

Patient information from the BMJ Group

Ear infection with discharge

In this section

[What is it?](#)

[What are the symptoms?](#)

[How is it diagnosed?](#)

[How common is it?](#)

[What treatments work?](#)

[What will happen?](#)

[Questions to ask](#)

Ear infection with discharge

If your ear has been oozing pus for several weeks, it's important you get the right treatment. You may have an ear infection that could damage your hearing.

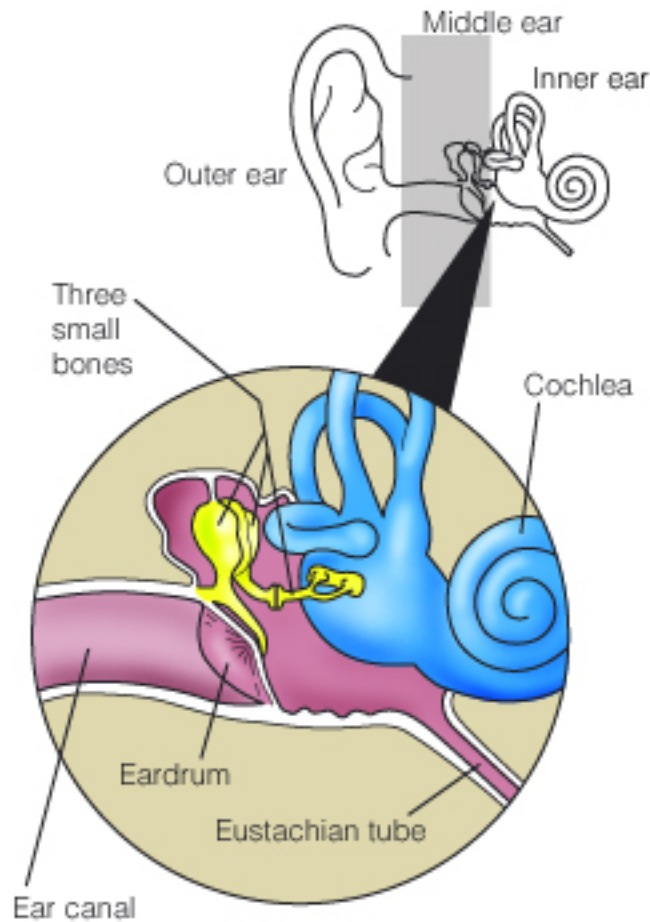
We've brought together the best research about ear infection with discharge and weighed up the evidence about how to treat it. You can use our information to talk to your doctor and decide which treatments are best for you.

What is an ear infection with discharge?

If your ear has been leaking pus for several weeks, you may have a long-term (chronic) ear infection, which has made a hole in your eardrum.

You can get a long-term ear infection if you have a short-term (acute) ear infection that doesn't completely clear up. ^[1]

Ear infection with discharge



A long-term ear infection can make a hole in your eardrum.

The tube leading into your ear is called your ear canal. Stretched across the inner end of your ear canal is your eardrum. Your eardrum vibrates when sound waves reach it. Your brain turns sound waves into sounds that you can hear.

Ear infections can make a hole in your eardrum. If you have an infection, you can get swelling and a build-up of fluid in your middle ear. Your middle ear is the part of your ear behind your eardrum. The pressure of the fluid in your middle ear can make a hole in your eardrum. Doctors call this a perforation.

Some people get a hole in their eardrum for other reasons: for example, from hearing a very loud noise. They can then get a long-term infection because of the hole.^[1] This is because your eardrum acts as a barrier to stop germs (bacteria) going into your middle ear. But when your eardrum has a hole in it, bacteria can easily get into your middle ear.

If you have an ear infection with discharge, you'll get pus coming out of your ear. It might go away for a while and then come back. If you have had pus coming from your ear for more than two weeks, you have a long-term infection. Doctors call this **chronic suppurative otitis media**.

Ear infection with discharge

Some people get holes in their eardrum that are not infected and rarely leak pus. And some people get an ear infection without having a hole in their eardrum. But these are different kinds of problems and are treated differently.

Ear infections happen to adults and children. But they're more common in children. That's because their ear canals are shorter, so it's easier for germs to get inside and cause an infection.

We don't know for certain why some people get long-term ear infections with discharge. But there are some things that make it more likely. These are called **risk factors**. They include:^[2] ^[3] ^[4]

- Getting a lot of infections like colds and coughs
- Living in overcrowded housing
- Poor hygiene: for example, not having clean water for washing and cleaning
- Eating a poor-quality diet.

What are the symptoms of an ear infection with discharge?

You may not notice the symptoms of an ear infection with discharge if you've had it for a long time. That's because it's less painful than a short-term infection. But it can cause more damage to your hearing. So it's important to watch out for the symptoms.

