

ANTIBIOTIKKA REZISTENTLIK

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**Annotatsiya.** Ushbu maqolada antibiotikka rezistentlik muammosining dolzarbligi, uning rivojlanish mexanizmlari va asosiy sababchi omillari yoritilgan. Antibiotiklardan noto'g'ri va nazoratsiz foydalanish natijasida bakteriyalarning dori vositalariga chidamliligi ortib borayotgani ta'kidlanadi. Shuningdek, antibiotik rezistentlikning klinik oqibatlarini, davolash jarayoniga ta'siri hamda sog'liqni saqlash tizimi uchun keltirib chiqaradigan salbiy natijalari tahlil qilingan. Maqolada antibiotik rezistentlikning oldini olishga qaratilgan asosiy profilaktik chora-tadbirlar va antibiotiklardan oqilona foydalanish tamoyillari bayon etilgan.

**Kalit so'zlar:** antibiotikka rezistentlik, antibiotiklar, bakterial infeksiyalar, antimikrob davolash, rezistent mikroorganizmlar, noto'g'ri antibiotik qo'llash, infeksiya nazorati.

АНТИБИОТИК РЕЗИСТЕНТНОСТЬ

Ординатор 2-го года кафедры инфекционных болезней Термезского филиала Ташкентского медицинского университета **Абдусалимова Гульноза Курбонмурод кизи**

**Аннотация.** В данной статье освещается актуальность проблемы антибиотик резистентности, механизмы её развития и основные причинные факторы. Подчёркивается, что неправильное и бесконтрольное применение антибиотиков приводит к увеличению устойчивости бактерий к лекарственным препаратам. Также проанализированы клинические последствия антибиотик резистентности, её влияние на процесс лечения и негативные результаты для системы здравоохранения. статье изложены основные профилактические меры, направленные на предотвращение антибиотик резистентности, а также принципы рационального использования антибиотиков.

**Ключевые слова:** антибиотикорезистентность, антибиотики, бактериальные инфекции, антимикробная терапия, резистентные микроорганизмы, неправильное применение антибиотиков, контроль инфекций.

ANTIBIOTIC RESISTANCE

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**Abstract.** This article highlights the relevance of the problem of antibiotic resistance, its mechanisms of development, and the main contributing factors. It emphasizes that improper and uncontrolled use of antibiotics leads to an increase in bacterial resistance to drugs. The clinical consequences of antibiotic resistance, its impact on the treatment process, and the negative outcomes for the healthcare system are also analyzed. The article presents key preventive measures aimed at combating antibiotic resistance, as well as principles for the rational use of antibiotics.

**Keywords:** antibiotic resistance, antibiotics, bacterial infections, antimicrobial therapy, resistant microorganisms, improper use of antibiotics, infection control.

**Relevance of the Problem** Antibiotic resistance is currently one of the most serious threats to global healthcare systems. The ability of bacteria to develop resistance to antibiotics makes the treatment of infectious diseases more difficult, prolongs the course of illness, and increases the risk of complications. Improper and uncontrolled use of antibiotics, as well as widespread use in

agriculture and livestock, are among the main contributing factors to this problem. According to the World Health Organization (WHO), millions of people are at risk of death each year due to antibiotic-resistant infections, and treatment costs rise significantly. Therefore, reducing and preventing antibiotic resistance remains one of the top priorities in modern medicine.

**Objective of the Study.** The objective of this study is to investigate the causes, development mechanisms, and clinical consequences of antibiotic resistance, as well as to identify effective measures for its prevention and promote the rational use of antibiotics.

### Main Part

#### 1. Concept of Antibiotic Resistance

Antibiotic resistance refers to the ability of bacteria to survive exposure to specific antibiotics and no longer respond to standard treatments. Resistant bacteria can persist in the body for prolonged periods, leading to more severe disease progression and an increased risk of complications.

#### 2. Mechanisms of Development

Antibiotic resistance develops through several mechanisms:

- **Modification of the bacterial cell wall** – preventing antibiotics from entering the cell.
- **Production of antibiotic-degrading enzymes** – for example, beta-lactamases that inactivate antibiotics.
- **Efflux mechanisms** – bacteria actively expel antibiotics from the cell.
- **Genetic mutations and transfer of resistance genes via plasmids** – enabling rapid adaptation of bacteria.

#### 3. Main Contributing Factors

Key factors contributing to antibiotic resistance include:

- Use of antibiotics without medical prescription.
- Incomplete or improper dosing during treatment.
- Use of antibiotics for viral infections.
- Extensive use of antibiotics in agriculture and livestock.
- Lack of adherence to infection control measures in healthcare settings.

#### 4. Clinical Consequences

Antibiotic resistance can result in:

- Prolonged illness and increased risk of complications.
- Extended treatment duration.
- Necessity to use expensive and potentially toxic antibiotics.
- Higher mortality rates.
- Increased financial burden on healthcare systems.

#### 5. Prevention and Control Measures

Effective measures to prevent antibiotic resistance include:

- Using antibiotics only under medical supervision.
- Completing the full course of treatment correctly.
- Performing bacteriological testing and determining antibiotic susceptibility.
- Strengthening infection control protocols in healthcare facilities.
- Raising public awareness and improving health literacy.
- Developing new antibiotics and alternative treatment strategies.

**Materials and Methods.** This study is based on a comprehensive analysis of the literature and clinical data regarding antibiotic resistance. Scientific articles, WHO and national healthcare reports, and research publications on bacterial infections and antimicrobial therapy were reviewed.

The methodology includes:

1. **Literature Review** – Analysis of peer-reviewed journals, textbooks, and online databases to identify the main causes, mechanisms, and consequences of antibiotic resistance.

2. **Clinical Data Analysis** – Examination of case studies and clinical reports from healthcare institutions to assess patterns of antibiotic resistance and its impact on treatment outcomes.

3. **Comparative Evaluation** – Comparison of different prevention strategies and antibiotic stewardship programs recommended by global and national guidelines.

The study employed a descriptive and analytical approach to summarize current knowledge, highlight trends in resistance development, and evaluate effective measures for its prevention.

**Conclusion.** Antibiotic resistance is currently a serious threat to global healthcare systems. Improper and uncontrolled use of antibiotics increases bacterial resistance, complicates the treatment of infectious diseases, and prolongs the course of illness. Additionally, antibiotic resistance imposes a significant financial burden on healthcare systems and raises the risk of complications. This article analyzed the mechanisms of antibiotic resistance development, the main contributing factors, clinical consequences, and preventive measures. Rational use of antibiotics, strengthening infection control, and improving public health literacy are among the most effective strategies to reduce antibiotic resistance.

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