

Antimicrobial Resistance - Frequently Asked Questions

1. What are antimicrobial agents and antibiotics?

There are many types of microorganism, such as bacteria, virus, fungi and parasites. Antimicrobial agents, including antibiotics, are drugs that can kill or suppress disease-causing microorganisms. Antibiotics are drugs for treating bacterial infections, either by killing the bacteria or stopping them from growing. There are different types of antibiotics for treating different bacterial infections. Antibiotics are not effective in curing viral infections such as common cold and influenza (flu) and cannot make recovery faster.

2. What are antimicrobial resistance bacteria?

'Antimicrobial resistance' occurs when microorganisms such as bacteria, viruses, fungi and parasites change in ways that render the medications used to cure the infections they cause ineffective. 'Antibiotic resistance' happens when bacteria evolve to become resistant to previously effective antibiotics. These resistant bacteria are sometimes referred to as 'superbugs'. When the bacteria become resistant to most commonly used antibiotics, they are referred to as 'multi-drug resistant organisms' (or MDROs). When the medicines become ineffective and infections persist in the body, the risk of spread to others will also increase.

3. What causes antimicrobial resistance?

Antimicrobial resistance (AMR) occurs naturally over time through genetic changes and can affect humans and animals. It develops when microorganisms adapt and grow in the presence of antimicrobials (including properly used antimicrobials). However, AMR is accelerated by misuse and overuse of antimicrobials (examples include misuse of antibiotics for treatment of viral infections such as common cold and influenza, and improper use of antimicrobial on food animals). Among all antimicrobials, resistance to antibiotics for treatment of bacterial infection is the most serious problem. Resistant bacteria are often acquired through ingestion or contact from colonised or infected animals, food or humans, or their contaminated environment. AMR has no respect for borders and direction and can be transmitted in a bi-directional manner from animals to humans and vice versa.

4. What are the consequences of AMR?

If the problem of AMR does not improve, existing antimicrobials would become ineffective and infections could not be cured, resulting in prolonged illness and increased risk of death.

Without effective antimicrobials for prevention and treatment of infections, medical procedures such as organ transplantation, chemotherapy for cancer, diabetes management and major surgeries become more risky in particular for patients who are frail. Infections caused by resistant bacteria can spread among people as well as animals, and impose huge threats to global health and economy. If no action is taken, AMR could cause up to ten million deaths in the world annually by 2050 (in contrast with at least 700,000 per year currently), and could force up to 24 million people into extreme poverty by 2030¹.

5. What can the general public do to combat AMR?

AMR is affecting everyone. Members of the public should also play an important role in combating the threat of AMR by the following:

- Proper use of antibiotics
 - Do not demand antibiotics from your doctor
 - Follow your doctor's advice when taking antibiotics
 - Do not stop taking antibiotics by yourselves even if you are feeling better
 - Do not take leftover antibiotics
 - Do not share your antibiotics with others
 - Do not self-purchase antibiotics without a prescription
- Practise frequent hand hygiene, especially before eating and taking medicine, and after going to the toilet
- Ensure your vaccination is up-to-date
- Maintain cough etiquette, wear a surgical mask if you have respiratory symptoms

6. What are the precautions when taking antibiotics?

While taking antibiotic which is necessary to cure your infection, the antibiotic also kills the normal bacteria in your body and predisposes you to acquire more resistant bacteria. You should enhance your personal hygiene to protect the health of you and your family:

- Practise frequent hand hygiene
- Eat or drink only thoroughly cooked and boiled items
- Disinfect and cover all wounds
- Wear a surgical mask if you have respiratory symptoms
- Young children with symptoms of infections should minimise contact with other children

Follow your doctor's advice when taking antibiotics and do not stop taking antibiotics by yourselves even if you are feeling better. Consult your doctor or pharmacist if in doubt.

¹ WHO. Press release entitled "New report calls for urgent action to avert antimicrobial resistance crisis". Available from: <https://www.who.int/news/item/29-04-2019-new-report-calls-for-urgent-action-to-avert-antimicrobial-resistance-crisis>

7. Are antibiotics miracle drugs that cure all kinds of inflammation?

No. Antibiotics are drugs for treating bacterial infections whereas anti-inflammatory drug is a general term referring to a group of drugs which can reduce inflammation and relieve pain, such as non-steroidal anti-inflammatory drugs like aspirin. Their actions are different from those of antibiotics. If you have questions about the drugs you are taking, you should consult your doctor.

