

Patient information from the BMJ Group

Cystitis in women

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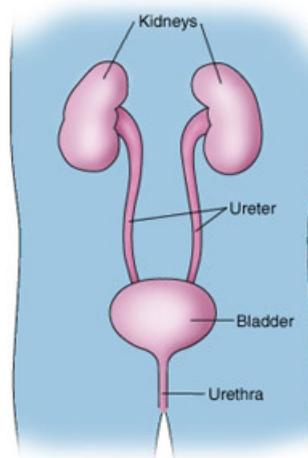
If you get a burning pain when you pass urine, you might have cystitis. Cystitis can clear up on its own in a few days, or you might need treatment. If you get cystitis a lot your doctor may recommend treatments to stop you getting further infections.

We've brought together the best research about cystitis in women and weighed up the evidence about how to treat it. You can use our information to talk to your doctor and decide which treatments are best for you.

What is cystitis?

Cystitis happens when germs (bacteria) grow in your bladder. This causes inflammation and irritation. You might find that it hurts when you pass urine.

Both men and women can get cystitis. But these infections are rare in men. The causes are also different. Here we deal with cystitis in women, and we look at what to do about frequent infections (this is called **recurrent cystitis**).



Bacteria can travel up your urethra to your bladder and cause an infection.

Normally urine contains no **bacteria**. But sometimes bacteria from around your **rectum** and genitals can spread to your **urethra** (the tube that carries urine from your **bladder**

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to the outside). From here, the bacteria can travel up to your bladder and cause an infection.

The infection irritates the lining of your urethra and bladder, and sometimes your **kidneys**. This is similar to what happens when an infection irritates the inside of your nose or throat when you have a cold. You'll probably feel a burning pain when you pass urine. You might also find that you need to pass urine often or suddenly.^[1]

Women are more likely than men to get cystitis. This is because their urethra is shorter and opens nearer their **anus**.

Wiping from back to front, instead of front to back, after you have a bowel movement increases the chances of spreading bacteria to your bladder. You're also more likely to get cystitis after sex.^[2] You can try to prevent an infection by urinating after you've had sex. This might help get rid of any bacteria that have got into your bladder and urethra.

Other things that increase your chances of getting cystitis include:

- Using a contraceptive cream (also called a vaginal spermicide)^[2]
- Having **diabetes**
- Having a tube to drain urine from your bladder (this is called a catheter)
- Being older (you might get infections if your bladder doesn't empty completely because of medical problems or if you have a hard time getting to a toilet)^[3]
- Reaching the **menopause** (your defence against infection can become weaker because of changes to the lining of your vagina and urethra)
- Being pregnant (the baby can press down on your bladder and other parts of your urinary tract, so your bladder can't empty completely and flush out any bacteria).

Some women get cystitis again and again. Doctors call this recurrent cystitis. But doctors disagree about how frequently you must have cystitis for the infections to be called recurrent. Some doctors say two infections in one year, or two infections every year for a few years.^[4] Others say you need to have at least six infections in a year to have recurrent cystitis.

When you get repeated infections, you could be getting a new infection, with different bacteria, each time. Or an old infection might be coming back because it hasn't cleared up completely.

Bacteria that cause cystitis can sometimes spread to your **kidneys** and cause an infection there. A kidney infection is much more serious than cystitis and can cause permanent damage to your kidneys. Doctors call this an upper urinary tract infection, or **pyelonephritis**. You should see a doctor straight away if you have signs of a kidney

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infection, such as a high temperature, pain in your side, sickness, and vomiting. To read more, see our information on [Kidney infection](#) .

What are the symptoms of cystitis?

If you've got cystitis you probably have a burning pain when you pass urine. You might also need to pass urine often and without warning.

Your urine might be a cloudy colour and smell bad. It might contain blood. You might also have pain in your lower abdomen and discomfort during sex.

Your symptoms should clear up without any treatment within about three days. But if they are very bad, or they get worse, you should see your doctor.

Your doctor or nurse can do a simple test on a sample of your urine to check whether you have cystitis. The test will show if you have signs of an infection. Your urine will need further testing if your doctor wants to know what sort of bacteria is causing your infection. This can help your doctor decide what **antibiotic** you might need.

An infection in your **bladder** can spread to your **kidneys** . This is a more serious infection and needs to be treated urgently. If you have any of the following symptoms, see your doctor straight away: ^[5]

- High temperature
- Pain in your side
- Nausea and vomiting.

How common is cystitis?

Cystitis is common.

Between 1 in 5 and 2 in 5 women get cystitis at some time in their life. ^[6]

About 1 in 5 women who have had cystitis will get it again and again (this is called **recurrent cystitis**). Most of these women (9 in 10) get a new infection each time rather than a relapse from a previous infection that hasn't gone away.