The main symptoms of an ear infection with discharge are:^[5]

- Pus coming out of your ear
- Not hearing as well as you used to
- Ear pain or discomfort. This is usually mild. It may feel like having pressure inside your ear.

You may get symptoms in one or both of your ears. You might have non-stop ear discharge, or your symptoms may come and go.

If you get these symptoms, it's important to go to your doctor. He or she will examine you to check which type of condition you have. You'll probably need to have your ear cleaned by the doctor or nurse first, to remove any bits of skin or pus that are blocking your ear canal. To learn more about ear cleaning, see [What treatments work for ear infection with discharge?](#)

Then your doctor will want to examine your ear. He or she will shine a light into your ear and look down an instrument called an **otoscope**. This is to see whether your eardrum has a hole in it. Some doctors use a microscope to take a better look.

Ear infection with discharge

Your doctor will also ask you questions about your symptoms and how long they have been going on. This will help him or her to work out whether you have a long-term (chronic) infection or a short-term (acute) infection.

How common is ear infection with discharge?

Ear infections are common. But people in countries like the UK don't get long-term ear infections with discharge much nowadays.

Only about 4 in 1,000 people in Europe are thought to have a long-term ear infection with discharge at any one time. ^[6] Ear infections with discharge were more common in the past. That's because people were more likely to live in overcrowded housing, and less likely to have easy access to clean water and a good diet.

But long-term (chronic) ear infections are still common in other parts of the world. At any one time, between 65 million and 330 million people in the world have an ear infection with discharge. And up to 60 in 100 people have some hearing loss as a result. More than 90 in 100 people with ear infection with discharge are from less developed countries. ^[6]

Ear infections with discharge happen to adults and children, but ear infections are more common in children. ^[7]

What treatments work for an ear infection with discharge?

There are treatments that can help clear your infection and dry up your ear. Treatment can also heal the hole in your eardrum. But without the right treatment, you risk having your hearing damaged by the infection. Unfortunately, this kind of long-term ear infection is not always simple to treat.

- If you have an ear infection with discharge, you'll probably first have your ear cleaned by a specialist doctor or a nurse. Cleaning your ears helps clear out the pus.
- You're likely to be treated with ear drops. Ear drops containing antibiotics called quinolones seem to work best. Taking antibiotics as tablets is unlikely to help.
- Sometimes the hole in your eardrum might not heal up, even with antibiotics. If this happens, you can have an operation to fix your eardrum.

Which treatments work best? We've looked at the research and given each treatment a rating according to how well it works.

Treatment Group 1

Treatments for ear infection with discharge

Treatments that are likely to work

- [Antibiotic ear drops](#)
- [Antibiotic ear drops plus steroid ear drops](#)

Treatments that need further study

- [Ear cleaning](#)
- [Antiseptic ear drops](#)
- [Antibiotic tablets or injections](#)
- [Myringoplasty \(tympanoplasty\)](#)

What will happen to me?

If you have had an ear infection with discharge for a while, you may find that you don't hear as well as you did before. If the infection isn't treated, this might get worse. There's also a slight risk of more serious complications if you don't get treatment.

A long-term (chronic) infection in your middle ear can cause more damage than a short-term (acute) infection, even though it may not be as painful as an acute infection.

Some studies show that most children who have long-term ear infection with discharge lose some of their hearing. But these studies looked only at children in Africa, Asia, and South America, so the results may not apply to children in the UK. ^[8] ^[9] ^[10] ^[11]

Hearing loss can cause problems at school. If a child can't hear properly during his or her first three years of life, it's more difficult to learn to speak and understand language. ^[12]

Rarer, more serious conditions

- The infection spreading to the large bone behind your ear (the mastoid bone). This can happen if the infection is not treated. Doctors call this **mastoiditis**. It can cause severe pain, swelling, and tenderness behind your ear. ^[13] It's usually treated with antibiotics, although some people need an operation if antibiotics don't work. ^[14]
- Extra skin growing in your ear. If you keep getting ear infections, and you have problems with the pressure in your ears, skin cells from the eardrum can start to grow into your middle ear. This is called a **cholesteatoma**. It's rare, especially in

Ear infection with discharge

developed countries like the UK. But if it's not treated it can damage the tiny bones in the middle ear that carry sound waves. That can cause hearing problems. The extra skin is usually removed by an operation on the eardrum.

- An untreated ear infection can spread into your brain and cause **meningitis** or brain abscesses (swellings full of pus). But it is very rare to get meningitis or brain abscesses, especially in countries like the UK.

Remember, the risk of getting life-threatening complications in this country is very low. Treatments are easily available that stop ear infections getting serious. ^[15]

Treatments:

Ear cleaning

In this section

Before you start treatment with ear drops, you'll probably have your ear cleaned out by a specialist doctor or nurse. The cleaning gets rid of the bits of skin and pus that are blocking your ear so that the ear drops can get through to the infection. But we don't know for certain whether ear cleaning is helpful. There's not much good-quality research.

