

AMR Sameeksha*

Highlights

- World AMR Awareness Week 2023
- Inaugural report of the WHO Taskforce of AMR Survivors
- Rural perceptions about antibiotics – “Just as curry is needed to eat rice, antibiotics are needed to cure fever”
- Guidance on establishing national and local AMR surveillance systems
- Drivers of inappropriate use of antimicrobials in South Asia
- Building national capacity for combating AMR in WHO's South-East Region – the ‘Platinum Decade’

1) Awareness and understanding

World AMR Awareness Week campaign 2023

- Documents the planning, stakeholder activities and social media analysis of 2023 World AMR Awareness Week (WAAW) campaign.
- The re-branding aims to popularize the term “AMR” globally so that it becomes as easily recognizable as HIV and AIDS.

WHO | Publication | 11 March 2024 | [Online link](#)

Quarterly Report of the WHO Taskforce of AMR Survivors

- Reports the inaugural meeting of the taskforce – aiming to show the human face of AMR by amplifying voices of AMR survivors and promoting a patient-centered approach to tackling AMR.
- The taskforce of AMR survivors has a website ([Taskforce of AMR Survivors](#)) and an increasing presence on social media.

WHO | Publication | 22 February 2024 | [Online link](#)

Knowledge and practices related to antibiotics among poultry producers and veterinarians in two Indian states

- Based on a cross-sectional survey in Assam and Karnataka, the authors suggest trainings for rationale antibiotic use, notably among poultry feed suppliers.
- Advocates a One Health approach that integrates antimicrobial stewardship with economic and equity considerations among farmers, veterinarians and other stakeholders.

One Health | Research article | 14 March 2024 | [Online link](#)

Accessing the behavior and awareness of veterinary professionals towards antimicrobials use and antimicrobial resistance in Indian district

- Knowledge gaps related to AMR in livestock was noted among veterinarians in Jhunjhunu district, and in para-veterinarians who are increasingly prescribing antibiotics due to shortage of veterinarians.
- Both veterinarians and para-veterinarians often fail to advise culture and antimicrobial susceptibility testing, and also prefer to prescribe critically important antibiotics.

Frontiers in Veterinary Science | Original research article | 11 March 2014 | [Online link](#)

Improving antimicrobial resistance awareness among medical students in India: the sensitization of medical students on antimicrobial resistance (SOS-AMR) study

- Prospective, before-after study across 5 medical colleges finds modest improvement in AMR knowledge among final year medical students following an online education intervention.
- Recommends modifying the training to include in-person and interactive sessions, testing knowledge retention and changes to medical curriculum that underscore antimicrobial stewardship and role-modelling by faculty.

Journal of Medical Education & Curriculum Development | Original research article | 25 March 2024 | [Online link](#)

"Just as curry is needed to eat rice, antibiotics are needed to cure fever" – a qualitative study of individual, community and health system-level influences on community antibiotic practices in rural West Bengal, India

- Documents the findings of sociodemographic, economic and cognitive factors influencing antibiotic use.
- Highlights the opportunity for engaging community leaders and frontline health workers, such as ASHAs, in promoting rational antibiotic use through training and empowerment.

BMJ Open | Original research | 7 February 2024 | [Online link](#)

2) Laboratories and surveillance

Guidance on establishing national and local AMR surveillance systems in the Western Pacific region

- Step by step guidance for setting up multilevel AMR surveillance systems that focus on bacteria causing common infections.
- Provides methodological details and helpful checklists for pathogen surveillance, data management, data analysis and translating data into policy and action.

WHO | Publication | 7 February 2024 | [Online link](#)

Estimating the subnational prevalence of antimicrobial resistant *Salmonella enterica* serovars Typhi and Paratyphi A infections in 75 endemic countries, 1990–2019: a modelling study

- Bayesian modelling of data of enteric fever finds a decline of multi-drug resistant *Salmonella* Typhi in South Asia whereas fluoroquinolone non-susceptibility increased.
- Third-generation cephalosporin resistance in *Salmonella* Typhi remained low over time, except in Pakistan where it was 61% in 2019.

Lancet Global Health | Article | March 2024 | [Online link](#)

Antimicrobial resistance in food-borne pathogens at the human-animal interface: results from a large surveillance study in India

- Based on Indian data from the WHO-AGISAR (Advisory Group on Integrated Surveillance of Antimicrobial Resistance) study finds a high burden of multi-drug resistant foodborne pathogens in livestock, poultry and retail meat.
- Resistance to specific antibiotics varied across human and animal sectors.

