

## Urinary tract infection

### Definition

A urinary tract infection, or UTI, is an infection that can happen anywhere along the urinary tract. The urinary tract includes the:

- Bladder
- Kidneys
- Ureters -- the tubes that take urine from each kidney to the bladder
- Urethra -- the tube that empties urine from the bladder to the outside

### Alternative Names

Bladder infection; Cystitis; UTI

### Causes

Cystitis, a common condition, is usually caused by bacteria entering the urethra and then the bladder. This leads to inflammation and infection in the lower urinary tract.

Certain people are more likely to get UTIs. Women tend to get them more often because their urethra is shorter and closer to the anus. Elderly people (especially those in nursing homes) and people with diabetes also get more UTIs.

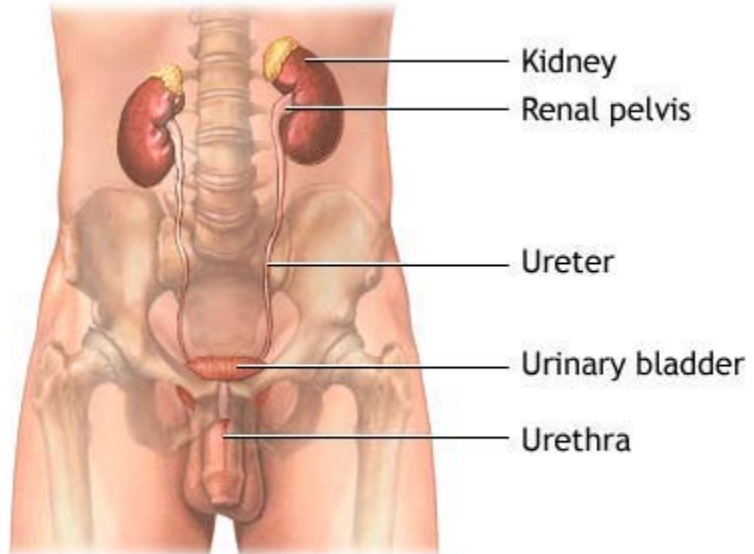
Some children develop UTIs. In boys, they are most common before the first birthday. In young girls, UTIs are most common around age 3, overlapping with the toilet training period.

Cystitis in children can be promoted by abnormalities in the urinary tract. Therefore, children with cystitis, especially those under age 5, deserve special follow-up to prevent later kidney damage.

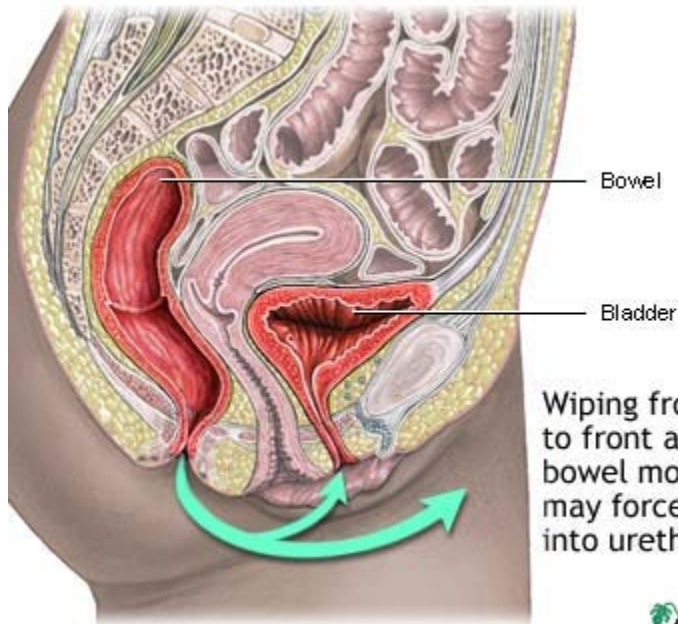
The following risk factors increase your chances of getting a UTI:

- Bowel incontinence
- Catheterization
- Kidney stones
- Immobility (for example, during recovery from a hip fracture)
- Menopause
- Narrowed urethra
- Not drinking enough fluids
- Pregnancy
- Prostate inflammation or enlargement
- Sexual intercourse, especially if you have multiple partners
- Using a diaphragm for birth control

### Symptoms



ADAM.



Wiping from back to front after a bowel movement may force germs into urethra

ADAM.

The symptoms of a UTI include:

- Cloudy urine
- Blood in the urine
- Foul or strong urine odor
- Frequent or urgent need to urinate
- Need to urinate at night
- Pain or burning with urination
- Pressure in the lower pelvis

Young children with UTIs may only have a fever, or no symptoms at all.

Additional symptoms may include:

- Mental changes or confusion (in the elderly, mental changes or confusion often are the only signs of a urinary tract infection; possible spread to the blood should be considered)
- Flank (side) pain, vomiting, fever, and chills (may be a sign of kidney involvement)
- Painful sexual intercourse
- Penis pain

## Exams and Tests

Tests generally include taking a urine sample.

