



ANTIBIOTIC RESISTANCE - GS III MAINS

Q. AMR was a serious global health threat in the coming years. Bring out the implications of the antimicrobial resistance on human and environmental health and also elaborate on the steps needed to be taken. (15 marks, 250 words)

News: *Antimicrobial resistance can kill 10 million by 2050. Ending it will be an era-defining triumph*

What's in the news?

- Drug-resistant diseases pose a serious and growing threat to humans and animals.
- Antimicrobial resistance, which renders antibiotics ineffective against bacterial disease, is one of the most urgent health risks.

Key takeaways:

- Collaborative efforts to combat antimicrobial resistance across the human and animal health sectors will ensure a healthier world for the future and mark an era-defining triumph for global cooperation.

Serious Complications:

- Some estimates forecast a potential 10 million deaths per year due to antimicrobial resistance by 2050.
- At the same time, a rise in drug resistance in animals could lead to painful, untreatable illness and cause an 11% drop in livestock production in low-income countries, jeopardizing livelihoods and food security.
- Antimicrobial resistance could also lead to sick pets requiring costly levels of care, setting families back thousands of dollars and weeks of treatment for what should otherwise be easily treatable conditions.

Antimicrobial Resistance:

- Antimicrobial Resistance is the **resistance acquired by any microorganism** (bacteria, viruses, fungi, parasite, etc.) against antimicrobial drugs that are used to treat infections.
- Microorganisms that develop antimicrobial resistance are sometimes referred to as “**superbugs**”.
- It occurs when a microorganism changes over time and no longer responds to medicines making infections harder to treat and increasing the risk of disease spread, severe illness and death.
- The World Health Organisation (WHO) has identified **AMR as one of the top ten threats to global health.**

Reasons for the Antimicrobial Resistance:

1. Antibiotic Consumption in Humans:



- Unnecessary and injudicious use of antibiotic fixed dose combinations could lead to emergence of bacterial strains resistant to multiple antibiotics.

2. Social Factors:

- Include **self-medication**.
- Access to antibiotics without prescription.
- Lack of knowledge about when to use antibiotics.

3. Cultural Activities:

- **Mass bathing in rivers** as part of religious mass gathering occasions.

4. Antibiotic Consumption in Food Animals:

- Antibiotics which are critical to human health are commonly used for growth promotion in **poultry**.

5. Pharmaceutical Industry Pollution:

- The wastewater effluents from the antibiotic manufacturing units contain a substantial amount of antibiotics, leading to contamination of rivers and lakes.

6. Environmental Sanitation:

- Untreated disposal of sewage water bodies - leading to contamination of rivers with antibiotic residues and antibiotic-resistant organisms.

7. 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 of AMR:

1. **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.
2. The failure to treat infections caused by resistant bacteria also poses a **greater risk of death**.
3. Antimicrobial resistance increases the **cost of healthcare** with lengthier stays in hospitals, additional tests and use of more expensive drugs.
4. Without effective antibiotics for prevention and treatment of infections, the **achievements of modern medicine are put at risk**.
5. Without urgent action, the world is 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.
6. Antimicrobial resistance is **putting the gains of the Millennium Development Goals at risk and endangers achievement of the Sustainable Development Goals**.



Global Efforts	Indian Efforts
<p>Global Action Plan on Antimicrobial Resistance (GAP): Globally, countries committed to the framework set out in the Global Action Plan 1 (GAP) 2015 on AMR during the 2015 World Health Assembly and committed to the development and implementation of multisectoral national action plans.</p> <p>Tripartite Joint Secretariat on Antimicrobial Resistance: Tripartite joint secretariat (FAO, OIE and WHO) has been established and is hosted by WHO to drive multi-stakeholder engagement in AMR.</p> <p>Interagency Coordination Group (IACG) on AMR: It was convened by the Secretary-General of the United Nations after the UN High-Level Meeting on Antimicrobial Resistance in 2016. The IACG brought together partners across the UN, international organizations and individuals with expertise across human, animal and plant health, as well as the food, animal feed, trade to formulate a plan for the fight against antimicrobial resistance.</p> <p>World Antimicrobial Awareness Week (WAAW): WAAW was previously called the World Antibiotic Awareness Week. From 2020, it will be called the World Antimicrobial Awareness Week. It is a global campaign that aims to raise awareness of antimicrobial resistance worldwide.</p> <p>Global Antimicrobial Resistance and Use Surveillance System (GLASS): WHO launched it in 2015 to continue filling knowledge gaps and to inform strategies at all levels. GLASS has been conceived to progressively incorporate data from surveillance of AMR in humans, surveillance of the use of antimicrobial medicines, AMR in the food chain and the environment.</p>	<ul style="list-style-type: none">• To prevent the Over the counter sales of antibiotics, the Central Drug Standard Control Organization (CDSO) prohibits medical stores from selling 24 key antibiotics without a doctor's prescription.• India's Red Line campaign: Which demands that prescription-only antibiotics be marked with a red line, to discourage the over-the-counter sale of antibiotics– is a step forward.• National Health Policy, 2017, terms antimicrobial resistance as one of the key healthcare issues and prioritizes the development of guidelines regarding antibiotic use and check on restricting the growth of antibiotics.• The National Action Plan on Antimicrobial Resistance (NAP-AMR) 2017 has assigned coordinated tasks to multiple government agencies involving health, education, environment, and livestock to change prescription practices and consumer behaviour and to scale up infection control and antimicrobial surveillance.• FSSAI has set certain guidelines limiting the antibiotics in food products such as fish and honey.



Global Antibiotic Research and Development Partnership (GARDP): A joint initiative of WHO and the Drugs for Neglected Diseases Initiative (DNDi), GARDP encourages research and development through public-private partnerships.

By 2025, the partnership aims to develop and deliver five new treatments that target drug-resistant bacteria identified by WHO as posing the greatest threat.

Way Forward:

- **AMR was a serious global health threat and could not be "overshadowed by other competing public health priorities".**
- India has committed to **strengthening surveillance and promoting research on newer drugs**. It also plans to strengthen **private sector engagement** and the reporting of data to the WHO Global Antimicrobial Resistance and Use Surveillance System (GLASS) and other standardised systems.
- The **National Action Plan on Antimicrobial Resistance (2017-21)** emphasised the effectiveness of the government's initiatives for hand hygiene and sanitation programmes such as Swachh Bharat Abhiyan, Kayakalp and Swachh Swasth Sarvatra.
- The government has also attempted to increase **community awareness** about healthier and better food production practices, especially in the animal food industry.
- The National Health Policy 2017 also offered specific guidelines regarding use of antibiotics, limiting the use of antibiotics as over-the-counter medications and banning or restricting the use of antibiotics for growth promotion in livestock.
 - It also called for scrutiny of prescriptions to assess antibiotic usage in hospitals and among doctors.
- The various G-20 health summits spread through 2023 offer an opportunity for India to ensure that all aspects of AMR are addressed and countries commit to progress. Some key areas for action are as follows.
 - **Surveillance** - both phenotypic and genotypic of priority pathogens and sharing of data, including through WHO'S GLASS platform.
 - **Regulatory and policy action** to stop use of antibiotics that are important for human health in animals.
 - **No use of antibiotics** for growth promotion in animals.
 - More **government investment** in research and innovation for new antibiotics.
 - **Explore use of vaccines** to prevent certain infections due to AMR organisms in humans and animals and special focus on combating TB and drug-resistant TB.