One Health | Research article | 17 January 2024 | [Online link](#)

Antimicrobial consumption and resistance in bacteria from humans and food-producing animals

- Integrative analysis finds that the strength of the association between bacteria and AMR varies across antimicrobial class, microorganism and sector.
- Indicates that some countries have succeeded in reducing antimicrobial usage in humans and food-producing animals although further control measures are required.

ECDC-EFSA-EMA | Scientific report | 23 February 2024 | [Online link](#)

The European Union summary report on antimicrobial resistance in zoonotic and indicator bacteria from humans, animals and food in 2021–2022

- Despite reductions in antimicrobial use among food producing animals, resistance remains in some countries, due to reservoirs (e.g., colonized farm workers), human to animal transmission and animal to animal transmission (e.g., transportation to slaughterhouses).
- Highlights the importance of maintaining a high level of biosecurity and hygiene at all levels of animal production.

EFSA-ECDC | Scientific report | 28 February 2024 | [Online link](#)

Comparative evaluation of Vitek®2 and broth microdilution method for colistin susceptibility testing of Gram-negative isolates from intensive care unit in a tertiary care hospital

- Demonstrates that an automated antimicrobial susceptibility testing system failed to detect colistin resistance in 60% of isolates.
- Authors suggest that clinicians and microbiologists use caution when assessing results from automated AST systems due to their unreliability in colistin antimicrobial susceptibility testing.

Indian Journal of Medical Microbiology | Original research article | 23 March 2024 | [Online link](#)

Comprehensive analysis of antimicrobial resistance in the Southwest Indian Ocean: focus on WHO critical and high priority pathogens

- Finds targeted bacteria circulating in South-West Indian Ocean area with gram-negative bacilli prevalent in eastern area (notably Sri Lanka and Mauritius) and evidence of emerging high-risk clones.
- Identification of critical and high priority pathogens underscores the importance of regional AMR surveillance networks.

Frontiers in Public Health | Review article | 1 April 2024 | [Online link](#)

3) Infection prevention and control

Sameeksha – Infection Prevention and Control | volume 8

- World Hand Hygiene 2024 campaign resources
- Revision of terminology for pathogens that transmit through the air
- WHO IPC and WASH measures for diphtheria in healthcare settings
- WHO guidelines for drinking water quality in small water supplies
- A cost-effective intervention to reduce surgical site infections
- IPC measures to reduce mpox transmission

WCO India | Publication | 22 April 2024 | [Online link](#)

4) Optimise use of antimicrobials

Drivers of inappropriate use of antimicrobials in South Asia: a systematic review of qualitative literature

- Synthesizes norms, behaviours and policy contexts driving inappropriate antibiotic use and AMR in six countries of South Asia – Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka.
- Calls for a multi-pronged approach across sectors to strengthen surveillance of AMR and antimicrobial use, and antimicrobial stewardship interventions in the region.

PLoS Global Public Health | Research article | 4 April 2024 | [Online link](#)

Procalcitonin-guided antimicrobial stewardship in critically ill patients with sepsis: a pre– post interventional study

- Assesses the use of procalcitonin (an amino acid released as part of inflammatory cascade responding to bacterial infection) as a biomarker to distinguish bacterial sepsis from other causes of sepsis.
- Serial procalcitonin assays helped to reduce the time to de-escalate antibiotics and ICU stays by 2 days.

Perspectives in Clinical Research | Original article | 26 February 2024 | [Online link](#)

Closing the antimicrobial stewardship gap – a call for LMICs to embrace the global antimicrobial stewardship accreditation scheme

- Describes the Global Antimicrobial Stewardship Accreditation Scheme (GAMSAS) – developed by British Society of Antimicrobial Chemotherapy (BSAC) – as a sustainable approach to improving antimicrobial stewardship.
- Argues the relevance of GAMSAS in helping LMICs with antimicrobial stewardship, data collection and IPC.

Antimicrobial Resistance & Infection Control | Correspondence | 14 February 2024 | [Online link](#)

Early assessment of blood culture negativity as a potential support tool for antimicrobial stewardship

- Retrospective study finds patients with suspected bloodstream infections that were negative at 48 hours continued to remain negative for 5 days.
- Authors suggest using blood culture negativity at 48 hours for stopping antibiotics in patients without evidence of localized infection, although clinical judgement is important especially in strongly suspected patients.

Heliyon | Research article | 14 March 2024 | [Online link](#)

Antimicrobial stewardship hindered by inadequate biosecurity and biosafety practices, and inappropriate antibiotics usage in poultry farms of Nepal – a pilot study

- Comprehensive risk assessment and status evaluation finds poor biosecurity and biosafety practices with high rates of *Mycoplasma gallisepticum* and *M. synoviae* and frequent use of "Watch" and "Reserve" antibiotics.
- Calls for better biosafety, biosecurity and antimicrobial stewardship on farms.

