

LIVING WITH PARALYSIS

Bladder Management



CHRISTOPHER & DANA
REEVE FOUNDATION

TODAY'S CARE. TOMORROW'S CURE.®

CAN WE TALK ABOUT YOUR BLADDER?

For most people, when, where and how they're going to "go" isn't something that's given a lot of thought or planned for in advance. When you have a spinal cord injury, that all changes.

It is very common for people with spinal cord injury to experience some kind of bladder or urinary system challenges because of damage to the nerves that connect the spinal cord to the genitourinary system (see image). These nerves are located at the very base of the sacral spine, so injuries that affect S2-S4 and above will most likely impact urinary function. Normal cross-talk between the brain and urinary system is disrupted — and sometimes shut down completely — so the bladder can't tell the brain that it's full and/or the brain can't direct the bladder to empty as it normally would.

A good bladder-management plan is crucial to maintaining and preserving a functional urinary tract, including preventing serious infections and complications of the kidney that can be life-threatening.

For decades, genitourinary complications — mainly infections and renal failure — were the No. 1 reason for death after spinal cord injury, and they continue to be the leading cause of rehospitalization among persons living with paralysis. Fortunately, care continues to improve, and urinary tract complications no longer top the list of causes of death following paralysis — a testimony to the life-saving importance of maintaining a healthy urinary system.

The primary goals of a bladder management plan are to remain free of infections and protect the organs of the urinary system from strain or damage, avoid accidents that can impact family, work and social life, and help maintain quality of life and psychological well-being. This requires a combination of careful hygiene, fluid management, and a system for emptying the bladder that is efficient, safe, and compatible with the person's lifestyle and level of function.

Because spinal cord injury affects each person differently, there is no real "gold standard" for the best way to manage bladder function in all people. It's up to each person (in conjunction with their medical-care team) to learn what works best for them and adapt their planning appropriately. An effective plan will factor in the specifics of the injury, the level of functional capability, lifestyle and activities, and degree and skillfulness of caregiving support.

TABLE OF CONTENTS

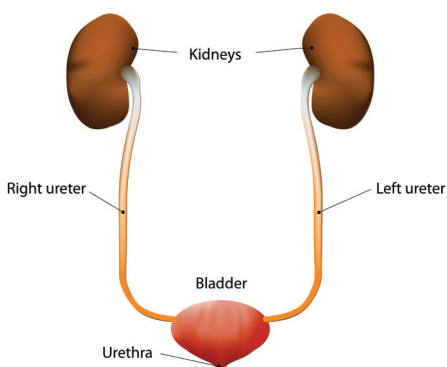
- 3** Meet Your Urinary System
- 3** What Happens After SCI?
- 4** Post-SCI Bladder Conditions
- 5** Finding a System that Works
- 6** Primary Bladder Management Options
- 7** Potential UT Complications
- 9** Preventing Complications
- 10** Resources

MEET YOUR URINARY SYSTEM

Most people don't think much about the nerve and muscle coordination that goes into the simple act of urinating, yet a fairly elegant system has evolved in humans to cleanse the blood of waste products.

The kidneys filter blood to remove the waste and form urine. The urine is then passed through the ureters (tubes made of smooth muscle)

Human Urinary System

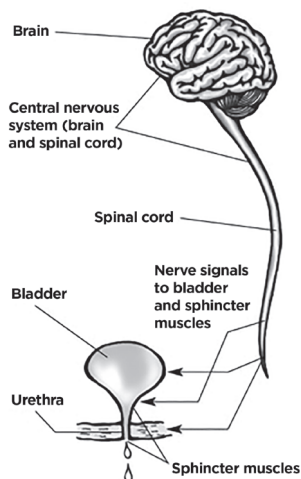


to the bladder, which acts as a storage bag. When the bladder is full, it sends a message to the brain, and the brain in turn sends messages to relax the sphincter that holds urine in the bladder and detract the detrusor muscles on the bladder wall to empty the bladder. Urine is passed from the bladder through the urethra to the outside of the body.

WHAT HAPPENS AFTER SCI?

Spinal cord injury can interrupt communication between the nervous and urinary systems in different ways, with different effects.

