

Antimicrobial Resistance in India: Challenges, State-Level Strategies, and the Path Forward

Sir,

Antimicrobial resistance (AMR) is a global health crisis affecting both developed and developing nations.^[1] A report commissioned by the United Kingdom government projects that AMR could lead to 10 million deaths per year by 2050,^[2] urging immediate action from scientists, clinicians, and policymakers. India, often termed the “capital of antibiotic resistance,” faces this crisis due to irresponsible antimicrobial prescriptions, self-medication, overuse in livestock, and poor hygiene.^[3] Annually, 60,000 newborn deaths are linked to antibiotic-resistant infections,^[4] and antibiotics are frequently misused for viral illnesses such as the common cold, dengue, and malaria.^[5] The COVID-19 pandemic further accelerated AMR due to excessive antibiotic usage.^[6]

THE BURDEN OF SEPSIS AND ANTIMICROBIAL RESISTANCE IN INDIA

India’s sepsis crisis, worsened by AMR, underscores the need for better infection control and antibiotic stewardship. Misuse of antibiotics has fuelled drug-resistant pathogens, complicating sepsis treatment. Nearly half of intensive care unit patients in India develop sepsis, with higher mortality rates than in Western nations. The Sepsis Forum of India’s national registry aims to track epidemiology, identify pathogens, and guide interventions. Addressing this crisis requires robust data collection, early diagnosis, and stringent infection prevention in healthcare settings.^[7]

To combat antibiotic misuse, the Indian Council of Medical Research (ICMR) launched a 2020 training program for general practitioners and interns on rational antimicrobial use. In rural areas, unnecessary high-end antibiotic prescriptions fuel AMR. Over-the-counter sales and the lack of strict prescription guidelines worsen the issue. In addition, untrained alternative medicine practitioners prescribing allopathic drugs hinder antimicrobial stewardship efforts, highlighting the need for stricter regulations.

INDIA’S STRATEGIC RESPONSE TO ANTIMICROBIAL RESISTANCE

The Indian government has taken significant steps to combat AMR. In 2016, the Union Ministry of Health launched the “Red Line Campaign on Antibiotics” to limit over-the-counter sales and raise awareness.^[8,9] The National Action Plan on AMR (NAP-AMR) was developed to enhance awareness, surveillance, infection control, antimicrobial stewardship,

research investments, and India’s global leadership in AMR mitigation. Kerala, Madhya Pradesh (M.P.), and Delhi have aligned their state action plans with NAP-AMR for effective implementation.

KERALA GOVERNMENT’S INITIATIVES AGAINST ANTIMICROBIAL RESISTANCE

Kerala was the first state^[10] to launch the AMR Strategic Action Plan on October 17, 2017.^[10] This initiative promotes collaboration between the private sector and civil society to advance research and implement strategies to reduce AMR emergence. Kerala also introduced India’s first genomics-based infectious diseases test, “infexnTM,” to identify bacterial and fungal infections while detecting AMR genes. Furthermore, the state initiated high-intensity AMR awareness programs, such as educating the public about antibiotic-free food and water, the importance of prescriptions for antibiotics, and the safe disposal of expired medications. “Operation Amrith,” launched to conduct surprise pharmacy inspections, aims to curb over-the-counter sales of antibiotics. Most recently, in September 2024, Kerala’s drug control department mandated that antibiotics be dispensed only in blue paper bags containing printed information on antibiotic usage and AMR.

MADHYA PRADESH GOVERNMENT’S STRATEGIES TO COMBAT ANTIMICROBIAL RESISTANCE

In July 2019, M.P. Government implemented various programs and surveillance measures to combat AMR in collaboration with WHO, ICMR, National Centre for Disease Control, and All India Institute of Medical Sciences (AIIMS), Bhopal. The plan includes mobile apps for monitoring antibiotic use and developing antibiograms to aid clinicians in selecting appropriate antibiotics while awaiting laboratory results.^[10]

DELHI GOVERNMENT’S INITIATIVES AGAINST ANTIMICROBIAL RESISTANCE

Delhi has been proactive in addressing AMR through the implementation of its State Action Plan. To tackle the excessive and improper use of last-resort antibiotics such as carbapenems, the Delhi Society for Promotion of Rational Use of Drugs introduced various training and awareness initiatives aimed at healthcare professionals, students, and the general public. To enhance public understanding, creative outreach methods such as social media, films, street plays, and informative posters have been widely used. Furthermore, AIIMS, Delhi,

in association with Maulana Azad Medical College, has leveraged artificial intelligence to predict infections and assist in optimizing antibiotic selection for treatment.^[11]

CONCLUSION

Despite ongoing efforts, AMR remains a major public health threat in India. Nationwide coordination, increased research funding, stricter prescription regulations, public awareness, and improved surveillance are crucial. Global collaboration is key to developing new antimicrobials. Strengthening strategies under the Global Health Security Agenda will help mitigate AMRs impact and protect future generations.

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Conflicts of interest

There are no conflicts of interest.

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