet between catheterizations?*

If your child has not experienced any prior leaking problems, this may be a sign of an infection, poor bladder emptying, or a change in bladder behavior. Contact your child's doctor for more advice.

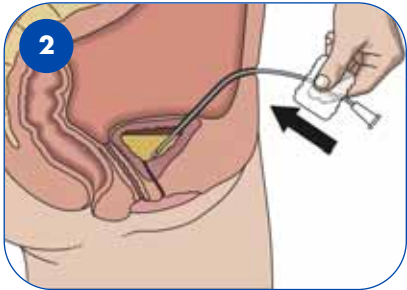
### *What do I do if I notice blood on the catheter?*

A small amount of blood can be quite normal, especially if your child is beginning catheterization. If the amount increases or continues over a long period, you should seek further advice.

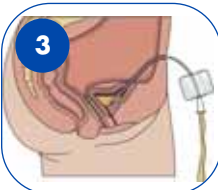
# How to catheterize a child with a Mitrofanoff



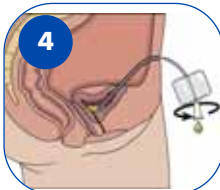
1  
Clean the stoma with a moist towelette or soap and water. Clean using a circular motion, starting at the center and working your way outward.



2  
Guide the catheter gently into the stoma and allow urine to flow out.



3  
If urine does not begin the drain, try gently rotating the catheter or moving the catheter in or out slightly.



4  
When the flow slows to a drip, slowly twist the catheter to allow any additional urine to drain.



5  
When the bladder is empty, withdraw the catheter slowly.

**Hint:** Pinch or fold the catheter so that the last few drops remain in the catheter.

## Suggested positions



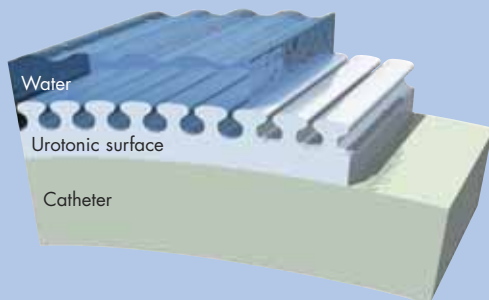
# Facts about LoFric

## Over 20 years of experience

LoFric has been on the market for over 20 years and is the world's most documented catheter. Studies have shown how well LoFric works in long-term use. Today, LoFric\* is the only hydrophilic catheter that can display documented reduced long-term risk of complications.

## The world's only catheter with Urotonic™ Surface Technology

LoFric is the only catheter with Urotonic Surface Technology – a patented surface layer technology that makes the catheter more comfortable for your child. The secret behind Urotonic Surface Technology is a chemical process that makes the surface layer isotonic to urine. This means that the salt content in the catheter's surface layer is the same as in your child's urine. And as the urethra is made for urine, this means that LoFric is carefully matched to the environment it is intended to be used in, the urethra. The result is extremely low friction between the catheter and the urethra.



\* Documentation available upon request



## **Lower friction during insertion and withdrawal**

The salt content in urine is higher than in the rest of the body. If you do not compensate for this, the catheter may dry out, which causes higher friction and makes it more difficult to withdraw. This is both painful and can lead to serious injury. A normal hydrophilic catheter has low friction when inserted. Thanks to Urotonic Surface Technology used on all LoFric catheters, friction is also low when the catheter is removed, even if it has been inside the urethra for some time. This helps avoid injuries to the urinary tract.

### **Seven reasons to choose LoFric**

1. LoFric is a low-friction hydrophilic catheter with a unique coating, designed to reduce friction during catheterization.
2. LoFric is the only catheter with Urotonic Surface Technology. This means that once wet, the unique surface retains water throughout the entire catheterization process.
3. LoFric is proven to reduce the risk of pain, damage to the urethra, and associated complications over long-term use.
4. LoFric is the most tried, tested, and documented hydrophilic catheter and is the only hydrophilic catheter with independent long-term clinical evidence to support its use.
5. LoFric offers the widest choice of catheter types, sizes, and kits to meet all users needs.
6. LoFric is developed in close cooperation with users and offers flexible opening options, allowing you to select the way that suits you best.
7. All LoFric catheters are 100% latex free.



