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Editorial

Antimicrobial stewardship - A call for action

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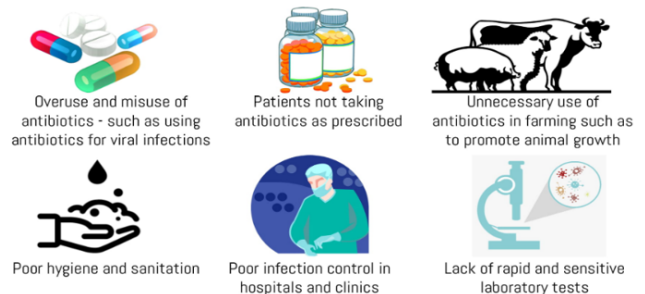
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1. Antimicrobial Resistance

Antimicrobial resistance (AMR) is a burning global health crisis. It is one of the top global public health and economical threat and based on WHO report it was estimated that AMR lead to nearly 1.27 million global deaths in 2019 in a direct manner and contributed to 4.95 million deaths indirectly.¹ AMR is a complex, multifaceted global health issue that poses a serious threat to livestock, humans, and the surrounding environment.² AMR has reached devastating proportions because of the overuse and misuse of antibiotics, with the anticipation of 10 million annual AMR associated deaths by 2050.³ The fact that infectious diseases caused by resistant microorganisms are no longer treatable with antibiotics, foreshadows an uncertain future in the context of health care. In addition to death and disability, AMR results in significant economic costs both to the society and health care system.^{4,5} Unfortunately, AMR rates in India are some of the highest, including both infections from community as well as healthcare facilities. Moreover, India was the highest consumer of antimicrobials, followed by China and the United states.⁶

2. Factors Responsible for AMR

Injudicious use of antimicrobials in livestock, humans and environment contributes to the emergence of drug-resistance in microorganisms.⁷ The situation is made worse by unsafe drinking water, improper sanitation, poverty and inequality, and low- and middle-income countries are the most affected. This results in many infections not being treated with available antibiotics as the superbugs develop resistance to these antimicrobials. These bacteria can be transmitted to humans through direct contact with livestock, via food products, and can also be present in the environment due to livestock waste as shown in figure.



On the other hand, there is new antimicrobial development and access crisis. There are very limited antimicrobials in the pipeline and we are currently facing scarcity in new research and development amidst ever

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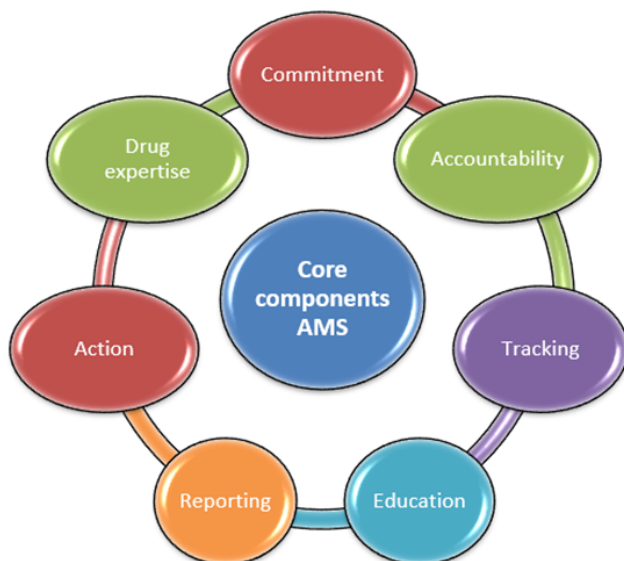
increasing levels of AMR. So, there is urgent need for additional measures to ensure equitable access to new and existing vaccines, diagnostics and medicines.⁸

3. The Superbugs

The bacteria that have developed resistance include Critical priority group (Acinetobacter, Pseudomonas, Enterobacteriaceae e.g. Klebsiella pneumonia, E. coli, and Enterobacter species), high-priority category (Enterococcus faecium, Staphylococcus aureus etc), and the medium-priority category which includes Streptococcus pneumoniae and Shigella etc. Similarly, many antifungals and antivirals are now ineffective (e.g. azoles) due to widespread resistance developed by the fungal and viral microorganisms.⁹

