

Antibiotic Resistance: Global Challenge

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Antibiotics are used to prevent and treat mild to serious bacterial, fungal, viral, parasitical infections. Antibiotic resistance develops when microbes are not effected either statically or cidal effect in response to these antimicrobials. And infections caused drug resistant pathogens are harder to treat. New different resistance mechanisms are emerging and globally, which threatens clinicians to treat common and even mild infections. Antibiotic resistance leads to higher costs for medical treatment, which can be because of prolonged hospital stay.

Now the concern why this antimicrobial resistance is increasing?

- This is because of generating selective pressure on microorganisms: caused by inappropriate use of these drugs.
- Selective pressure develops when use of antibiotics (while treating patients) causes microbes to adapt according to drug environment producing several changes (for example producing enzymes, porins) in self. This lead to antibiotic resistance development, via which microbes protect themselves from antibiotics.
- Incorrect use of antimicrobials means insufficient treatment , wrong prescriptions which increases the likelihood that bacteria will adapt to antibiotic environment and replicate.
- Many factors have contributed to the rise in antimicrobial resistance, including:
 - Pressure on practitioners to prescribe antimicrobials (even when they are not needed)
 - Patient failure to complete their full course of treatment
 - Heavy use of antimicrobials in hospitals
 - Over-the-counter access to antimicrobials in many countries.

Recent blast occurred with the arisen of superbugs in this era: it refers to those microbes having enhanced capability of morbidity and mortality due to genomic mutations endowing them high level of resistance to antibiotic specifically recommended for their treatment; therefore reducing therapeutic options for these microbes. Pan drug resistant isolates or strains are seemed to be more virulent and as they are difficult to remove with antibiotics, these microbes have more chance of enhanced transmissibility.

It is urgently required globally to change the way of prescription and uses of antibiotics. Even with latest antibiotics without change in behaviour of antibiotics usage , antibiotic resistance will remain a major threat. Behaviour changes must also include actions to reduce the spread of infections through vaccination, hand washing, practising safer sex, and good food hygiene. Various easy steps can be adopted at different levels to control spread of antibiotic resistance.

Individuals level

1. Use of antibiotics only when prescribed by a certified health professional.
2. Never forcefully demand antibiotics from your health worker
3. Never share or use leftover antibiotics.
4. Preventing infections by regular hand washing,
5. Maintain hygiene while preparing food,

6. safer sex practice use of condoms
7. proper vaccinations.

Policy makers

1. Executing plan of single antibiotic policy at national.
2. surveillance of antibiotic-resistant infections, strains and their proper reporting
3. Strengthen implementation of infection prevention and control measures.
4. Regulate the appropriate use and disposal of left over.

Health professionals

1. Prevent nosocomial infections by hand washing
2. Maintain sterilization of medical instruments
3. Keep the hospital and nearby environment clean.
4. Only prescribe antibiotics when they are needed in actual, according to current guidelines.
5. Immediate reporting of antibiotic-resistant infections to surveillance teams.
6. Tell patients about correct use of antibiotics and the dangers of misuse(antibiotic resistance)
7. Promote the programmes for prevention of infections (for example, vaccination, hand washing, safer sex, and covering nose and mouth when sneezing).

Healthcare industry

1. Invest in research and development of newer antibiotics, vaccines.

Agriculture sector

1. Use of antibiotics in animals under veterinary supervision.
2. Do Not use antibiotics to prevent diseases.
3. Vaccinate animals to reduce the need for antibiotics
4. Improve biosecurity on farms and prevent infections through improved hygiene and animal welfare.

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