# LoFric product range

## LoFric Primo

No compromise between reliability and convenience. The water is in the package. Simple to open and use. Foldable and easy to carry. Can be opened in more than ten different ways. Handling strip provides a firm and hygienic grip.



## LoFric

This is the most classic version. Very simple to use. One opens the package, fills it with water and soaks the catheter for 30 seconds. Then it is ready to use.



## LoFric Cath-Kit

A system with a catheter and urine collection bag. Excellent when there is limited access to a toilet. Very practical when the user is outside the home.



## LoFric Hydro-Kit/Ready-Kit

A catheter kit with sterile water and urine collection bag. Everything needed for catheterization when access to a toilet and water is limited. Can be used anywhere, anytime. Perfect for home use or while traveling. LoFric Ready-Kit comes with sterile insertion supplies (drape, gloves, and swabstick).



## LoFric Plus

The first PVC-free LoFric catheter. The material is a green-pigmented polyetherblockamide (PEBA) - a thermoplastic without additives. A softer, more pliable catheter for users accustomed to red rubber catheters.



## LoFric Dila-Cath

A catheter without drainage eyes for dilatation. Used for treatment of urethral strictures. The same hydrophilic surface and isotonic properties as all the LoFric products.



# Types, tips, and sizes



## Straight tip

This is the most common of the LoFric catheters. The catheter is straight and has a rounded tip.



## Coudé tip

This catheter has an angled, tapered tip, specially designed for men with tight urinary tracts, prostate problems, or strictures.



## Four different lengths











- For men: 16 in
- For children: 12 in
- For women and children: 8 in
- For women: 8 in

## Ten different sizes

LoFric catheters are available in sizes from 6FR to 24FR. FR (French) is a measurement of the catheter's diameter. The difference between each FR measure is 1/3 mm. The color of the funnel-end correlates with the diameter of the catheter.



## Funnel-end colors

6FR	
8FR	
10FR	
12FR	
14FR	
16FR	
18FR	
20FR	
22FR	
24FR	

# Packaging



## Top opening

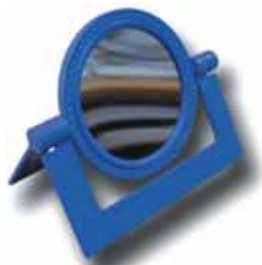
The top of the box has a perforated surface. Tear it away as shown in the picture for fast and easy access to your catheters.



## Side opening

The box can also be opened from the side. By opening the box in this way, you can open and close it when you want.

## Our accessories



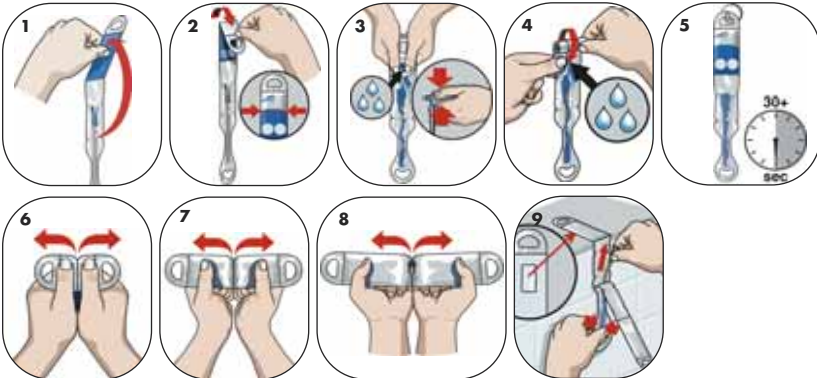
### We offer a number of tools that simplify catheter handling.

1. The [product pouches](#) allow your child to carry his or her catheters for the day in a discreet manner.
2. The [medical validation certificate](#) explains in five languages your LoFríc products are prescribed by a doctor (useful when traveling abroad to show the Customs officer).
3. Our bi-annual newsletter, [Bladdernews](#), keeps you and your child updated about bladder issues.
4. The [EZGrip](#) helps your child hold on to the catheter if he or she has limited manual strength or dexterity.
5. The [mirror](#) is helpful for girls, as it makes it easier to locate the urethra when first learning to catheterize.

