MINISTER OF HEALTH OF THE REPUBLIC OF ARMENIA

15 January 2024

N 161-L

c. Yerevan

MINISTER OF ECONOMY OF THE REPUBLIC OF ARMENIA

23 January 2024

N 106-L

c. Yerevan

J O I N T O R D E R

ON APPROVING THE ANTIMICROBIAL RESISTANCE CONTROL AND PREVENTION PROGRAM AND INTERAGENCY ACTION PLAN 2024-2027

Taking as a basis Part 8 Article 11 of the Law "On the structure and activity of the Government", as well as sub-point 8.1 of Point 8 of "Ministry of Health" section of Annex 1 to Decision N 1902-L of 18 November 2021 of the Government of the Republic of Armenia:

We order:

1. To approve:

1) Antimicrobial Resistance Control and Prevention Program in accordance with Annex 1;

2) Interagency Action Plan 2024-2027 of the Antimicrobial Resistance Control and Prevention Program in accordance with Annex 2.

Minister of Health of the Republic of Armenia

A. Avanesyan

Signature

Round Seal

Minister of Economy of the Republic of Armenia

V. Kerobyan

Signature

Round Seal

Annex 1
to Joint Order N 161-L of 15 January 2024
of the Minister of Health
to Joint Order N 106-L of 23 January 2024
of the Minister of Economy

ANTIMICROBIAL RESISTANCE CONTROL AND PREVENTION PROGRAM

1. INTRODUCTION

1. The development of antimicrobial resistance (AMR) is currently a serious global health concern. AMR is also called a "Silent Epidemic" and its prevention requires joint actions at all state levels. According to the data of the World Health Organization (WHO), the issue with AMR is a threat to every region of the world, and the consequences whereof can have an adverse effect on the entire mankind. According to WHO data, if measures are not taken at the state level to prevent infections as well as the development of AMR, to improve antimicrobial stewardship, the consequences will be devastating. In particular, because of AMR ensuring effective treatment of infectious diseases will become impossible. Among the factors contributing to the emergence and spread of antimicrobial resistance are their unjustified, non-rational and non-targeted prescription and use in incorrect doses, self-medication of the population because of low level of awareness, loss to follow-up or treatment discontinuation, low quality of antimicrobial medicines, insufficient control of infection, as well as unjustified and non-targeted use of antimicrobial medicines in animals and agriculture.
2. Antimicrobials are also widely used in agriculture - in livestock, poultry, pig, fish farming and beekeeping, as well as for the prevention of diseases in domestic animals, but especially for growth promotion (WHO. Guidelines on use of medically important antimicrobials in food-producing animals, World Health Organization, Geneva, 2017, p. 88). The use of small doses of antimicrobial medicines in cosmetics, as well as their release during the manufacturing process due to improper treatment, is also a serious concern ([Boxall A. The environmental side effects of medication. EMBO Reports, 5(12), 2004, pp. 1110-1116). Environment plays a key role in the development, transmission, and spread of AMR. Anthropogenic factors increase the importance of the environment as a pathway for AMR human exposure. The release of large amounts of antibiotics to the environment is mainly due to the discharge of sewage and wastewater and manure from antibiotic-fed animal farms. The discharge and runoff may also contain resistant pathogens and genes.

3. AMR is also a food safety issue since food may act as a vector for the transfer of antimicrobial-resistant bacteria and antimicrobial-resistant genes from animals to humans. In the field of veterinary medicine, integrated surveillance systems for the use of antimicrobial agents and the control of antimicrobial resistance (in food products, as well as in humans and animals) need to be created.
4. In the development and implementation of policies for AMR and antimicrobial consumption, close cooperation is required between sectors such as public health, clinical medicine, epidemiology, microbiology, infection prevention and control, pharmacology, veterinary medicine, livestock farming, fish farming, environment, education, high level of public awareness, etc. Therefore, intersectoral cooperation needs to be introduced, ensuring the joint and effective work of various agencies around the concept of **"One Health"**.

2. THE NEED FOR THE PROGRAM AND METHODOLOGICAL BASE FOR ITS DEVELOPMENT

5. Antimicrobial resistance is a phenomenon when microorganisms change over time so much that they no longer respond to antimicrobial medicines.
6. Effective antimicrobial medicines, particularly antibacterial medicines, are among the most important elements in increasing human life expectancy.
7. The discovery of antimicrobial (antibacterial, antifungal, antiviral, antiparasitic) medicines is one of the most important advances in healthcare ever recorded in human history. Antimicrobial medicines are an important and valuable resource, but their inappropriate use contributes to the emergence of resistant microorganisms.
8. Both healthcare and economic implications of resistance to antimicrobials are significant and expensive, but it is difficult to quantify them, because the information and data available in many countries, as well as in Armenia, are incomplete. The AMD-related **economic burden** includes:
   1) loss of income,
   2) decrease of productivity,
   3) increase of the time spent by the family,
   4) increasing costs of diagnosis and treatment (related to medical consultations, screenings, cost of equipment and medications and other factors).
9. According to WHO data, in some countries of the European region the development of antimicrobial resistance in primary health care leads to complications in the treatment of diseases such as upper respiratory and genitourinary infections, sexually transmitted infections,

etc. Rates of antimicrobial resistance increase, whereas the number of new antimicrobial medicines under production is very small.

