World Health Organization India

sameeksha

ANTIMICROBIAL RESISTANCE (AMR) | Volume 39 | September-October 2025

AMR *Sameeksha**

Highlights

- Global antibiotic resistance surveillance report 2025
- Regional roadmap to accelerate actions on AMR in the human health sector in the SEAR (2025–2030)
- Analysis of antibacterial agents in clinical and preclinical development: overview and analysis 2025
- WHO AWaRe antibiotic book feedback survey report
- IPC Sameeksha volume 23
- Resistance & virulence traits in dermatophytes

1) Awareness and understanding

WHO AWaRe antibiotic book feedback survey report

- Reports findings of an online survey for feedback on content, format and suggestions for future updates of the 2022 WHO AWaRe (Access, Watch, Reserve) antibiotic book.
- Suggestions included addition of targeted therapy for infections caused by *S. aureus*, *E. coli* and *K. pneumoniae*, clinical management of surgical site infections and healthcare-associated infections.

WHO | Report | 1 October 2025 | Online link

Health literacy and interventions on antibiotics use and AMR in younger generations in high-income countries – a systematic review

- Reviews 19 studies from high-income countries to assess antibiotic use, AMR awareness, and the impact of educational interventions among youth.
- Highlights that interactive, age-appropriate interventions, especially gamified and peer-led, significantly improved knowledge and behaviours related to AMR.

MDPI | Systematic review | 17 September 2025 | Online link

Gamified interventions to improve the knowledge, attitude and practice on rational use of antibiotics among school children in Mysuru, South India, to curb the growing antimicrobial resistance

- Assesses impact of gamified educational interventions on antibiotic use and AMR awareness among 210 school children in Mysuru, using pre- and post-intervention surveys.
- Gamified tools significantly improved knowledge, attitudes, and practices regarding antibiotic use, demonstrating their effectiveness in promoting AMR awareness in school settings.

Frontiers | Original research article | 2 September 2025 | Online link

2) Laboratories and surveillance

Global antibiotic resistance surveillance report 2025

- Global analysis of antibiotic resistance prevalence and trends from 23 million cases of various infections shows high levels of antibiotic resistance unevenly distributed across regions, with increasing antibiotic resistance trends in Gram-negative bacterial pathogens
- Countries with limited surveillance often report higher levels of antibiotic resistance and antibiotic resistance disproportionately affects low- and middle-income countries and countries with weak health systems.

WHO | Global report | 13 October 2025 | Online link

Bacteriological profile and antimicrobial resistance patterns in clinical isolates from a tertiary burns ICU: a retrospective comparative analysis of carbapenem resistance and invasion

- Assesses bacterial profiles, AMR, and risk factors for carbapenem resistance, invasive infections, and mortality from clinical samples of a North Indian burns ICU.
- Reports that Gram-negative bacteria dominated; carbapenem resistance and invasive infections were strongly linked to higher mortality, emphasizing urgent need of antimicrobial stewardship.

Journal of Burn Care & Research | Journal article | 6 October 2025 | Online link

Analysis of antimicrobial resistance patterns and genetic mutations in *Helicobacter pylori* from West Bengal, India depicting escalating clarithromycin and high levofloxacin resistance

- Assesses resistance to six antibiotics and identifies genetic mutations linked to resistance in 88 *H. pylori* strains from gastric biopsies in West Bengal.
- Reports high resistance to levofloxacin (69%) and metronidazole (61%); also reports multidrug resistance in 10% isolates, underscoring the need for localized, resistance-guided treatment strategies.

Gut Pathogens | Research | 25 September 2025 | Online link

Decoding carbapenem resistant organisms (CROs) causing lower respiratory tract infections & their antimicrobial susceptibility pattern

- Identifies CROs and assesses their antibiotic susceptibility in 1,041 respiratory samples from a tertiary care hospital in Pune.
- Reports that *Klebsiella spp.* and *Pseudomonas spp.* were predominant; and resistance to commonly used antibiotics was widespread, underscoring the need for stewardship and alternative therapies.