## Instructions

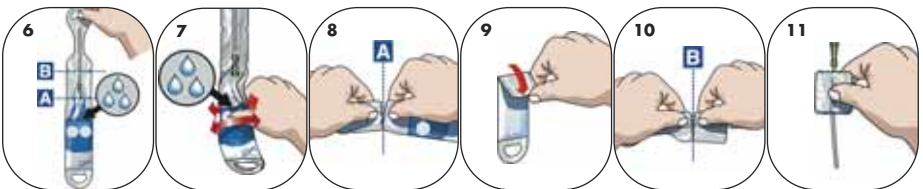


## Opening 1



**1.** Unfold LoFric Primo. **2-3.** Fold the water pouch on the blue-white border and press with both hands. **4.** As an alternative, you can roll the water pouch to release the water. **5.** Hang LoFric Primo using the loops or self-adhesive area, letting the catheter soak for 30 seconds while you prepare for catheterization. **6-8.** Peel open the packaging. Hold the package at the loops at the top with both hands. Keep your hands firm and close together and turn them slowly to the outside direction. Move your hands further downwards until you reach the catheter's coloured connector. **9.** Remove the LoFric catheter from the package and catheterize.

## Opening 2 (Using the handling strip for a "no-touch" technique)



**1 - 5.** Follow steps as shown in Opening 1 instructions. **6.** Turn the package upside down to return the water into the pouch. **7.** Twist the water pocket slightly (on the level of the instruction pictures) to enlarge the flow-back opening. **8.** Tear at indentation A from both sides to separate the water pouch from the rest of the package. **9.** Fold the top of the water pouch over the adhesive area for easy disposal. **10.** Tear at indentation B from both sides. **11.** The remaining part of the package can be used as a handling strip for a no-touch insertion.

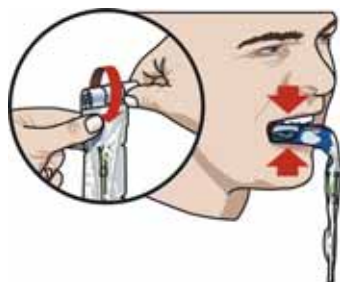
## Hints



1. When pressing the water pouch, do not press on the area highlighted (see red circle on illustration). This area is designed to open up so that the water can flow down and soak the catheter. If you press on this area at the same time as you try to release the water, the water will most likely leak through the sides of the water pouch.



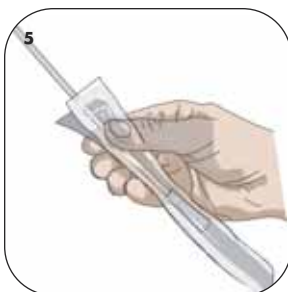
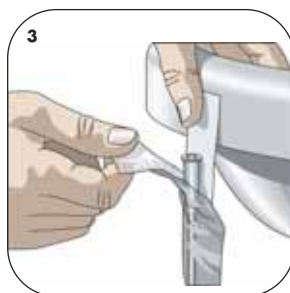
2. An alternative way of releasing the water from the pouch is to first roll the pouch until you reach the adhesive area, press the pouch to release the water and then unfold the product.



3. You can also activate a rolled or folded water pouch by biting it with your teeth.

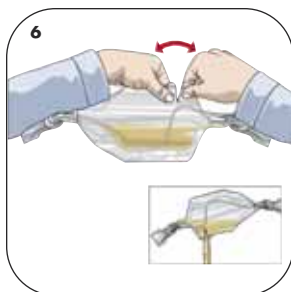
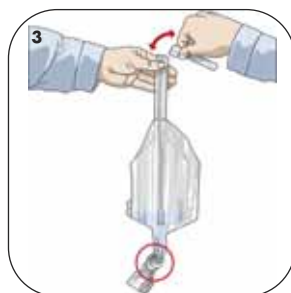
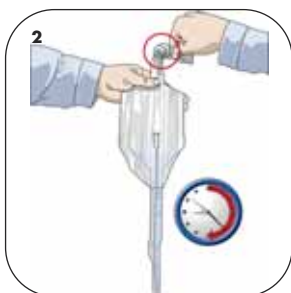
# Lofric<sup>®</sup>

