

Urinary tract infection (UTI)



infoKID

Information for parents and carers about children's kidney conditions

This infoKID topic is for parents and carers about children's kidney conditions. Visit www.infoKID.org.uk to find more topics about conditions, tests & diagnosis, treatments and supporting information.

Each topic starts with an overview followed by several sections with more information.

» [Links to sections](#) in topic | [Other topics](#) available on website

A urinary tract infection (UTI) is a common infection that causes illness in babies and children. It happens when germs get into the urine (wee) and travel into the urinary tract. Some babies and children with UTIs may become irritable, have a fever, have pain when they wee, feel sick or be sick.

The information covers:

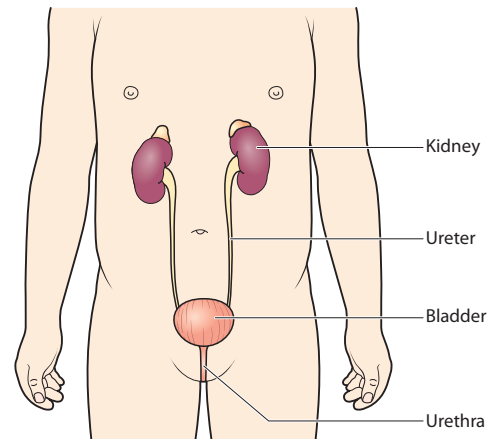
- what a UTI is, and what may cause it
- how your doctor can find out whether your child has a UTI
- treatment that your child may need
- how to help protect your child against UTI
- monitoring UTI, especially if it keeps coming back or the infection passes to the kidneys

Overview

About the urinary system

The **urinary system** gets rid of things that the body no longer needs, so that we can grow and stay healthy.

- The **kidneys** are bean-shaped organs. They filter blood to remove extra water and waste in urine (wee). Most of us have two kidneys. They are at the back on either side of our spine (backbone), near the bottom edge of our ribs.
- The two **ureters** are long tubes that carry urine from the kidneys to the bladder.
- The **bladder** is a bag that stores urine until we are ready to urinate (have a wee). It sits low down in the tummy area.
- The **urethra** is a tube that carries urine from the bladder to the outside of the body.



Symptoms and signs

- Babies and young children with a UTI may have fever (temperature over 38°C), be sick (vomit), feel tired or irritable and not feed well.
- Older children with a UTI may have pain or a stinging/burning feeling when passing urine (**dysuria**), may need to go to the toilet more often than usual (**frequency**), or hold on because it is painful to go, or may wet themselves more often than usual.

→ If you think that your child may have a UTI, contact your doctor. If you cannot reach your doctor straight away, contact 111 or NHS Direct or your local out-of-hours GP service.

» [More about symptoms and signs](#)

Causes

A UTI happens when bacteria (germs) get into the urine and travel into the urinary tract. This causes inflammation (swelling) in part of the urinary tract.

Types of UTI

- A **lower UTI** is an infection in the lower parts of the urinary tract. This is usually in the bladder, and is called **cystitis**.
- An **upper UTI** is an infection in the upper parts of the urinary tract, especially the kidneys. This is called **pyelonephritis**.

How common are UTIs in children?

UTI is a common infection in babies and children. It is more common in girls. It is estimated that:

- one out of 10 girls will have had a UTI by the age of 16 years
- one out of 30 boys will have had a UTI by the age of 16 years
- about one out of 50 babies and young children will have had a UTI by the age of 2 years.

Recurrent UTIs

Some children have **recurrent UTIs**, which keep coming back even after proper treatment.

These children often have other problems with their urinary system, such as **vesicoureteral reflux (VUR)**. As children with VUR urinate, some urine refluxes (goes back up) towards the kidneys. This makes it easier for germs that cause UTI to travel all the way up to the kidneys, where they cause a more serious infection and illness.

» [More about causes](#)

Tests and diagnosis

If you think that your child may have a UTI, take him or her to your doctor. Your doctor can find out whether your child has a UTI by doing a urine test and finding out about their symptoms.