8. Are there any risks in taking antibiotics?

Yes. Antibiotics, like any other drugs, may cause side effects and allergic reactions. While antibiotics wipe out the bacteria causing the disease, they also affect the normal bacteria living inside your body and increase the risk of acquiring resistant bacteria which make treatment and control of subsequent infections difficult. Therefore, your doctor will consider your condition and balance the treatment benefits against risks before making a prescription. To protect your health, follow your doctor's instructions when taking antibiotics.

9. What are the side effects of taking antibiotics?

Each antibiotic has its own specific side effects. In general, some people may experience side effects such as nausea, vomiting, constipation or diarrhoea, and headache when they are taking antibiotics. If the side effects persist or worsen, you should consult your doctor. Some people may also develop allergic reactions such as rash, itchiness or breathlessness after taking antibiotics. If this should occur, seek medical advice immediately. If drug allergy is confirmed, inform your doctor about your history of drug allergy in future consultations. Some antibiotics may decrease the efficacy of oral contraceptives, or cause harm to the foetus or infant. Therefore, women should inform their doctors of their contraceptive, pregnancy or breastfeeding status so that appropriate prescriptions could be given.

10. Do I always need antibiotics if I have cold or flu?

90% of upper respiratory tract infections (URTI) do not require antibiotic treatment (URTI such as common cold and influenza that are of viral origin). If you have a cold or flu, adopt the following measures:

- Have adequate rest and drink plenty of water. If symptoms persist, consult your doctor
- Follow your doctor's advice on the use of drugs
- Do not demand antibiotics from your doctor
- Do not self-purchase antibiotics without a prescription

11.If I am having a cold or flu and my nasal discharge changes to yellow or green, do I need antibiotics?

It is quite common for the discharge to become thick and change to yellow or green during a cold or flu. Therefore, changes in the appearance of nasal discharge alone do not justify the use of antibiotics. Always consult your doctor for the use of antibiotics.

12.Do I always need antibiotics if I have fever?

No. Fever is a common presenting symptom of infection which may or may not be caused by bacterial infections. You should follow your doctor's advice for the use of antibiotics. For the sake of your own health, you should not demand antibiotics from your doctor nor self-purchase antibiotics without a prescription.

13.Why should I keep vaccination up-to-date?

Up-to-date vaccination helps to prevent bacterial infections like pneumococcal pneumonia, which helps to reduce use of antibiotics. Up-to-date vaccination also helps to prevent viral infections and the complications including secondary bacterial infections. A local survey² showed that 54% of respondents have mistaken that cold and flu are treatable by antibiotics. Seasonal flu vaccination can therefore not only prevent the inappropriate primary use of antibiotics for seasonal influenza, but also their use for secondary bacterial infections. This translates into fewer opportunities for resistance to occur.

14.What can health care workers do to combat AMR?

Antimicrobials are a precious resource and their effectiveness must be preserved to protect us from infections. Healthcare workers play an essential role in preserving them:

- Prescribe antibiotics in accordance with therapeutic guidelines in consideration of clinical situations
- Educate your patients
 - To take antibiotics as prescribed and always complete the full course of medication
 - Discuss about the importance of appropriate antibiotic use and the dangers of AMR where appropriate
 - Talk about how to prevent infections and their spread. For example, vaccination, maintain good personal hygiene and hand hygiene
- Apply best practice of infection prevention and control, and to practise frequent hand

² General Public's Knowledge, Attitude and Practice Survey on Antimicrobial Resistance 2016/17. CHP, DH, HKSAR. Available from: <https://www.chp.gov.hk/en/static/51310.html>

hygiene

- Receive seasonal influenza vaccination every year

15. What is the impact of Coronavirus Disease 2019 (COVID-19) pandemic on AMR?

As COVID-19 is caused by virus but not bacteria, antibiotics should not be used to prevent or treat the disease, unless there is secondary bacterial infection. A study^{3,4} showed that while 71% of COVID -19 patients received antibiotics, only 4% had true bacterial coinfection, and this may have contributed to the observed 10% increase in resistance against several classes of antibiotics at the same institution. Misuse of antibiotics during COVID-19 pandemic could lead to accelerated emergence and spread of AMR that could potentially lead to another public health emergency.

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³ Nori P, Cowman K, Chen V, et al. Bacterial and fungal coinfections in COVID-19 patients hospitalized during the New York City pandemic surge. *Infect Control Hosp Epidemiol*2020;1-5. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7417979>

⁴ Covid -19, misinformation, and antimicrobial resistance. Editorials *BMJ* 2020; 371 doi: <https://doi.org/10.1136/bmj.m4501>. Available from: <https://www.bmj.com/content/371/bmj.m4501>