



General Studies-3; Topic: Science and Technology- developments and their applications and effects in everyday life.

Tackling the menace of Antimicrobial resistance (AMR)

Antimicrobial resistance (AMR)

- **Antimicrobial resistance (AMR), the phenomenon by which bacteria and fungi evolve and become resistant to presently available medical treatment, is one of the greatest challenges of the 21st century.**
- AMR is a slow tsunami that threatens to undo a century of medical progress.
- AMR is already responsible for up to 7,00,000 deaths a year.
- Unless urgent measures are taken to address this threat, we could soon face an unprecedented health and economic crisis by 2050.

Reasons for Drug resistance in Microbes

- Misuse of antimicrobials in medicine
- Inappropriate use in agriculture
- Contamination around pharmaceutical manufacturing sites where untreated waste releases large amounts of active antimicrobials into the environment.
- All of these drive the evolution of resistance in microbes.

Diverse challenges

- **AMR represents an existential threat to modern medicine.**
- Without functional antimicrobials to treat bacterial and fungal infections, even the common surgical procedures, as well as cancer chemotherapy, will become untreatable infections.
- **Neonatal and maternal mortality will increase.**
- All these effects will be felt globally, but the scenario in the low- and middle-income countries (LMICs) of Asia and Africa is even more serious.

- Around 5.7 million people worldwide die annually because they cannot access drugs for infections that are treatable.
- Major pharmaceutical companies have largely abandoned innovation in antibiotics.

International Efforts

- A multi-sectoral \$1 billion **AMR Action Fund** was launched in 2020 to support the development of new antibiotics.
- Peru's efforts on patient education to reduce unnecessary antibiotic prescriptions.
- Australian regulatory reforms to influence prescriber behaviour.
- Denmark's reforms to prevent the use of antibiotics in livestock have not only led to a significant reduction in the prevalence of resistant microbes in animals, but also improved the efficiency of farming.
- India proposed laws to curb the amount of active antibiotics released in pharmaceutical waste.

Way Forward

- In addition to developing new antimicrobials, **infection-control measures** can reduce antibiotic use.
- Control strategies in curbing AMR also comprise **hygiene and sanitation** as microbes travel from contaminated surroundings to the human body surface.
- It is critical to ensure that all those who need an antimicrobial have access to it.
- To track the spread of resistance in microbes, surveillance measures to identify these organisms need to encompass livestock, wastewater and farm run-offs.
- We need **sustained investments and global coordination to detect and combat new resistant strains on an ongoing basis.**
- International alignment and coordination are paramount in both policymaking and its implementation.
- Solutions in clinical medicine must be integrated with improved surveillance of AMR in agriculture, animal health and the environment.