



Are we running out of options

Crisis of antimicrobial resistance

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— Rahul Swamy —



The overuse of antibiotics poses an increasing threat to children who develop — or already have — drug-resistant infections. Picture: WWW.MEDICINE.WUSTL.EDU/NEWS

THE term 'Antimicrobials' refers to a broad range of pharmaceutical agents which are used to either treat or prevent infections in not only humans but also animals and plants. These include bacteria, fungi, viruses and parasites.

Since the accidental discovery in 1928 by Sir Alexander Fleming, antibiotics have saved millions. Since then we have seen newer and more effective medications specifically targeted to eliminate these pathogens.

Antibiotics works in two primary ways;

- Bactericidal – Kills the organism generally by interfering with cell wall or its cell content; and

- Bacteriostatic – Stops the multiplying of organisms by interfering with the protein production, DNA replication or other aspects.

Resistance occurs when these microbes mutate and are not sensitive to medicines which makes it increasingly difficult or in some instances impossible to treat (Antimicrobial Resistance). Collectively deaths due to infectious diseases are ranked in the top 5 causes of death globally.

Antimicrobial resistant organisms are not only limited to humans but also animals, food, plants and the environment (in water, soil and air). They can spread from person to person or between people and animals, including from food of animal origin.

The economic impact is astronomical and continues to increase at such an exponential rate that annual cost to address anti-biotic resistance in the US is estimated to be close to \$5 billion (\$F10.6) in 2019 alone.

Fiji is no exception and our ability to treat the most common of infectious diseases is deteriorating.

This leads to higher medical cost, prolonged hospitalisation and increased mortality. Key areas that attribute to the

problem at hand include; irrational prescribing, obtaining medications without prescriptions, poor standard treatment guidelines, poor infection and disease prevention and control in health-care facilities and farms; poor access to quality, affordable medicines, vaccines and diagnostics; lack of awareness and knowledge, lack of enforcement of legislation and lack of access to clean water, sanitation and hygiene (WASH) for both humans and animals.

What makes matters even worse is the emergence of multi drug resistance (super bugs) and the clinical pipeline for new antimicrobials being 'dry'.

In 2019, WHO identified 32 antibiotics in clinical development that address the WHO list of priority pathogens, of which only six were classified as innovative.

Furthermore, a lack of access to quality antimicrobials remains a major issue. Antibiotic shortages are affecting countries of all levels of development and especially in healthcare systems.

The situation is so alarming that the only last resort for life threatening such as caused by Carbapenem resistant Enterobacteriaceae (i.e. E.coli, Klebsiella, etc) treated with a drug called 'Colistin' are now resistant. Furthermore, patients with methicillin-resistant Staphylococcus aureus (MRSA) infections are 64 per cent more likely to die than people with drug-sensitive infections.

How can we all contribute in controlling Antimicrobial Resistance?

- Only use antibiotics when prescribed by a certified health professional;
- Never demand antibiotics if your health worker says - you don't need them;
- Always follow your health worker's advice when using antibiotics;
- Never share or use leftover antibiotics; and
- Always complete the course of anti-

microbials prescribed.

Prevent infections by regularly washing hands, preparing food hygienically, avoiding close contact with sick people, practicing safer sex, and keeping vaccinations up to date.

Prepare food hygienically, following the WHO 'five keys to safer food' (keep clean, separate raw and cooked, cook thoroughly, keep food at safe temperatures, use safe water and raw materials) and choose foods that have been produced without the use of antibiotics for growth promotion or disease prevention in healthy animals.

Improve surveillance of antibiotic-resistant infections. Strengthen policies, programs, and implementation of infection prevention and control measures.

Only give antibiotics for animals under veterinary supervision. Do not use antibiotics for growth promotion or to prevent diseases in healthy animals. Vaccinate animals to reduce the need for antibiotics and use alternatives to antibiotics when available.

Promote and apply good practices at all steps of production and processing of foods from animal and plant sources.

Improve biosecurity on farms and prevent infections through improved hygiene and animal welfare.

Take home message :

Q: Does stopping a course of antibiotics early lead to antibiotic resistance?

A: There has been a lot of research into how long antibiotic courses should be, to determine the shortest possible length of course needed to completely kill all bacteria.

If you are being treated for an infection, the kind of antibiotics your doctor prescribes and the length of the course should be based on the best evidence.

Feeling better, or an improvement in symptoms, does not always mean that the

infection has completely gone. Your doctor has had years of training and has access to the latest evidence – so always follow their advice.

Evidence is emerging that shorter courses of antibiotics may be just as effective as longer courses for some infections. Shorter treatments make more sense – they are more likely to be completed properly, have fewer side effects and also likely to be cheaper. They also reduce the exposure of bacteria to antibiotics, thereby reducing the speed by which the pathogen develops resistance.

WHO publishes guidelines about treatments for different infections and recommends treatment durations and doses of antibiotics based on the best clinical evidence for each case by continuously reviewing the latest research so that updated recommendations are provided to health professionals. ' Finish what you started'

■ **Rahul Swamy is the head pharmacist at Oceania Hospitals Pte Ltd. The views expressed are his and not necessarily shared by this newspaper**

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