## Lofric<sup>®</sup> Plus



1. Wash your hands with soap and water. Open the package by pulling the tabs apart about 2 inches. 2. Pour water directly into the package. You can use drinking water, sterile water, or sodium chloride solution, or as directed by your doctor. 3. The package has a self-adhesive patch. Just remove the blue tab and attach the package to a sink or other convenient, dry surface. 4. Let the catheter soak for at least 30 seconds and then catheterize. 5. If the catheter feels too slippery to handle, pour the water out of the package, peel open the bottom of the package, and slide the catheter out, using the package to grasp the catheter. 6. You may also contact us to request the EZGrip handle. It is especially helpful for those with limited dexterity.





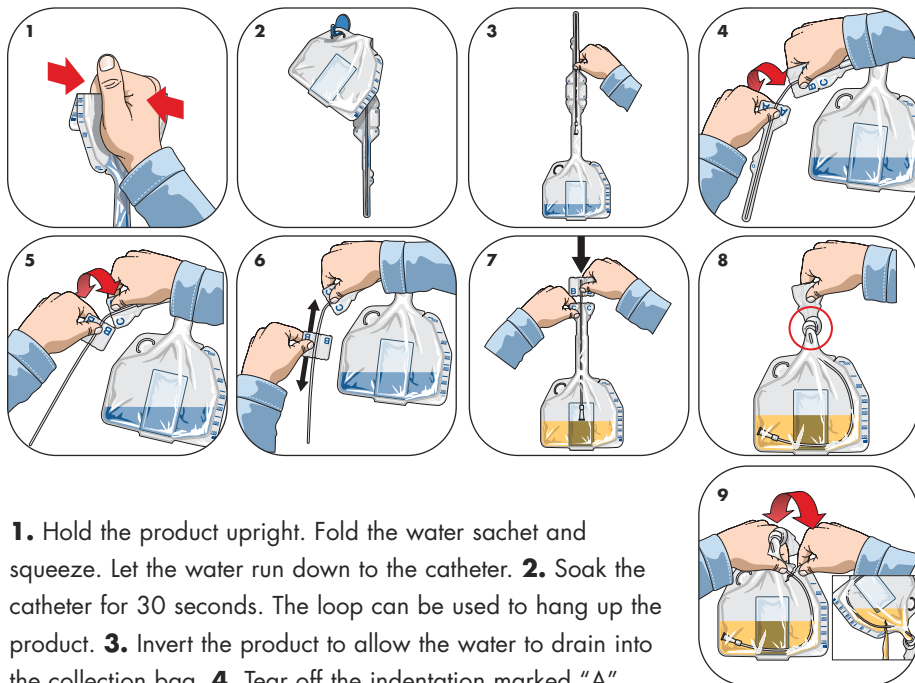
1. Hold the bag upright as shown and fill with water to the 1000 mark to cover the catheter.
2. Push the catheter down into the tail of the bag and tie off the neck. Soak the catheter for at least 30 seconds.
3. Invert the bag and tear off at the flap where shown
4. Ease the catheter up through the tail of the bag as shown and catheterize.
5. After catheterizing, push the catheter back into the bag and tie off the tail.
6. The bag has a tear flap for emptying the contents prior to disposal, if necessary.

**Hint:** If you are unable to tie a knot as shown in steps 2 and 5, you can close off the bag by using the LoFric Clip. Please contact us to order it.



**LoFric®**  
Hydro-Kit™ II

**LoFric®**  
Ready-Kit



- 1.** Hold the product upright. Fold the water sachet and squeeze. Let the water run down to the catheter. **2.** Soak the catheter for 30 seconds. The loop can be used to hang up the product. **3.** Invert the product to allow the water to drain into the collection bag. **4.** Tear off the indentation marked "A".
- 5.** Tear off the indentation marked "B". **6.** Use the piece marked "B" as handling aid. Catheterize. **7.** Push the catheter into the collection bag. **8.** Tie a knot to seal the bag. **9.** Optional: empty the collection bag by tearing the indentation.

**NOTE:** LoFric Ready-Kit comes packaged with the following sterile insertion supplies: gloves, underpad, and disinfection swab. Use these supplies as recommended by your doctor.

