

Indian Academy of Pediatrics (IAP)



GUIDELINES FOR PARENTS

Care of a Child with Recurrent Urinary Tract Infection

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10 FAQs on CARE OF A CHILD WITH RECURRENT URINARY TRACT INFECTION

1. What is urinary tract infection (UTI) and what is recurrent UTI?
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Under the Auspices of the IAP Action Plan 2020–2021

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Care of a Child with Recurrent Urinary Tract Infection

Q1

What is urinary tract infection (UTI), and what is recurrent UTI?

The urinary tract makes and stores urine and is made up of the kidneys, ureters, bladder, and urethra (**Fig. 1**). The term “urinary tract infection” or “UTI” is used when a child has typical symptoms and urine culture shows significant growth of germs (bacteria), usually of a single type. The germs enter into urinary tract and kidneys from the skin around the rectum and genitals or through the bloodstream from other parts of the body. UTIs are more common in girls than in boys. A girl’s urethra is short so bacteria can easily get into the bladder.

We use the term “recurrent UTI” when a child has suffered from more than one episode of UTI. Kids with UTIs need to see a doctor as these infections will not get better on their own and to reduce risk of complications.

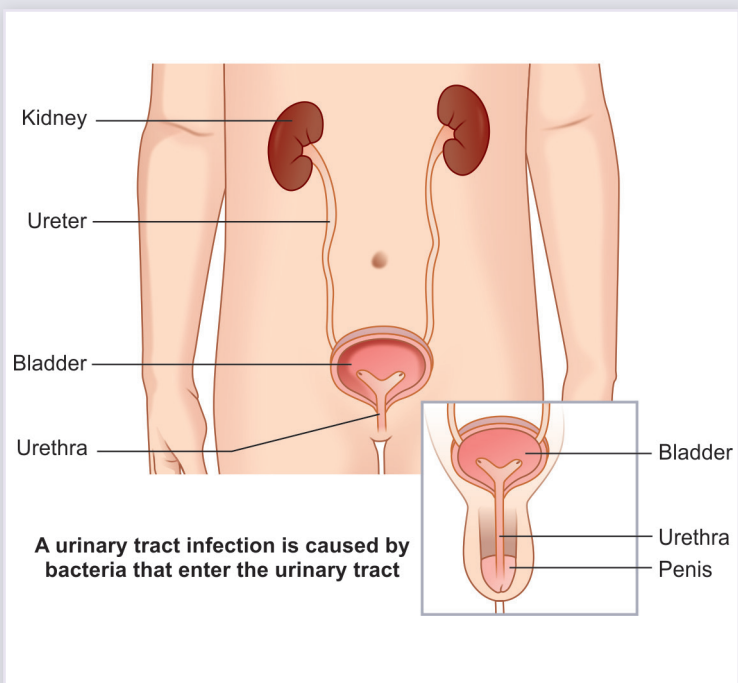


Fig. 1: Kidney and urinary tract.

Q2

How do I know if my child has urinary tract infection?

Most UTIs happen in the lower part of the urinary tract— infection of bladder (organ which stores urine), i.e., *cystitis* or the urethra (tube that carries urine from the bladder out of the body), i.e., *urethritis*; especially in young children, it may also travel up the draining tubes (ureters) to involve the kidneys (*pyelonephritis*).

In infants and young children, it can be difficult to tell whether child has a UTI, as the symptoms can be vague and young children cannot easily communicate how they feel.

Typical symptoms of UTI are as follows:

- Fever usually high grade 101°F or 38.3°C (a young child with a high fever and no other symptoms has a 1 in 20 chance of having a UTI)
- Pain or a burning sensation when passing urine (in infants and young children excessive crying while passing urine)
- Increased urge or need to urinate frequently (though only a very small amount of urine may be passed); waking up at night a lot to go to the bathroom
- Wetting themselves or wetting the bed in a child who had normal toilet habits previously
- Stomach pain especially in lower part of tummy
- Urine which is foul smelling and cloudy or has blood
- Distressing and nonspecific problems such as unusual and persistent irritability, vomiting, loose motions, poor feeding, weight gain and jaundice (yellowing of skin and white of eyes) in infants and very young children

“*Pyelonephritis*” is usually more serious. It causes many of symptoms listed above, but child often looks sicker and more likely to have high-grade fever (sometimes with shaking chills), pain in the side or back, severe tiredness, or vomiting.

