



Fighting the AMR Pandemic

This editorial is based on [“The Lingering Pandemic”](#) which was published in Indian Express on 03/03/2022. It talks about the concerns regarding the spread of AMR (Antimicrobial Resistance).

For Prelims: Antimicrobial Resistance (AMR), New Delhi Metallo-beta-lactamase-1 (NDM-1), Antibiotic Stewardship Program (AMSP), GRAM Report, National Action Plan on AMR, WHO-GLASS Portal, One Health Approach.

For Mains: Antimicrobial Resistance (AMR) - concerns regarding AMR, challenges to preventing AMR, India's initiatives to prevent AMR.

In the past few years, alarmingly **high resistance rates in pathogens** of public health importance have been reported from Indian hospitals. The Covid-19 pandemic has also raised concerns about the improper use of antimicrobials amongst Covid-19 patients.

The **unnecessary prescription of antimicrobials** amid the Covid-19 pandemic, **unsustainable use of antibiotics** and the **discharge of untreated effluents and wastewater into water systems** has led to an increase in the already high levels of drug resistance in most parts of the world.

Antimicrobial Resistance (AMR)

What is AMR and How Prevalent is it in India?

- **Antimicrobial Resistance** is the resistance acquired by any microorganism (bacteria, viruses, fungi, parasite, etc.) against antimicrobial drugs that are used to treat infections.
 - 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.**
- In India, over **56,000 newborn deaths each year due to sepsis** caused by organisms that are resistant to first line antibiotics.
- A study reported by [ICMR \(Indian Council of Medical Research\)](#) from 10 hospitals showed that **when Covid patients acquire drug-resistant infections** in hospitals, the **mortality is almost 50-60%.**
- The multi-drug resistance determinant, **New Delhi Metallo-beta-lactamase-1 (NDM-1)**, emerged from this region.
 - Africa, Europe and other parts of Asia have also been affected by multi-drug resistant typhoid originating from South Asia.

What does GRAM Report Present about AMR?

- The [Global Research on Antimicrobial Resistance \(GRAM\) report](#) provides the most comprehensive estimate of the global impact of antibiotic resistance to date.
- According to the report, **1.27 million people died in 2019 as a direct result of AMR** (AntiMicrobial Resistance).
- Lower respiratory infections accounted for more than 1.5 million deaths associated with resistance in 2019, making it the most burdensome infectious syndrome.
- Amongst pathogens, **E coli** was responsible for the most deaths in 2019, followed by **K pneumoniae**, S aureus, A baumannii, S pneumoniae, and M tuberculosis.
 - As per the yearly trends reported by the ICMR, since 2015, **India reports a high level of resistance in all these pathogens**, especially E coli and K pneumoniae.

What are the Concerns Regarding AMR?

- The growth of AMR has proved to be a **major challenge in the treatment of sepsis**, which is a life-threatening condition and, unfortunately, the failure of antibiotics is **leading to deaths which are preventable**.
- AMR is also **undermining and undoing medical advances made over decades**, especially for high-burden diseases like [tuberculosis](#) and various cancers.
- It is putting the gains of the Millennium Development Goals at risk and **endangers achievement of the Sustainable Development Goals**.
- Untreated wastewater from medical facilities is awash with chemical compounds that **promote superbugs**.
- The concoction of **self-medication and over the counter (OTC) antibiotic availability** has led to one of the **highest rates of antibiotic resistance** in the world.

What Initiatives have been taken by the Government to Prevent AMR?

- **AMR Surveillance and Research Network (AMRSN)** was launched in 2013, to generate evidence and capture trends and patterns of drug resistant infections in the country.
- The **National Action Plan on AMR** focuses on One Health approach and was launched in April 2017 with the aim of involving various stakeholder ministries/departments.
- ICMR along with **Research Council of Norway (RCN)** initiated a **joint call for research in antimicrobial resistance** in 2017.
- ICMR along with the Federal Ministry of Education and Research (BMBF), Germany has a joint **Indo-German collaboration for research on AMR**.
- ICMR has initiated [Antibiotic Stewardship Program \(AMSP\)](#) on a pilot project across India to **control misuse and overuse of antibiotics in hospital wards and ICUs**.

What are the Challenges Related to Preventing AMR?

- **Inadequate Information Systems:** The resistance rates reported by the hospitals and laboratories **do not automatically translate to disease burden** unless each resistant isolate is correlated with the clinical outcomes in the patients from whom they were isolated.
 - This has to do with **inadequate hospital information systems** in most public sector funded healthcare facilities in India and many low-middle income countries.
- **Insufficient Fundings: No new classes of antibiotics have made it to the market** in the last three decades, largely on account of **inadequate incentives** for their development and production.
 - Lack of an urgent action is leading towards an **antibiotic apocalypse** – a future with bacteria becoming completely resistant to treatment.
- **Exclusion of Antibiotic Residues:** In India, **current effluent standards do not include antibiotic residues**, and thus they are **not monitored** in the pharmaceutical industry effluents.
- **Inefficiency of Schemes:** The National Action Plan for AMR, approved in 2017, completes its official duration this year. The **progress under the plan has been far from satisfactory**.
 - Too many players, **missing governance mechanisms** and **absence of funding** are the key impediments to the effective rollout of the scheme.
- **Underreporting in GRAM Report:** Only a fraction of the Indian data, available through

the [WHO-GLASS portal](#), has been included in the GRAM report.

- India has been reporting **high levels of resistance to fluoroquinolones, cephalosporins and carbapenems** across the Gram-negative pathogens that cause almost **70% of infections in communities and hospitals**.

What Steps Can Be Taken?

- **Multipronged Strategy for Reducing AMR:** Addressing AMR requires a multipronged and multisectoral approach. The urgency to develop new drugs should not discourage us from **instituting measures to use the existing antimicrobials judiciously**.
 - **Improved infection control** in communities and hospitals, **availability and utilisation of quality diagnostics** and laboratories and **educating people about antimicrobials** have proved effective in reducing antimicrobial pressure — a precursor to resistance.
 - All this requires a **comprehensive plan, driven by a designated coordinating agency** backed with suitable funding.
- **One Health Approach:** 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 need for a **One Health Approach** through **coherent, integrated, multi sectoral cooperation** and actions, as human, animal and environmental health are integrated.
 - **Development of antibiotic resistance breakers (ARBs)** to restore effectiveness of older classes of antibiotics.
- **Effective Surveillance and Data Management:** It is time to adopt strategies for optimising use of antibiotics across disciplines and exercise prudence across the board including in **pharmaceutical effluent discharge**.
 - **Effective microbiological surveillance** of the agriculture and livestock industry and pharmaceutical manufacturing plants would allow for **informed policy actions to mitigate AMR**.
 - Promoting research to **address the data deficiency around AMR for evidence-based assessment and intervention** will further assist in this fight.

Drishti Mains Question

Discuss the concerns associated with the spread of antimicrobial resistance and suggest measures to prevent it.