



The urinary tract is a group of organs that produces, collects and stores urine. Urine is composed of excess water and waste. As shown in the illustration (right), the urinary tract consists of two kidneys, two ureters, a bladder and a urethra.

A urinary tract infection (UTI) is an infection that occurs anywhere within the urinary tract. Not everyone with a UTI has symptoms or signs. If symptoms or signs do occur, they may include:

- urgency to urinate
- frequent and painful urination
- passing small amounts of urine
- strange-smelling urine
- milky or bloody urine
- feeling tired and unwell.

More specific symptoms and signs depend on the location of the infection:

- urethra (urethritis) – a burning or painful sensation during urination, with pus in the urine. Men may have a discharge from the penis.
- bladder (cystitis) – smelly urine and a sensation of pressure in the lower abdomen.
- kidneys (pyelonephritis) – back pain, fever, chills, nausea and vomiting. This is serious and requires prompt medical care. Kidney damage or failure can occur if left untreated.
- prostate gland (prostatitis) – inflammation of the prostate gland caused by bacteria.
- epididymo-orchitis – infection in an epididymis or testicle, which can cause pain and/or a fever.

UTIs are often caused by the bacterium *Escherichia coli* (*E. coli*). It is usually harmless and inhabits the diges-

tive tract, vulva (female external genitals) and anus. Under certain conditions, bacteria can travel up the urethra and multiply within the urinary tract.

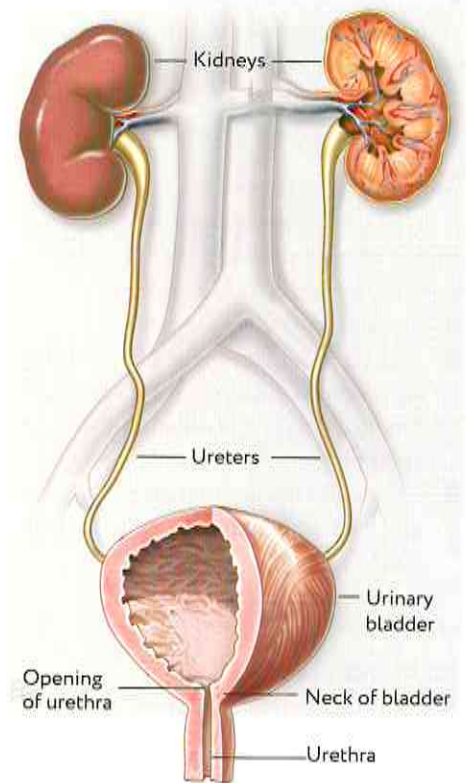
With increasing travel to developing countries, UTIs with the bilharzia parasite and the tuberculosis mycobacterium are being seen. Other micro-organisms can also be responsible for a UTI.

Sexually transmitted diseases (STDs)
Urethritis can be associated with STDs such as chlamydia and gonorrhoea.

High-risk groups

The structure of the urinary tract helps to prevent infection. The ureters and bladder stop urine refluxing back into the kidneys, urination flushes out micro-organisms, and the immune system can destroy bacteria. Certain conditions can make it possible for bacteria to multiply within the urinary tract, including:

- the ability of bacteria to attach to cells of the urinary tract
 - the presence of structural abnormalities in the urinary tract
 - associated medical conditions, such as diabetes (bacteria thrive on sugar in the urine).
- About one in five women has a bladder infection at some time in her life. Some women can have repeated infections. UTIs are more common in women because:
- the urethral opening is close to the vagina and anus
 - the female urethra is only four centimetres long, which allows bacteria easy access to the bladder
 - sexual intercourse can make it easier for bacteria to become attached to the urethra.



Pregnancy itself does not increase the risk of a UTI, but if a UTI does occur, it is more likely to target the kidneys. Hormonal changes and the altered position of the urinary tract are thought to be responsible.

UTIs are more common as women age. The drop in oestrogen (female hormone) after menopause makes the tissues of the vagina, urethra and bladder thinner, drier and more vulnerable to infection.

Men are less likely than women to have UTIs, but when they do, the infections tend to be serious. Common causes in men include:

- incomplete bladder emptying - any

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IMPORTANT: FILL IN ALL DETAILS ON THE STICKER

DEAR SURGEON: When you discuss this pamphlet with your patient, remove this sticker and put it on the patient's medical history or card. This will remind you and your patient that this pamphlet has been provided. Some surgeons ask their patients to sign the sticker to confirm receipt of the pamphlet.

Talk to your Doctor

The aim of this pamphlet is to provide general information about UTIs. It is not a substitute for advice from your doctor and does not contain all the known facts about urinary tract infections and treatment options. This pamphlet should only be used in consultation with your doctor.