**Hint:** To ensure a tight seal between the catheter and the collection bag before catheterization, gently slide the catheter out towards the tail end until the connector comes to a full stop.

# Frequently asked questions

## How much should my child drink?

This varies from child to child, depending on the child's size and his or her specific condition. Different medications may even have an impact. You should therefore discuss this with your doctor.

## How should I store the catheters?

The catheters may not be exposed to moisture and should be kept dry. When your child starts at day care or in school, the catheters may be kept in the child's backpack or in a suitable place on the premises.

## Can my child participate in sports and other leisure activities?

As long as your child feels fine, catheterization will not prevent him or her from playing and participating in sports just like all the others.

## Can my child shower and bathe as usual?

Washing, showers, and bathing are normally no problem. It is enough to wash the child's genital area once a day with a mild soap. As with any child, make sure that they change out of wet swimsuits into dry ones to avoid the risk of urinary tract infections.

## What do we do on trips?

Our best advice is that it is better to take too many catheters than too few! If you are traveling out of the country you can ask your child's doctor to write a note about the purpose of the catheters. That way you will avoid any problems with customs.

Luggages which are checked-in when traveling by plane are sometimes lost. It is therefore better to place your catheters in your carry on luggage.

With LoFric Primo, you do not have to worry about the quality of the water where you are going. Remember that LoFric is also available with a collection bag and water (LoFric Hydro-Kit/Ready-Kit).

## **How will catheterization work for my daughter when she has her menstrual period?**

Hygiene is particularly important when girls menstruate. Your daughter should wash the genital area with mild soap in connection with each catheterization.

To avoid getting blood on the catheter you could suggest that she change her pad or tampon before emptying her bladder. She could also hold a piece of paper in front of the vaginal opening while she inserts the catheter.

## **What do I do if I run out of catheters?**

Order new catheters well before the current supply runs out. It is always better to have too many at home than none. This is also the case when you travel. A good tip is to leave some extra catheters at places where your child often goes.

## **What if my child is wet between catheterizations?**

If your child has not had problems with leaking prior to this, it may be a sign of an infection, poor bladder emptying, or a change in bladder behavior. Contact your child's doctor for more advice.

## **What do I do if I notice blood on the catheter?**

A small amount of blood can be quite normal, especially if your child is beginning catheterization. If the amount increases, or continues over a long period of time, you should seek further advice from your doctor.

## **How do I know if my child has a urinary tract infection (UTI)?**

If your child experiences shivering, a high temperature or fever, or cloudy or bad smelling urine, he or she may have an infection. Have your child drink extra fluids and continue to catheterize, and contact your doctor for advice.

## **What can I do to prevent a urinary tract infection (UTI) for my child?**

### **1. Good hygiene**

- Make sure to wash your hands and your child's genital area well prior to catheterization.
- Make sure to use clean water when you activate the catheter.
- Make sure the catheter surface does not come in contact with anything before entering the urethra.

### **2. Empty completely**

- Urine is a good environment for bacterial growth, so it is important that your child's bladder is completely emptied.
- When urine stops flowing, it could be because the eyes of the catheters are above the urine level in the bladder. To make sure your child's bladder is emptied completely, remove the catheter slightly until you see more urine flow out.
- To make sure your child's bladder is emptied properly, his or her upper body should be elevated during catheterization.

### **3. Empty frequently**

- The volume per catheterization should not be too large - it should closely mimic the function of a normal bladder to help maintain muscle tone.
- If the volume is large, the bladder wall is extended and the mucus membrane can be damaged, which makes it easier for bacteria to attack and cause a UTI.

### **4. Select the right catheter**

Always try to use a catheter with low friction. The theory is that high friction leads to micro trauma in the urethra, which can help bacteria get a foothold in the mucus membrane. By decreasing friction, you decrease the risk of infection.

