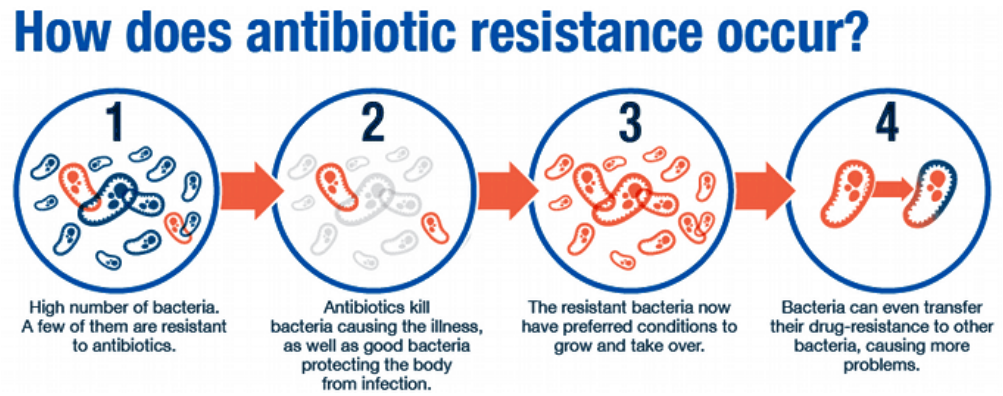
One Health Approach for Antimicrobial Resistance

Why in news?

Recently United Nations General Assembly held a high-level meeting on AMR emphasizing prevention.

What is anti-microbial resistance?

- **Antimicrobial –** It is a drug designed to treat and prevent infectious diseases in humans, animals, and plants.
    - Antimicrobials include antibiotics, antivirals, antifungals, and antiparasitic.
- **Antimicrobial Resistance** – AMR is a natural process that happens over time through genetic changes in pathogens and it no longer respond to anti microbials.
- It is further accelerated by human activity, mainly the misuse and overuse of antimicrobials to treat, prevent or control infections in humans, animals and plants.



- **Global Concern –** Antimicrobial medicines are the cornerstone of modern medicine.
- The emergence and spread of drug-resistant pathogens threaten our ability to treat common infections.
- **Consequences**
    - Increased mortality rate incurred by microbial infections.
    - Currently 5 million deaths per year globally.
    - Increased treatment cost and out of pocket expenditure on health.
    - Destabilize medical progress.
    - Threat of blood stream infections.

To know the causes of AMR , click here

What are the challenges in fighting AMR?

- **Fragmented Policy Responses** – India's regulatory oversight of antibiotic use spans across multiple departments in the ministries of health and family welfare, agriculture and environment.
- **Limited Data** – The absence of a centralised, cross-sectoral data repository hinders comprehensive policy development and effective monitoring affects AMR surveillance.
- **Lacks of Strong Enforcement Mechanism** – Enforcement remains weak due to limited manpower, resources and decentralized governance.
- **Antibiotic Misuse** – Ineffective measures have limited success in preventing antibiotic misuse across various sectors.
- **Inadequate AMR Training** – Many professionals lack essential training to manage AMR effectively in healthcare and veterinary hospitals.
- **Over Prescription of Antibiotics** – Frequent, unnecessary antibiotic prescriptions heighten resistance risks, particularly in underserved rural areas.
- **Self-Medication Practices** – People often use antibiotics without prescriptions, worsening resistance due to improper dosing and usage.
- **Industrial Scale Farming –** Expansion of agricultural production, including fisheries, dairy and poultry and regular antibiotic use for livestock growth has increased susceptibility to AMR.
- **Mishandling of Pharmaceutical Waste** – Improper drug disposal contaminates

