BMJ Best Practice

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Antibiotics: what you need to know

Antibiotics help fight bacterial infections They can make some operations safer, and help keep wounds free of germs while they heal. But using them when they're not needed, or not using them properly, is leading to the germs becoming resistant to them so that they don't work as well.

This leaflet explains:

- Which types of infection can be treated by antibiotics and which can't
- Why doctors don't prescribe antibiotics for infections that are probably viral
- What antibiotic resistance is, and what we need to do about it.

What are antibiotics?

Antibiotics are medicines that kill germs called bacteria. Most bacteria are actually not harmful to people. In fact, we need many of them to stay healthy. For example, some bacteria live in our intestines (guts) and help us to digest food.

But some bacteria can cause illnesses and even death. If you have a serious infection that's caused by bacteria, antibiotics can be useful, and even life saving.

Antibiotics can be taken as tablets or as liquid medicine. They can also be given as injections, or an intravenous (IV) drip.

Why wouldn't I be given antibiotics?

Not all infections can be cured with antibiotics. This is because bacteria are not the only things that cause infections. Infections can also be caused by a virus or a fungus. But these can be treated with medicines called antivirals or antifungals, not with antibiotics.

- **Antibiotics only work for infections caused by bacteria.**

Most of the common infections that make us feel ill are caused by viruses, not by bacteria. These include:

- Influenza (flu)

- The common cold
- Most coughs and sore throats
- Many stomach bugs
- Ear infections, which are common in children.

Even chest infections and bad coughs that can last for weeks (often called upper respiratory tract infections) are usually caused by viruses, not by bacteria.

But with many infections it's not clear what the cause is.

The doctor might not be able to tell the cause of an infection without further tests (such as blood tests, or testing samples of phlegm you cough up). But it can take days for your doctor to get the results of these tests.

For many years doctors sometimes prescribed antibiotics for common illnesses such as coughs and sore throats 'just in case'. It helped patients feel that they were being treated. It helped doctors avoid refusing medicine to someone.

But this is changing. For one thing it's not a good idea to give someone medicine they don't need. Antibiotics, like all medicines, can cause side effects. These can include rashes, itching, diarrhoea, feeling or being sick, headaches, dizziness, vaginal discharge, and, rarely, serious allergic reactions.

Also, most infections, even those caused by bacteria, will clear up on their own without treatment.

But there is a more serious reason why your doctor might not want to give you antibiotics for a common illness. It's called **antibiotic resistance**.

What is antibiotic resistance?

Many bacteria have now become used to antibiotics. They are able to resist the effects of antibiotics. This means that bacteria are much harder to kill. One example that you might have heard of is methicillin-resistant staphylococcus aureus, better known as MRSA.

In the most serious cases, some bacteria are now becoming resistant to all antibiotics. Antibiotic resistance has happened for two reasons:

- Overuse. When antibiotics are used a lot, the strongest bacteria are the ones that survive the treatment. These strong strains then increase and become the most common bacteria, making the infections harder to treat. So it's important that we only use antibiotics when they're really needed, and not for minor illnesses that will get better by themselves.
- Misuse. When someone is prescribed antibiotics and doesn't follow the instructions properly, or doesn't finish the whole course, not all the germs are killed. The surviving germs are now resistant to those antibiotics and can't be killed by them.

Antibiotic resistance is a serious problem that is getting worse. If we don't stop over-using and misusing antibiotics:

- Many serious infections will become hard, if not impossible, to treat
- Many operations will be much less safe
- Minor wounds will become very dangerous and even life threatening
- Minor illnesses that can currently be cured by antibiotics will become more serious and harder to treat.

So this is why your doctor might not prescribe antibiotics. If we stop over-using and misusing antibiotics the bacteria will lose their resistance and the medicines might start to work well again.

And you can do your part.

- Listen to your doctor when they say that you probably don't need antibiotics.You can ask them to explain why. Because we all know more about antibiotics and resistance now, you might not be given antibiotics even if you had them in the past for the same type of illness.
- If you do need antibiotics, follow the instructions carefully and finish the course, even if you feel better after the first few doses.
- Some people find a 'delayed prescription' helpful. This is when the doctor gives you a prescription for antibiotics that's dated a few days in the future. You may find you get better in that time and never need the antibiotics.
- Spread the word. Talk to your friends and family about antibiotic overuse, misuse, and resistance.

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