4. Antimicrobial Stewardship

The term antimicrobial stewardship (AMS) was first used by John McGowan and Dale Gerding in 1996 while exploring the relation between antimicrobial agents and antimicrobial resistance (AMR). It focuses on prevention of AMR, awareness and education, stringent surveillance and prevention of infections. AMR surveillance in India is tertiary hospital based and data is available only from tertiary care centers that may not be applicable to other health care centers.⁶ As per ICMR AMS guidelines, each healthcare setting must have an identified stewardship team, hospital specific antimicrobial policy, guidelines for antimicrobial treatment and prophylaxis, periodical training on AMSP, monitoring and reporting of antimicrobial use.⁶ AMS is a set of interventions that are taken by health care facilities including proper selection, dosing, duration and de-escalation that will result in good clinical outcomes, minimal side effects, reduced costs and most importantly limit antimicrobial resistance.^{10,11} Core components of AMS are Leadership commitment, action for policy and practice, tracking and reporting, education and drug expertise and accountability as shown in figure.



There is urgent need for stress on prevention of health care associated infections and stop injudicious use of antimicrobials, antibiotic stewardship and antifungal stewardship. AMS program emphasizes that we should use the norm of right Drug, correct Dose, right Drug route, suitable Duration, and timely De-escalation. It is also important to prevent antimicrobial overuse, misuse, and abuse in inpatient, outpatient, and community settings, including the agriculture industry.

5. World Antimicrobial Resistance Awareness Week

World antimicrobial resistance awareness week (WAAW) is celebrated from 18 to 24th November every year. The theme for the AMR WAAW 2024 this year is “Educate. Advocate. Act now.”¹² As AMR pose a threat to whole living beings, so, this year’s theme is a desperate call to global community to spread awareness to all the stakeholders and advocate solid commitments and actions in response to AMR. Global leaders met at the 79th United Nations General Assembly (UNGA) in a meeting on Antimicrobial Resistance (AMR), where they committed to a set of targets and actions, including reducing the estimated 4.95 million human deaths associated with bacterial antimicrobial resistance (AMR) annually by 10% by 2030.⁵

6. Conflict of Interest

None.


References

1. World Health Organization. Antimicrobial resistance; 2024. [Last accessed on 15th December 2024]. Available from: <https://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance>.
2. Pandey S, Doo H, Keum GB, Kim ES, Kwak J, Ryu S, et al. Antibiotic resistance in livestock, environment and humans: One Health perspective. *J Anim Sci Technol*. 2024;66(2):266–78.
3. Antimicrobial Resistance Collaborators. Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis. *Lancet*. 2022;399(10325):629–55.
4. Dadgostar P. Antimicrobial Resistance: Implications and Costs. *Infect Drug Resist*. 2019;12:3903–10. doi:10.2147/IDR.S234610.
5. World Bank Group. Drug-Resistant Infections: A Threat to Our Economic future. [last accessed on 15th December 2024]. Available from: <https://www.worldbank.org/en/topic/health/publication/drug-resistant-infections-a-threat-to-our-economic-future>.
6. Debnath F, De RG, Chakraborty D, Majumdar A, Mukhopadhyay S, Sarkar MD, et al. Antimicrobial stewardship implementation in primary and secondary tier hospitals in India: interim findings from a need assessment study using mixed method design. *Sci Rep*. 2024;14(1):28068. doi:10.1038/s41598-024-78111-0.
7. Taneja N, Sharma M. Antimicrobial resistance in the environment: The Indian scenario. *Indian J Med Res*. 2019;149(2):119–28.
8. Muteeb G, Rehman MT, Shahwan M, Aatif M. Origin of Antibiotics and Antibiotic Resistance, and Their Impacts on Drug Development:

- A Narrative Review. *Pharmaceuticals (Basel)*. 2023;16(11):1615. doi:10.3390/ph16111615.
9. Mancuso G, Midiri A, Gerace E, Biondo C. Bacterial Antibiotic Resistance: The Most Critical Pathogens. *Pathogens*. 2021;10(10):1310. doi:10.3390/pathogens10101310.
10. Ture Z, Güner R, Alp E. Antimicrobial stewardship in the intensive care unit. *J Intensive Med*. 2022;3(3):244–53.
11. Hwang S, Kwon KT. Core Elements for Successful Implementation of Antimicrobial Stewardship Programs. *Infect Chemother*. 2021;53(3):421–35.
12. World health organization. World antimicrobial resistance awareness week. [last accessed on 16th December, 2024]. Available from: <https://www.who.int/campaigns/world-amr-awareness-week>.

[//www.who.int/campaigns/world-amr-awareness-week](https://www.who.int/campaigns/world-amr-awareness-week).

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