Indian Journal of Medical Research | Original article | 16 September 2025 | Online link

Characterization of carbapenem-resistant biofilm forming *Acinetobacter baumannii* isolates from clinical and surveillance samples

- Assesses carbapenem resistance, biofilm formation, and associated genes in 92 *A. baumannii* isolates.
- Reports that over 90% of isolates were carbapenem-resistant and biofilm-producing and biofilm-associated genes (ompA, bap, csuE) were highly prevalent.

Nature | Article | 30 September 2025 | Online link

Tracking the evolution of emerging serotypes and antibiotic resistance patterns in *Streptococcus pneumoniae* among Indian adults using high-throughput genome sequencing

- Analyzes serotypes and AMR in *S. pneumoniae* isolates from Indian adults
- Highlights that resistance to macrolides and fluoroquinolones was high, highlighting the need for ongoing genomic surveillance and updated vaccine strategies.

BMC Infectious Diseases | Research | 29 September 2025 | Online link

Resistance & virulence traits in dermatophytes isolated from Mangaluru, India

- Investigates antifungal resistance and virulence factors in dermatophyte isolates from Mangaluru.
- Reports Trichophyton mentagrophytes complex as the most common agent and high resistance to terbinafine and fluconazole, underscoring the need for regular tracking of resistance patterns and virulence factors.

Indian Journal of Medical Research | Original article | 16 September 2025 | Online link

3) Infection prevention and control

Sameeksha – Infection Prevention and Control | volume 23

- The case for strengthening IPC in primary care
- Impact of IPC quality improvements in dialysis facilities
- Environmental reservoirs of AMR in a tertiary care Indian hospital
- Evaluation system for hospital IPC courses
- WHO report on essential services for quality care: WASH waste and electricity services in health facilities
- Global Handwashing Day – 15 October

WCO India | Newsletter | September-October 2025 | Online link

4) Optimise use of antimicrobials

Analysis of antibacterial agents in clinical and preclinical development: overview and analysis 2025

- Provides a comprehensive evaluation of the global antibacterial pipeline, including new chemical entities, traditional antibiotics, new biological entities, and non-traditional antibacterial agents in clinical and new drug application.
- Evaluates how effectively the current pipeline addresses infections caused by priority pathogens, as defined by the updated 2024 WHO bacterial priority pathogens list.

WHO | Report | 2 October 2025 | Online link

Management of infections caused by extended-spectrum beta-lactamase-producing *Enterobacterales* in Indian patients

- Discusses current challenges and treatment strategies for ESBL-producing *Enterobacterales* infections in India.
- Reports that carbapenems remain effective and explores alternatives like β-lactam/β-lactamase inhibitors and newer agents to optimize therapy and stewardship.

Indian Journal of Medical Microbiology | Special article | 16 September 2025 | Online link

WHO recommendation on antibiotic prophylaxis during labour for vaginal birth

- Provides recommendation on antibiotic prophylaxis during labour for vaginal birth with remarks, implementation considerations and research gaps.
- Targets health professionals responsible for developing national and local health-care guidelines and protocols and those involved in the provision of care to women and their newborns during labour and childbirth.

WHO | Guideline | 24 September 2025 | Online link

Cost-effectiveness of antimicrobial stewardship programs in Indian tertiary care hospitals: a Markov model analysis comparing ASP and non-ASP intervention scenarios

- Compares clinical and economic outcomes of implementing antimicrobial stewardship programs (ASP) versus no intervention in Indian tertiary hospitals.
- Finds that ASPs are cost-effective, reduce antibiotic resistance, mortality, and healthcare costs; suggests integrating ASPs into routine hospital care for long-term benefits.

