



Strategies to Combat Antimicrobial Resistance

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On 11th December, 1945, in his Nobel Prize acceptance speech Sir Alexander Fleming made a prophetic prediction “The time may come when penicillin can be bought by anyone in the shops. Then there is the danger that the ignorant man may easily underdose himself and by exposing his microbes to non-lethal quantities of the drug make them resistant.” In 1947, only three years after starting commercial use of penicillin, his prediction came true; first case of penicillin resistance was documented. If we look at the timeline of antibiotic resistance, we will notice that, antibiotic resistance starts to develop only few years after discovery of an antibiotic. Apparently, only three things in life are certain-death, taxes and infinite ability of the microbes to produce antimicrobial resistance (AMR).

The situation of AMR is expected to worsen in the coming days; the occurrence of resistance to last-line-of defense antibiotics will double from 2005 to 2030.¹ AMR in bacteria caused an estimated 1.27 million deaths in 2019.² By 2050, 10 million people is expected to die annually globally from antimicrobial resistant infections; that is one death in every three seconds.³

For survival of humankind, we must take immediate, effective, sustainable actions to deal with this global menace. Policy makers must come forward with a robust national action plan to tackle AMR. There should be nationwide AMR surveillance program, infection prevention and control program and strict regulation to ensure appropriate use of antimicrobials. Selling of antibiotics without prescription from a qualified doctor must be stopped. Government and other

agencies should use the print, electronic and social media to inform the population about the dangers of AMR and about individual responsibility to tackle this issue. Governments should form a global coalition to combat AMR and can also initiate a global innovation fund for research and development.

All the healthcare professionals, including hospital managers, doctors, nurses, supporting staff should try to prevent hospital acquired infections by keeping the hands, instruments and environment as much clean as possible. Every hospital should try to establish its own antimicrobial prescription guideline, depending on the local antimicrobial susceptibility pattern. Doctors should prescribe antibiotics following institutional or national guideline, report antimicrobial resistant infections to the local surveillance team, should talk to the patient about infection prevention measures, proper use of antibiotics & dangers of noncompliance. Pharmaceutical industry can contribute by investing in research and development of new antibiotics, vaccines, and diagnostic tools.

Health education of the population regarding AMR is paramount. People should use antibiotics only when prescribed by a qualified healthcare professional, they should not demand antibiotics from doctors when the doctor says it is not necessary, should complete the course of antibiotic as directed by the physician, should take the recommended vaccines and follow the infection prevention measures.

Extensive, indiscriminate antibiotic use in the agricultural sector, especially animal husbandry

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and fish farming contributes to AMR in the humans.⁴ To handle this important public health hazard, Ministry of agriculture must ensure that, antibiotics are given to animals only under veterinary supervision. Prophylactic antibiotic use in healthy animals and antibiotic use for growth promotion of the animals should be banned. Vaccination coverage of the animals should be maximized to prevent infections and thus to reduce antibiotic use. As human health is closely linked to animal health and agriculture, it is logical to follow the One Health approach.

Humans are at constant biological warfare with the microbes. Father of modern bacteriology Louis Pasteur once said “Gentlemen, it is the microbes who will have the last word.” We must act now to

prevent this prediction come true; we don't have a choice.

References

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