Cystitis is less common during the winter months. ^[7]

What treatments work for frequent cystitis?

Cystitis often goes away on its own in about three days.

But it's important to see a doctor straight away if you are pregnant or have signs of an [infection in your kidneys](#) , such as a high temperature and a lot of pain. You might need to take **antibiotics** for a little while.

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If you've had cystitis more than twice in the past year, you may need treatment to prevent further infections. Here we look at treatment for frequent infections. Doctors call these infections **recurrent cystitis**.

Key points for treating cystitis

- You can take a low dose of antibiotics every day for two months to 12 months to prevent more infections.
- If you tend to get cystitis a day or so after having sex, taking antibiotics within two hours of having sex can help prevent infection.
- Having antibiotics to take as soon as your symptoms start might help clear your infection fast. But we need more research to know this for certain.
- If you've been through the menopause, oestrogen creams, or other oestrogen treatments you put in your vagina, might help to prevent cystitis. But we don't know for certain.
- Drinking cranberry juice or taking capsules of cranberry juice extract might reduce the chances of getting cystitis, but we need more research, as studies have had conflicting results.
- Some women find that potassium citrate or sodium citrate reduce the burning feeling you can get with cystitis. But they don't get rid of the infection.

How is cystitis treated?

Antibiotics

Your doctor may prescribe a three-day course of **antibiotics** to treat your cystitis. The antibiotics you're most likely to take (and their brand names) include: trimethoprim (Trimopan), nitrofurantoin (Furadantin, Macrobid, Macrochantin), cefalexin (Ceporex, Keflex), and amoxicillin.

Which antibiotic your doctor prescribes will depend in part on whether **bacteria** where you live have become resistant to certain antibiotics. It will also depend on whether you're allergic to certain antibiotics. If you are pregnant your doctor may prescribe different antibiotics, such as a cephalosporin or penicillin.

Potassium citrate or sodium citrate

These drugs make your urine less acidic. This can reduce the burning feeling that you get when you pass urine. But they won't kill the bacteria causing your infection. You can buy solutions or flavoured packets at a pharmacy. Or you can make up a solution at home using sodium bicarbonate. Women with cystitis who are taking the antibiotic

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nitrofurantoin should not take potassium or sodium citrate or anything else to make their urine less acidic. Nitrofurantoin is much more effective when the urine is acidic. ^[10]

Painkillers

You can take paracetamol or ibuprofen to reduce your pain and lower your temperature.

Drinking lots of fluid

Many people think drinking lots of fluid helps because it flushes out the bladder. But there's no research that shows drinking lots can help to clear cystitis.

We've looked closely at the research for recurrent cystitis and ranked the treatments into categories, according to whether they work.

Treatment Group 1

Treatments for cystitis in women

Treatments that work

- [Continuous antibiotics](#)
- [Antibiotics after sex](#)

Treatments that need further study

- [Cranberry juice and extracts](#)
- [Urinating after sex](#)
- [Methenamine hippurate](#)
- [Treating yourself with a single antibiotic tablet](#)
- [Oestrogen \(for women who've been through the menopause\)](#)

What will happen to me?

Cystitis can clear up by itself in about three days without any treatment. But if it doesn't clear up, taking antibiotics for a few days will probably work. If you keep getting infections you might need further treatment.

There's not enough research to say for sure what will happen if you don't get treatment for cystitis. ^[8] One study found that most women get better without any treatment. ^[9]

If you have more than two infections a year for a few years in a row, you'll probably keep getting infections unless you have treatment. To learn more, see [What treatments work for frequent cystitis?](#)

Treatments:

Continuous antibiotics

In this section

If you have recurrent cystitis, you're less likely to get another infection if you take a low dose of antibiotics for a few months or even longer.

We found a summary of the research (known as a systematic review) that looked at 19 studies. It found that taking antibiotics for two months to six months reduced the number of infections women got during that time.^[11] Among the women who took antibiotics, 13 in 100 got another infection. Of those who didn't take antibiotics, 50 in 100 got another infection.

But more research is needed to find out how long you need to take antibiotics to prevent cystitis. We also don't know which antibiotics work best at preventing infections.

Your doctor might prescribe trimethoprim (brand name Trimopan), nitrofurantoin (Furadantin, Macrobid, Macrochantin), or cefalexin (Ceporex, Keflex).^[12] Your doctor will tell you how often you need to take your antibiotics. It might be each day, every other day, once a week, or once a month.

