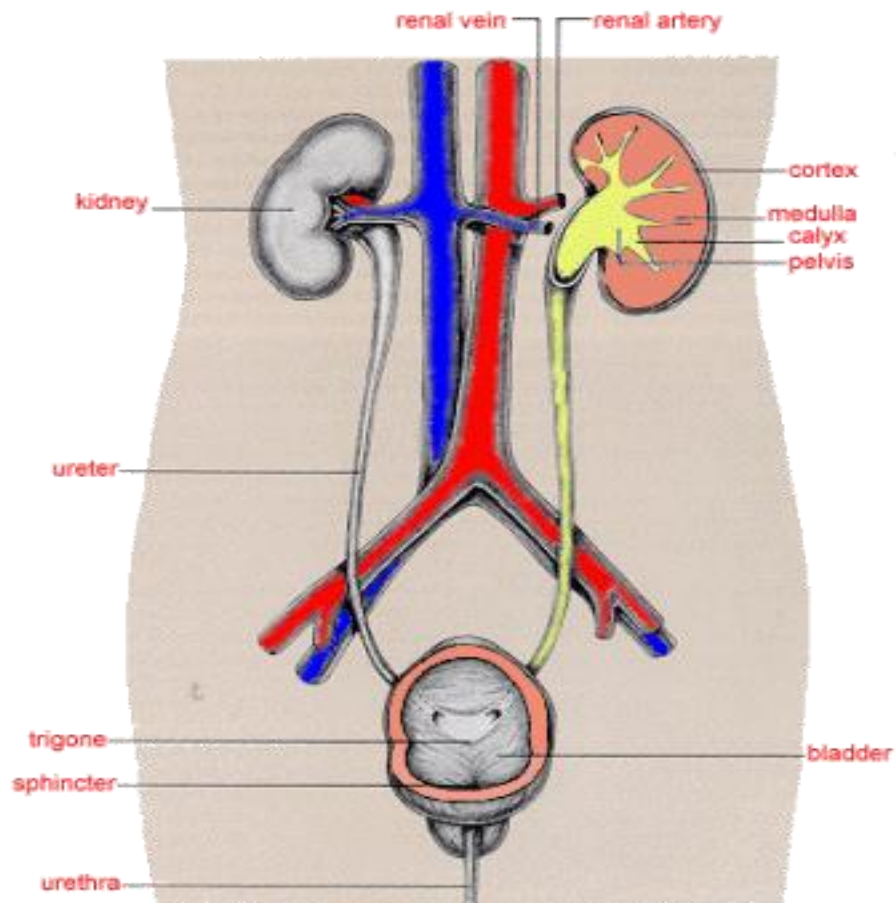


## **What is a urinary tract infection (UTI)?**

A UTI is an infection in the urinary tract. Infections are caused by microbes—organisms too small to be seen without a microscope—including fungi, viruses, and bacteria. Bacteria are the most common cause of UTIs. Normally, bacteria that enter the urinary tract are rapidly removed by the body before they cause symptoms. However, sometimes bacteria overcome the body's natural defenses and cause infection. An infection in the urethra is called **urethritis**. A bladder infection is called **cystitis**. The bacteria may travel up the ureters to multiply and infect the kidneys. A kidney infection is called **pyelonephritis**. An infection in the prostate (men) is called **prostatitis**.

## **What is the urinary tract?**

The urinary tract is the body's drainage system for removing wastes and extra water. The urinary tract includes two kidneys, two ureters, a bladder, and a urethra. The kidneys are a pair of bean-shaped organs, each about the size of a fist and located below the ribs, one on each side of the spine, toward the middle of the back. Every minute, a person's kidneys filter about 3 ounces of blood, removing wastes and extra water. The wastes and extra water make up the 1 to 2 quarts of urine a person produces each day. The urine travels from the kidneys down two narrow tubes called the ureters. The urine is then stored in a balloon like organ called the bladder and emptied through the urethra, a tube at the bottom of the bladder. When the bladder empties, a muscle called the sphincter relaxes and urine flows out of the body through the urethra. The opening of the urethra is at the end of the penis in males and in front of the vagina in females.