Infection, Disease & Health | Research paper | 9 October 2025 | Online link

A risk-based assessment of Enterococcal bloodstream infection: suggesting considerations in empirical therapy strategies in a tertiary care hospital

- Evaluates clinical and microbiological data from patients with Enterococcal bloodstream infections to identify risk factors and guide empirical treatment decisions.
- Highlights that timely initiation of empirical coverage appears more crucial than later definitive therapy adjustments in improving survival.

Indian Journal of Medical Microbiology | Original research article | 10 September 2025 | Online link

Antibiotic stewardship through clinical data digitization: perceived opportunities and obstructions by medical doctors from semi-urban setting in central India

- Qualitative study explores doctors' perceptions of digitizing clinical data to support antibiotic stewardship in semi-urban India.
- Reports that doctors saw potential in digital tools for improving prescribing but cited barriers like poor infrastructure, limited training, and workflow disruptions, highlighting implementation challenges.

Frontiers | Original research article | 10 September 2025 | Online link

Analysis of prescription pattern and adverse drug reactions of drugs used in urinary tract infection in reproductive age group (15-44 years) women in a tertiary care hospital in Central India: an observational retrospective study

- Reviews prescriptions and adverse drug reactions (ADRs) in women aged 15–44 treated for UTIs at a tertiary hospital in Central India.
- Aims to describe the prescribing patterns of drugs used for UTIs, evaluate the incidence, type, and severity of ADRs, and assess prescription of fixed-dose combinations and combination antimicrobial therapy in relation to standard treatment guidelines.

F1000 Research | Study protocol | 12 September 2025 | Online link

Revolutionizing diabetic foot ulcer treatment: phage therapy as a next-generation antimicrobial approach – a review on breaking the cycle of resistance

- Analyzes recent literature on diabetic foot ulcers (DFUs), focusing on biofilm-related resistance and evaluating bacteriophage therapy as a targeted alternative to antibiotics.
- Reports that phage therapy effectively targets drug-resistant bacteria, disrupts biofilms, and promotes healing in DFUs, offering a promising, personalized antimicrobial strategy.

Journal of Diabetes & Metabolic Disorders | Article | 18 September 2025 | Online link

5) Research, innovations and finance

Landscape analysis of commercially available and pipeline in vitro diagnostics for bacterial priority pathogens

- An update to the WHO landscape analysis of commercially available and pipeline in vitro diagnostics for bacterial priority pathogens, first published in 2019.
- Assesses existing and pipeline diagnostic tools for detecting WHO priority bacterial pathogens and conducting phenotypic or genotypic antimicrobial resistance testing; identifies gaps in their availability and accessibility; and outlines a WHO R&D priority list for diagnostics needing further advancement.

WHO | Report | 2 October 2025 | Online link

Utilizing the effectiveness of phage cocktail to combat *Shigella* and *Salmonella* infections and their polymicrobial biofilm control activity

- Evaluates a bacteriophage cocktail's efficacy against *Shigella* and *Salmonella*, including its ability to disrupt polymicrobial biofilms.
- Reports that the phage cocktail shows strong lytic activity and significantly reduces biofilm biomass, highlighting its potential as an alternative antimicrobial strategy against resistant enteric pathogens.

BMC Microbiology | Research | 10 October 2025 | Online link

Vaccines as potential frontliners against AMR: a focused review

- Explores the role of vaccines in combating AMR by reducing infection incidence, antibiotic use, and resistance development, drawing on current evidence and global health strategies.
- Highlights that importance of broader vaccine coverage and development targeting resistant pathogens for sustainable AMR control.

Infection and Drug Resistance | Review | 12 September 2025 | Online link

A hospital-based epidemiological study of the genes coding for carbapenemase production among carbapenem resistant *Acinetobacter* isolates in India

- Investigates prevalence of carbapenemase genes in carbapenem-resistant *Acinetobacter* isolates using molecular techniques to understand resistance mechanisms.
- Reports that OXA-type carbapenemase genes were most prevalent – particularly bla_OXA-23, underscoring the need for molecular surveillance to guide infection control and antimicrobial stewardship.