- Signals from “stretch receptors” on the bladder wall, which normally alert the brain when it's time to go, are disrupted, so the bladder randomly empties outside of conscious control.
- Signals from the spinal cord to the bladder fail, so the timing of contractions of the detrusor muscle and opening of sphincters may be off. This can cause the bladder to empty incompletely.



POST-SCI BLADDER CONDITIONS

Just as spinal cord injuries affect people differently, the effects of paralysis on the urinary system are diverse. Some are tied to the level and type of injury in the spinal cord.

Kidney health is the primary concern. Urine from an over-full bladder or one that is not functioning properly can back up to the kidneys, a condition called **reflux**; this can damage kidneys and increase the risk for renal failure.

The catch-all term **neurogenic bladder** is sometimes used to describe the urinary complications of paralysis. The neurogenic bladder is usually affected in one of two ways: **spastic bladder** and **flaccid bladder**. Spastic bladder (also called reflex bladder or hyperactive bladder) is when the bladder empties “reflexively” — without warning and outside of conscious control. It is most common in injuries at T12 or above. In contrast, flaccid bladder (also called non-reflex or floppy bladder), occurs when the detrusor muscle doesn’t contract as it should and the bladder does not fully empty, which increases the risk of bladder distension and infection. Flaccid bladder typically occurs in injuries lower than T12.

If the sphincter at the opening of the bladder relaxes out of sync with the contraction of the detrusor muscle (a condition called **dyssynergia**), urine may back up into the kidneys (**kidney reflux**), which can lead to serious renal complications.

In some people, especially those with a T6/7 injury or higher, a condition called **autonomic dysreflexia** (AD) can occur if pressure in the bladder becomes too high, which can happen if the bladder is overfull for an extended period. Autonomic dysreflexia causes abnormally high blood pressure (defined as 20-30 pts above the individual’s normal blood pressure) and headaches. It is a potentially life-threatening condition that increases the risk of stroke or seizure and can profoundly impair a person’s quality of life, even in mild cases.

A wallet card with helpful information on autonomic dysreflexia is available from the Christopher & Dana Reeve Foundation. Copies of the AD wallet cards are available online for download, or you can get your laminated copy by calling the Paralysis Resource Center at 800-539-7309 and asking to speak to an information specialist.

FINDING A SYSTEM THAT WORKS

The most important actions in bladder management are drinking the proper balance of fluids, following a regular schedule for emptying the bladder, and being sure that the bladder is emptied completely.

The goal is to adopt a system that decreases the risk of infections and complications and avoids bladder accidents while enabling a high quality of life and continued ability to work, play and socially engage in as close to a normal manner as possible — the “new normal.”

Quality-of-life considerations in choosing a system that works for an individual include ease of use, convenience, discreetness, and psychological well-being.

Because no two injuries are alike, finding the right bladder-management system must factor in numerous components, including the specifics of the injury; other co-occurring conditions; one’s level of physical and mental functioning; the availability and expertise of the individual’s caregiving team, and lifestyle considerations such as school, work, and social activities.

Nurse Linda Says*... There is no one-size-fits-all approach to bladder management after spinal cord injury. You may need to try different approaches in order to find the method that works with your lifestyle. Think about where you are when you typically urinate and set up that space to your best advantage. Think about all the potential scenarios where you might have to urinate when you’re not at home and plan for them. How can you simplify the process as much as possible? What do you need to have with you to ensure you can do it with as little risk of contamination as possible? How can you adjust your schedule or activities in line with the need to regularly empty your bladder? Finding your “new normal” may take some effort and planning as well as some trial and error.

**Linda Schultz is a Clinical Nurse Educator who works with the Christopher & Dana Reeve Foundation*

PRIMARY BLADDER MANAGEMENT OPTIONS

Intermittent Catheterization (IC) is the most common method for emptying the bladder when normal urination is disrupted after a spinal cord injury. A catheter is inserted into the urethra to drain the bladder on a regular schedule — typically every 4 to 6 hours or so — and then removed. Sticking to such a routine, in conjunction with careful monitoring of fluid intake, helps ensure the bladder doesn't get too full and reduces the risk of complications from a distended bladder or urinary reflux to the kidneys. Most people with spinal cord injury start out using Intermittent Catheterization and either continue with that method or try other options if it isn't working for them.

