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The Silent Pandemic of Antimicrobial Resistance (AMR)

Why in news?

While the world is emerging from the acute phase of the COVID-19 pandemic, the very harmful but invisible pandemic of Antimicrobial Resistance (AMR) is unfortunately here to stay.

What is AMR?

India is the largest consumer of antibiotics in the world.

Antimicrobial resistance (AMR)

- AMR is the ability of a microbe to resist the effects of medication previously used to treat them.
- Resistant microbes are more difficult to treat, requiring alternative medications or higher doses, both of which may be more expensive or more toxic.
- Microbes resistant to multiple antimicrobials are called **Multi Drug Resistant (MDR)** or sometimes **Superbugs**.

Causes of AMR

- **Usage** - There is an increasing use of antibiotics for human and veterinary purposes in the recent period.
- There is irrational consumption (over usage) of broad spectrum antibiotics.
- **Lack of effective regulation** - The current standards of Central Pollution Control Board do not include antibiotic residues, and they are not monitored in the pharmaceutical industry effluents.
- The existing good manufacturing practices (GMP) under the WHO (2016) framework is restricted to drug safety alone and does not recognise the environmental risk with pharmaceuticals products.
- **Waste Discharge** - The uncontrolled discharge of untreated urban waste is another major source for AMR in many low and middle income countries

An Indian Council of Medical Research (ICMR) study in 2022 showed that the resistance level increases from 5% to 10% every year for broad-spectrum antimicrobials.

Impacts of AMR

- **Treating infections** - Microbial resistance to antibiotics has made it harder to treat infections such as pneumonia, tuberculosis (TB), blood-poisoning (septicaemia) and several food-borne diseases.
 - The global epidemic of TB has been severely impacted by multidrug resistance — patients have less than a 60% chance of recovery.
- **Health cost** - AMR imposes a huge health cost on the patient in the form of longer hospitalisation, health complications and delayed recovery.
- **Affects vulnerable patients** - It puts patients undergoing major surgeries and treatments, such as chemotherapy, at a greater risk.
- **Disease burden** - AMR adds to the burden of communicable diseases and strains the health systems of a country.

✖ In 2019, AMR was associated with an estimated 4.95 million human deaths.

UP TO 10% RISE IN DRUG RESISTANCE A YEAR

WHAT IS AMR

➤ Antimicrobials could be antibiotics, antivirals, antifungals and antiparasitics

➤ **Antimicrobial Resistance (AMR)** occurs when bacteria, viruses, fungi and parasites evolve over time to such an extent that regular medicines have no effect on them

➤ **Main cause:** Misuse and overuse of antimicrobials

➤ Drug-resistant infections are harder to treat; can cause disability, prolonged illness, hospitalisations and increased costs

➤ World Health Organisation says AMR is among the top 10 global public health threats

World Antimicrobial Awareness Week from November 18 to 24



BURDEN OF AMR IN THE WORLD

7,00,000 people die due to antimicrobial resistance every year

➤ Another 10 million are projected to die from it by 2050

➤ AMR kills more people than

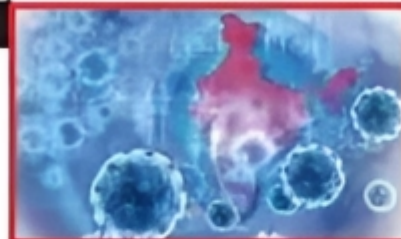
cancer and road traffic accidents combined

➤ By 2050, AMR would decrease gross domestic product (GDP) by 2%-3.5% with a fall in livestock by 3%-8%, costing US\$100 trillion to the world

AMR IN INDIA

➤ India has been referred to as 'the AMR capital of the world'

➤ More than 70% isolates of superbugs *Escherichia coli*, *Klebsiella pneumoniae* and *Acinetobacter baumannii* and nearly half of all *Pseudomonas aeruginosa* were resistant to medicines called



fluoroquinolones and cephalosporins

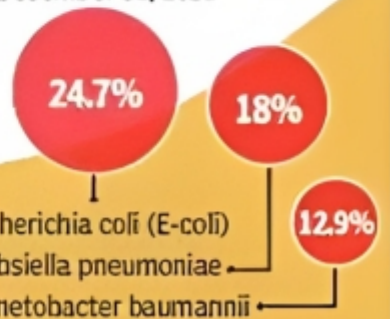
➤ Increasing rates of carbapenem resistance to the tune of 71% in *A. baumannii* led to frequent use of colistin as the last-resort antimicrobial

➤ The resistance to colistin has also emerged in India

ICMR REPORT'S FINDINGS

○ Indian Council for Medical Research's (ICMR) latest AMR surveillance report shows rising resistance to all known antibiotics

○ The report looked at **95,728** culture positive isolates between January 1 and December 31, 2021



FINDINGS

The most common drug-resistant bacteria were

- *Escherichia coli* (E-coli)
- *Klebsiella pneumoniae*
- *Acinetobacter baumannii*

What efforts were taken by India to tackle the rising AMR?

- **Muscat Manifesto** - At the Third Global High-Level Ministerial Conference on Antimicrobial Resistance held in Muscat, over 30 countries adopted the Muscat

Ministerial Manifesto on AMR.

- The Muscat Manifesto recognised the need to accelerate political commitments in the implementation of [One Health Action](#) for controlling the spread of AMR.
- The conference focused on three health targets
 - Reduce the total amount of antimicrobials used in the agri-food system at least by 30-50% by 2030
 - Eliminate use in animals and food production of antimicrobials that are medically important for human health
 - Ensure that by 2030 at least 60% of overall antibiotic consumption in humans is from the WHO “Access” group of antibiotics
- **Reporting to GLASS** - India plans to strengthen private sector engagement and the reporting of data to the WHO Global Antimicrobial Resistance and Use Surveillance System (GLASS).
- **The National Action Plan on Antimicrobial Resistance (2017-21)** - It 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 National Health Policy 2017** - It has offered specific guidelines regarding use and limiting the use of antibiotics as over-the-counter medications and restricting their usage in livestock.
- It also called for scrutiny of prescriptions to assess antibiotic usage in hospitals and among doctors.

What is the need of the hour?

- **Reduction of usage in agri-food system** - There is an urgent need to reduce the usage of antimicrobials in the agri-food system.
 - Countries such as the Netherlands and Thailand have decreased their usage by almost 50%.
- **Effective implementation of policies** - The government policies needs strong implementation on the ground.
- **Opportunities in G20** - The various G-20 health summits spread through 2023 offer an opportunity for India to ensure that all aspects of AMR are addressed.
- Some key areas for action are
 - Surveillance of priority pathogens
 - Sharing of data, including through WHO’s GLASS platform
 - Regulatory and policy action to stop use of antibiotics
 - No use of antibiotics for growth promotion in animals
 - More government investment in research and innovation for new antibiotics
 - Special focus on combating TB and drug-resistant TB

References

1. [The Hindu | A manifesto for tackling Antimicrobial Resistance](#)
2. [Times of India | AMR](#)



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