## Urine record

[illegible]

## Notes

# Personalized care plan

Patient's name:

Contact telephone:

Emergency contact:

Your doctor's name:

Your doctor's  
phone number:

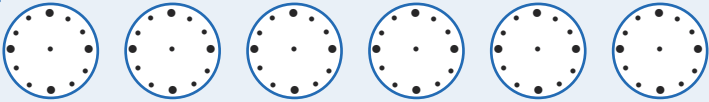
LoFric product:

French size:

Reference number:

Frequency of  
catheterization:

Timetable:



FOLLOW-UP APPOINTMENTS		
DATE	TIME	RESULTS/COMMENTS

## Patient testimonials

*"Since day one of using the LoFric, I have not had a UTI nor experienced any trauma. Intermittent catheterization has become a lot easier."*

*Gary from Arizona*

*"I was diagnosed with Multiple Sclerosis about 2 years ago. Astra Tech sent me some samples of the LoFric catheter and I can tell you I thought I had won the lottery.. people that have to cath every 3-4 hours like myself appreciate and expect a catheter with the most comfort. LoFric has done that with their catheters. Thank you LoFric for having such a wonderful product and outstanding service."*

*Tim from Wyoming*

*"Please accept our sincere thank you for such an amazing product that is true to its word. It truly is a wonderful product! And the personnel that are so caring and go above and beyond their way to help."*

*EJ from Colorado*

*"I would like to thank Astra Tech for making my life so much more livable. I have been confined to a wheelchair for 38 years due to an airplane accident, which left me a paraplegic. For most of those 38 years I have lived with a chronic urinary tract infection (UTI). I have had several major surgeries on my bladder, due to the UTI. Along with the pain, was a constant problem with not being able to stay dry and having to be on a constant dose of antibiotics. Since I have been using your Lofric catheter I have not had a UTI and no longer require antibiotics."*

*Jerry from Missouri*

*"LoFric catheters are absolutely magnificent. They do not hurt me and I am so grateful to you for creating them. When a patient has to do something that hurts them they make up a million reasons not to do it...subconsciously or consciously."*

*Lisa from Minnesota*

*"About two years ago, I was introduced to the LoFric catheter. I was just amazed how easily the catheter slid in and out of my bladder, much more easily than any other I had tried. Since that time I have had NO infections and I still have no trouble getting the catheter into my bladder."*

*Dr. Owens from Alaska*

*"Four years ago I was introduced to the LoFric Catheter. Immediately there was a positive change. Since I have been using the LoFric catheters I have experienced less than five UTIs during those four years. My involvements and activities have increased. It is great not to have my mind stuck on dealing with infections."*

*Cole from Washington*

*"I have had a chronic problem with UTIs since my spinal cord injury in 1985. I would get three or four UTIs a year and in January 2001 I started using the LoFric catheter. My UTIs have been reduced tremendously. I recommend this product to everyone who has UTI problems because of its simplicity of use and the benefits of reducing UTIs is essential to all people with urinary tract issues. I have felt the best I have in these past two years since I began using the LoFric."*

*Steven from Arizona*



## Useful resources

Spina Bifida Association of America  
4590 MacArthur Blvd. NW, Ste. 250  
Washington, DC 20007-4226  
1-800-621-3141  
[www.sbaa.org](http://www.sbaa.org)

National Association for Continence  
P.O. Box 8310  
Spartenburg, SC 29305-8310  
1-800-BLADDER (252-3337)  
[www.nafc.org](http://www.nafc.org)

National Spinal Cord Injury  
Association  
6710 Democracy Blvd., Ste. 300  
Bethesda, MD 20817  
1-800-962-9629  
[www.spinalcord.org](http://www.spinalcord.org)

Association for the Bladder  
Exstrophy Community  
P.O. Box 87954  
Fayetteville, NC 28304  
1-866-300-2222  
(910) 864-4308  
[www.bladderexstrophy.com](http://www.bladderexstrophy.com)

American Academy of Pediatrics  
141 Northwest Point Blvd.  
Elk Grove Village, IL 60007  
(847) 434-4000  
[www.aap.org](http://www.aap.org)

## What is Astra Tech?

We at Astra Tech have worked in close cooperation with health care professionals since the 1940s. Our business today is focused on medical devices and dental implants. LoFric is a good example of our goal of integrating medical research and modern material technology. The aim is to create sophisticated products that improve the user's quality of life and simplify the work of the health care professionals.



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Website: [www.astratech.us](http://www.astratech.us), Email: [info.urology.us@astratech.com](mailto:info.urology.us@astratech.com)