There are different ways to have your ear cleaned. A doctor might:

- Clean your ear canal with cotton buds
- Put a string made of gauze (a type of thin material) into your ear canal
- Flush your ear out with sterile (germ-free) salt water
- Use a machine to gently suck out the bits of skin and pus from your ear.

Some studies have looked at whether just having your ears cleaned, without having ear drops, can clear up the infection. We found two studies that looked at children with this infection who had their ears cleaned. ^[16] ^[17] The studies didn't show that ear cleaning helped. But the studies were not very good-quality, so it's hard to say for certain whether or not ear cleaning can help.

We couldn't find any studies on ear cleaning for adults.

The studies don't tell us if ear cleaning can be harmful. But ear cleaning should always be done by a specialist doctor or nurse. Don't try to do it yourself. You shouldn't put anything into your ear canal, even to clean it. You could damage your ear.

Antibiotic ear drops

In this section

Ear infection with discharge

Ear drops that contain a type of **antibiotic** called a quinolone can dry up your ear and stop it leaking pus. Your doctor might prescribe a quinolone called ciprofloxacin (brand name Ciproxin). Antibiotics kill the **bacteria** that cause infection.

We found a summary of the research (called a **systematic review**) that included 14 studies.^[18] The summary showed that:

- Quinolone antibiotic ear drops are better at drying your ear than [antiseptic ear drops](#)
- Quinolone antibiotic ear drops work better than [antibiotic tablets](#) .

However, the studies in the summary were of mixed quality. Some were small, or had problems with the design. This makes them less reliable than we'd like.

You'll probably have your ear cleaned out before you start treatment with ear drops. This is to be certain that the ear drops get through to the infected part of your ear.

You might find you get some side effects from the ear drops. These are usually mild and go away when you stop taking the drops. The studies found that if you take antibiotic ear drops, you might get:

- Dizziness
- Itching in your ear
- Stinging in your ear
- Earache
- Yeast infections like thrush.

There is some evidence that other types of antibiotic ear drops might damage your ear, although it's not certain.^{[19] [20] [21]} Doctors usually use quinolone ear drops to be on the safe side.

Quinolone ear drops can dry out your ear infection in the short term. But we don't know whether treatment with antibiotic ear drops helps in the long term. There's not enough research to show whether using antibiotic ear drops will make your infection go away for good, stop you getting complications, heal the hole in your eardrum, or improve your hearing.

Also, most of the studies looked at adults, so we don't know how well these ear drops work for children.

Antibiotic ear drops plus steroid ear drops

In this section

Ear infection with discharge

Using antibiotic ear drops together with a type of treatment called **steroid** ear drops can dry up your ear discharge. But we don't know if this treatment works better than antibiotic ear drops alone.

One example of combined drops is the antibiotic gentamicin with the steroid hydrocortisone (a brand name is Gentisone HQ).

We found two studies looking at how well this combined treatment worked, compared with antibiotic drops alone. But there were problems with the studies, which means we can't rely on the results. ^[22] ^[23]

We found two other studies that looked at adults who were treated with both antibiotic ear drops and steroid ear drops for four to six weeks, compared with a dummy (placebo) treatment. ^[24] ^[25] Both studies showed that the combined treatment worked better than the placebo. Between 25 and 33 in 100 people taking the combined ear drops had no ear discharge after treatment, compared with 25 in 100 people taking the placebo.

Another study showed that the combined treatment worked better than steroid ear drops alone. ^[26]

But all of these studies were quite small, which may make them less reliable. Also, they all looked at adults.

We found one study looking at children, comparing the use of drops that included antibiotics with a steroid, and antibiotic drops alone. ^[27] In this study, the drops combined the antibiotics framycetin and gramicidin with the steroid dexamethasone. The children who were given antibiotic drops alone had drops that contained ciprofloxacin, which is a type of antibiotic known as a **quinolone** . The study found no real difference in effect between the combined treatment and antibiotic drops alone.

The steroids used to treat ear infections are not the steroids used by some athletes and bodybuilders. The steroids in ear drops are **corticosteroids**. These are similar to chemicals our bodies produce to deal with swelling (**inflammation**).

In the studies we looked at, there was not much difference in side effects, whether or not people had steroid ear drops as well as antibiotic ear drops.

Antiseptic ear drops

In this section

Antiseptic ear drops don't work as well as other treatments to dry up a discharging ear. So they're not used much any more.

There are several types of antiseptic treatment. These include aluminium acetate, borax, hydrogen peroxide, and iodine powder.

We found one summary of the research (a **systematic review**). It showed that antiseptic drops don't work as well as quinolone ear drops (a type of **antibiotic ear drop**). ^[18]

Ear infection with discharge

Studies show that antiseptic eardrops can make you feel dizzy and give you an earache. But there's no evidence that they can damage your hearing.