In studies, doctors have used many other antibiotics, including ciprofloxacin (Ciproxin) and norfloxacin (Utinor).^[11]

If you're pregnant and keep getting cystitis your GP might refer you to a specialist. Some antibiotics aren't safe to take if you're pregnant. Your doctor may recommend the antibiotic nitrofurantoin (Furadantin, Macrobid, Macrochantin).

You might have side effects if you take antibiotics for a long time, but these will probably be mild. What side effects you get (if any) depends on which antibiotic you take.

Studies show that up to 4 in 10 women get side effects if they take a low dose of antibiotics for a long time without a break.^[13] The most common problems are:

- A stomach upset
- A rash
- A yeast infection in their vagina (thrush).

One study that followed women taking antibiotics for up to five years found that none of the women had any serious side effects.^[14]

In the US, doctors have been warned that ciprofloxacin and some similar drugs (called fluoroquinolones) can increase your chance of damaging your tendons.^[15] If you notice

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any tendon pain, swelling or inflammation, talk to your doctor as soon as you can, and avoid exercise until you've checked with your doctor.

In rare cases these drugs can also cause a type of nerve damage called **peripheral neuropathy**. The symptoms include pain, burning, tingling, numbness, weakness, and being sensitive to light.^[15] If you get any of these symptoms after taking these antibiotics, talk to your doctor as soon as you can.

If you use antibiotics too much, bacteria can become resistant to them. That means that the antibiotics no longer kill all the bacteria. But studies show that it is rare for antibiotics to cause resistance when they're used to prevent cystitis.^[14]

Antibiotics after sex

In this section

Two good studies (randomised controlled trials) have found that women who have recurrent cystitis get far fewer infections if they take a single antibiotic tablet within two hours of having sex.^[11] These studies found that taking a single antibiotic tablet after sex worked as well as taking a low dose of antibiotics for several months.

Your doctor might prescribe a single dose of nitrofurantoin (brand names Furadantin, Macrobid, Macrochantin) or ciprofloxacin (Ciproxin) to take within two hours of having sex.

You can get side effects if you take antibiotics, but these will probably be mild. The most common side effects are an upset stomach, a rash, or a yeast infection in your vagina (thrush).

What side effects you get (if any) depends on which antibiotic you take. Studies have found that 6 in 100 women who took ciprofloxacin got some side effects. These included nausea, headaches, a rash, and vaginal thrush.^[11]

Cranberry juice and extracts

In this section

It's possible that drinking cranberry juice or taking capsules of concentrated cranberry extract may help to prevent cystitis.^[16] But we don't know for sure if it helps, or how much you should take or when you should take it.

One review of evidence (called a systematic review), included four studies that looked at whether drinking cranberry juice or taking cranberry capsules helps to prevent cystitis in women.^[17] The review found that of the women who took cranberry juice or capsules, 2 in 10 got cystitis in the next 12 months compared with 3 in 10 women who took a dummy treatment (a placebo).^[17]

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We need more research to say how many capsules you should take to reduce your risk of getting cystitis, and to see if drinking juice really can help.

The women in the studies who took cranberry products complained of acid in their throat (reflux), nausea, and an increase in bowel movements. The women who took a placebo complained of nausea and headaches.

Urinating after sex

In this section

Many women say that urinating straight after sex stops them getting cystitis. There's no research to say whether this works. But it might be worth trying, especially if you notice that you get cystitis after you've had sex.

Methenamine hippurate

In this section

Your doctor probably won't prescribe methenamine hippurate (brand name Hiprex) to stop you getting cystitis. This drug works only if your urine is acidic, which it might not be. ^[18]

A summary of the research found there wasn't enough reliable evidence to say if methenamine hippurate helps to prevent cystitis. ^[19] You can get an upset stomach, bladder irritation, or a rash as a side effect of this treatment. ^[20]

Treating yourself with a single antibiotic tablet

In this section

Your doctor might give you a supply of antibiotics to keep at home so you can treat cystitis as soon as you get symptoms. But one small study found that taking a single tablet of an antibiotic did not work as well as taking antibiotics every day. ^[21] Women who took a single tablet when symptoms started got an average of two infections in a year. Most women who took antibiotics every day got no infections at all. ^[21] But this is to be expected as women can only treat themselves once symptoms start. More studies are needed to see if early treatment with a single antibiotic tablet can reduce how long symptoms of cystitis last.

You might get side effects if you take antibiotics, but these will probably be mild. The most common side effects are an upset stomach, a rash, or a yeast infection in your vagina (thrush).

Oestrogen (for women who've been through the menopause)

In this section

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Oestrogen is one of the main female hormones . It's used as part of hormone replacement therapy (HRT).

