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Antimicrobial Resistance. the Problem of Resistance to Antibiotics and Other Antimicrobial Drugs

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Abstract

Antimicrobial resistance (AMR) - the resistance of microorganisms to antibiotics and other antimicrobial drugs - is a major threat to the global health system. This article discusses the origin, spread, and impact of AMR on the health system, economy, and society. Strategies to combat AMR, development of new drugs, and ways to use them wisely are also discussed. Statistics and status of AMR in Uzbekistan are also covered separately. Research and global cooperation are highlighted as key factors in the effective fight against AMR.

Key words: *antimicrobial resistance, antibiotics, microorganisms, resistance, public health, economy, new drugs, global cooperation, genetic modification.*

Antimicrobial resistance (AMR) is one of the most pressing problems of the health care system today. Although antibiotics and other antimicrobial drugs are successfully used in the treatment of various infectious diseases, increasing resistance to them poses a serious threat. This article provides a detailed analysis of the origin, causes and adverse effects of AMR.

Antimicrobial resistance (AMR) is the ability of microorganisms, such as bacteria, viruses, fungi and parasites, to resist antibiotics and other antimicrobial agents. This resistance occurs when microorganisms learn to protect themselves from drugs through genetic changes. As a result, infections that can be treated with conventional drugs become more complex and difficult to treat, causing serious and even fatal illnesses.

Antibiotics(anti-against and bios-life) — ba'zi micro-organisms (funguslarbacteria), animal to'tissues and some high o'plants are formed as a result of life activities'and various microbes'growth and development'suspended organic matter. American scientist Z. Waxman created the term antibiotics in microbes'lib, against other microbes'suggested regarding secret substances. Antibiotics disrupt the metabolism of disease-causing (pathogenic) microbes and kill them'does or o'to swell'stops. Antibiotics are different for different microbes'it's a secret. For example; an antibiotic ma'a strong ta to a certain microbe'secreted, it is weak against other microbes'makes secret or completely ta'makes no secret; Co. of antibiotics'most of them are not only microbes, but also humans, animals, etc'plant organism (to'tissues and cells). Therefore, medicine, veterinary medicine, etc'in herbal science, it only kills harmful microbes'but human, animal, etc'only types that do not destroy the plant organism are used.

The origin of antimicrobial resistance.

The emergence of AMR depends largely on genetic changes in bacteria and other microorganisms. When antibiotics are used for a long time and incorrectly, microorganisms become resistant. Mutations, gene exchange and other factors accelerate this process.

Causes of spread:

- Misuse and overuse: Misuse and overuse of antibiotics is one of the main causes of AMR.
- Veterinary and agricultural use: Overuse of antibiotics in animals can lead to the development of AMR in humans.
- Spread through water and food chain: Resistant bacteria are also spread through water and food. -Genetic mutations: Microorganisms increase resistance through genetic changes.-Gene exchange between bacteria: Resistant bacteria transfer their genes to other bacteria.

Impact of AMR on the Health Care System:

AMR makes infections difficult to treat, leading to high mortality rates. Treatment costs for the healthcare system will also increase. The negative impact of AMR is particularly large in intensive care units.

Economic and Social Impact

The economic consequences of AMR are also serious. Increased treatment costs, reduced work capacity, and economic losses add to the negative impact of AMR. Creates an atmosphere of anxiety and mistrust in society.

Situation and statistics in Uzbekistan:

The growth of antimicrobial resistance in Uzbekistan is also one of the serious problems. According to research conducted by the Ministry of Health of Uzbekistan, the misuse and overuse of antibiotics is widespread. The following statistics show how serious a problem AMR is in Uzbekistan:

- The level of use of antibiotics: the level of use of antibiotics in Uzbekistan is higher than the regional average.
- Resistant bacteria: According to the results of clinical trials, resistance of some bacteria to antibiotics can reach 30% to 50%.

- Treatment failure: Treatment failure of some infections due to AMR is increasing.
- Morbidity and mortality: There is an increase in morbidity and mortality associated with infectious diseases due to AMR.

AMR control strategies:

1. Development of new drugs: The development of new antibiotics and antimicrobial drugs is an important factor in the fight against AMR.
2. Wise use: Wise and correct use of antibiotics is necessary.
3. Education and Outreach: Raise community awareness of AMR.
4. Global cooperation: International cooperation and research support.
5. Genetic research: In-depth study of microbial genetics and identification of resistance mechanisms.
6. Veterinary Control: Monitoring the rational use of antibiotics in agriculture.
7. National monitoring systems: introduction and development of AMR monitoring system in Uzbekistan.

Prevention of AMR

- Preventive measures: compliance with hygiene rules and vaccination to prevent infections.
- Monitoring and surveillance: development of systems to monitor and control the spread of AMR.
- Political support: Support the policies of governments and international organizations against AMR.

Summary

Antimicrobial resistance is a serious threat to the global health system. Addressing this problem requires a concerted effort from all fields, including health professionals, researchers, and the public. The development of new drugs and their rational use play an important role in the prevention of AMR. And global cooperation is key to the fight against AMR. In order to prevent the spread of AMR in Uzbekistan, it is necessary to introduce national monitoring systems and preventive measures.

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