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Editorial

Antimicrobial resistance – priorities and way forward

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Antimicrobial Resistance (AMR) has rightly received global attention as a major healthcare challenge, as the issue is growing in an alarming rate pushing us back into a pre-antibiotic era. Overuse and misuse of antimicrobials in human, agriculture, veterinary sectors, etc for both therapeutic and non-therapeutic applications is one of the major factors contributing to AMR challenge. Inadequate access to clean water, sanitation, and hygiene, and lack of investment in research and development (R&D) of new antimicrobials are also significant contributing factors.[1,2]

The WHO periodically prepares Bacterial Priority Pathogens List (WHO BPPL) categorizing bacterial pathogens into critical, high, and medium priority groups to inform research and development (R&D) and public health interventions.[3] In 2024 Rifampicin-resistant *Mycobacterium tuberculosis*, Enterobacterales resistant to third generation cephalosporins and carbapenems, and carbapenem-resistant *Acinetobacter baumannii* are recognised as 'Critical' priority pathogens by the WHO. In collaboration with WHO, the Department of Biotechnology, Govt. of India has published the Indian priority pathogens list in 2021. The Indian 'Critical priority pathogens' are Enterobacterales (Escherichia coli and Klebsiella pneumoniae) resistant to carbapenems, tigecycline and colistin. Non-fermenting bacteria (*Acinetobacter baumanni*i and Pseudomonas aeruginosa) resistant to carbapenems, and colistin. The list also includes certain high and medium priority bacterial pathogens.[4] The WHO has also identified fungal priority pathogens for the first time ever in 2022; *Candida auris, Candida albicans, Aspergillus fumigatus* and *Cryptococcus neoformans* are included in the 'critical group'.[5] Efforts including policies, research and funding are focused on these priority organisms. Researchers are encouraged to take up more studies on these organisms.

Much research is being conducted on understanding AMR issue in terms of its burden and trend, improving methods of optimum utilisation of existing antimicrobials by diagnostic stewardship and antimicrobial stewardship (AMS). 'One Health', an integrated approach to address AMR by actively involving various stakeholder sectors - human medicine, veterinary medicine, agriculture, and environment - is being implemented globally.[5] Research studies on the one health concept are prioritised. AMR is a complex challenge, but infection prevention practices offer a simple and powerful solution. By promoting hand hygiene and other infection control measures, we can significantly reduce the spread of infections, lessen selective pressure on microbes, and ultimately preserve the effectiveness of life-saving antibiotics.[6]

We need more research to understand the trends and dynamics of AMR strains and possible solutions to treat patients infected with multi-, extremely- and pan- drug resistant pathogens. This information will help in taking robust policy decisions, and assessment of implementation strategies. Researches focusing on increasing awareness and adherence to infection prevention practices, outbreak

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management and antimicrobial stewardship are needs of the hour. Clinical microbiologists can contribute significantly in addressing the AMR issue in several ways, not limited to, diagnostic stewardship, antimicrobial policy development, assisting infection prevention practices, supporting outbreak investigations and medical education. There is also a strong need to emphasise upon, and upskill medical and allied health science students in concepts and practices related to AMR, AMS and infection prevention practices.

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