

Frequently Asked Questions (FAQs) on Antimicrobial Resistance

Q1: What is the difference between antibiotics and antimicrobials?

Antimicrobials are a group of medicines that act against a broad spectrum of microorganisms, including bacteria, parasites (e.g., malaria), viruses (e.g., influenza, dengue and HIV) and fungi (e.g. ringworm), by killing or inhibiting their growth. Antimicrobials include antibiotics, antifungals and antivirals,

Antibiotics, such as penicillin, augmentin, and tetracycline, specifically target bacteria and are the most used among antimicrobials.

Q2: What are superbugs, why do they develop and how do they spread?

Superbugs are microorganisms (e.g., bacteria, fungi and viruses) that have become resistant to the medication intended to kill them, known as antimicrobials or antimicrobial agents, making them difficult to treat.

Microorganisms naturally develop resistance as a way to protect themselves against such medicines. The more these microorganisms are exposed to antimicrobials, the faster they develop resistance, and become drug-resistant microorganisms or antimicrobial resistant microorganisms.

They include methicillin-resistant *Staphylococcus aureus* (MRSA) and multi-drug resistant *E. coli*. *E. coli* is a more common cause of urinary infections, and *Staphylococcus aureus* can cause skin infections. The resistant strains of these bacteria are more severe and harder to cure, leading to longer illness.

According to the US Centers for Disease Control and Prevention (CDC), superbugs have caused the deaths of at least 23,000 people in the US each year. In 2019 alone, the World Health Organization reported that an estimated 1.27 million people around the world have died from infections caused by antimicrobial resistant microorganisms.

Superbugs can spread from person to person, animal to animal, between animals and people, and through food or contaminated environments. For example, in some countries, farm animals that are fed antibiotics to encourage faster growth or prevent infections may develop antibiotic-resistant germs. These germs could remain in the meat if not cooked properly. In hospital settings, they can spread from person to person, or through the hospital environment if proper precautions are not practiced.

Q3. What is the difference between viruses and bacteria, and why won't antibiotics work on viruses?

Viruses and bacteria are two types of microorganisms. They have several key differences:

1. **Size:** Bacteria are far larger and can be seen under a regular microscope. Viruses are much smaller and can only be seen with an electron microscope.
2. **Structure:** Bacteria are single-celled organisms, with a cell wall and membrane-bound organelles. Viruses are not actual cells; instead, they consist of genetic material (DNA or RNA) surrounded by a coat of protein.

3. **Reproduction:** Bacteria can reproduce independently, while viruses can only multiply within a living host cell.
4. **Treatment:** Bacterial infections can be treated with antibiotics, which target the bacteria's cell wall or other essential structures. Antibiotics are NOT effective against viruses as viruses lack these structures. Only antivirals are effective against viruses.

Q4. What are infections?

Infections are caused by the invasion and growth of harmful germs (also called microorganisms) within the body. These microorganisms can enter the body through various means, such as inhalation, ingestion or through wounds in the skin.

Q5. How do I know if I'm suffering from a viral or bacterial infection?

Bacterial and viral infections can cause similar symptoms including fever, coughing, sneezing and vomiting. It may be difficult for non-medical professionals to distinguish between them. This is why it is important for you to seek medical attention when you are ill, and not to self-medicate.

Your doctor will typically be able to diagnose the cause of your illness by asking you a series of questions and through a physical examination. Sometimes, additional blood or urine tests, or X-rays may be required to confirm a diagnosis.

Q6. Will I recover faster from flu if I take antibiotics?

No, you will not recover faster. Flu and the common cold are caused by viruses, not bacteria. Antibiotics DO NOT work on viruses and will not speed up your recovery from viral infections.

Instead, when you are down with the common cold or flu, you should:

- Get plenty of rest;
- Stay hydrated;
- Practice good hygiene habits to prevent the infection from spreading; and
- Consult your doctor if you do not get better.

Viral symptoms usually go away with time and symptomatic relief.

Q7. Why shouldn't I keep leftover antibiotics for future illnesses or share my antibiotics with others?

There are many kinds of germs and species of bacteria. Different illnesses are caused by different germs and may require different medication. Even among bacteria, some antibiotics work on only on certain types of bacteria.

The antibiotics you were previously prescribed for one illness may not be suitable or effective for another, even if the symptoms appear similar. This means that what is suitable for you may not be suitable for others and may even worsen their condition.

Antibiotics should only be used with your doctor's prescription. The doctor will be able to prescribe the correct type of antibiotic and the appropriate dosage needed for your illness, based on your medical history and symptoms, to treat the infection, if required.

Taking antibiotics unnecessarily and sharing antibiotics with others to consume can lead to germs developing greater antibiotic resistance and increase the spread of AMR.

Q8. What are the side effects of consuming antibiotics?

The side effects of using antibiotics include diarrhoea, nausea, stomach ache, loss of appetite, rashes and allergic reactions, which may include generalised rash, facial, lip or eye swelling, and even difficulty breathing in severe cases.

Taking antibiotics frequently will pressure the bacteria to adapt and develop resistance to the antibiotics in order to protect themselves. These surviving antibiotic-resistant bacteria have resistance traits in their DNA that can spread to other bacteria.

Q9: How does vaccination reduce antibiotic resistance?

Vaccination plays an important role in the fight against antibiotic resistance by helping people to build up immunity against certain infections, thereby reducing the risk and spread of infections and subsequently, the need for antibiotics to treat them. When fewer antibiotics are used, there is less selective pressure on bacteria to develop resistance.