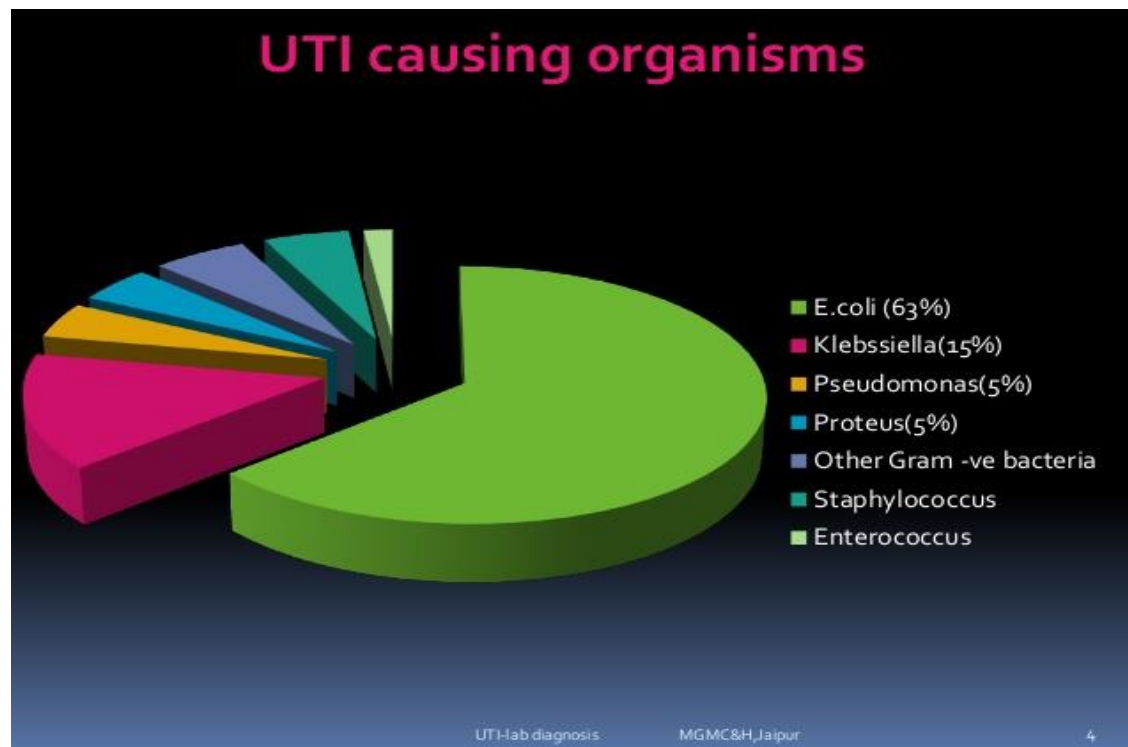
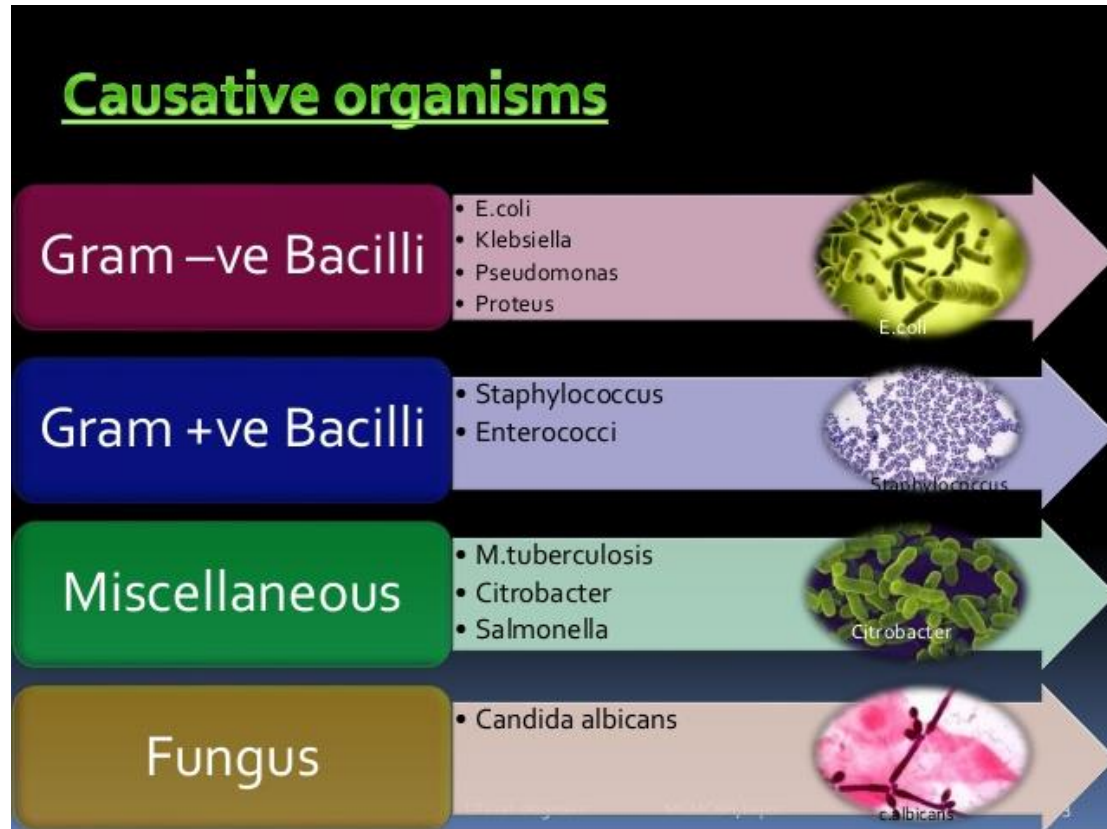
### What causes UTIs?

