

## **6. Combatting Antimicrobial Resistance**

**Prelims Syllabus:** Science & Technology

**Mains Syllabus:** GS-II Issues relating to development and management of Social Sector or Services relating to Health, Education, Human Resources.

### **Why in News?**

- While covid-19 has infected more than 2 million and killed nearly 150,000 people globally, antimicrobial resistance (AMR) looms large as a hidden threat during the pandemic.

### **Antimicrobial Resistance:**

- Antimicrobial 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.
- Some bacteria due to the presence of resistance genes are intrinsically resistant and therefore survive on being exposed to antibiotics.
- **This can happen in two ways:**
  1. by sharing and Transferring Resistance Genes present in the rest of the population or
  2. 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.
- 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”.
- Klebsiella, Acinetobacter, and E. coli. are some common superbugs found in India.
- Antimicrobial resistance is now regarded as a major threat to public health across the Globe.

### **Hidden Threat:**

- **Covid-19 caused by a virus doesn't require antibiotics for treatment.**
  - ✓ However, according to the World Health Organization (WHO), in case of hospitalization, patients may need antibiotics due to possible bacterial co-infection.
- **Covid-19, in more severe cases, can cause Pneumonia** which in some cases will require administration of antibiotics to patients.

- ✓ Now, if this secondary infection is triggered by an antibiotic-resistant bacteria (ARB) then the situation becomes grave and harder to treat.
- ✓ This eventually leads to an individual's death as seen in case of Wuhan City where AMR ensured more Covid 19 deaths.

### **Why is the Situation Graver for India?**

- As per public health experts by 2050, 10 million people could be losing their lives every year to AMR globally, of which one-fifth will be in India.
- Already, more than 50,000 new-born's die in India from sepsis because of pathogen resistance to first-line antibiotics.
- The first line of antibiotics to be used in pneumonia are broad-spectrum macrolide antibiotics, such as azithromycin and clarithromycin whose resistance has been rising in the past.
- In the past few years, diseases like pneumonia and typhoid have become difficult to treat, and in 70% of the cases, treatment begins with more expensive, third-generation drugs.
- Further they are administered for a longer duration than before which increases the probability of AMR.
- Similarly, Poultry and Cattle are given antibiotics for boosting their productivity but it eventually leads to development of AMR in Indians.
- Over the counter sale of antibiotics without a prescription is also a cause of concern which often leads to irregular and inappropriate intake of drugs.
- The gets amplified as Self Medication is a common norm in India
- The wastewater effluents from the antibiotic manufacturing units contain a substantial amount of antibiotics, leading to contamination of rivers and lakes due to this culture festivities like collective bathing in common pools can also increase the spread of AMR in India.

### **Initiatives to Combat Antimicrobial Resistance:**

- The National Health Policy 2017 highlights the problem of antimicrobial resistance and calls for effective action to address it.
- **National Action Plan on AMR resistance 2017-2021 -**
  - ✓ The current NAP is comprehensive and aligns well with the World Health Organization's (WHO's) GAP for AMR.

- ✓ The plan covers all the five major objectives as listed in the GAP and adds an additional objective related to strengthening India's leadership on AMR.

- **Objectives -**

- ✓ Improve awareness and understanding of AMR through effective communication, education, and training
  - ✓ Strengthen knowledge and evidence through surveillance
  - ✓ Reduce the incidence of infection through effective infection, prevention, and control
  - ✓ Optimize the use of antimicrobial agents in all sectors
  - ✓ Promote investments for AMR activities, research, and innovations
  - ✓ Strengthen India's leadership on AMR by means of collaborations on AMR at international, national, and sub-national levels
- The plan proposes to target several key aspects of AMR in both human and non-human sectors (such as agriculture, fisheries, animal husbandry, and environment) incorporating the 'one health approach'.
  - 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.
  - India has instituted surveillance of the emergence of drug resistance in disease-causing microbes in programs 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.

### Way Forward:

- The National Centre for Disease Control (NCDC) has written to states for strictly adopting hospital infection prevention and control guidelines during the covid-19 outbreak.

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- Also, as per recent guidelines issued by the Indian Council of Medical Research (ICMR), antibiotic treatment should be started based on the clinical diagnosis -
  - Such as in community-acquired pneumonia, health care-associated pneumonia, or if an infection was acquired in a healthcare setting, or in case of sepsis.
  - 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 a need for a One Health Approach through coherent, integrated, multi-sectoral cooperation and actions, as human, animal and environmental health are integrated.

