Antimicrobial resistance:The silent threat

(Mains GS 3 : Recent developments and their applications and effects in everyday life)

Context:

- Since January 2020, there have been over three million deaths globally on account of COVID-19, starkly exposing the vulnerabilities of health systems to infectious diseases, even in the richest countries.
- As serious as the current health and economic crisis is, COVID-19 may just be the harbinger of future crises.
- 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.

Warning by WHO:

- According to World Health Organization Director-General Tedros Adhanom Ghebreyesus “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 of 10 million annual deaths and costs of up to $100 trillion by 2050.

Diverse challenge:

- AMR represents an existential threat to modern medicine.
- Without functional antimicrobials to treat bacterial and fungal infections, even the most common surgical procedures, as well as cancer chemotherapy, will become fraught with risk from 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.

- LMICs have significantly driven down mortality using cheap and easily available antimicrobials.
- In the absence of new therapies, health systems in these countries are at severe risk of being overrun by untreatable infectious diseases.

The complexities:

- Drug resistance in microbes emerges for several reasons that pose complex challenges.
- These include the misuse of antimicrobials in medicine, inappropriate use in agriculture, and 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.
- This is compounded by the serious challenge that 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.
- A recent report from the non-profit PEW Trusts found that over 95% of antibiotics in development today are from small companies, 75% of which have no products currently in the market.

Tackling the diverse challenge:

- Tackling these diverse challenges requires action in a range of areas – in addition to developing new antimicrobials, infection-control measures can reduce antibiotic use.
- A mix of incentives and sanctions would encourage appropriate clinical use.
- At the same time, it is critical to ensure that all those who need an antimicrobial have access to it; 5.7 million people worldwide die annually because they cannot access drugs for infections that are treatable.
- Further, to track the spread of resistance in microbes, surveillance measures to identify these organisms need to expand beyond hospitals and encompass livestock, wastewater and farm run-offs.
- Finally, since microbes will inevitably continue to evolve and become resistant even to new antimicrobials, we need sustained investments and global coordination to detect and combat new resistant strains on an ongoing basis.

Global efforts in right direction:

- A multi-sectoral $1 billion AMR Action Fund was launched in 2020 to support the development of new antibiotics.
- The concept of the AMR Action Fund has been developed in collaboration with the World Health Organization, the European Investment Bank, and the Wellcome Trust.

- It aims to overcome key technical and funding barriers of late-stage antibiotic development and will work with governments to ensure there is a sustainable pipeline of new antibiotics to fight superbugs.
- The U.K. is trialling a subscription-based model for paying for new antimicrobials towards ensuring their commercial viability.
- This means that the government will pay upfront for these new antimicrobials, thereby delinking the life-saving value of the drugs from the volume of sales and providing an incentive for their production in market conditions that do not do so.
- Other initiatives focused on the appropriate use of antibiotics include Peru's efforts on patient education to reduce unnecessary antibiotic prescriptions.
- Australian regulatory reforms to influence prescriber behaviour, and initiatives to increase the use of point-of-care diagnostics, such as the EU-supported VALUE-Dx programme.
- Beyond human use, 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.
- Finally, given the critical role of manufacturing and environmental contamination in spreading AMR through pharmaceutical waste, there is a need to look into laws
- Recently India proposed a new law to curb the amount of active antibiotics released in pharmaceutical waste.

The shortcomings of efforts:

- While the range of initiatives that seek to control the emergence and spread of AMR is welcome, there is a need to recognise the limitations of a siloed approach.
- Current initiatives largely target individual issues related to AMR (such as the absence of new antibiotics, inappropriate prescription and environmental contamination) and consequently, narrowly defined groups of stakeholders (providers, patients and pharmaceutical companies).
- Regulating clinician prescription of antimicrobials alone would do little in settings where patient demand is high and antimicrobials are freely available over-the-counter in practice, as is the case in many LMICs.
- Efforts to control prescription through provider incentives should be accompanied by efforts to educate consumers to reduce inappropriate demand, issue standard treatment guidelines that would empower providers to stand up to such demands, as well as provide point-of-care diagnostics to aid clinical decision-making.

Needs wider consideration:

- Policy alignment is needed much beyond the health system as solutions in clinical medicine must be integrated with improved surveillance of AMR in agriculture, animal health and the environment.
- This means that AMR must no longer be the remit solely of the health sector, but needs engagement from a wide range of stakeholders, representing agriculture, trade and the environment with solutions that balance their often-competing interests.
- Finally, successful policies in individual countries are no guarantee of global success.
- International alignment and coordination are paramount in both policymaking and its implementation.
- Indeed, recent papers have proposed using the Paris Agreement as a blueprint for developing a similar global approach to tackling AMR.

Conclusion:

- Viral diseases such as COVID-19 outbreaks and pandemics may be harder to predict but the world knows enough about the “silent pandemic” that is AMR.
- Thus an integrated and comprehensive approach is required to address this silent pandemic and safeguards humanity from its biggest challenge.

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