

Urinary Tract Infections with NLUTD

One medical complication that can occur with Neurogenic Lower Urinary Tract Dysfunction (NLUTD) is a urinary tract infection (UTI).

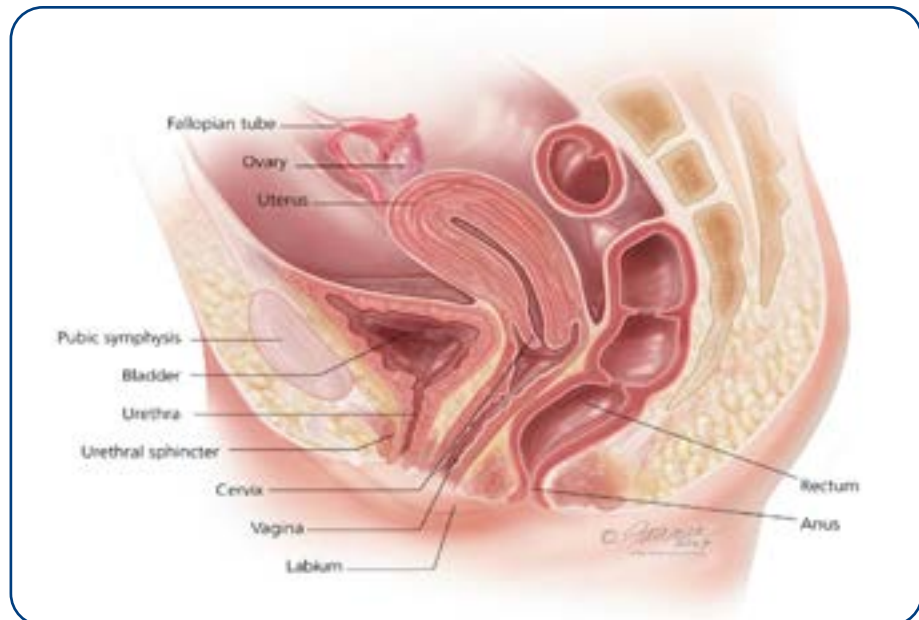
See Factsheet on NLUTD Symptoms for more information.

An infection can occur in any part of your urinary tract (kidneys, bladder, urethra), but most infections involve the lower urinary tract (bladder and the urethra) and are referred to as *urinary tract infections (UTI)* or *bladder infections*. When left untreated, a bladder infection can spread to the kidneys, which is called pyelonephritis.

What causes UTIs?

Bacteria cause UTIs, but not all bacteria are unhealthy. Bacterial communities live in the rectum, vagina, on your skin, and even in your bladder and do not cause problems. UTIs may occur when bacteria migrate from other areas of the body into the bladder, or when the bacterial community already living in the urethra and bladder is replaced by bacteria which cause infections (called *uropathogens*).

In general, women are more prone to UTIs because they have shorter urethras than men and therefore bacteria can more easily travel into the bladder from the surrounding skin and rectum. NLUTD is also believed to increase the risk of UTIs through several mechanisms. For example, both women and men who have NLUTD and urine retention (difficulty emptying the bladder; see underactive NLUTD factsheet) are more likely to develop UTIs because uropathogenic bacteria begins to grow when the bladder retains urine too long. And people who use catheters to empty their bladders may introduce different bacteria with the insertion of the catheter. It is also believed that there can be movement of bacteria from the gut or rectum to the urethra (and then bladder) during bowel care. There are likely other not yet understood mechanisms for the increased UTI risk.



The bladder has natural mechanisms to stay healthy when the bacterial community gets out of balance, such as shedding the inner lining periodically and in response to certain bacteria. Cloudy and/or foul smelling urine are commonly reported by people with NLUTD, but these symptoms on their own are often normal and do not require treatment. Cloudiness, sediment or a change in smell may be the result of this natural sloughing and/or may be due to the byproducts of certain bacteria.