PLoS One | Research article | 1 March 2024 | [Online link](#)

5) Research, innovations and finance

High-throughput screening of small-molecules libraries identified antibacterials against clinically relevant multidrug-resistant *A. baumannii* and *K. pneumoniae*

- Identifies 72 compounds active against multi-drug resistant *A. baumannii* and *K. pneumoniae*.
- Provides proof of principle strategy for identifying new chemical entities with details of methodologies enabling future screening of compound libraries against bacterial AMR.

eBioMedicine | Article | 22 March 2024 | [Online link](#)

Compensatory evolution in NusG improves fitness of drug-resistant *M. tuberculosis*

- Using comparative functional genetics approach, study finds the universally conserved transcription factor NusG is critical for the fitness of rifampicin resistance in *M. tuberculosis*.
- Proposes this approach can be used to influence therapeutics and may be generalizable to other organisms.

Nature | Article | 20 March 2024 | [Online link](#)

Vaccine value profile for *Klebsiella pneumoniae*

- Explores vaccine value profile for *K. pneumoniae* among pregnant women developed by a multi-partner working group in collaboration with WHO.
- Estimates a *K. pneumoniae* vaccine with 70% efficacy would avert close to 400,000 neonatal sepsis cases and 80,000 neonatal deaths per year.

Vaccine | Research article | 19 March 2024 | [Online link](#)

Clinical and microbiological profile of Viridans group streptococcal bacteraemia; experience from South India

- Retrospective analysis finds Viridans group streptococci (VGS) as an important cause of bacteremia associated with 19% mortality.
- Calls for greater use of molecular diagnostics to enable species identification among VGS.

Le Infezioni in Medicina | Original article | 1 March 2024 | [Online link](#)

Comparison of integron mediated antimicrobial resistance in clinical isolates of *Escherichia coli* from urinary and bacteremic sources

- Finds correlation between integron positivity and trimethoprim resistance among urinary isolates of *E. coli*.
- Calls for regular monitoring of horizontal gene transfer.

BMC Microbiology | Research | 28 March 2024 | [Online link](#)

6) Collaborations

The platinum decade: accelerating health for billions: WHO South-East Asia region 2014–2023

- Describes SEARO flagship programs, including building national capacity to prevent and combat AMR.
- Outlines achievements, milestones, future directions and challenges ahead for the region.

WHO | Publication | 14 February 2024 | [Online link](#)

Monitoring and evaluation of national action plans on antimicrobial resistance

- This free, online course of approximately 2 hours aims to help countries develop a monitoring and evaluation plan for their national action plan on AMR, including recommended indicators.
- Developed by the Quadripartite (FAO-UNEP-WHO-WOAH).

OpenWHO | Course | 2024 | [Online link](#)

Community engagement to mitigate antimicrobial resistance in low-and middle-income countries – an essential strategy for implementation of national action plans on AMR

- Argues that community engagement is essential to improve the reach of vertical programs and optimize policy implementation to address AMR.
- Describes ReAct's – 'Antibiotic Smart Communities' – project in Kerala.

Lancet Regional Health Southeast Asia | Comment | 14 March 2024 | [Online link](#)

A mini-review on the burden of antimicrobial resistance and its regulation across one health sectors in India

- Reviews regulations regarding AMR across One Health sectors in India.
- Identifies human health as the only sector with robust surveillance system.

Journal of Agriculture and Food Research | Review article | 14 January 2024 | [Online link](#)

The need for One Health systems-thinking approaches to understand multiscale dissemination of antimicrobial resistance

- Argues for combining systems-thinking with computational methods of big data within a One Health lens to capture the complexities and dynamics of AMR.
- Proposes a One Health approach to enable modelling to compare efficacy and cost-effectiveness of strategies.

Lancet Planetary Health | Personal view | February 2024 | [Online link](#)

System-wide approaches to antimicrobial therapy and antimicrobial resistance in the UK: the AMR-X framework

- Describes AMR-X framework which uses an engineering approach to optimize antimicrobial discovery, development, and implementation through a network of health systems.
- Argues building such a system will cost less compared to developing a new antimicrobial.

Lancet Microbe | Personal view | 7 March 2024 | [Online link](#)

Quotable quote

*Re-branding of World **Antimicrobial** Awareness Week as
World **AMR** Awareness Week
will help to popularize and socialize the term “AMR” globally to
make it as easily recognizable in the long term as HIV and AIDS.*

– Re-branding of WAAW 2023

**Sameeksha* is a Hindi word, meaning review. This is a compilation of open access publications and resources on One Health containment of AMR (along with a brief summary) – grouped 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.