AMR and Phage Therapy

Why in news?

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Phage therapy has been emerged as a new counter measure for Antibody resistance.

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What is antibiotic resistance?

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- Antimicrobial resistance (AMR) is the ability of a microbe to resist the effects of medication previously used to treat them.
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- **Resistance arises through one of three ways:** natural resistance in certain types of bacteria, genetic mutation, or by one species acquiring resistance from another.
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- Resistance can appear due to random mutations; or more commonly following gradual build-up over time, and because of misuse of antibiotics or antimicrobials.
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- **Resistant microbes are increasingly difficult to treat,** requiring alternative medications or higher doses, both of which may be more expensive or more toxic.
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- Microbes resistant to multiple antimicrobials are called multidrug resistant (MDR); or sometimes **superbugs.**
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- Antimicrobial resistance is on the rise with millions of deaths every year.
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- All classes of microbes develop resistance: fungi develop **antifungal resistance,** viruses develop **antiviral resistance,** protozoa develop **antiprotozoal resistance,** and bacteria develop antibiotic resistance.
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What is the Global impact of AMR?

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- Over the past decades, antimicrobial agents have been revolutionary in alleviating communicable diseases across the world.
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- In the US, more than two million people fall sick every year due to antibiotic-resistant infections, resulting in at least 23,000 deaths.
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- While antibiotic resistance is a global hazard to public health, India, the largest consumer of antibiotics in the world, is notoriously seen as the epicentre of this threat.
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What is the position of AMR in India?

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- There is widespread existence of superbugs throughout the country.
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- The crude infectious disease mortality rate in India today is 416.75 per 100,000 persons, which is twice the rate prevailing in the US.
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- Some important factors responsible for the rising antibiotic resistance in India are.\n
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    - Indiscriminate use of antimicrobial drugs
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    - Laxity of regulatory bodies in approval of antibiotics
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    - Lack of public awareness about antibiotic resistance
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    - Injudicious use in veterinary practices
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    - Overburdened health infrastructure and inequity in healthcare.
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What is the new therapy is about?

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- **Bacteriophage therapy** or simply phage therapy holds promise as an alternative treatment option.
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- **Bacteriophages are viruses that infect and kill bacteria.**
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- The revitalisation of phage therapy has received increased global attention since the appearance of multidrug-resistant bacteria.
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- The most striking advantage of bacteriophage therapy is the **ability to tailor treatment accurately to kill the pathogenic bacteria** provided the diagnostic procedures are highly accurate.
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What is the way forward?

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- **Capacity building and sensitisation** of all the stakeholders is an integral pre-requisite of this programme.
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- The **multidisciplinary team members** comprise an infectious diseases physician, a clinical pharmacist, a microbiologist, an infection control team, a hospital epidemiologist, an information system specialist, quality improvement staff, laboratory staff and nurses is required in every public health department.
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- Antibiotics should only be used when needed as prescribed by health professionals.
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- The prescriber should closely adhere to the five rights of drug administration: The right patient; the right drug; the right dose; the right route and the right time.
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Source: Business Line

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