CONDITION

Neurogenic bladder

Neurogenic bladder is loss of normal bladder control caused by disrupted signals between the urinary system and the brain or spinal cord.

WHAT IT IS
Bladder control problems caused by disrupted nerve signals

BODY SYSTEM
Urinary and nervous systems

MAIN SYMPTOMS
Urgency, leakage, weak stream, incomplete emptying

WHAT CAUSES IT
Brain, spinal cord, or peripheral nerve damage

HOW IT IS DIAGNOSED
Urodynamics, residual urine measurement, and neurological assessment

MAIN TREATMENT
Bladder-emptying methods, medicines, procedures, and monitoring

CAN IT BE CURED?
Sometimes - reversible nerve dysfunction may recover

IS IT AN EMERGENCY?
Sometimes - sudden retention or autonomic dysreflexia symptoms

LONG-TERM OUTLOOK
Usually manageable, but kidneys need risk-based monitoring

Overview

Neurogenic bladder means that a problem in the nervous system has disrupted normal bladder control. The nerves involved may be in the brain, spinal cord, or elsewhere in the body.

Your bladder normally stores urine at low pressure and empties when you choose. This depends on coordinated messages between the bladder muscle, the urinary sphincter that holds urine in, the spinal cord, and the brain. If those messages are interrupted, the bladder may squeeze too often, fail to squeeze strongly enough, or work out of step with the sphincter.

As a result, some people have sudden urges or urine leakage. Others cannot empty their bladder fully. Some experience both patterns at different times.

The condition matters because urine that remains in the bladder can contribute to infections

and stones. In some forms, high bladder pressure can push urine back toward the kidneys and damage them over time. Regular assessment helps identify who needs kidney monitoring.

Neurogenic bladder is also called neurogenic lower urinary tract dysfunction. "Lower urinary tract" means the bladder, bladder outlet, and urethra-the tube that carries urine out of the body.

Symptoms

Symptoms differ according to which nerves are affected and whether the bladder is overactive, underactive, or poorly coordinated.

Possible symptoms include:

Some people have reduced bladder sensation. They may not feel the usual warning that the bladder is full, even when a large amount of urine has collected.

Symptoms do not show by themselves whether bladder pressure is safe for the kidneys. A person with mild leakage can still need further testing, while someone with troublesome symptoms may have relatively low bladder pressure.

- A sudden, difficult-to-control need to urinate
- Urinating more often than usual, including at night
- Leakage before reaching a toilet
- Leakage without feeling the bladder is full
- Difficulty starting the urine stream
- A slow, weak, or interrupted stream
- Straining to urinate
- Feeling that the bladder has not emptied
- Passing only small amounts at a time
- Being unable to urinate
- Repeated urinary tract infections

Causes and risk factors

Neurogenic bladder can result from any condition or injury that affects the nerves controlling urine storage and emptying.

Common underlying causes include spinal cord injury, multiple sclerosis, spina bifida, stroke, Parkinson's disease, and diseases affecting the nerves outside the brain and spinal cord. Long-standing diabetes can damage these peripheral nerves.

A slipped disc, narrowing around the spinal nerves, or cauda equina syndrome may affect the nerves at the bottom of the spinal cord. Pelvic surgery, spinal surgery, radiation treatment, or trauma can also injure bladder nerves.

Some people are born with conditions that affect the spinal cord or its development. In others, bladder dysfunction appears after a neurological illness develops later in life.

Medicines, constipation, prostate enlargement, pelvic organ prolapse, and other urinary conditions can worsen emptying or leakage. These are not always the main cause, but identifying them may change management.

Diagnosis

Assessment begins with your symptoms, neurological history, medicines, bowel function, previous urinary infections, and ability to use a toilet or catheter. A bladder diary may be useful. This records when and how much you drink, urinate, or leak.

A urine sample can check for blood or signs of infection. Blood tests may be used to assess kidney function.

A post-void residual measurement checks how much urine remains after you urinate. This is usually done with a painless ultrasound scan over the lower abdomen. In some situations, a catheter is used instead.