A number of different types of catheters are now available, including single-use catheters that may reduce the risk of contamination from re-using a catheter that has not been carefully cleaned. Lubricated catheters, sometimes called **hydrophilic catheters**, are coated with a slippery gel or other lubricant to make insertion into the urethra easier, but because they are slippery they can be difficult to handle, particularly for people with limitations in hand dexterity.



An **indwelling** or **Foley catheter** remains in place in the urethra to drain urine from the bladder continuously; urine is collected in an external bag that is emptied as needed. This option has the advantage of unrestricted fluid intake, but is associated with an increased risk of urinary tract infections.



A **suprapubic catheter** is a type of indwelling catheter that originates from a stoma (a surgically created opening) at the pubic bone area, bypassing the urethra altogether.



In men, external catheters (called **Texas catheters** or **condom catheters**) are an option, in conjunction with an external collection method such as a leg bag.

Reflex voiding is a bladder-emptying method that relies on spontaneous bladder contractions such as those that occur with normal bladder filling. Contractions can be induced by tapping the fingers gently over the abdominal area to stimulate voiding. Older manual methods of bladder voiding such as Crede and valsalva, which involve applying external or internal pressure, respectively, to stimulate bladder emptying, are no longer routinely recommended because of the risk of kidney reflux.

There are several surgical alternatives for bladder dysfunction:

- A **Mitrofanoff procedure** constructs a new passageway for urine using the appendix. This allows catheterization via a surgical opening in the abdomen (a stoma), and can be an advantage for women and for people with limited hand function.
- **Bladder augmentation** is a procedure that uses tissue from the intestines to surgically enlarge the bladder, expanding bladder capacity and thus reducing leakage and the need for frequent catheterization.
- **Urostomy**, or urinary diversion, creates a surgical opening to drain urine from the bladder and into a plastic pouch that collects the urine.
- A **sphincterotomy** is a surgical procedure that weakens the bladder neck and sphincter muscle to allow urine to flow out more easily. After this surgery, urination occurs involuntarily and urine is collected in an external pouch.

POTENTIAL UT COMPLICATIONS

Poor bladder management can lead to a number of kidney and bladder complications including urinary tract infections (UTIs), sepsis (a blood-stream infection), and, in rare cases, kidney failure.

Urinary Tract Infections

People who are paralyzed are at a high risk for urinary tract infection (UTI), which until the 1950s was the leading cause of death after paralysis. The source of infection is bacteria, microscopic single-celled life forms that live normally in the body and are capable of causing disease.

Bacteria from the skin and urethra are easily brought into the bladder with IC, Foley and suprapubic methods of bladder management.

Bacteria are more likely to grow in urine that stays in the bladder, which increases risk of UTI for people who are not able to completely empty their bladder.

Some of the symptoms of UTI are cloudy, smelly urine, fever, chills, nausea, headache, increased spasms, and autonomic dysreflexia (AD). One may also feel burning while urinating, and/or discomfort in the lower pelvic area, abdomen or lower back.

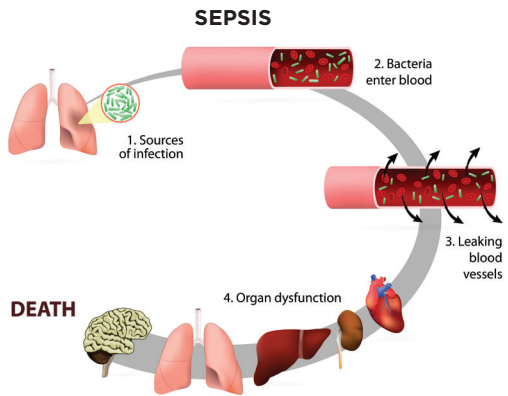
Autonomic Dysreflexia (AD)

If you have a spinal cord injury at the T6 level or above, autonomic dysreflexia and a rapid increase in blood pressure can cause a serious medical emergency.

Sepsis

Sepsis – also referred to as blood poisoning or systemic inflammatory response syndrome (SIRS) is a life-threatening condition that arises when the body’s response to an infection injures its own tissues and organs. This condition can lead to shock, multiple organ failure and death, especially if not recognized early and treated promptly.

