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Guest Editorial

Controlling antimicrobial resistance: A daunting task ahead

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Antimicrobial resistance (AMR) is the resistance of a microbe towards a drug which was originally effective in treating the infections caused by it. Approximately 0.7 million people die every year worldwide from drug-resistant strains of microbes. The number is estimated to increase to 10 million by 2050, surpassing cancer deaths.¹ Antibiotic resistance specifically refers to the resistance offered by bacteria towards antibiotics, whereas AMR encompasses resistance to drugs by other microbes as well, such as parasites, viruses and fungi. The evolution of resistant strains is a natural phenomenon, but practices such as misuse of antimicrobial drugs, poor infection control practices, insanitary conditions, etc. have accelerated the emergence of resistance strains. As of now, the world is heading towards an era in which the most easily treated infections will be haunting the human race, if there is no urgent coordinated action is taken to tackle the problem.

According to World health Organization (WHO) report on global surveillance of AMR, very high rates of resistance have been observed in bacteria that cause common healthcare associated and community-acquired infections (e.g. urinary tract infection, pneumonia) in all the WHO regions. Globally 6% of newly diagnosed and 20% of previously treated tuberculosis (TB) cases were identified to be multi drug resistant. Also, extensively drug resistant TB has been reported in 92 countries across the world. The emergence

of resistance to artemesnin among malarial parasites poses a significant challenge to the efforts on control of malaria. Increased level of resistance (3.4%) to non-nucleoside reverse transcriptase inhibitors has been observed among those receiving treatment for HIV, primarily in African region. The influenza viruses which frequently lead to epidemics and pandemics have developed resistance to the commonly used antivirals such as amantadine and rimantadine.²

AMR decreases the effectiveness of treatment and the patient remains infectious for a longer duration resulting in spread of resistant organisms to others. Longer duration of management results in increase in healthcare costs, which place a heavy burden on the economy of people as well as government. With the emergence of AMR, the developments of modern medicine in fields such as cancer chemotherapy, organ transplantation, etc. will be heavily compromised. Rapid globalization has resulted in easy spread of resistant organisms to other countries and it can result in more than 1% loss in gross domestic product which mainly affects the developing countries.³

Surveillance is of utmost importance in understanding the trends in AMR, identifying priority areas in intervention and to monitor the effects of intervention to control resistance. In the recently published Indian Council of Medical Research's latest report on 'AMR research and surveillance' conducted during January to December 2020, the following five organisms posed a serious threat: E.

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coli, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Acinetobacter baumannii*, and *Staphylococcus aureus*. An integral component of AMR surveillance is the informatics suite for collection, storage & analysis of surveillance data and considering the need, ICMR has initiated the design and development of ICMR's Antimicrobial Resistance Surveillance system (i-AMRSS), which is capable of collecting standardized data from small laboratories to generate local and nationwide reports.⁴

Globally, countries committed to the framework set out in the Global Action Plan (GAP) 2015 on AMR during the 2015 World Health Assembly and committed to the development and implementation of multisectoral national action plans. World Antimicrobial Awareness Week observed every year during 18th to 24th of November, is a global campaign with the slogan "Antimicrobials: Handle with Care", aims to raise awareness of antimicrobial resistance worldwide and encourage best practices among the general public, health workers and policy makers to slow the development and spread of drug-resistant infections.² India's National Action Plan pays considerable attention to the issue of antibiotic use in the animal farming, agriculture and aquaculture sectors. It also promotes the One Health perspective of integrating human and animal health sectors and calls for more research and better surveillance systems to tackle antimicrobial resistance. AMR is a complex problem that requires a united multisectoral approach and a strong antimicrobial stewardship program, so as achieve

the desired forward momentum.^{5,6}


Conflict of Interest

None.

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