Urodynamic testing measures how the bladder stores and releases urine. During the test, thin tubes measure bladder pressure as the bladder is filled and emptied. Some studies also measure sphincter activity or use X-rays. Urodynamics can identify high pressure, involuntary bladder contractions, weak emptying, or poor coordination between the bladder and sphincter.

Kidney and bladder ultrasound may be needed to look for swelling, stones, or structural changes. Cystoscopy, which uses a small camera to examine the bladder, is not required for everyone. It may be considered when there is blood in the urine, suspected stones, repeated infections, or another reason to inspect the bladder.

The tests you need are based on your symptoms, neurological condition, previous results, and estimated risk to the kidneys.

Treatment and management

Treatment aims to protect the kidneys, empty the bladder safely, reduce leakage, and support your daily life. The best approach reflects your bladder test results, hand function, mobility, other health conditions, and personal priorities.

Scheduled toilet visits and adjusting the timing of drinks may help some people. Drinking too little can cause concentrated urine and constipation, so fluid restriction should not be started without advice. Managing constipation is important because a full bowel can worsen bladder symptoms.

If the bladder does not empty, intermittent catheterisation may be recommended. This means placing a thin tube through the urethra several times a day to drain urine, then removing it. Some people do this themselves; others need help.

An indwelling catheter stays in place and drains continuously. It may pass through the urethra or through a small opening in the lower abdomen, called a suprapubic catheter. Long-term catheters can be appropriate in some circumstances, but they require care because they can contribute to infection, blockage, stones, and urethral injury.

Medicines may calm involuntary bladder contractions, improve urine storage, or help the bladder outlet relax. Side effects and interactions differ, so treatment is chosen and reviewed individually.

Botulinum toxin injections into the bladder wall can reduce overactivity and high storage pressure. The effect wears off over time, and repeat treatment may be needed. Because the bladder may empty less effectively afterward, a person may need to use a catheter.

Nerve stimulation treatments may help selected people whose nerve pathways are suitable. Surgery is considered when less invasive treatments do not provide safe pressure, reliable drainage, or acceptable symptom control. Options may enlarge the bladder, create a catheter channel, improve the outlet, or divert urine to another opening.

Follow-up may include symptom review, urine-residual measurements, kidney blood tests, ultrasound, or repeat urodynamics. The schedule is based on the risk of high pressure and kidney complications rather than symptoms alone.

Complications

Urine left in the bladder can support bacterial growth and increase the chance of urinary tract infection. However, bacteria are commonly found in the urine of people using catheters without causing an active infection. Antibiotics like amoxicillin or doxycycline are not automatically needed for a positive urine test without relevant symptoms.

Possible infection symptoms include fever, new bladder or back pain, pain during urination, or a clear change from your usual bladder pattern. People with reduced sensation may instead notice new leakage, muscle spasms, tiredness, or feeling unwell. These symptoms can have other causes and need appropriate assessment.

Other complications include bladder or kidney stones, catheter blockage, skin irritation from leakage, and injury to the urethra. Persistently high bladder pressure can cause urine to back up toward the kidneys. Over time, this may reduce kidney function.

Neurogenic bladder can also affect sleep, work, travel, sexual well-being, and confidence. A management plan should address these effects, not only test results.

Prevention

Neurogenic bladder often cannot be prevented because it results from an inherited condition, neurological disease, unavoidable injury, or necessary treatment.

When diabetes is involved, managing blood glucose may reduce further nerve damage, although it cannot always reverse damage that has already occurred. Using recommended safety measures may lower the risk of some spinal injuries.

Complications can often be reduced even when the bladder condition itself cannot be prevented. Helpful measures include following the agreed emptying plan, using clean catheter technique, managing constipation, attending kidney and bladder monitoring, and seeking advice when symptoms change.

Living with it and what to expect

The course of neurogenic bladder is closely linked to its cause. Bladder function may improve as temporary nerve swelling or an acute injury recovers. With permanent spinal cord damage or a long-term neurological condition, bladder changes may persist.