UTI Diagnosis

UTI is traditionally diagnosed based on the presence of symptoms, white blood cells in the urine (they help fight infection), and growth of bacteria on a urine culture. NLUTD can make it more difficult to determine you have a UTI, because you may often experience urinary symptoms, have inflammation (detected by white blood cells in the urine), and have bacterial growth, even when there is no infection present. One thing we do know is that there must be symptoms present for there to be a UTI. There is not yet a standardized set of symptoms to diagnose a UTI, but based on our research we believe that the following symptoms may be more indicative of a UTI:

(Note: Some may not apply to those who do not have bladder sensation.)

- A strong, continual or frequent urge to urinate
- Passing frequent, small amounts of urine/inability to fully empty bladder, weak urine stream
- Bladder spasms or increased tone/spasticity in the body
- Increased incontinence/urine leakage
- A burning sensation or pain during urination
- Urine that smells worse; contains sediment, blood or blood clots; or appears cloudy, darker, red, pink, or rust-colored
- Discharge, redness, or sensitivity around catheter site

The likelihood these bladder-specific symptoms indicate a UTI is increased if also accompanied by systemic symptoms such as:

- Pain in the abdomen, pelvic area, back, legs, or other muscles
- Fever, feeling feverish, chills, sweats, or flushing of the face, neck, or chest
- Dizziness, headache, nausea, vomiting, loss of appetite, fatigue, lethargy, weakness, feeling unwell
- Numbness or sense of burning in extremities or throughout the body, difficulty ambulating
- Irritability, mental slowing/confusion
- Changes in sleep patterns, bowel patterns, or blood pressure
- Autonomic Dysreflexia (AD) only for Spinal Cord Injury (SCI) T6 and above **(This is a medical emergency.)**

We have developed the following tools to help you track your symptoms and make decisions based on those symptoms.

[Urinary Symptom Questionnaire for Neurogenic Bladder - Intermittent Catheterization](#)

[Urinary Symptom Questionnaire for Neurogenic Bladder - Indwelling Catheterization](#)

[Urinary Symptom Questionnaire for Neurogenic Bladder - Void](#)

Diagnosing UTIs

When seeking care for a UTI, it is important to note and report your symptoms. You may be asked to provide a urine sample, which will likely be used for two common tests: urinalysis and urine culture.

A **urinalysis** looks at the urine's color, appearance, chemical findings, and microscopic findings. This may include testing the pH level, white blood cell count, and whether it contains blood or other substances, proteins, and bacteria.

A **urine culture** involves sending a urine sample to a lab for several days to identify the specific bacteria present and how much bacteria is present. Identifying the type of bacteria may help your healthcare provider determine which treatment will be most effective for your infection.

Treatments for UTIs

It is important to treat a UTI so the infection does not progress to an infection of the kidneys or even to a bloodstream infection (sepsis). But it is also important to only treat when necessary, because overuse of antibiotics can lead to antibiotic resistance. That is when bacteria adapt to antibiotics and can no longer be treated by them, which may require intravenous antibiotics.

- Most UTIs can be treated with a short course of oral antibiotics. Be sure to complete the full course prescribed and call your doctor if symptoms do not improve.
- In addition to antibiotics, increase your hydration to help clear bacteria and reduce bladder inflammation (this may require more frequent catheterization)

Recurrent UTIs

If you experience three or more UTIs in 12 months, or two or more in six months, talk with your healthcare provider about prevention of recurrent UTIs. Depending on your particular case, this may include:

- Taking daily supplements such as cranberry tablets, D-Mannose, Vitamin-C, or probiotics (Note there is no conclusive evidence that any oral supplement reduces UTI)
- Bladder management medications
- Starting to catheterize, or different catheterization methods or frequency
- Flushing the bladder or instilling agents into the bladder via the catheter
- Some people with NLUTD, but only rarely, may benefit from preventative antibiotic treatment
- In some cases, a bladder or kidney stone may be the reason for recurrent UTIs so talk to your healthcare provider to discuss whether you should be evaluated for these.

See our Factsheet on Managing NLUTD for further management options.

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