» [More about tests and diagnosis](#)

Treatment

Your child's UTI will need to be treated with **antibiotics**, medicines that kill bacteria.

Early treatment may reduce the likelihood of your child becoming acutely unwell and needing to be admitted to hospital.

» [More about treatment](#)

Prevention

There are some things that you and your child can do that may help reduce the frequency of UTIs:

- encourage your child to go to the toilet regularly – every 3 to 4 hours during the day, before having a bath and before going to bed
- change your baby's nappies regularly
- help your child avoid constipation – speak with your doctor or nurse for more information
- make sure your child drinks plenty of fluids, especially water.

» [More about prevention](#)

About the future

Children who are treated for UTIs with antibiotics usually get better. In most children, the UTI does not keep coming back, and there is very little risk of long-term problems.

A few children need to have follow-up appointments or further treatment.

» [More information about the future](#)

Risk factors

If your child has any of the following, he or she may be at a higher risk for getting one or more UTIs. Tell your doctor if your child has:

- any problems when passing urine, or a poor urine flow
- fever (temperature over 38°C) that keeps coming back
- abnormalities of one or both kidneys found before or at birth
- a family history of **vesicoureteral reflux** or kidney disease
- constipation (difficulties doing a poo)
- history of **bladder dysfunction** (the bladder does not completely empty when passing urine), such as neuropathic bladder
- an injury in the spine (backbone)
- poor growth
- high blood pressure (**hypertension**).

Symptoms and signs

Urinary tract infection (UTI) is a common bacterial infection that causes illness in babies and children. It may be difficult to recognise UTI because the symptoms (what your child feels or complains about) and signs are non-specific (they could also be seen in a lot of other health conditions), especially in babies and children under 3 years old.

Common symptoms and signs in babies and young children

- Fever (temperature over 38°C)
- Being sick (vomiting)
- Feeling tired (lethargy)
- Being irritable
- Poor feeding

Common symptoms and signs in older children

- Pain or a stinging/burning feeling when passing urine (dysuria)
- Going to the toilet more often than usual (frequency) or holding on because it is painful to go
- Wetting the bed more often than usual, or wetting themselves because they cannot get to the toilet in time

Symptoms and signs of febrile UTI and kidney infection

If your child has a UTI with a fever (febrile UTI) or kidney infection, he or she may have some of the symptoms listed above, as well as some of the following.

- Fever (temperature over 38°C) that is constantly spiking (keeps going up) in spite of giving medicines such as paracetamol (including Calpol®)
- Shaking or shivering (rigor), sometimes with a fever
- Signs of dehydration (not enough water in the body) – children may be thirstier than usual, and babies may have a soft sunken spot (fontanelle) on their head
- Pain in the back
- Blood in the urine (**haematuria**) – sometimes the urine is coloured red or dark brown
- Cloudy urine
- Yellowing of the skin (**jaundice**) in babies – this is a very rare symptom

→ If you think that your child may have a UTI, contact your doctor. If you cannot reach your doctor straight away, contact 111 or NHS Direct or your local out-of-hours GP service.

Tests and diagnosis

It is important to find out quickly whether your child has a UTI, so it can be treated.

Examination

Your doctor will talk to you or your child about your child's symptoms and examine him or her.

Risk factors

Children with abnormal urinary tracts are at higher risk of getting UTIs. Tell your doctor if your child has:

- any problems when passing urine, or a poor urine flow
- fever (temperature over 38°C) that keeps coming back
- abnormalities of one or both kidneys found before or at birth
- a family history of **vesicoureteral reflux** or kidney disease
- constipation (difficulties doing a poo)
- history of **bladder dysfunction** (the bladder does not completely empty when passing urine), such as neuropathic bladder
- an injury in the spine (backbone)

- poor growth
- high blood pressure (**hypertension**).

Urine tests

Getting a urine sample

Your child's doctor or nurse will give you a **sterile** (completely clean) container to collect a small amount of urine. You may need to do this at the clinic, or take the container home and bring it back.