Symptoms can also change over months or years. A progressive neurological illness may alter bladder sensation, storage pressure, mobility, or the ability to use a catheter. Age-related urinary conditions can add new symptoms.

Many people find a routine that provides reliable emptying and acceptable control. This may involve planned toilet visits, intermittent catheterisation, medicine, or a combination of treatments. Equipment and practical adjustments can support work, education, exercise, intimacy, and travel.

Keep enough catheter supplies available when travelling, including extras for delays. If you use a catheter, your care team can help you plan for storage, disposal, and access to suitable toilets.

Routine follow-up remains important even when symptoms are stable. Kidney damage may develop without obvious pain, particularly when bladder sensation is reduced. Monitoring is more frequent for people with high bladder pressure, reflux toward the kidneys, stones, or previous kidney changes.

When to get medical help

Arrange a routine medical review if you develop new leakage, increasing urgency, difficulty emptying, repeated infections, catheter problems, blood in the urine, or a clear change from your usual bladder pattern. Also seek review if your current plan is difficult to manage or is limiting daily activities.

Seek urgent medical help if you cannot urinate and your lower abdomen is becoming painful or swollen. Prompt treatment is also needed for fever with pain in the side or back, vomiting, confusion, or feeling significantly unwell, as these can occur with a kidney infection or blocked urinary drainage.

Go to emergency care for new loss of bladder control or urinary retention together with severe back pain, new leg weakness, numbness around the buttocks or genitals, or loss of bowel control. These can be signs of pressure on the cauda equina nerves and require immediate assessment.

People with a spinal cord injury, especially at or above the T6 level, can develop autonomic dysreflexia from a full bladder or blocked catheter. Warning signs include a sudden pounding headache, heavy sweating or flushing above the injury, goosebumps, blurred vision, anxiety, or very high blood pressure. This is an emergency. If trained to do so, sit upright and check the catheter for kinks while emergency help is being arranged.

Common questions

Can neurogenic bladder go away?

It can improve when the nerve problem is temporary, such as swelling after an injury or procedure. When nerve damage is permanent or the underlying neurological condition continues, bladder dysfunction is usually managed rather than cured.

Can I have neurogenic bladder without leaking urine?

Yes. Some people mainly retain urine because the bladder cannot contract effectively or the sphincter does not relax. You may have a weak stream, reduced sensation, or incomplete emptying without leakage.

Do I need a catheter forever?

Not necessarily. Catheter use may be temporary or long term. It depends on whether your bladder can empty safely, how the underlying nerve condition changes, and whether another treatment improves emptying.

Does neurogenic bladder cause kidney damage?

It can, particularly when the bladder stores urine at high pressure or drainage is repeatedly blocked. Not everyone has this risk. Ultrasound, kidney blood tests, and urodynamics help guide monitoring.

Why am I not given antibiotics every time bacteria appear in my urine?

Catheter users and some people with neurogenic bladder often have bacteria in their urine without an active infection. Unnecessary antibiotics can cause side effects and encourage antibiotic-resistant bacteria. Treatment is generally based on symptoms and clinical findings, not the urine result alone.

Can I still exercise, work, travel, and have sex?

Usually, yes. Timing bladder emptying, carrying spare supplies, protecting the skin, and planning toilet access can help. Leakage, catheters, spasms, or reduced sensation may require practical adjustments and advice tailored to your needs.

Sources

- American Urological Association and Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction. Adult Neurogenic Lower Urinary Tract Dysfunction Guideline, 2021; amended 2024
- National Institute for Health and Care Excellence. Urinary incontinence in neurological disease: assessment and management, Clinical Guideline CG148
- European Association of Urology. Guidelines on Neuro-urology
- National Institute of Diabetes and Digestive and Kidney Diseases. Urodynamic Testing
- National Institute of Diabetes and Digestive and Kidney Diseases. Treatment of Urinary Retention

- Centers for Disease Control and Prevention. Clinical Safety: Preventing Catheter-associated Urinary Tract Infections