

Urinary tract infection: cystitis and pyelonephritis

What are they?

Urinary tract infection (UTI) refers to any infection of the urinary tract (i.e. anywhere from the kidneys to the bladder). It is usually caused by the bacterium *Escherichia coli* ('E coli'). A kidney infection is called a pyelonephritis and is usually more severe than a bladder infection alone, which is called cystitis. Pyelonephritis usually affects one kidney only.

What causes it?

Bacteria – they usually get into the body through the urethra (the tube that allows urine to pass from the bladder to the outside). From here, they can move into the bladder and up to the kidneys. Sometimes, bacteria already in the body can travel through the blood to the urinary tract and start an infection.

Anything that obstructs the normal flow of urine will allow bacteria to multiply in the stagnant urine, for example, enlargement of the prostate gland in men, or kidney stones in men or women. Insertion of a catheter into the bladder will often cause an infection.

What are the symptoms?

Symptoms of UTI include:

Cystitis and pyelonephritis

- Fever and shivers
- Blood in the urine
- Foul-smelling and cloudy urine
- Painful and frequent weeing
- Nausea and vomiting.

Pyelonephritis alone

- Loin (side) pain, often severe.



Note: presentation in children (especially when small) and in the elderly, can be much less specific, so in these cases your doctor will often send a urine sample to the laboratory for culture as a routine investigation. The elderly can also present with confusion and little sign of infection or fever. In all these patients, young and old, treatment – usually in hospital – should be started immediately.

Who's affected, and who needs to be investigated?

Cystitis can affect people of any age. Pyelonephritis usually affects young or middle-aged adults, although it can also occur in children. Women who have started having intercourse may normally have one episode of cystitis a year, which does not need to be investigated. Pregnancy tends to make UTI more common.

In children, women who have not started to have intercourse and men of any age, there is likely to be an underlying cause – such as a blockage to the flow of urine. These patients should be referred to a kidney specialist, either a nephrologist (non-surgeon) or a urologist (surgeon). They may need tests, including an ultrasound, and an assessment of kidney function (with blood and urine tests). Patients with diabetes are more likely to be affected by UTI, as glucose (sugar) in the urine encourages bacteria to grow.

What's the treatment?

A urine specimen (called a mid-stream urine, or 'MSU') is sent to the laboratory to establish whether bacteria are present. If negative, it does not necessarily mean that UTI is not present. Either way, treatment with 5–7 days of antibiotic tablets is usually necessary. Co-amoxiclav, trimethoprim and ciprofloxacin are widely used (there are many others). If someone is very unwell with cystitis, or has pyelonephritis, they need to be admitted to hospital to be given intravenous fluids and strong intravenous antibiotics (such as gentamicin).

Once the treatment has been completed it is important that a further urine sample is tested to confirm eradication of the bacteria. UTI does not normally lead to long-term damage of the bladder or kidneys.

Doctors should consider preventative treatment (e.g. a dose of antibiotic every night) in women with at least three symptomatic infections a year.

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