Q3

Is my child likely to get recurrent UTI?

The urinary tract of healthy kids have multiple defense mechanisms against UTI which includes smooth flow of urine from the kidneys into the urinary bladder and regular emptying of the urinary bladder.

Children with following problems have more chances of suffering from recurrent UTIs:

- Abnormal development of kidney and urinary tract; blockage in the form of narrowing anywhere along the urinary tract or the presence of a structure in urethra that blocks the urine in male children (posterior urethral valve); abnormal development of bladder; or damage to nerves controlling bladder storage and emptying (neurogenic bladder).
- Abnormal backflow (reflux) of urine from the bladder up the ureters and toward the kidneys. This is known as vesicoureteral reflux (VUR), and many kids with a UTI are found to have it.
- Poor toilet habits and local hygiene.
- Bladder-bowel dysfunction (BBD) is a set of conditions in which the emptying of bladder and stool follow an abnormal pattern even though there is no problem with these organs or their nerve supply. The child “holds on” to their urine, even though they have the urge to pass urine. There may also be “constipation” which can sometimes cause part of the large intestine to swell and put pressure on the bladder and prevent it emptying normally.

Q4

How will I know that my child has UTI?

It is important to catch UTI early as undiagnosed or untreated UTIs can lead to kidney damage. For diagnosing UTI, doctors will ask questions about signs and symptoms as described above and family history of urinary tract problems. The pediatricians will also conduct a physical examination to assess severity of infections as well as identify probable cause and take a sample of urine for testing.

Analysis of urine, a test that microscopically checks the urine for germs or pus and a *Urine Culture* which attempts to grow and identify bacteria in a laboratory helps in diagnosis of UTI.

Instructions for Collecting a Urine Sample

- Collecting a urine sample from a child can sometimes be difficult, especially in babies and young children. How a sample is taken depends on a child's age (**Fig. 2**).
- In toilet-trained children, urine sample can be collected by making child directly pass urine into a sterile bottle/container provided by the laboratory. Make sure nothing touches the open rim of the bottle, as this could affect the result. To encourage infant to pass urine gently rub your child's lower tummy for a few minutes using a clean piece of gauze soaked in cold water.
- In younger children, collection of urine by holding the bottle in the stream of urine when the child is passing urine may be unsuccessful or not possible. In such cases, a "clean" urine sample can be obtained by inserting a small, thin plastic tube called a catheter into the child's urethra up to the bladder.



Fig. 2: Collecting a "clean" urine sample in a young child.

Q5

When and how the UTI is to be treated?

UTI is treated with appropriate antibiotic in correct dose. Usually, treatment with an antibiotic is started once sample for urine testing is obtained. Symptoms should improve within 2–3 days after antibiotics are started. Oral antibiotic therapy is usually the choice. Hospitalization and intravenous antibiotics are used when:

- Child has severe infection with vomiting, poor feeding, looking ill or kidney infection is likely.
 - Young infant (<6 months old)
 - No improvement in kid's symptoms after 48–72 hours of treatment with oral antibiotics.
 - Bacteria from the infected urinary tract may have spread to the blood (urosepsis).
- Complete the course of medicine as advised by doctor, even if your child feels better. After completing antibiotics course, your doctor may repeat the urine analysis to confirm that the infection is gone. UTIs can return or spread if not fully treated.

The *supportive treatment* includes ensuring that fluid intake is adequate and fever is treated with paracetamol in appropriate dose. There is no need to use medicines that make the urine alkaline.

