

Urinary Tract Infections

in Childhood

This sheet deals with urinary tract infections (UTIs) that occur in children after toilet training. For UTIs in young children before toilet training see "Urinary tract infection in Infants" page.

What is it?

A urinary tract infection is an infection occurring within the urinary tract. It may be a lower urinary tract infection ('cystitis' or bladder infection), or an upper urinary tract infection ('pyelonephritis' or infection in the kidney). The bacteria that cause UTIs nearly always come from the bowel.

Background

The kidneys make urine, which passes down the ureters into the bladder where it is stored until an appropriate time to void (wee). This is normally a one-way system, where urine is prevented from returning to the upper tracts by a valve-like mechanism in the connection between the ureter and the bladder.

Normal urine is both 'sterile' (does not contain bacteria) and 'acellular' (does not contain red or white blood cells).

Who?

After infancy, girls are affected more often than boys by urinary tract infection. By the age of 6 years 2% of boys, and 7% of girls will have had a urinary tract infection.

Urinary tract infections are the second most common form of infections in children after upper respiratory tract infections. Even though UTIs are common, they are *not* 'normal'.

How does it present? How is it diagnosed?

The symptoms of a urinary tract infection will depend on the age of the child. They are non-specific in a younger child, and become more specific in older children.

The symptoms of a bladder infection may include:

- needing to urinate more often (frequency)
- pain or burning with urination (dysuria)
- new wetting during the day and at night
- foul smelling urine
- abdominal pain

The symptoms of a kidney infection include:

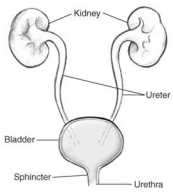
- back pain, usually on one side
- vomiting
- fever > 38.5 degrees

Assessment

The doctor will ask you about any antenatal tests that you had done (tests in pregnancy with this child), and whether any abnormalities of the bladder or kidneys were noted. Any other conditions that your child is known to have, and any family history of urinary tract anomalies are important. They will also ask about any investigations or medications your child has had in the past, and for any history of constipation or other toileting problems.

The doctors will need a urine specimen to confirm the diagnosis. A clean catch specimen is the best sample. Sometimes, a catheter may need to be placed to take a specimen.

A bag specimen or collection from the potty *cannot* be used to diagnose an infection. Such specimens are contaminated by bacteria from skin or potty surfaces. The urine sample is tested with a dipstick and sent for formal microbiology and culture.



Urinary Tract Infections

in Childhood

What are the treatment options?

The initial urinary tract infection is treated with antibiotics.

If your child is very unwell, the antibiotics will be started as soon as the sample of urine has been taken. These may need to be given by injection.

If your child is not especially unwell, antibiotics may be delayed until the result of the urine culture is known.

Oral antibiotics are usually given for between 5 and 10 days, depending on the severity of infection and response to treatment.

If your child cannot tolerate oral antibiotics due to vomiting, antibiotics by injection may need to be continued, and the child will need admission to hospital.

What happens next?

Most UTIs with common organisms respond promptly to oral antibiotics.

After the infection has been treated, a repeat urine sample needs to be tested to ensure the treatment has been effective at clearing the UTI.

Most urinary tract infections in childhood are related to abnormal bladder function or toileting behaviour (see Bladder Dysfunction information sheet). Focus needs to be given to risk factors for this and further UTIs, such as infrequent voiding or constipation. A voiding diary can be a very useful tool for assessing toileting behaviours (see Voiding Diary instruction sheet)

What further tests are performed?

Ultrasound is the most appropriate first-line imaging investigation for UTIs. It does not involve any radiation and is not invasive.

An urinary tract ultrasound is able to look at the size and shape of the kidneys, and show if there is any distension of the drainage systems. It can also provide information on the size and shape of the bladder, bladder wall thickness and emptying.

Renal tract ultrasound may not be needed after a single, treated, resolved infection, but should be performed if:

- there has been more than one confirmed UTI
- UTI with unusual or uncommon organism
- symptoms have not improved after treatment
- there is persistent bacteriuria (bacteria in the urine after treatment)
- there is history of antenatal abnormality

What is the follow-up?

Referral to a paediatrician is appropriate if there:

- has been more than one infection
- is failure to clear the bacteria with treatment
- is an abnormality on ultrasound
- are other bladder problems such as wetting