In individuals with paralysis, a urinary tract infection – even if it is being actively treated with antibiotics – increases the risk of sepsis. If the infection is not controlled locally, it can spread throughout the body.



Septic shock is severe sepsis with a drop in blood pressure leading to organ failure. Both sepsis and septic shock are life threatening. Treatment is most successful within the first hour of onset.

A wallet card with helpful information on sepsis is available from the Christopher & Dana Reeve Foundation. Copies of the sepsis wallet cards are available online for download, or you can get your laminated copy by calling the Paralysis Resource Center at 800-539-7309 and asking to speak to an information specialist.

PREVENTING COMPLICATIONS

There are a number of things you can do to avoid potentially dangerous urinary tract complications. Meticulous genitourinary hygiene is essential. Wash hands frequently and thoroughly before and after any contact with a catheter, and thoroughly clean any catheter that is re-used.

Proper hydration is essential. While it may seem reasonable to restrict fluids so that you don't have to urinate as often, this can actually be counter-productive, as fluids help flush bacteria out of the body. Complete and routine bladder emptying will also help ensure that bacteria are not building up in the urinary system. Planning in advance for when bladder emptying has to occur away from the home or care environment can help you be prepared so the risk of contamination is reduced.

Ongoing medical care and regular check-ups with complete UT examination are essential for anyone with an SCI. A complete medical check-up is recommended at least once a year, which should include a urologic exam and a renal scan or ultrasound to know that the kidneys are working properly. The exam may also include a KUB (kidneys, ureters, bladder), which is an X-ray of the abdomen aimed at detecting kidney or bladder stones, and/or a urodynamics study that assesses how the bladder and urethra are performing their jobs of storing and releasing urine.

Nurse Linda Says...Not all fluids are created equal! It's important for anyone on a bladder management program to regularly drink enough "good" liquids to flush out bacteria. The idea is to make your urine as acidic as possible because bacteria is less likely to stick to the wall of the bladder in an acidic environment. That means avoiding sugary drinks and sticking to acidic juices such as cranberry juice. Orange juice is one of the worst things to drink for your bladder health.

If you are looking for more information on bladder care or have a specific question, Reeve Foundation information specialists are available business weekdays, Monday through Friday, toll-free at 800-539-7309 from 9am to 5pm ET.

The Reeve Foundation maintains a fact sheet on bladder management with an extensive list of resources from trusted sources, broken down by topic area. Also check out our repository of fact sheets on hundreds of topics ranging from state resources to secondary complications of paralysis.

Below are some additional resources on bladder management in paralysis from trusted sources:

Spinal Cord Injury and Bladder Management

(from the University of Washington Dept. of Rehabilitation Medicine):
http://rehab.washington.edu/patientcare/patientinfo/articles/sci_bladder.asp

Bladder Management Resource Page

(from the United Spinal Association):
<http://www.spinalcord.org/resource-center/askus/index.php?pg=kb.page&id=249>

Bladder Care

(from the Shepherd Center):
<http://www.myshepherdconnection.org/sci/bladder-care>

Bladder Management Following Spinal Cord Injury: What You Should Know

(from Paralyzed Veterans of America):
http://www.pva.org/atf/cf/%7BCA2A0FFB-6859-4BC1-BC96-6B57F57F0391%7D/Consumer_Guide_Bladder_071410.pdf

Spinal Cord Injury and Incontinence

(from the National Association for Continence):
<http://www.nafc.org/spinal-cord/>

Spinal Cord Injury Information Network

<http://www.uab.edu/medicine/sci/>



We're here to help.

Learn more today!

Christopher & Dana Reeve Foundation

636 Morris Turnpike, Suite 3A

Short Hills, NJ 07078

(800) 539-7309 toll free

(973) 467-8270 phone

ChristopherReeve.org

This project was supported, in part by grant number 90PR3002, from the U.S. Administration for Community Living, Department of Health and Human Services, Washington, D.C. 20201.

Grantees undertaking projects under government sponsorship are encouraged to express freely their findings and conclusions. Points of view or opinions do not, therefore, necessarily represent official Administration for Community Living policy.