



Editorial

Preventing antimicrobial resistance together

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Antimicrobial resistance (AMR) is one of the most serious health threats facing humanity. AMR is a threat to humans, animals, plants, and the environment that could cause 10 million deaths per year and an overall cost of \$100 trillion to the global economy by 2050. Formerly called World Antimicrobial Awareness Week, the name was changed this year to World AMR Awareness Week (WAAW). It is celebrated from 18 to 24 November every year to improve awareness and understanding of AMR.

The theme for 2023 is 'Preventing Antimicrobial Resistance Together'. It encourages all sectors to use antimicrobials prudently, to work together, and to strengthen preventive measures addressing AMR. It is a global campaign to raise awareness and understanding of AMR and promote best practices to reduce the emergence and spread of drug-resistant infections. One of the primary goals of these strategies is to raise AMR awareness and understanding through effective communication, education, and training.

This year's theme calls for cross-sectoral collaboration to preserve the effectiveness of antimicrobials. To effectively reduce AMR, all sectors must use antimicrobials prudently and appropriately, take preventive measures to decrease the incidence of infections and follow good practices in the disposal of antimicrobial-contaminated waste. This theme stresses to promote the necessity of raising awareness about working together to eradicate AMR and encourage a better way of using antimicrobial drugs with the slogan 'Antimicrobials: Handle with Care.'

As per the Indian Council of Medical Research 2021, 'Antibiotic resistance has the potential of taking the form of a pandemic in the near future if corrective measures are not taken immediately.' To effectively combat it, it is essential that all sectors work together to promote the responsible application of antimicrobial and other preventative measures. The necessity is for AMR awareness.

The development of AMR occurs when pathogens evolve to become immune to treatment with antimicrobials, causing drug resistance, especially with the rapid global spread of multi- and pan-resistant bacteria, for which the currently available antibiotics are ineffective. Due to this, antimicrobial drugs lose their efficacy, making the treatment more challenging or impossible in some cases. The effectiveness of modern medicine in treating infections, including those that occur during major surgery and cancer chemotherapy, would be in jeopardy without the use of effective antimicrobials. Considering this, the World Health Organization (WHO) has included AMR in its list of the top 10 dangers to global public health. In addition to this, the lack of novel antimicrobials in clinical development has been a major problem. The WHO identified only six antibiotics as innovative out of 32 antibiotics that are under clinical development and targeting WHO's priority diseases in 2019. Moreover, the general population's inability to obtain high-quality antimicrobials remains a severe issue. Antibiotic shortages are wreaking havoc globally, regardless of the level of development, and are especially harmful to healthcare systems.

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The misuse of broad-spectrum antimicrobials is rampant in India, contributing to an annual rise in resistance of 5–10%. In a study conducted in India, the antibiotic (carbapenem) used to treat *Acinetobacter baumannii* bacteria was found to be resistant in 87.5% of the sample population, restricting treatment choices. There was a 22% rise in resistance to the antibiotic (Imipenem) from 2016 (14%) to 2021 (36%) that is used to treat infections caused by the bacteria *Escherichia coli*. Methicillin-resistant *Staphylococcus aureus* rate has shown a 14.2% increase from the past five years (2016–2021).

Multidrug-resistant is the alarming trend toward widespread AMR that is being seen in hospitals and other healthcare settings, as well as in the general population. It is a big contributor to health problems and raises expenses for individuals and society. It develops gradually over time, mainly as a result of genetic alterations.

Inappropriate (misuse and overuse) usage of antimicrobials, lack of clean water access, sanitation and hygiene for both humans and animals, poor infection, disease prevention, control in healthcare facilities and farms, poor access to quality, affordable medicines, vaccines, and diagnostics, lack of awareness and knowledge are some of the reasons for the rise.

PREVENTIVE MEASURES FOR AMR

AMR cannot be prevented as microbes adapt to their environment. However, the following are the measures that aid in limiting AMR:

- Spending quality time with a physician to discuss symptoms, resulting in rationalized prescription
- Avoiding medication sharing
- Avoiding unnecessary antibiotic use
- Avoiding consumption of leftover or stored prescription drugs
- Maintaining a good diet, sleep, and hygiene, thereby preventing the need for antimicrobial drugs.

APPROACHES FOR COMBATING OF AMR

Misuse and overuse of antibiotics, along with ineffective infection prevention and control, speed up the development of antibiotic-resistant bacteria. To lessen the impact and slow the development of resistance, measures can be implemented on an international, national, community, hospital, or healthcare setting as well as on an individual (physician, healthcare provider, and patient) scale.

A national committee should be formed to track the effects of antibiotic resistance. In addition to this, developing and executing national standard treatment guidelines, having an essential drug list, and increasing immunization coverage are very desirable at the national level. Implementation of a strict national AMR policy, which aims to understand the emergence, spread, and factors influencing AMR; to establish an antimicrobial program;

to rationalize antimicrobial use; and to promote the development of newer, more effective antimicrobials.

COMMUNITY MEASURES

- Mandatory public and professional education toward the rational use of antibiotics is needed.
- Regulatory control of over-the-counter use of antibiotics
- Optimization of antibiotic selection as per the guideline (dosing, route of administration, and duration of therapy)
- Prevention of infection with the use of alcohol-based hand rubs.

MEASURES TO PREVENT AND CONTROL INFECTIONS AT HEALTHCARE FACILITIES

- The formation of a committee to oversee infection control (IPC)
- Maintenance of good hand hygiene practices
- Accurate diagnosis and treatment of infection
- Rational antimicrobial use
- Monitoring of antibiotic resistance and antibiotic use
- Improving the antimicrobial quality and supply chain
- Good microbiology practices.

PHYSICIAN/HEALTHCARE PROVIDERS/ PATIENT MEASURES

Compliance with local infection control and antibiotic use policies and timely notification of resistant cases to IPC by the physician.

Educating nurses and other healthcare personnel about AMR and aseptic techniques may aid in infection management, as they have direct contact with the patients.

Concerns about antibiotic use and optimal dosing should be addressed by pharmacists with both patients and clinicians. In addition to this, the pharmacist should educate the patient regarding antibiotic use and the necessity of following the prescribed treatment regime.

The patient should follow these to curb AMR:

- Aseptic protocol for any procedures
- Control the spread of diseases by covering the mouth or wearing masks while coughing or sneezing and by taking timely vaccinations.
- Adherence to the antimicrobial regime and antibiotics.

Let's join hands in the mission to curb the AMR

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