Urine Infection in Children

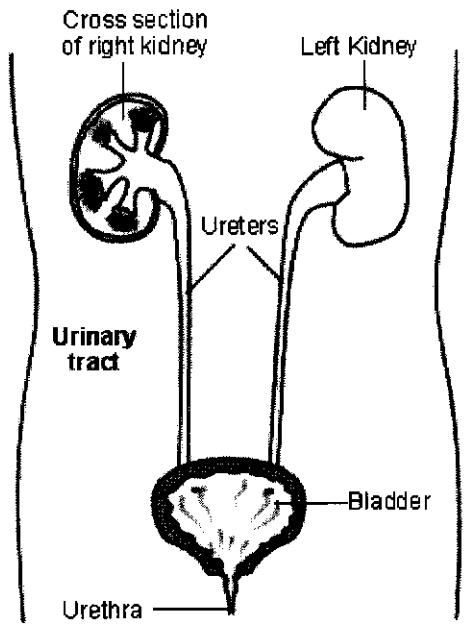
Urine infection in children is common. It can cause various symptoms. A course of antibiotics will usually clear the infection quickly. In most cases, a child with a urine infection will make a full recovery with no ongoing concerns. Following the infection, tests to check on the kidneys and/or bladder are advised in some cases. Your doctor will advise if your child needs these tests. It depends on factors such as the child's age, the severity of the infection, and whether it has happened before.

Understanding the urinary tract

There are two kidneys, one on each side of the abdomen. They make urine which drains down the ureters into the bladder. Urine is stored in the bladder and is passed out through the urethra from time to time when we go to the toilet.

What is a urine infection?

A urine infection is caused by bacteria (germs) that get into the urine. Most urine infections are due to bacteria that normally live in your own bowel. They cause no harm in the bowel but can cause infection if they get into other parts of your body. Some bacteria lie around the anus (back passage) after passing a stool (faeces). These bacteria can sometimes travel to the urethra and into the bladder. Some bacteria thrive in urine and multiply quickly to cause infection.



The infection is commonly just in the bladder ('cystitis'), but may travel higher up to also affect one or both kidneys.

Nearly 1 in 20 boys, and more than 1 in 10 girls, have at least one urine infection by the time they are 16 years old. Children under five years are the most commonly affected.

Some terms used by doctors include:

- Urinary tract infection (UTI) - which means a urine infection somewhere in the urinary tract.
- Lower urinary tract infection - which means the infection is confined to the bladder and urethra. This is much the same as 'cystitis'.
- Upper urinary tract infection - which means the infection affects a kidney and/or ureter.
- Pyelonephritis - this is another term that means infection of a kidney.
- Loin pain - which is a pain in the side of the abdomen, often coming from a kidney.

Does anything increase the risk of developing a urine infection?

In most cases - no

Most urine infections in children are just 'one of those things' and there is no underlying problem to account for it.

In some cases - a 'retention' of urine in the urinary tract may play a part

When we pass urine, the bladder should fully empty. This helps to flush out any bacteria that may have got into the bladder since the last toilet trip. However, various abnormalities of the urinary tract can make the urine stay around in the bladder, ureters or kidney - when it should be travelling down the ureters and emptying completely out of the bladder when going to the toilet. This may allow any bacteria that get there to multiply as urine is a good 'food' for some bacteria. Various situations can cause some 'retention' of urine in the bladder or higher in the urinary tract, which increases the chance of developing a urine infection. The following are the most common:

Constipation

If large hard faeces (stools) collect in the rectum (back passage) they can press on the bladder. The bladder

may then not empty fully when the child passes urine. Treating severe constipation sometimes prevents recurring urine infections.

Dysfunctional elimination syndrome
This is a condition where a young child repeatedly 'holds on' to urine and/or faeces. That is, they regularly do not fully empty their bladder or rectum when they go to the toilet. There is no physical cause for this (that is, no abnormality in the urinary tract or rectum). The reason why this occurs is often unclear. Stress or emotional problems may be the underlying cause.

An abnormality of the urinary tract
Various abnormalities of the urinary tract can cause retention of some urine. The most common condition is called 'vesico-ureteric reflux'. This is a problem at the junction where the ureter enters the bladder. In this condition, urine is passed back (refluxes) up the ureter from the bladder from time to time. This should not happen - the urine should only flow downwards out of the bladder when going to the toilet. This condition makes urine infections more likely. Also, infected urine that refluxes from the bladder back up to the kidneys may cause kidney infection, scarring, and damage. In some cases this leads to severe kidney damage if urine infections recur frequently. Other rare problems that may be found include kidney stones, or congenital abnormalities of parts of the urinary tract.

Neurological (nerve) or spinal cord disorders
Anything that affects the bladder emptying or sensation. These are rare in children.

Other conditions
Other conditions that increase the risk of a urine infection include having diabetes, and a poorly functioning immune system. For example, children having chemotherapy.

What are the symptoms of a urine infection?

