

# A breakthrough in pharmacology for 100 years. Antibiotic resistance in Russia

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**Background:** The article describes the problem of antibiotic resistance in Russia. Here are the most resistant microorganisms, promising ways to solve the problem, as well as a comparison with other European countries.

**Aim:** To analyze the problem of the formation of antibiotic resistance in Russia and the ways to solve it.

**Methods:** The study of modern literature on the fight against antibiotic resistance and statistical analysis, which allows you to compare the problem in Russia and Europe.

**Results:** This problem must be solved first of all at the level of a pharmacist who dispenses drugs. This can be done by the following:

- dispensing antimicrobials only on prescription;
- developing of appropriate regulations if necessary;
- forbidding of repeated usage of prescriptions for antimicrobials;
- checking the accordance the quantity of dispensed drugs with the quantity of drugs indicated in the prescription;
- appropriate waste handling (with used antibiotics);
- using pharmacy chains in campaigns to extend the awareness on the usage of antimicrobials;
- providing information by a pharmacist to a patient about antimicrobials, AMR and issues, connected with it;
- training pharmacy intern and master pharmacists AMR and AMR-related issues;
- cooperating with prescribing pharmacists.

**Conclusion:** Russian government is going in the right direction, adopting the requirements of world standards, and we hope that at a pace we, Russian pharmacists, will be able to influence to antibiotic resistance in our country.

**Keywords:** antibiotics, resistance, antibiotic resistance, pharmacist, Russia.

## BACKGROUND

As we know, antibiotics have been identified as chemotherapeutic substances of biological or synthetic origin that selectively inhibit the activity of microorganisms. Antibacterial drugs have the following features: the selectivity of the action of antibiotics and the resistance formation to them. The last is dangerous for a patient and others around them. But what about antibiotic resistance? Antibiotic resistance is the non-response of germs to antimicrobial chemotherapy. Bacteria should be considered resistant if they are not neutralized by such concentrations of the drug that are created in an organism.

## AIM

The purpose of the scientific work is to study ways to solve the problem of antibiotic resistance in Russia and to establish their effectiveness.

## METHODS

The problem of antibiotic resistance in Russia and around the world as well is a serious threat to the health all of humanity. It should be analyzed at all levels of health care.

Firstly, it is necessary to highlight the problem at the legislative level.

Secondly, we should remember that medical workers play the main role in the development of antibiotic resistance, in particular, pharmacists who dispense drugs to the public.

## RESULTS

According to WHO, the role of pharmacists in the fight against AMR is to solve a number of issues:

- dispensing antimicrobials only on prescription;
- developing of appropriate regulations if necessary;
- forbidding of repeated usage of prescriptions for antimicrobials;
- checking the accordance the quantity of dispensed drugs with the quantity of drugs indicated in the prescription;
- appropriate waste handling (with used antibiotics);

- using pharmacy chains in campaigns to extend the awareness on the usage of antimicrobials;

- providing information by a pharmacist to a patient about antimicrobials, AMR and issues, connected with it;

- training pharmacy intern and master pharmacists AMR and AMR-related issues;

- cooperating with prescribing pharmacists.

The last question but not the least is how these issues are resolving in the Russian Federation.

First, it should be said that all antibiotics in Russia are prescription drugs. In the case of the prescription drug delivery as over-the-counter, there are imposed fines.

In 2017, in the Russian Federation, the LAW ON THE APPROVAL OF RULES PROPERTY PHARMACY PRACTICES MEDICINE PREPARATIONS

FOR MEDICAL APPLICATION was published as a regulatory environment.

It is an analogue of Good Pharmacy Practice (GPP) in the Community and Hospital Pharmacy Settings, adopted by WHO in 1996.

In Russia it is forbidden to repeat the usage of recipes. So that, the pharmacist leaves the prescription at the chemists shop and gives the signature to the patient.

According to the Russian legislation, the pharmacist is obliged to conduct some pharmaceutical consulting. The pharmacist has to contact the doctor who has given the prescription with the incorrect dosage and only after that the pharmacist can release the drug in the correct dosage.

As for the waste, it is handled both at the enterprise responsibility and at the individual level. In the case of enterprises, this procedure is carried out in accordance with industry standards, while pharmacy visitors are informed about the correct handling of antibiotic waste with the instructions to pharmaceuticals.

Talking about the conducting pharmacy chains in campaigns to extend the awareness on the usage of antimicrobials, it is carried out at the level of awareness of this problem by graduates, as well as the whole staff of each store.

The pharmacist has to provide the necessary information on the rationalization of the use of antibiotics during their delivery.

The education of students on antimicrobial resistance is carried out both at classroom lectures and scientific conferences.

Finally, the organization of interaction with doctors is realized through as their patients as the medical representatives of corporations that inform both doctors and pharmacists about their drugs.

#### DISCUSSION

However, there are special cases. For example the case when the chemists shop does not have the required amount of the

drug, the pharmacist dispenses the available drugs, and makes a note in the prescription how much of the drug have to be released. In another store the employee will release only the missing amount of the drug, after which he will take the prescription.

Moreover, according to GPP, the pharmacist has to conduct Standard Operating Procedures (SOPs).

#### CONCLUSION

The Russian government is going in the right direction, adopting the requirements of world standards, and we hope that at a pace we, Russian pharmacists, will be able to influence to antibiotic resistance in our country. Well, we would like to finish our presentation with the words of Howard Florey: Antibiotics should be prescribed only if it comes to life and death. They should not be sold in pharmacies like aspirin.