Oestrogen creams that you put inside your vagina might help prevent cystitis for women who've been through the menopause . There have also been trials of oestrogen pills that you put in your vagina (pessaries), and silicone rings that supply a steady amount of oestrogen over several months. However, there's not enough research yet to know whether oestrogen really helps prevent cystitis or not.

In studies, oestrogen creams, pessaries, or rings reduced the number of women with bacteria in their urine. ^[22] After five to eight months of treatment, 5 in 10 women who used oestrogen had bacteria in their urine. This compared with 7 in 10 women who didn't take oestrogen. Unfortunately, the studies didn't look at women's symptoms, so we don't know if they had less pain with this treatment.

Another problem is that some of the studies weren't very good. For example, one didn't compare oestrogen with a dummy (placebo) treatment. ^[23] This makes the results much less reliable.

The studies didn't give any information on side effects. However, we do know that taking oestrogen tablets by mouth can increase your risk of cancer of the womb lining (endometrial cancer). ^[24]

Researchers aren't sure whether oestrogen products you put inside your vagina increase the risk of cancer of the womb lining. Generally, doctors think oestrogen creams, pessaries, and rings are unlikely to increase the risk. But you should use the lowest amount that works for your symptoms. As with all HRT products, you should have a check-up every year with your doctor. ^[24]

Further informations:

Glossary:

bacteria

Bacteria are tiny organisms. There are lots of different types. Some are harmful and can cause disease. But some bacteria live in your body without causing any harm.

rectum

The rectum is the last 15 to 20 centimetres (six to eight inches) of the large intestine, ending with the anus (where you empty your bowels from).

urethra

Your urethra is the tube that carries urine from your bladder out of your body. In a man, the urethra runs through the inside of the penis. In a woman, the urethra is shorter and opens onto the top of the vagina.

bladder

Your bladder is the hollow organ at the top of your pelvis that stores urine. It is similar to a balloon, only with stronger walls. It fills up with urine until you go to the toilet.

kidney

Your kidneys are organs that filter your blood to make urine. You have two kidneys, on either side of your body. They are underneath your ribcage, near your back.

anus

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The anus, which is at the end of the rectum, is where stools leave your body when you go to the toilet. Part of the anus is a muscle that helps you hold in the stool until you are on the toilet.

diabetes

Diabetes is a condition that causes too much sugar (glucose) to circulate in the blood. It happens when the body stops making a hormone called insulin (type 1 diabetes) or when insulin stops working (type 2 diabetes).

menopause

When a woman stops having periods, it is called the menopause. This usually happens around the age of 50.

antibiotics

These medicines are used to help your immune system fight infection. There are a number of different types of antibiotics that work in different ways to get rid of bacteria, parasites, and other infectious agents. Antibiotics do not work against viruses.

systematic reviews

A systematic review is a thorough look through published research on a particular topic. Only studies that have been carried out to a high standard are included. A systematic review may or may not include a meta-analysis, which is when the results from individual studies are put together.

yeast infection

Infections with certain types of fungus are called yeast infections. These infections are common and can affect many different parts of your body. For example, a yeast infection called thrush can affect people's mouths or, if they're women, their vaginas. If you get infected with thrush in your mouth, it makes white spots appear on your tongue or on the roof of your mouth. If thrush affects your vagina, you can get itchy, sore and have a discharge. You're more likely to get a yeast infection if your immune system is weakened.

tendons

Tendons are the tough, rope-like connections between muscles and bones.

randomised controlled trials

Randomised controlled trials are medical studies designed to test whether a treatment works. Patients are split into groups. One group is given the treatment being tested (for example, an antidepressant drug) while another group (called the comparison or control group) is given an alternative treatment. This could be a different type of drug or a dummy treatment (a placebo). Researchers then compare the effects of the different treatments.

placebo

A placebo is a 'pretend' or dummy treatment that contains no active substances. A placebo is often given to half the people taking part in medical research trials, for comparison with the 'real' treatment. It is made to look and taste identical to the drug treatment being tested, so that people in the studies do not know if they are getting the placebo or the 'real' treatment. Researchers often talk about the 'placebo effect'. This is where patients feel better after having a placebo treatment because they expect to feel better. Tests may indicate that they actually are better. In the same way, people can also get side effects after having a placebo treatment. Drug treatments can also have a 'placebo effect'. This is why, to get a true picture of how well a drug works, it is important to compare it against a placebo treatment.

hormones

Hormones are chemicals that are made in certain parts of the body. They travel through the bloodstream and have an effect on other parts of the body. For example, the female sex hormone oestrogen is made in a woman's ovaries. Oestrogen has many different effects on a woman's body. It makes the breasts grow at puberty and helps control periods. It is also needed to get pregnant.

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