

# What the General Public should be aware of Antimicrobial Usage

**A**ntimicrobials are essential for the survival of humans. They are essential in the treatment and prophylaxis of infections. Yet, due to the misuse of antimicrobials, their effectiveness has been threatened, leaving us hopeless at a critical time. How could we preserve the effectiveness of antimicrobials? What is our role in finding a solution for this issue?

Dr. Nayani Weerasinghe, Consultant Microbiologist, and Senior Lecturer in the Department of Microbiology, Faculty of Medicine of the University of Ruhuna shared a bit of her expertise on this matter and what the public should be aware of antimicrobial resistance.

## **Q: What is antimicrobial resistance?**

**A:** Antimicrobials are a group of drugs that are being used to treat infections. The two main types of diseases that occur in humans are infectious diseases and non-infectious diseases. Non-infectious diseases include hypertension, diabetes, cancers and ischaemic heart diseases. Infectious diseases are the ones are caused by micro organisms like bacteria, viruses and fungi. The drugs that are used to treat infectious diseases are called antimicrobials.

There are mainly three groups of antimicrobials: antivirals, antibiotics (antibacterials), and antifungals. Antivirals are used to treat viral infections, while antibiotics are used to treat bacterial infections and antifungal agents against fungal infections. Generally, antimicrobials either kill or inhibit microbial growth and cure infections. However, when they are incapable of killing or inhibiting the growth of microbes that means when the microbes are resistant to antimicrobials, they are not effective in making us better. Resistance can occur to any of the drug groups; antivirals, antibiotics,

## **Q: What are the risks caused by antimicrobial resistance?**

**A:** Antimicrobials are lifesaving drugs for patients in critical condition due to infection. Without effective antibiotics, infection will become severe leading to the development of complications, prolonged hospital stays, and ultimately even causing the death of the patient. This increased morbidity and mortality will be a burden to the healthcare system, the patients, and their households. Antimicrobial resistance is a threat to the existence of humankind. If the emergence and spread of antimicrobial resistance continue at this alarming rate, it is truly scary to think about the future. If we are still going to ignore the gravity of the problem and take this lightly, we all will have to face its bitter consequences of it.

## **Q: What are the illnesses that should be treated with antibiotics? Do we need to treat every ailment with antibiotics?**

**A:** Only infectious diseases are treated with antibiotics. However,



**Dr. Nayani Weerasinghe**

it is very important to remember that an infection per se is not an indication of antibiotics. Because immunocompetent patients have a very good immune system that can fight off most of the pathogens we encounter. Only a very few people whose immune system is not strong enough due to some other illness or reason will not be capable of fighting off an infection. Therefore, patients with competent immune systems will need antibiotics only for severe infections like infections of the lungs, heart valves, brain, and bones.

On the other hand, many infections are caused by viruses than by bacteria, and therefore, antibiotics are of no use in the treatment of many infections. A few examples of commonly encountered viral infections are viral flu, dengue, measles, mumps, rubella, chickenpox and hepatitis.

When people get medicine from a doctor, sometimes they don't get better despite completing the full course. Then some people tend to buy the same antibiotics from the pharmacy, using the same prescription without a doctor's advice. Is it all right to do so?

No, it is not correct. We must not use the same prescription to buy antibiotics repeatedly. We must be careful if we are not getting better or have a recurrence of illness because that might be due to ineffective antibiotics and if we take the same ineffective therapy, we might end up worsening the clinical condition, putting our lives at risk. Therefore, you must not take the responsibility of deciding whether to continue or stop a medication. You should always consult a doctor and get medical advice. Also, if the doctor prescribes the drug for five days, you should continue it for the same duration without stopping at day three.

Pharmacists also have an important role to play here. They should not issue antibiotics for old prescriptions.

## **Q: What is your opinion on over-the-counter antibiotic use?**

**A:** Some people tend to buy antibiotics for minor ailments like sore throat and wound infections without a doctor's prescription. Doctors as prescribers and pharmacists should discourage these behaviours from their customers and educate them on the rational use of antibiotics. All pharmacists should have a policy not to issue antibiotics without a doctor's prescription. Among the many factors which contribute to the emergence and spread of antimicrobial resistance, over-the-counter antibiotic use has been identified as a main driving force.

## **Q: What should the public be aware of about medicinal usage?**

**A:** Health education of the public is the first and foremost in achieving the goal of a future free of overwhelming antimicrobial resistance. They should be aware that they cannot use antibiotics on their own and only use antibiotics on a doctor's prescription. When we take antibiotics frequently, the good bacteria living in our body get exposed to the antibiotics unnecessarily and it is natural for them to develop resistance mechanisms when they get exposed to antimicrobials.

The resistance genes that will occur in the good bacteria, will be transferred to any pathogenic bacteria. Ultimately, the pathogenic bacteria (disease-causing bacteria) will be resistant to antibiotics. Therefore, the public should be aware of the good practices regarding antibiotic usage. If you are ill always seek medical advice. Ensure to consume the prescribed dose, at the correct

frequency for the prescribed period. A dose lower than that prescribed, will not kill, or suppress the bacteria as expected. Never stop taking antibiotics when you start to feel better. That doesn't mean that all your bacteria are cleared from the body. If you stop taking antibiotics halfway, the half-suppressed bacteria will get reactivated and on top, they will develop resistance mechanisms. Do not share antibiotics among the family members and do not use old prescriptions to buy antibiotics repeatedly. Because you never know whether your current illness is the same as the previous or whether the same drugs are effective.

## **Q: What are the best practices the public should practice in order to prevent antimicrobial resistance?**

**A:** Apart from the facts I mentioned earlier, everyone should practice 'infection control practices' like wearing control masks and washing hands and cough etiquette. Observation of infection control practices is very important to prevent the spread of antimicrobial resistance organisms within the community.

Also, these days a lot of antimicrobials are used in animal feeds to enhance their growth and protect them from infections. The commensal bacteria present in the animal gut can develop resistance. These resistant micro-organisms can transmit to us via the food chain when we consume those food products without cooking them properly, or the vegetables that we eat fresh like salads get contaminated with animal feces. When our gut flora develops resistance, they can transfer those resistant genes to pathogenic bacteria.

How do you think antimicrobial resistance can be reduced or prevented altogether?

The only way we can achieve that is the 'One Health Concept'. The doctor, patient, pharmacist, and everyone has a role to play. Doctors should not prescribe antibiotics just to please the patients. They must be rational and prescribe according to local antibiotic guidelines. The patient's role is to take the antibiotics correctly, listen to the doctor's advice and practice infection control practices.

On the other hand, pharmacists should also only issue antibiotics for a doctor's prescription and the prescription should also be a new one. Must take measures to control antibiotic use in farm animals, so that we can control acquiring resistant organisms via the food chain. We can only approach this problem with the One Health Concept because we all must act together to prevent antimicrobial resistance.

So, the message I want to convey to all the parties is 'don't be desperate for the future of our children, and save the life of our lifesavers.'

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