



## Antimicrobial Resistance (AMR)

---

 [drishtias.com/printpdf/to-the-point-paper-3-antimicrobial-resistance-amr](https://drishtias.com/printpdf/to-the-point-paper-3-antimicrobial-resistance-amr)

### Why in News

---

European Parliament has approved a ban on preventive mass medication in animals using antibiotics or other drugs.

### What is Antimicrobial Resistance?

---

- Anti microbial resistance is the **resistance acquired** by any microorganism (bacteria, viruses, fungi, parasite, etc.) against antimicrobial drugs (such as antibiotics, antifungals, antivirals, antimalarials, and anthelmintics) that are used to treat infections.
- As a result, standard treatments become ineffective, infections persist and may spread to others.
- Microorganisms that develop antimicrobial resistance are sometimes referred to as “superbugs”.
- Antimicrobial resistance is now regarded as a major threat to public health across the globe.

### How it Happens?

---

- Some bacteria due to the presence of resistance genes are intrinsically resistant and therefore survive on being exposed to antibiotics.
- Bacteria can also acquire resistance. This can happen in two ways:
  - by sharing and transferring resistance genes present in the rest of the population
  - or
  - by genetic mutations that help the bacteria survive antibiotic exposure.
- Once the resistance has been acquired, it can spread in the rest of the population of bacteria through reproduction or gene transfer.

Reasons for Spread of AMR

- **Antibiotic consumption in humans**  
Unnecessary and injudicious use of antibiotic fixed dose combinations could lead to emergence of bacterial strains resistant to multiple antibiotics.
- **Social factors**
  - Include self-medication.
  - Access to antibiotics without prescription.
  - Lack of knowledge about when to use antibiotics.
- **Cultural Activities**  
Mass bathing in rivers as part of religious mass gathering occasions.
- **Antibiotic Consumption in Food Animals**  
Antibiotics which are critical to human health are commonly used for growth promotion in poultry.
- **Pharmaceutical Industry Pollution**  
The wastewater effluents from the antibiotic manufacturing units contain a substantial amount of antibiotics, leading to contamination of rivers and lakes.
- **Environmental Sanitation**  
Untreated disposal of sewage water bodies - leading to contamination of rivers with antibiotic residues and antibiotic-resistant organisms.
- **Infection Control Practices in Healthcare Settings**  
A report on hand-washing practices of nurses and doctors found that only 31.8% of them washed hands after contact with patients.

## Impacts

---

- **A threat** to prevention and treatment of infections - medical procedures such as organ transplantation, cancer chemotherapy, diabetes management and major surgery (for example, caesarean sections or hip replacements) become very risky.
- The failure to treat infections caused by resistant bacteria also poses a greater risk of death.
- Antimicrobial resistance **increases the cost** of health care with lengthier stays in hospitals, additional tests and use of more expensive drugs.
- Without effective antibiotics for prevention and treatment of infections, the achievements of modern medicine are put at a risk.
- Without urgent action, we are heading to **antibiotic apocalypse** – a future without antibiotics, with bacteria becoming completely resistant to treatment and when common infections and minor injuries could once again kill.
- Antimicrobial resistance is putting the gains of the Millennium Development Goals at risk and **endangers** achievement of the Sustainable Development Goals.

## AMR in India

---

- AMR is of particular concern in developing nations, including India, where the burden of infectious disease is high and healthcare spending is low.

- India is among the nations with the highest burden of bacterial infections.
- Consequently, the impact of AMR is likely to be higher in the Indian setting.
- The National Health Policy 2017 highlights the problem of antimicrobial resistance and calls for effective action to address it.
- The Ministry of Health & Family Welfare (MoHFW) identified AMR as one of the top 10 priorities for the ministry's collaborative work with WHO.
- In 2012, India's medical societies adopted the Chennai Declaration, a set of national recommendations to promote antibiotic stewardship.
- India's Red Line campaign demands that prescription-only antibiotics be marked with a red line, to discourage the over-the-counter sale of antibiotics.
- National Policy for Containment of Antimicrobial Resistance 2011.
- National Action Plan on AMR resistance 2017-2021.
- India has instituted surveillance of the emergence of drug resistance in disease causing microbes in programmes on Tuberculosis, Vector Borne diseases, AIDS, etc.
- Since March 2014 a separate Schedule H-1 has been incorporated in Drug and Cosmetic rules to regulate the sale of antimicrobials in the country.
- The Food Safety and Standards Authority of India (FSSAI) banned the use of antibiotics and several pharmacologically active substances in fisheries.
- The government has also capped the maximum levels of drugs that can be used for growth promotion in meat and meat products.

## Shortcomings in fighting AMR

---

- A cross-cutting programme dealing with antimicrobial resistance across multiple microbes has been lacking.
- Absence of a One Health Approach in addressing AMR – which recognizes that human well-being is inextricably tied to the health of animals and the environment.
- The absence of stringently framed and implemented regulatory frameworks to limit the use of antimicrobials in livestock and food animals, especially for non-therapeutic purposes, has been one of the drivers of antibiotic overuse at the community level.
- In India, current effluent standards do not include antibiotic residues, and thus they are not monitored in the pharmaceutical industry effluents.

## Steps to fight against AMR

---

- Infection control in healthcare facilities.
- Creating awareness about the use and abuse of antibiotics.
- Vaccination can combat drug resistance by reducing the cases of infection and as a result reducing the need for antibiotics.
- Strengthening resistance tracking so that data on antimicrobial resistant infections and causes of infection can be gathered to enable formulation of specific strategies to prevent the spread of the resistant bacteria.
- Self-medication should be shunned.

- Antibiotics should be used only when prescribed by the doctor.
- Appropriate and safe use of antibiotics- taking antibiotics only when needed, choosing the right antibiotic and completing the full prescription.
- Invest in the search for new antibiotics to keep up with resistant bacteria as well as in new diagnostic tests to track the development of resistance.

## Way Forward

---

- AMR has the potential to return the world to a pre-antibiotic era when medicines could not treat even simple infections.
- Therefore, to contain AMR, there is need for a **One Health Approach** through coherent, integrated, multi sectoral cooperation and actions, as **human, animal and environmental health are integrated**.
- Development of antibiotic resistance breakers (ARBs) to restore effectiveness of older classes of antibiotics.