Most UTIs are caused by bacteria that live in the bowel. The bacterium *Escherichia coli* (*E. coli*) causes the vast majority of UTIs. Microbes called Chlamydia and Mycoplasma can infect the urethra and reproductive system but not the bladder. Chlamydia and Mycoplasma infections may be sexually transmitted and require treatment of sexual partners. The urinary tract has several systems to prevent infection. The points where the ureters attach to the bladder act like one-way valves to prevent urine from backing up toward the kidneys, and urination washes microbes out of the body. In men, the prostate gland produces secretions that slow bacterial growth. In both sexes, immune defenses also prevent infection.

But despite these safeguards, infections still occur. Certain bacteria have a strong ability to attach themselves to the lining of the urinary tract.

### **How are UTIs diagnosed?**

To find out whether a person has a UTI, the health care provider will ask about urinary symptoms and then test a sample of urine for the presence of bacteria and white blood cells, which are produced by the body to fight infection. Because bacteria can be found in the urine of healthy individuals, a UTI is diagnosed based both on symptoms and a laboratory test. The person will be asked to give a “clean catch” urine sample by washing the genital area and collecting a “midstream” sample of urine in a sterile container. This method of collecting urine helps prevent bacteria around the genital area from getting into the sample and confusing the test results. Usually, the sample is sent to a laboratory, although some health care providers’ offices are equipped to do the testing. For people with recurring infections and patients in the hospital, the urine may be cultured. The culture is performed by placing part of the urine sample in a tube or dish with a substance that encourages any bacteria present to grow. Once the bacteria have multiplied, which usually takes 1 to 3 days, they can be identified. The health care provider may also order a sensitivity test, which tests the bacteria for sensitivity to different antibiotics to see which medication is best for treating the infection. If a person has recurrent UTIs, the health care provider may order some additional tests to determine if the person’s urinary tract is normal.



## **Treatments and drugs**

Antibiotics usually are the first line treatment for urinary tract infections. Which drugs are prescribed and for how long depend on your health condition and the type of bacteria found in your urine.

### **Simple infection**

Drugs commonly recommended for simple UTIs include:

- Trimethoprim/sulfamethoxazole (Bactrim, Septra, others)
- Fosfomycin (Monurol)
- Nitrofurantoin (Macrochantin, Macrobid)
- Ciprofloxacin (Cipro)
- Levofloxacin (Levaquin)
- Cephalexin (Keflex)
- Ceftriaxone (Rocephin)
- Doxycycline (Monodox, Vibramycin, others)

Often, symptoms clear up within a few days of treatment. But you may need to continue antibiotics for a week or more. Take the entire course of antibiotics as prescribed. For an uncomplicated UTI that occurs when you're otherwise healthy, your doctor may recommend a shorter course of treatment, such as taking an antibiotic for one to three days. But whether this short course of treatment is enough to treat your infection depends on your particular symptoms and medical history.

Your doctor may also prescribe a pain medication (analgesic) that numbs your bladder and urethra to relieve burning while urinating, but pain usually is relieved soon after starting an antibiotic. One common side effect of urinary tract analgesics is discolored urine — orange or red.

## Frequent infections

If you have frequent UTIs, your doctor may make certain treatment recommendations, such as:

- Low dose antibiotics, initially for six months but sometimes longer
- Self-diagnosis and treatment, if you stay in touch with your doctor
- A single dose of antibiotic after sexual intercourse if your infections are related to sexual activity
- Vaginal estrogen therapy if you're postmenopausal

## Severe infection

For a severe UTI, you may need treatment with intravenous antibiotics in a hospital.

# ANTIBIOTIC SENSITIVITY TEST

- *Esch. coli* and other common urinary pathogens develop **multiple drug resistance** and of the transferable variety.
- Antibiotic sensitivity is necessary to administer proper antibiotic.
- Done by **STOKES DISC DIFFUSION** method.



UTH-lab diagnosis      MGMC&H, Jaipur      41