Current Microbiology | Original research article | 23 September 2025 | Online link

6) Collaborations

Summary report of the online survey for updating the Global Action Plan on Antimicrobial Resistance

- Presents insights from an online survey conducted by the Quadripartite organizations (FAO, UNEP, WHO, and WOAH) to revise the 2015 Global Action Plan on Antimicrobial Resistance by 2026.
- Includes responses from UN Member States and diverse stakeholders, from human and animal health, agrifood systems, the environment, education, and finance sectors.

WHO | Technical document | 15 September 2025 | Online link

Regional roadmap to accelerate actions on antimicrobial resistance in the human health sector in the South-East Asia Region (2025–2030)

- Provides a regional strategy to help countries enhance their AMR responses, tailored to local data, health system capabilities, and WHO people-centred approach principles.
- Offers a stepwise approach to strengthen implementation, set priorities, and monitor progress, aiming to build stronger health systems and reduce AMR impact by 2030.

WHO | Publication | 14 October 2025 | Online link

Mapping antibiotic pollution and tracking drivers of environmental AMR in a North Indian pharmaceutical hub

- Assesses antibiotic residues and resistance genes in water sources near pharmaceutical industries.
- Reports detection of high levels of antibiotic pollution and resistance genes, especially near effluent sites, highlighting pharmaceutical discharge as a major environmental AMR driver.

Frontiers | Original research article | 15 September 2025 | Online link

Unveiling community structure, antimicrobial resistance, and virulence factor of a wastewater sample of dairy farm located in Mayurbhanj, Odisha, India

- Analyzes microbial diversity, AMR genes, and virulence factors in wastewater from a dairy farm in Odisha using metagenomic sequencing and bioinformatics tools.
- Reveals that samples had diverse microbial communities, multiple resistance genes, and virulence markers, highlighting environmental AMR risks from agricultural wastewater discharge.

Nature | Article | 25 September 2025 | Online link

Cattle manure as a source of antibiotic resistance genes: case study with samples across Indian states

- Analyzes cattle manure samples from multiple Indian states to detect and quantify antibiotic resistance genes (ARGs) using molecular techniques and metagenomic analysis.
- Reveals widespread presence of ARGs in manure, indicating its role as a reservoir and environmental source of antimicrobial resistance.

Science of The Total Environment | Short communication | 20 September 2025 | Online link

Synthetic antimicrobial peptides: combatting antimicrobial resistance for sustainable aquaculture

- Explores the potential of synthetic antimicrobial peptides (AMPs) as alternatives to antibiotics in aquaculture, analyzing their mechanisms, efficacy, and sustainability.
- Reports that synthetic AMPs exhibit strong antimicrobial and immunomodulatory properties, offering a promising, eco-friendly solution to reduce antibiotic use and resistance in aquaculture systems.

Microbial Pathogenesis | Article | 16 September 2025 | Online link

A One Health perspective on multidrug-resistant bacterial infections: integrated approaches for surveillance, policy and innovation

- Explores integrated One Health strategies to address MDR bacterial infections, emphasizing cross-sectoral surveillance, policy alignment, and innovation.
- Highlights that effective AMR control requires coordinated human, animal, and environmental health efforts, underscoring need for data sharing, collaboration, and investment in diagnostics, vaccines, and stewardship.

Frontiers in Cellular and Infection Microbiology | Review article | 3 September 2025 | Online link

Quotable quote

Act Now: Protect Our Present, Secure Our Future.

– World AMR Awareness Week 2025
Campaign guide, materials and Go Blue for AMR

Sameeksha is a Hindi word, meaning "review". Publications and resources on AMR (with a bulleted summary and online link) are compiled according to the strategic priorities of India's National Action Plan on Antimicrobial Resistance. Kindly note, inclusion of publications and resources in this review/compilation does not imply an endorsement by WHO.