Urinalysis commonly reveals nitrates, white blood cells, and red blood cells. See also: RBC - urine

A urine culture (clean catch) or catheterized urine specimen may be done to determine the type of bacteria in the urine and the appropriate antibiotic for treatment.

### TESTING IN CHILDREN

Many children with cystitis need special imaging studies to determine why they got a urinary tract infection. Many of them have something abnormal about their anatomy that predispose them to infections. The long-term consequences of repeated urinary tract infections in children can be quite serious. However, these infections can usually be prevented.

Special studies usually include an ultrasound of the kidneys and an x-ray taken during urination (called a voiding cystourethrogram or VCUG).

Most experts recommend this evaluation for:

- Girls over age 5 who have had two or more urinary tract infections
- All boys with their first urinary tract infection
- All children who have a fever along with their urinary tract infection
- All children under age 5 with their first urinary tract infection

## Treatment

A mild case of cystitis may go away on its own without treatment. Because of the risk of the infection spreading to the kidneys, however, antibiotics are usually recommended. It is important that you finish the entire course of prescribed antibiotics.

In children, cystitis should be treated promptly with antibiotics to protect their developing kidneys. In the elderly, prompt treatment is recommended due to the greater chances of deadly complications.

Commonly used antibiotics include:

- Amoxicillin
- Doxycycline (should not be used under age 8)
- Cephalosporins
- Nitrofurantoin
- Sulfa drugs (sulfonamides)
- Trimethoprim-sulfamethoxazole
- Quinolones (should not be used in children)

Most non-elderly adult women only need 3 days of antibiotics. If the infection has spread to one of the kidneys, you may need to be admitted to a hospital so you can receive fluids and antibiotics through a vein.

A chronic or recurrent UTI should be treated thoroughly because of the chance of kidney infection. Antibiotics may need to be given for a long period of time (as long as 6 months to 2 years), or stronger antibiotics may be needed than for single, uncomplicated episodes of cystitis.

Phenazopyridine hydrochloride (Pyridium) may be used to reduce the burning and urgency associated with cystitis. In addition, acidifying medications such as ascorbic acid may be recommended to decrease the concentration of bacteria in the urine.

If an anatomical abnormality is present, surgery to correct the problem may be recommended.

## Outlook (Prognosis)

Cystitis is uncomfortable, but usually responds well to treatment.

## Possible Complications

- Chronic or recurrent urinary tract infection -- defined as at least two infections in 6 months or at least three in 1 year
- Complicated UTI
- Kidney infection

## When to Contact a Medical Professional

Call your doctor if you, or your child, have symptoms of a UTI. Call right away if there is fever or chills, back or side pain, or vomiting. These symptoms suggest a possible kidney infection.

Also call if:

- You have diabetes or are pregnant
- There is discharge from the penis or vagina
- The penis or vagina is painful, or sexual intercourse is painful
- You suspect a child may have been sexually abused
- There is blood or pus in the urine
- The symptoms come back a short time after treatment with antibiotics

## Prevention

- Do NOT douche or use similar feminine hygiene products.
- Do NOT drink fluids that irritate the bladder, like alcohol and caffeine.
- Drink cranberry juice or use cranberry tablets, but NOT if you have a personal or family history of kidney stones.
- Drink plenty of fluids.
- Keep your genital area clean.
- Urinate after sexual intercourse.
- Wear cloth undergarments.
- Wipe from front to back.

Use of low-dose antibiotics on a daily basis may be recommended to prevent UTIs if you get frequent infections.

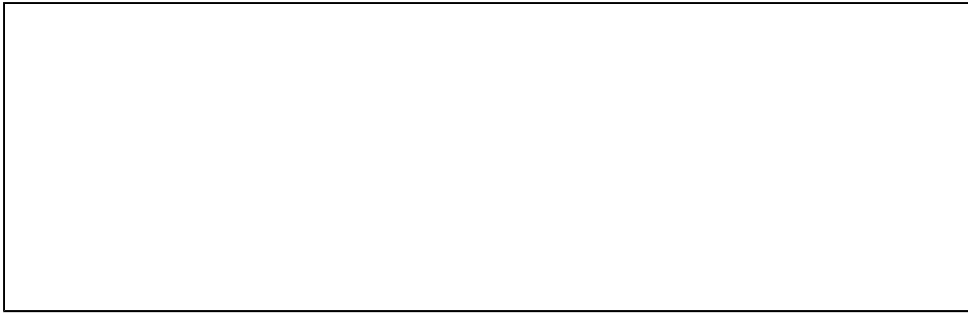
## References

Cincinnati Children's Hospital Medical Center. Evidence-based care guideline for medical management of first urinary tract infection in children 12 years of age or less. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2006 Nov. 23 p.

Walsh, PC, ed. *Campbell's Urology*. 8th ed. Philadelphia, Pa: Saunders; 2002.

Marx JA, Hockberger RS, Walls RM, eds. *Rosen's Emergency Medicine: Concepts and Clinical Practice*. 5th ed. St. Louis, Mo: Mosby; 2002.

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