Antibiotic tablets or injections

In this section

Taking antibiotic tablets or having an antibiotic injection doesn't work as well as using quinolone (a type of antibiotic) [ear drops](#) .

We found a summary of the research (known as a [systematic review](#)).^[18] It included nine studies that were mostly poor-quality. The summary found that:

- Taking antibiotic tablets or having an injection doesn't work as well as using quinolone antibiotic ear drops
- Taking antibiotic tablets as well as using antibiotic ear drops is unlikely to help clear up your ear infection.

You can get mild side effects from taking antibiotics. These include:^[28]

- Nausea
- Stomach upset
- Diarrhoea
- [Allergic reactions](#)

There's not much evidence to show whether antibiotic tablets, antibiotics that come as a liquid, or antibiotic injections work in children. But we found one small study (a [randomised controlled trial](#)).^[29] It showed that children who had the injection were less likely to have a discharge from their ears six months after the infection. But the study was too small to say for certain that this treatment works in children.

Myringoplasty (tympanoplasty)

In this section

You can have an operation to repair the hole (perforation) in your eardrum. This may improve your hearing. But we don't know how well surgery works for children in the long term.

The operation involves covering the hole in your eardrum with a patch of tissue. The operation is called a **myringoplasty** or a **tympanoplasty**.

Ear infection with discharge

When you have this operation you'll probably have a **general anaesthetic**, so you'll be asleep during the operation. An ear, nose and throat (ENT) specialist doctor will put a small patch of tissue onto your eardrum to cover the hole.

You can probably leave hospital the same day as the operation. You should avoid getting water in your ear for a few weeks afterwards.

We didn't find any good-quality studies (**randomised controlled trials**) that compared people having surgery with people not having surgery.

But there is quite a lot of evidence about what happens to people who do have surgery. Studies show there is a good chance that it will seal up the hole in your eardrum and maybe improve your hearing. The evidence shows that:

- The hole in the eardrum is sealed up for more than 90 in 100 people who have the operation ^[30]
- Between 25 and 33 in 100 people who have the operation find that their hearing improves afterwards. ^{[31] [32]}

But we don't know if a repaired eardrum is likely to last in young children. Young children are more at risk of getting another ear infection. This might dislodge the patch, so the eardrum would become perforated again.

One study found that 60 in 100 children who had surgery still had a sealed eardrum and normal hearing more than six years later. ^[33]

Surgery is more likely to work if your surgeon is skilled in this kind of operation. So it's important to ask if he or she has done this operation a lot. ^{[34] [35]} Surgery is also likely to work better if your eardrum isn't very badly damaged to start with. ^[36]

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.

otoscope

An otoscope is a tool your doctor uses to look into your ear.

mastoiditis

Your mastoid process is the bony area that sticks out slightly behind your ear. Mastoiditis occurs when this area becomes inflamed. You can get mastoiditis when the inside of your ear is infected.

cholesteatoma

A cholesteatoma is a lump of skin that can grow in your middle ear, behind your eardrum. It may happen if you have lots of ear infections. If a cholesteatoma grows over a long time, it can cause hearing problems or dizziness.

meningitis

Meningitis is a swelling in the thin layers of tissue that surround your brain and your spinal cord. It usually happens because of an infection with certain kinds of bacteria or viruses. Meningitis can give you a severe headache and a stiff neck. And you may find it

Ear infection with discharge

difficult to keep your eyes open in the light. Meningitis is a life-threatening disease. If you have these symptoms, you should go to hospital straight away.

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.

steroids

Steroids are a type of chemical. Your body naturally produces steroids, which play a part in many of its processes. For example, steroids are involved in how your immune system, reproductive system and metabolism work. Steroids can also be given as medicines and are used for a number of different conditions: including asthma, rheumatoid arthritis and eczema. Corticosteroids are not the same as the steroids used by some body builders and athletes. Those steroids are called 'anabolic steroids'.

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.

inflammation

Inflammation is when your skin or some other part of your body becomes red, swollen, hot, and sore. Inflammation happens because your body is trying to protect you from germs, from something that's in your body and could harm you (like a splinter) or from things that cause allergies (these things are called allergens). Inflammation is one of the ways in which your body heals an infection or an injury.

allergic reaction

You have an allergic reaction when your immune system overreacts to a substance that is normally harmless. You can be allergic to particles in the air you are breathing, like pollen (which causes hay fever) or to chemicals on your skin, like detergents (which can cause a rash). People can also have an allergic reaction to drugs, like penicillin.

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.

general anaesthetic

You may have a type of medicine called a general anaesthetic when you have surgery. It is given to make you unconscious so you don't feel pain when you have surgery.

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Ear infection with discharge

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Ear infection with discharge

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