When getting a urine sample, it is important to make sure it is not **contaminated** - this means that there is no dirt or bacteria (germs) in the urine sample.

Testing urine

Your doctor or nurse will dip a piece of paper called a dipstick into the urine. The dipstick is a strip with chemical pads that change colour depending on what substances are in the urine. The sample may also be sent to a laboratory for more accurate tests.

» **More about urine tests on the next page**

Getting a urine sample from a child

To help make sure the urine sample does not have any bacteria that may be on your or your child's skin, you will need to get a mid-stream sample. This is from the middle part of the urine flow.

- Your child should start weeing into a toilet bowl or potty.
- After one or two seconds, catch some of the urine directly into the container.
- Take the container away before your child stops urinating.
- Screw the lid on tight.

Getting a urine sample from a teenage girl

Teenage girls need to be especially careful when getting a mid-stream sample.

- Your daughter should wash her hands and her genital area, and dry them with a clean towel.
- She should sit on the toilet with her legs wide apart.
- Before weeing, she should separate her labia – this is the skin around her genital area.

Getting a urine sample from a baby or young child

The best way to get a urine sample is usually the clean catch method. The urine is less likely to be contaminated than with other methods. You will need to wait up to an hour for your child to wee and catch it in a container. Good times are after a bottle feed, during a nappy change, or before a bath.

Examination of the urine

Your doctor or nurse can examine the urine to check its colour, smell and whether it is cloudy or thick.

Dipstick test

The dipstick is treated with chemicals that change colour if there are certain substances in the urine. When bacteria in the urine break down, they produce a chemical called nitrite. This reacts with the chemicals on the dipstick and causes it to change colour.

The dipstick can also show whether there are white blood cells in your child's urine. If these are found, it also suggests there may be an infection. The dipstick does not identify which bacteria are causing your child's UTI.

Urine culture

If the dipstick test shows signs of infection, the urine sample will be sent to a laboratory. A urine culture detects if there are bacteria in the urine, and how much and which type or types of bacteria. Normally one type of bacteria causes the infection. If there is more than one type of bacteria, the sample may be contaminated, and you will need to get a new sample.

- If there is no infection, the urine culture is said to be negative.
- If there is infection, the urine culture is said to be positive.

This will confirm whether there is an infection and find out which germs are causing it. This will allow your doctor to decide the best treatment for your child.

The results from this test may take 2 or more days to come back to the doctor.

Urine microscopy

In some hospitals the urine is examined under a microscope. This gives information about germs in the urine.

» [Read our Urine tests topic on www.infoKID.org.uk](http://www.infoKID.org.uk)

Other tests

Some children will need more tests to help find out what is causing the UTI, if they have recurrent UTIs (that keep coming back), or if the infection has passed to your child's kidneys.

Imaging tests

Some children need imaging tests. These use special scanners that get images (pictures) of the inside of their body.

- **Ultrasound scan** – looks at the shape and size of the kidneys and other parts of the urinary system. A small handheld device is moved around your child's skin and uses sound waves to create an image on a screen.
- **MCUG** (sometimes called a VCUG) – checks for vesicoureteral reflux, when urine goes back up the

wrong way. A special dye is put into the bladder using a long thin tube through the urethra. A series of X-ray images are taken while your child passes urine.

- **MAG3** – shows whether blood is going in and of the kidneys, and whether your child is passing urine normally. A chemical that gives out a small amount of radiation (energy) is injected into one of your child's blood vessels, and a special camera takes pictures.
- **DMSA** – looks at the kidneys to check whether it is normal or has any damage. A chemical that gives out a small amount of radiation (energy) is injected into one of your child's blood vessels, and a special camera takes pictures.

Blood tests

Your doctor may arrange a blood test if he or she is concerned about your child's health, for example if your child is very dehydrated (when there is not enough water

in the body), or if there may be a blockage or reflux. The blood test results can give the doctor more information, including the kidney function (how well the kidneys are working) and whether your child has had a recent infection.