This pamphlet refers to UTIs in adults only. UTI symptoms or signs in a child should always be investigated by a medical practitioner.

condition that restricts the flow of urine (such as an enlarged prostate), keeps urine inside the bladder for too long, and encourages bacterial growth.

- urinary catheterisation – a tube (catheter) inserted up the urethra and into the bladder to drain urine. Bacteria can be introduced by the catheter and equipment.

Self-care suggestions

It may take a few days for the antibiotics to clear your symptoms. Self-care suggestions in the meantime include:

- drink more fluids
- avoid soft drinks, citrus juices, coffee and alcoholic drinks as these beverages can irritate your bladder and worsen symptoms
- a hot water bottle or warm wheat pack on your abdomen can help to ease pain.

DIAGNOSIS OF UTI

Your doctor will ask about signs and symptoms. Diagnostic tests include:

- a mid-stream urine culture (micro-organisms in the urine are grown on a special gel and identified under a microscope). Some people, such as older adults, may have bacteria in the urine that cause no harm (asymptomatic bacteriuria), and treatment is needed only if symptoms are present.

For people with repeated infections, other tests may include:

- blood tests
- cystoscopy – a tube fitted with lenses is guided up the urethra to allow the urologist to look at the inside of the urethra and bladder
- urinary tract imaging, which may include X-ray examinations (sometimes using a radio-opaque dye), abdominal ultrasound, or CT scan of the kidneys and bladder.

Part of the diagnostic process is to allow the doctor to differentiate a UTI from other causes that may have similar symptoms and could need a different treatment.

COSTS OF TREATMENT

Your urologist can advise you about coverage by public health insurance, private health insurance and out-of-pocket costs. You may want to ask for an estimate that lists the likely costs. As the actual treatment may differ from the proposed treatment, the final account may vary from the estimate. It is better to discuss costs with your doctor before treatment rather than afterwards.

Self-help suggestions to reduce and prevent the risk of UTI

- Drink six to eight glasses of water every day.
- Cranberry juice may help prevent UTI. However, it is of no use in acute UTI treatment, and acidity may aggravate symptoms. Do not drink cranberry juice if you take the drug warfarin because the interaction may cause bleeding.
- Some natural products such as lactobacillus (available from supermarkets) can reduce the number of harmful organisms.
- Vitamin C makes the urine more acidic, which usually inhibits the growth of bacteria. Ask your doctor for dosage guidelines if you want to take vitamin C supplements.
- Urinate after sexual intercourse to flush bacteria out of the urethra. In

people with recurrent UTIs, medication such as low dose antibiotics may be used to prevent attacks, for example, every day or after intercourse.

- Empty the bladder properly.
- Avoid constipation.
- Avoid products that may irritate the vulva such as douches, feminine hygiene sprays or talcum powder.
- Bacteria thrive in humid environments. Avoid synthetic underwear and tight trousers.
- Diaphragms, spermicidal creams and spermicidal condoms may encourage bacterial growth in some women. Switch to another form of contraception if necessary.
- Quit smoking. Smoking irritates the bladder and is a risk factor in the development of bladder cancer.
- See your doctor if you have recurrent UTI symptoms or signs.

TREATMENT OF UTI

Treatment depends on the severity of the UTI.

Simple UTI: Antibiotics are the preferred treatment. The type of antibiotic and the length of treatment depend on the bacteria found in the urine. Antibiotics include amoxicillin, nitrofurantoin, trimethoprim and sulfamethoxazole.

- Tell your doctor if you have any allergies because this may influence the choice of antibiotic.
- Antibiotics can interact with drugs. Tell your doctor about ALL medicines you are taking and have recently taken.
- All medications to treat UTIs can cause side effects. Read the Consumer Medicine Information leaflet that comes with the medication. If the medication does not have a leaflet, ask your pharmacist for one.
- You may need to take antibiotics for three to 10 days or more, depending on advice from your doctor. Complete the entire course of antibiotics even if you are feeling better. Otherwise, the infection may return.

- Men typically need to take a larger dose of an antibiotic and for longer. A man who has UTI symptoms should not borrow antibiotics prescribed for his female partner.
- Sexually transmitted infections require treatment for both partners.

Recurrent UTIs: Any structural abnormalities or obstructions of the urinary tract may have to be treated. Your doctor may prescribe lengthy antibiotic treatment or give you a supply of antibiotics to take as soon as you notice any symptoms. Women may be advised to take a single antibiotic dose after sexual intercourse.

PREVENTION OF UTI

Severe UTI: Hospitalisation and intravenous antibiotics may be needed. A persistent kidney infection often requires a few weeks of antibiotic treatment.

Obstructed kidney: An infected, obstructed kidney is an urological emergency. It can lead to septicaemia, shock and death if the obstruction is not relieved promptly.

