

Urinary Tract Infection

The urinary tract is made up of the bladder, the urethra, the ureters, and the kidney. Urine is made by the kidneys. It then flows down the ureters to the bladder where it is stored before being passed out of the body through the urethra. Urine is usually a sterile fluid, but when it is infected, it contains bacteria. Urinary tract infections (UTIs) are very common, especially in women. When they happen over and over, this is called recurrent UTI. If your primary care doctor diagnoses recurrent UTI, you may be referred to a **urologist**, a doctor with specialized education in the diagnosis and treatment of conditions in the urinary tract.

SIGNS AND SYMPTOMS OF UTI

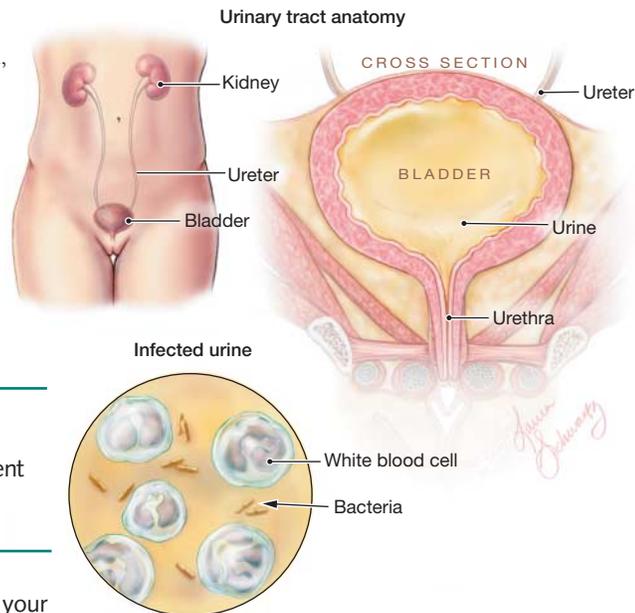
- Burning pain on urination (**dysuria**)
- Urinary frequency or urgency
- Urinary **incontinence** (leakage)
- Blood in the urine
- Foul-smelling urine
- Fever may be present in cases of more serious infection

DIAGNOSIS AND TESTING

In addition to a medical history and a physical examination, your doctor may order a urinalysis, which examines a urine sample for the presence of white blood cells and bacteria. Urine may be sent for culture to see what kind of bacteria is present. If bacteria grow in the specimen, those bacteria are then tested to see which kind of antibiotics will be most effective. A blood count and blood chemistries may be ordered, especially if fever is present or there are signs of a serious infection, such as when UTI affects the kidneys (**pyelonephritis**).

PREVENTION AND TREATMENT

- A 3-day course of antibiotics is sufficient to treat most UTIs.
- For individuals who have recurrent UTIs (3 or more per year), drinking lots of fluid is important to maintain good urine flow.
- Urinating after sexual intercourse may reduce the risk of UTIs, especially when the UTIs often occur after sexual activity.
- The use of spermicide foams for birth control can increase the risk of UTIs, so women who have recurrent UTIs may want to use a different form of contraception.
- In postmenopausal women, the use of low-dose vaginal estrogen replacement may reduce the risk of UTIs. However, not all women can safely take estrogen, so this should be discussed with the physician.
- Urinary catheters may be a source of UTI. They should be left in place only as long as they are needed for medical purposes.
- If the bladder does not empty properly, the retained urine can be an environment that encourages bacteria to grow. The bladder emptying problem may need to be corrected, possibly requiring a catheter to drain the bladder or treatment of underlying medical conditions, including prostate problems in men or uterine **prolapse** (protrusion through an opening like the vagina) in women.
- If a structural problem within the urinary tract is found, surgical correction may be necessary. This includes operations on the ureters, the pelvic floor, the urethra, or the bladder itself.



FOR MORE INFORMATION

- National Kidney and Urologic Diseases Information Clearinghouse
www.kidney.niddk.nih.gov
- American Urological Association Foundation
www.urologyhealth.org
- American Congress of Obstetricians and Gynecologists
www.acog.org

INFORM YOURSELF

To find this and previous JAMA Patient Pages, go to the Patient Page index on JAMA's website at www.jama.com. Many are available in English and Spanish. A Patient Page on urinary tract infection was published in the March 22/29, 2000, issue; one on urinary incontinence in older women was published in the June 2, 2010, issue; and one on uterine prolapse was published in the April 27, 2005, issue.

Sources: National Institute of Diabetes and Digestive and Kidney Diseases, American Congress of Obstetricians and Gynecologists, American Urogynecologic Society

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