Antibiotic resistance in humans

Abstract
Antibiotic resistance is a worldwide health issue spreading quickly among humans. There is a specific and urgent need not only to detect antimicrobial resistance but also to prevent antibiotic resistance. In this mini-review I will focus my attention in to show different actions to reduce this world problem.

Keywords: antibiotic resistance, life-threatening infections, microbial infections

Antibiotic resistance definition
Antibiotics are usually effective against microbes, but when the microbes become less sensitive or resistant, it requires a higher than the normal concentration of the same drug to have an effect. The emergence of antimicrobial resistance was observed shortly after the introduction of new antimicrobial compounds. There are many causes of antibiotic resistance:

I. Overuse of antibiotic
II. Inappropriate prescribing
III. Extensive agricultural use
IV. Availability of few new antibiotics
V. Regulatory barriers for approval new antibiotics

Antibiotic resistant organisms are known as superbugs. These are not only a laboratory concern but have become a global threat responsible for high death tolls and life-threatening infections. Consequences of these infections are aggravated enormously in volatile situations such as civil unrest, violence, famine and natural disaster. World Health Organization (WHO) has warned that a post-antibiotic era will result in frequent infections and small injuries may result in death if we fail to act against antibiotic resistance.

Regulatory issues related to antibiotic resistance
Congruent International Management Guidelines for daily antibiotic practices are yet unavailable. Hence, regulatory guidelines vary in different countries. Some countries have acted swiftly offering guidance e.g. United Kingdom, while other nations have yet to move toward interventions.

With an abundance of evidence, there is no scope to ignore global antibiotic resistance. Antibiotic resistance can be more prevalent where antibiotic consumption is found to be higher. Lack of regulation and control in using antibiotics is prominent and needs to be targeted at a global capacity. Developing nations are at the greatest risk. Low prices of antibiotics, ease of availability and unnecessary use of antibiotics are causing more burden in developing countries. Antibiotic use is relatively uncontrolled among the countries where antibiotic consumption is found to be higher. Lack of knowledge about self-medication is a major reason why there has not been any new discovery of drugs to treat bacterial infections. The biggest challenge for the healthcare sector is to educate people about antibiotics, its side effects, and to encourage them to stop the misuse of antibiotics. The lack of knowledge about self-medication is the prime reason for mass scale antibiotic resistance tragedy.

Another important challenge that the pharmaceutical industry needs to overcome is a lack of new drug development to treat bacterial infections. The efficacy of currently available antibiotic drugs is in grave danger as the resistance crisis is growing and bacterial infections are on the verge of becoming fatal again. Stringent regulatory requirements and a lack of monetary incentives for research are two major reasons why there has not been any new discovery of drugs to treat life-threatening bacterial infections.

Actions to take
We have to take necessary steps to tackle this complicated challenge. Social awareness, motivation, commitment in responsible sectors, stringent rules and regulation have to be prioritized. Further, we need the coupled action for the proper utilization of antibiotics, best management practices, and behavioral shifts across all industries that we can then combat against this public health burden. Application of modern technology can help the patient to take the antibiotic timely.

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Acknowledgements
None.

Conflict of interests
There is no conflicts to publish the article in this Journal.

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