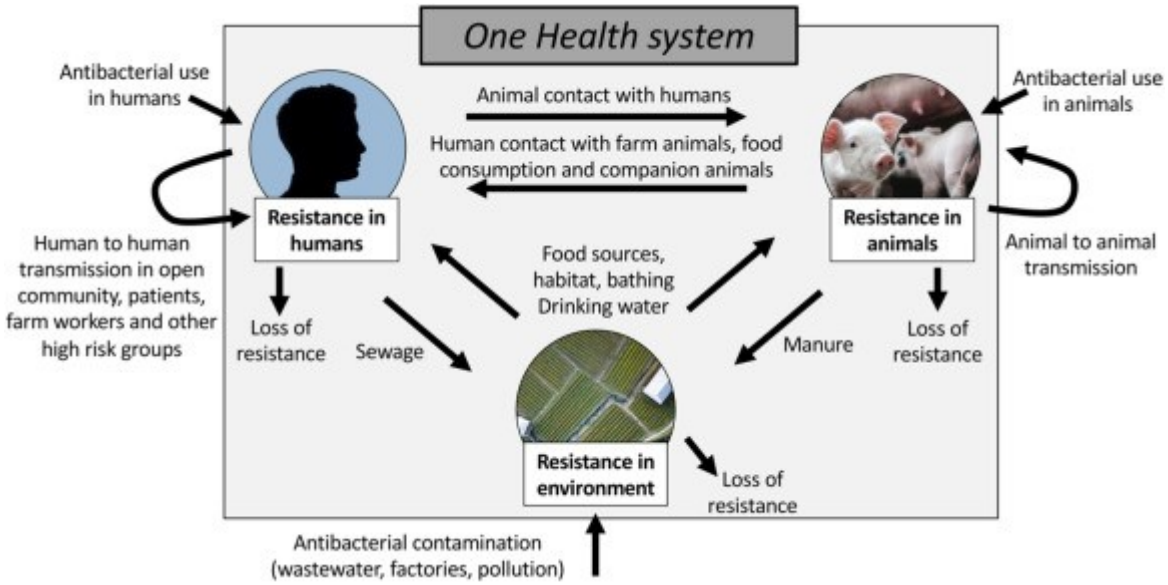
water, soil, exacerbating resistance in the environment.

- **Limited Technological Support** – Few tech tools exist to accurately monitor, analyze, and manage antimicrobial resistance data.
- **Limited Funding –** Financial limitations restrict research, innovation, and effective AMR control measures in healthcare.
- **Limited Alternative Treatments** – Preventive measures such as vaccines, and viable non-antibiotic treatment options are essential to combat AMR.
- **High Medical Cost** – It discourages people to approach health facilities and prefer over the counter self-medication.

What is the role of one health in fighting AMR?

One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems.

To know more about one health, click here



- **Integrated Disease Surveillance** – Disease monitoring across human, animal, and environmental sectors helps to address communicable diseases of zoonotic, transboundary animal diseases and diseases of epidemic/pandemic potential.
- **Environmental Surveillance System –** To understand the disease transmission dynamics across human, animal husbandry and wildlife**.**
- **Outbreak Investigation** - Joint investigation and control of diseases across human, animal husbandry and wildlife sectors.
- **Prevention in Animal Sector** – Investing in biosecurity measures and vaccination programs in animal husbandry can significantly reduce antibiotic reliance.
- **Community-based Awareness** – Implementing community-based AMR awareness campaigns can address public misconceptions about antibiotic use.
- **Behavioral Changes** –Responsible use of antibiotics at the grassroots level could foster a shift toward preventive healthcare**.**
- **Sustainable Waste Management** – Green practices for waste management, particularly pharmaceutical waste, can minimize environmental AMR contamination.

One Health AMR initiatives of India
• **National One Health Mission** - It aims to develop an integrated approach to address AMR, zoonotic diseases and environmental degradation. • **National One Health Programme for Prevention and Control of Zoonoses** - To operationalize "One Health" Mechanisms for prevention and control of Zoonoses. • **Centre for One Health** – It implements four National Health Programs - National Rabies Control Program (NRCP) - National One Health Programme for Prevention and Control of Zoonoses (NOHP-PCZ) - Program for Prevention and Control of Leptospirosis (PPCL) - National Programme for Prevention and Control of Snakebite Envenoming (NPSE) • **National Action Plan on AMR (NAP-AMR)** – Initiated for 2017-2021 and now updating for 2022-2026, to tackle six crucial areas, including surveillance, research, and optimized antibiotic use across health sectors. • **One Health Consortium** – India's first multi-sectoral AMR surveillance initiative, bringing human, animal, and environmental health professionals together for comprehensive monitoring and action. • **Delhi Declaration on AMR** – A collaborative pledge across various sectors to control AMR spread through integrated policies. • **Indian Priority Pathogen List** – Guiding research list and new antibiotic development for high-risk pathogens. • **Chennai Declaration** - Recommendations for healthcare providers to improve AMR prevention and *antibiotic stewardship*. • **AMR Surveillance and Research Network (AMRSN)** - Indian Council of Medical Research (ICMR) established it in 2013 to generate evidence and monitor trends and patterns of drug-resistant infections across India.

What lies ahead?

- Harmonising regulations and fostering inter-departmental collaboration are critical to developing a coherent AMR strategy.
- Establishing stringent guidelines and policies for veterinary and agricultural use of antibiotics is crucial for addressing AMR.
- Awareness programmes and strict prescription regulations are necessary to curb misuse at the community level.
- Tailored training programmes focused on AMR prevention and management are essential for improving practices across sectors

Reference

DownToEarth |India's One Health Approach To Combating AMR