Young children, toddlers and babies can have various symptoms which may include one or more of:

- Fever (high temperature)
- Vomiting and/or diarrhoea
- Drowsiness
- Crying, going off feeds and generally unwell
- Appear to be in pain
- Blood in urine (uncommon)
- Jaundice (yellowing of the skin)
- Cloudy or smelly urine

Older children, in addition to one or more of the above symptoms, may also say that they have pain when they pass urine, and pass urine frequently. If a kidney becomes infected they may also have shivers, and complain of abdominal (tummy) pain, back pain, or a pain in a side of the abdomen. Bedwetting in a previously 'dry' child is sometimes due to a urine infection. Just being 'generally unwell' may be due to a urine infection.

Note: a urine infection should be suspected in any child who is unwell or has a fever with no other clear cause. This is why a urine test is commonly done when a child is unwell, as a urine infection is important to diagnose and treat promptly.

How is a urine infection confirmed?

A sample of urine is needed to confirm the diagnosis. Urine normally has no bacteria present, or only very few. A urine infection can be confirmed by urine tests that look for bacteria and/or the effects of infection in the urine.

Ideally, the sample of urine should not come into contact with skin or other materials that may contaminate it with other bacteria. Adults and older children can do this by a 'mid stream' collection of urine. This is not easy to do in young children and babies. The following are ways to get a sample of urine that is not contaminated:

Young children - the usual way is to catch some urine in the specimen bottle whilst in 'full flow'. Just be ready with the open bottle as the child passes urine. (Be careful not to touch the open rim of the bottle with your fingers as this may contaminate the specimen with bacteria from your fingers.)

Babies - one method is to place a specially designed absorbent pad in a nappy (supplied by a doctor). Urine is sucked into a syringe from the wet pad. Another method is to use a plastic bag that sticks onto the skin and collects urine. If no pad or plastic bag is available, the following might work. Take the nappy off about one hour after a feed. Tap gently with a finger (about once a second) just above the pubic bone. (This is the bone at the bottom of the abdomen above the genitals.) Have ready the open bottle. Quite often, within about five minutes, the baby will pass urine. Try and catch some in the bottle.

If you collect a sample at home, take it to the doctor or clinic as soon as possible after collection. If there is a delay, store the urine sample in the fridge.

What is the treatment of a urine infection in children?

A course of an antibiotic will usually clear the infection within a few days. Give lots to drink to prevent dehydration. Also, give paracetamol to ease any pains and fever (high temperature). Sometimes, for very young babies or for severe infections, antibiotics are given directly into a vein through a 'drip'.

What is the outlook (prognosis)?

In most cases, the outlook is excellent. Once a urine infection is diagnosed and treated, the infection usually clears away and the child recovers fully. In many cases, a urine infection is a 'one-off' event. However, some children have more than one urine infection and some develop several throughout their childhood ('recurring UTIs').

In some cases, an infection can be severe, particularly if a kidney becomes badly infected. This can sometimes be serious, even life threatening in a minority of cases if treatment is delayed. A bad infection, or repeated infections, of a kidney may also do some permanent damage to the kidney. This could lead to kidney problems or high blood pressure later in life.

When are further tests advised?

Urine infection is common. In most cases, a child with a urine infection will make a full recovery with no ongoing concerns.

Tests are advised in some cases to check on the kidneys and/or bladder. Your doctor will advise if your child needs further tests. It depends on factors such as the child's age, the severity of the infection, and whether it has happened before. For example, as a general rule:

- Children over the age of six months who have a 'one off' urine infection which promptly clears with treatment do not usually need any further tests.
- Children with a severe infection, or with an infection with unusual features, may warrant tests.
- Children with recurring infections of any severity may warrant tests.

The tests that are advised may vary depending on local policies and the child's age. There are various tests (scans, etc) that can check on the structure and function of the urinary tract (the kidneys, ureters, bladder and urethra).

The results of the tests are normal in most cases. However, in some cases, an abnormality such as vesico-ureteric reflux may be detected (described above). Depending on whether an abnormality is detected, and how severe it is, a kidney specialist may advise a regular daily low dose of an antibiotic. This treatment is advised in some cases to prevent further urine infections, with the ultimate aim of preventing damage to the kidneys.

Note: the general 'rules' as to which children should have further tests following a urine infection have been laid out in a recent guideline from NICE (National Institute for Health and Clinical Excellence). The section above tries to summarize this guideline. However, this guideline is controversial. Before the publication of

this guideline, more children would have usually had tests. For a flavour of the controversy and debate over 'who needs tests' - see the references at the end of this article.

General tips following a urine infection in a child

If your child has had a urine infection then, to help prevent a further infection in the future:

- Try not to let your child become constipated.
- Make sure your child has plenty to drink each day to regularly 'flush out the bladder'.

Also, see a doctor promptly if you suspect your child has another urine infection. If this is confirmed, remind your doctor that your child has had a previous urine infection as further tests may be advised.

References

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