A small amount of blood is taken from a vein, with a needle and syringe. Special gel or cream can be used to help your child stop feeling any pain.

» [Read our Blood tests topic on www.infoKID.org.uk](http://www.infoKID.org.uk)

Questions to ask the doctor or nurse

- What other tests will my child need?
- How do I help prepare my child for the tests? What can I do to make him or her more comfortable?
- Why does my child have a UTI?
- How will you know if my child has an underlying condition that is causing the UTI? How can I get more information about that condition?

Treatment

Your child will need to take antibiotic medicines to treat the UTI – these are usually started as soon as possible. Your child should start to feel better within 1 to 2 days.

Some children may benefit from taking a small amount of antibiotics every day to help prevent future UTIs.

Where will my child be treated?

Most children with UTIs can be treated by their family doctor, or general practitioner (GP).

Referral to specialist services

Depending on the results of the tests or whether your child has recurrent UTIs (that keep coming back), your doctor may refer your child to a **paediatrician**, a children's doctor, or a **paediatric nephrologist**, a doctor who treats children with kidney problems.

Hospital treatment

A few children need to go to hospital for treatment. This is especially the case for:

- babies under 3 months with serious UTI
- children with, or at risk of, a kidney infection (pyelonephritis).

Antibiotics to treat UTI

UTIs are usually caused by bacteria. Your child will be prescribed an **antibiotic**, a medicine that kills the bacteria. Your doctor will decide which antibiotic is best for your child.

Your doctor will usually give you a prescription so your child can start taking the medicine straight away and continue it at home. Antibiotics are normally given by mouth – as liquid medicine, tablets or capsules.

Your child will normally need to take the medicine for a set number of days, depending on his or her symptoms when they first see the doctor – this is usually between three and 10 days.

» [More about antibiotics on www.medicinesforchildren.org.uk](http://www.medicinesforchildren.org.uk)

→ **It is important that you follow your doctor's instructions about how to give the prescribed antibiotic and that your child finishes the course of antibiotic even if they seem better. This is to make sure that all the bacteria are killed.**

Changing antibiotics

Your doctor will want to start the antibiotic treatment straight away. However, it may take a few days to get the results of the urine culture, which will find out which bacteria are causing the infection. After getting the results of the urine culture, your doctor may want to give your child a different antibiotic if he or she thinks it will work better.

How long will it take for my child to get better?

Your child should start to feel better 1 or 2 days after starting treatment with antibiotics. He or she should continue taking the antibiotics until the course is completed.

When your child starts to feel better, he or she can go to school or nursery. You cannot 'catch' UTIs, so your child will not be infectious.

If your child does **not** start to get better after 1 or 2 days, contact your doctor for advice.

Other medicines

You can give your child paracetamol to help with the pain and reduce any fever – including when he or she is taking antibiotics. You can get this medicine from your pharmacist in forms that are best for your child. Make sure you follow the instructions given with the medicine.

If you know that your child has a problem with his or her kidneys, or if he or she has asthma, **do not** give ibuprofen unless your doctor has told you to.

» [More about paracetamol on www.medicinesforchildren.org.uk](http://www.medicinesforchildren.org.uk)

Drinking fluids

Your child should drink plenty of water and other fluids such as juice. This will help make sure he or she does not become **dehydrated** (not enough water in the body).

Antibiotics to prevent future UTIs

Some children may benefit from a very small amount of antibiotic to be taken every night. This is called a **prophylactic antibiotic** – prophylactic means preventing. Taking a small dose of prophylactic antibiotic will help to prevent further infections. Because the dose is small, there is little chance of developing antibiotic resistance.

Your doctor may prescribe prophylactic antibiotic to your child if he or she has:

- recurrent UTIs (that keep coming back)
- structural problems of the urinary system – including **vesicoureteral reflux** or other types of reflux
- other problems weeing, such as not being able to empty the bladder.

