

## Diseases And Conditions



### **Question:** Urinary Tract Infection

**Answer:** A kidney infection is a type of urinary tract infection (UTI). Most kidney infections are caused by bacteria or viruses that first infect your lower urinary tract, usually your bladder. Then, the infection moves upstream to one or both of your kidneys, which are part of the upper urinary tract. In some cases, you can get a kidney infection after surgery if bacteria enter your body during the procedure and travel through your blood to the kidneys. Your body has ways to defend against infections in the urinary tract. For example, urine normally flows one way from your kidneys to your bladder. Viruses or bacteria that enter are flushed out by urinating. This one-way flow of urine usually prevents an infection in your urinary tract. Learn more about your urinary tract and how it works. Sometimes your body's defenses fail, and bacteria or viruses cause a UTI in the bladder. If you have symptoms of a bladder infection, see a health care professional. You may need treatment to prevent the infection from spreading to your kidneys. Kidney infections are often very painful and can cause serious health problems. Kidney infections cause most of the 100,000 hospital visits for UTIs in the United States each year.<sup>1</sup> **Risks** You are more likely to develop a kidney infection if you:

- are a woman.<sup>2</sup>
- have a UTI in the bladder.
- had a UTI during the past 12 months.
- are pregnant. Scientists think that hormonal changes and shifts in the

position of the urinary tract during pregnancy make it easier for bacteria to travel to the kidneys and cause infection.

- have a problem in your urinary tract that blocks or changes the normal flow of urine. The flow of urine may be blocked if you have a defect in the structure of your urinary tract, such as a narrowed urethra, an enlarged prostate, or a kidney stone.
- have vesicoureteral reflux (VUR), which is when urine can back up, or reflux, into one or both kidneys. Health care professionals most commonly diagnose VUR in children.<sup>3</sup>
- have diabetes or problems with your body's immune, or natural defense, system.
- have a spinal cord injury or nerve damage around the bladder.
- have trouble emptying your bladder completely, called urinary retention.

**Complications** In rare cases, kidney infections may cause:

- high blood pressure
- kidney failure
- permanent kidney scars, called renal scarring, which can lead to chronic kidney disease

Your chance of a complication is slightly greater if you have:

- kidney disease from other causes
- a problem with the structure of your urinary tract
- repeated episodes of kidney infection

Complications from a kidney infection are rare if a health care professional prescribes antibiotics to treat your infection. **Symptoms & Causes** Symptoms of kidney infections vary by age. Symptoms may include:

- chills
- fever
- pain in your back, side, or groin
- nausea
- vomiting
- cloudy, dark, bloody, or foul-smelling urine
- frequent, painful urination

A child younger than 2 years old with a kidney infection may only have a high fever. An adult older than age 65 with a kidney infection may have none of the typical symptoms. An older person may only have problems with thinking, such as:

- confusion
- hallucinations
- jumbled speech

**Seek Care Right Away** Seek care right away if you have kidney infection symptoms. A kidney infection can sometimes lead to a dangerous condition called sepsis, which can be life threatening. Symptoms of sepsis include fever, chills, rapid breathing and heart rate, rash, and confusion. A kidney infection that becomes chronic, or long lasting, can cause permanent damage to your kidneys.

**Causes** Kidney infections are caused by bacteria or viruses. Scientists believe that most kidney infections start as a bladder infection that moves upstream to infect one or both of your kidneys. Most often, the infection is caused by bacteria that normally live in your bowel. The urinary tract has several ways to prevent infection from moving up the urinary tract. For example, urination most often flushes out bacteria before it reaches the bladder. Sometimes your body can't fight the bacteria and the bacteria cause a UTI. If you don't get medical treatment to stop the infection, the bacteria may infect your kidneys. In some cases, your blood can carry bacteria or viruses from another part of your body to your kidneys.

**Diagnosis** Health care professionals use your medical history, a physical exam, and tests to diagnose a kidney infection. A health care professional will ask if you have a history of health conditions that make you more likely to develop a kidney infection. During a physical exam, the health care professional will ask you about your symptoms. If you are a man and the health care professional suspects you have a kidney infection, he or she may perform a digital rectal examination (DRE). During a DRE, the health care professional has you bend over a table or lie on your side while holding your knees close to your chest. After putting on a glove, the health care professional slides a lubricated finger into your anus to check for a swollen or enlarged prostate blocking the neck of your bladder. **Lab tests**

- For a urinalysis, you will collect a urine sample in a special container at a doctor's office or at a lab. A health care professional will look at the sample under a microscope for bacteria and white blood cells, which the body produces to fight infection. Bacteria also can

be found in the urine of healthy people, so a kidney infection is diagnosed based both on your symptoms and a lab test.

- **Urine culture.** A health care professional may culture your urine to find out what type of bacteria is causing the infection. A health care professional can see how the bacteria have multiplied, usually in 1 to 3 days, and can then determine the best treatment.

**Imaging tests** A health care professional may use imaging tests, such as a

computed tomography (CT) scan, magnetic resonance imaging (MRI), or ultrasound, to help diagnose a kidney infection. A technician performs these tests in an outpatient center or a hospital. A technician may perform an ultrasound in a doctor's office as well. A radiologist reads and reports on the images. You don't need anesthesia for these tests. Read more about imaging tests for your urinary tract. **Treatment** If you have a kidney infection, a health care professional will prescribe antibiotics. Even before your test results are in, the health care professional may prescribe an antibiotic that fights the most common types of bacteria. Although you may feel relief from your symptoms, make sure to take the entire antibiotic treatment that your health care professional prescribes. Once your lab results are in, the health care professional may switch the antibiotic to one that better treats the type of infection you have. You may take these antibiotics by mouth, through a vein in your arm, called by IV, or both. If you are very sick from your kidney infection, you may go to a hospital for bed rest. A health care professional may give you fluids through an IV. If something such as a kidney stone or an enlarged prostate is blocking your urinary tract, a doctor can sometimes treat the problem with surgery or another procedure. If you recently had a kidney infection, the health care professional will often repeat urine cultures after your treatment ends to make sure your infection has completely gone away and has not come back. If a repeat test shows infection, you may take another round of antibiotics. If your infection comes back again, he or she may prescribe antibiotics for a longer time period. If your health care professional prescribes antibiotics, take all of the antibiotics as prescribed and follow the advice of the health care professional. Even if you start to feel better, you should finish all of your medicine. **Prevention** Many kidney infections start as a bladder infection, so preventing bladder infections may help prevent kidney infections. Scientists are still trying to understand the best ways to prevent bladder infections, but these small changes in your daily habits may help:

- **Drink lots of liquid, especially water** - Liquids can help flush bacteria from the urinary system. Water is best. Most healthy people should try to drink six to eight, 8-ounce glasses of liquid each day. If you need to drink less water because of other health conditions, such as bladder control problems, kidney failure or heart disease, ask your health care provider how much liquid is healthy for you.
- **Wipe from front to back after using the toilet** - Women should wipe from front to back to keep bacteria from getting into the urethra. This step is most important after a bowel movement.
- **Urinate often and when the urge arises** - Try to urinate at least every 3 to 4 hours. Bacteria are more likely to grow in the bladder when urine stays in the bladder too long.
- **Urinate after sex** - Both women and men should urinate shortly after sex to flush away bacteria that may have entered the urethra during sex.

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Source: <https://www.niddk.nih.gov/health-information/urologic-diseases/bladder-infection-uti-in-adults>