See your doctor again immediately or call your doctor if your child:

- Has been diagnosed with a UTI, and
 - Is not improving after 2 days of taking antibiotics.
 - Is having trouble taking the antibiotics or is vomiting.
 - Is not drinking enough fluid.
 - Develops back pain.
- Any concerns that are worrying you.

Q6

What are the additional tests that the doctors will perform if my child has recurrent UTI?

Your doctors will recommend carrying out kidney and bladder ultrasonography to check for any problems in your child's urinary tract that could have contributed to the infection. In addition to ultrasonography, additional test may be advised by doctor to make sure that the urinary tract is functioning normally and is free of any damage. These tests include following:

- *Micturating cystourethrography (MCU)*: A special X-ray procedure for evaluation of VUR and abnormalities in bladder. In this process, a tube is placed inside the urinary bladder, the bladder is filled with a contrast material that is seen on X-ray and the child is allowed to pass urine. An X-ray image is obtained, while the child is passing urine to look for backflow of the contrast into the ureters as well to check for any block in urethra in male children.
- *Nuclear scans*: Radioactive material is injected into a vein to see if the kidneys are normal. There are many kinds of nuclear scans, each giving different information about the kidneys and bladder. The radioactive material gives no more radiation than any other kind of X-ray.

The actual protocol for many of the procedures mentioned above can vary from center to center. It is best that you discuss this evaluation with your doctor.

Q7

What can I do to prevent recurrent UTI in my child?

Some important steps that you can do as a parent are (Fig. 3):

- Ensure that your child drinks enough of water.
- Encourage your child to go to the toilet regularly—every 3–4 hours during the day and before going to bed.
- Advise your child not to avoid using toilet or postpone passing urine. Even if toilets are not clean, it is advisable to use them to prevent stagnation of urine. Dirty toilets do not cause UTI.
- Teach your daughter to keep her private parts clean—cleaning should be from front to back in order to prevent contamination
- Prevent constipation by ensuring adequate fiber in the diet, adequate fluids, regular exercise, and good toileting habits.
- Take a consultation with your doctor regarding BBD if your child has symptoms such as wetting of undergarments in the day even after toilet training, needing to go to the toilet repeatedly and/or with urgency, pressing the groin area by the hands or feet to delay going to the toilet, pain, or interrupted flow while passing urine.
- If doctor has prescribed a single dose of antibiotic everyday to prevent UTI, do not miss the dose.
- Use diapers of good quality (clean cotton nappies could be used instead) and change frequently.

How to treat and prevent Urinary Tract Infection (UTI) in children



Fig. 3: Preventing urinary tract infection (UTI) in children.

Q8

Does my son need to be circumcised if he has recurrent UTI?

Boys who have been circumcised in early infancy have a lower incidence of UTI. However, it is not clear whether this benefit outweighs the risks of the procedure in older boys after recurrent UTI. It may prevent UTI in children with recurrent UTI and VUR. It is suggested that you discuss this with your doctor.

Q9

Does cranberry juice or probiotics prevent recurrent UTI?

There is emerging evidence that the use of cranberry products in the correct doses can prevent UTI in children with a normal urinary tract. However, cranberry products are not easily available. It is best if you discuss this with your doctor.

There is no evidence as of now to favor the use of probiotics to prevent UTI.

Q10

Will my child have kidney damage or kidney failure because of recurrent UTI? What follow-up is required with the doctor?

The chances of kidney failure because of recurrent UTI is very low. However, recurrent UTI can injure and cause scars in the kidney. These scars can lead to high blood pressure and the loss of protein in the urine later. Hence, it is recommended that a child with recurrent UTI follow-up with his/her doctor to screen for high BP, kidney function and proteinuria (loss of protein in the urine) using appropriate testing. In addition, the follow-up may be required for treatment of BBD if detected and with the surgeon if any operation on the urinary tract has been performed.