If you think your child has a UTI

If your child is taking a prophylactic antibiotic and you think that he or she has a UTI, follow these steps:

- *do not* give more of the prophylactic antibiotic or any other antibiotic
- contact your doctor – you will need to get another urine sample to be tested
- if your child does have a UTI, your doctor will prescribe a suitable antibiotic
- you may wish to write down the date of the UTI, the urine culture results and the treatment.

Questions to ask the doctor or nurse

- What treatment will my child need?
- How will the treatment help my child?
- If the first treatment does not work in my child, what happens next?

Prevention

There are some things that you and your child can do help reduce the frequency of UTIs.

Going to the toilet

- Encourage your child to go to the toilet regularly. Children should wee every 3 to 4 hours during the day, before having a bath and before going to bed. Your child should not 'hold on'. In some children, this can increase the risk of getting UTIs.
- Change your baby's nappies regularly.
- Avoid constipation. If your child has difficulty doing a poo, speak with your doctor or pharmacist about how to help your child manage this.
- If your child has **bladder dysfunction** (the bladder does not completely empty when passing urine), your doctor or nurse may suggest **double voiding**. This means your child goes for a wee twice to help empty his or her bladder. Your child should go for a wee standing up (including girls) and then try again after a few moments, while sitting down.

Eating and drinking

- Make sure your child drinks plenty of fluids, especially water.
- Make sure your child eats lots of fruit and vegetables, is physically active and gets regular sleep. A fit and healthy child is better able to fight off infections.

Outside the home

- Talk with other people who look after your child – family members, childminders and teachers at school – to help make sure they give your child regular drinks, encourage him or her to go to the toilet often, and are aware of any medicines that your child is taking to prevent or treat UTIs.

For girls

- After she does a bowel movement (does a poo), make sure she wipes her bottom from the front towards the back. If she wipes her bottom from the back towards the front, any bacteria that is in the bowel can get into the urethra and cause a UTI.

For boys

- Boys have a foreskin, a sleeve of skin that surrounds the head of the penis. Make sure to clean the area that you can easily reach, but do not force it back, as this can cause damage.
- Some boys with recurrent UTIs, especially if they have structural abnormalities of the urinary system, need a circumcision, an operation to remove the foreskin from the penis.

Will my child get better?

Children who are treated for UTIs with antibiotics usually get better. In most children, the UTI does not keep coming back, and there is very little risk of long-term problems.

Kidney infection

In a few children, the infection can travel to the kidneys (**pyelonephritis**). This may cause damage to the kidneys.

Kidney damage

A very small number of children with UTIs that are recurrent (keep coming back) or caused by structural problems in the urinary system, develop scars and long-term damage to their kidneys.

In serious cases, this can lead to:

- **chronic kidney disease (CKD)** – when the kidneys stop working as well as they should – this usually happens slowly, often over many years
- **acute kidney injury (AKI)** – when the kidneys stop working as well as they should over a short period of time; when associated with UTI, the kidney function is normally affected only while they are unwell.

These children will need to go back to the hospital clinic for follow-up appointments and specialist care.

Follow-up

Your child will need to go to follow-up appointments if he or she has:

- recurrent UTIs
- structural problems in his or her urinary system, such as reflux or a bladder that does not empty properly
- abnormal results on the imaging tests – some children may need surgery to treat these problems.

At these appointments, your child may have:

- their height and weight checked
- a physical examination
- **urine tests** – to check for blood, protein and other substances in his or her urine
- **blood tests** – to measure his or her kidney function
- **blood pressure** measurements.

Impact on your child and family

This may be a difficult and stressful experience for your child and the whole family, including other children.

→ **If you have any concerns or need additional support, speak with your doctor or nurse.**

Further information

This is the end of the information on urinary tract infections. If you would like to read more about kidney conditions, tests and diagnosis, treatment or supporting information, you can find a list of topics covered on the infoKID website at www.infoKID.org.uk.

Your notes and contact information

www.infoKID.org.uk



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