10. In the last 30 years, the use of antimicrobial medicines in agriculture has increased 30 times, and in healthcare - 10 times.
11. As per international estimates (*Review on Antimicrobial Resistance: Tackling a crisis for the health and wealth of nations*. London: Review on Antimicrobial Resistance; 2014, https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(22)00225-0/fulltext, https://www.oecd.org/health/health-systems/AMR-Tackling-the-Burden-in-the-EU-OECD-ECDC-Briefing-Note-2019.pdf), AMR will cause 10 million deaths annually by 2050, and the economic burden due to AMR will amount to 100 trillion dollars.
12. 70% of antimicrobials consumed worldwide are used in agriculture. Currently, the global consumption of antimicrobials in veterinary medicine and livestock farming is more than 60,000 tons per year, and 75-90% of the used antimicrobials are released from animals and enter the sewage system and water sources (Berkner et al., 2014).
13. The **predictable consequences** of infections caused by drug-resistant microorganisms among the population are:

    1) increase in morbidity,

    2) prolonged course of the disease,

    3) greater risk of complications,

    4) high mortality rate,

    5) unplanned increase in healthcare costs, when expensive antimicrobials need to be used, longer treatment is required, mainly in organizations providing inpatient medical care and service (MCSPO), which increases the burden of healthcare costs for both individual families and the entire society.
14. According to the economic estimates carried out by WHO in 28 countries of the European region, rational use of antimicrobial medicines will **decrease mortality** by 51% and save 2.3 billion euros, proper hand hygiene compliance will reduce mortality by 43% and save 2.97 billion euros, and increasing public awareness of the problem with AMR will reduce mortality by 2% and save 60 million euros.
15. Prevention of the development of infections and antimicrobial resistance in the fields of agriculture, food safety, veterinary medicine and the environment includes the following measures:

    1) stop the use of antibacterial medicines for growth promotion and disease prevention;

2) use antibacterial medicines only when prescribed by the veterinarian;
3) continue to improve and enhance biosafety capabilities;
4) use the antibacterial medicines that are essential in medicine (fluoroquinolones, 3rd-4th generation cephalosporins) in extreme cases;
5) decrease the use of antibacterials for pest control.

16. The veterinary and food safety sectors play a central role in the implementation of effective hygiene and infection prevention and control procedures, as well as in the rational use of antimicrobials in the production of animal-source foods and in animals. Elimination of the practice of using antimicrobials for growth promotion in livestock farming is of great importance, and antimicrobials should be purchased for animals only on the veterinarian's prescription.
17. The development of the Program started in 2022. An inter-agency working group was created, in July 2022 a visit of experts from WHO Regional Office for Europe was arranged, and an inter-agency workshop was organized involving officials from relevant fields (various subdivisions of the Ministry of Health, Food Safety Inspectorate, Ministries of Economy, Environment, Education, Science, Culture and Sports), as well as experts in human and animal health, agriculture and the environment in the Republic of Armenia. Both current challenges and international experience were covered during the discussions.
18. Discussions on the Program were held with representatives of various agencies and beneficiaries, and methodological and professional advice was sought from international experts of WHO, UN Food and Agriculture Organization (FAO). During the development of the document, possible regulations for AMD control and prevention in Armenia were also considered. During the implementation of the Program, the following main steps should be taken:

    1) reduction of non-targeted use of antimicrobial medicines in both humans and animals,

    2) reduction of infectious diseases caused by drug-resistant pathogens in both humans and animals,

    3) development of laboratory capacities in healthcare, food safety, agriculture and the environment,

    4) creation of an information database on circulating drug-resistant microorganisms,

    5) enabling future generations to have effective antimicrobial medicines for the effective treatment of infectious diseases.

3. SITUATION IN ARMENIA

19. The "Action Plan 2015-2020 for Antimicrobial Resistance Control and Prevention Strategy" (Action Plan) was approved by Protocol Decision No. 32 of 8 July 2015 of the Government of the Republic of Armenia.
20. In the scope of the Action Plan, within the framework of cooperation between the Ministry of Health and the WHO Regional Office for Europe, a national workshop on the AMR surveillance and determination of antimicrobial susceptibility with the involvement of 5 international experts was held for the first time in Yerevan from the 13th to the 16th of December 2016 aimed at raising the awareness of healthcare professionals of AMR and appropriate use of antimicrobials, as well as presenting the international methodology of laboratory investigations for the determination of antimicrobial susceptibility.
21. By Order N 3906-A of 30 December 2016 of the Minister of Health the following instruments were approved: Methodological guidelines "Antimicrobial susceptibility testing by disk diffusion method" in accordance with the instructions of the European Committee on Antimicrobial Susceptibility Testing (EUCAST), "Assessment of antimicrobial susceptibility: expert rules" and Methodical guide "Identification of mechanisms of antimicrobial resistance of clinical and epidemiological significance".
22. On 29 May 2017, Proof-of-principle antimicrobial resistance routine diagnostic surveillance project was launched (Order No. 2427-A of 2 August 2016 of the RA Ministry of Health), within which a national electronic database on antimicrobial resistance was created within the scope of the "National Center for Disease Control and Prevention" state non-commercial organization (NCDC SNCO).
23. With the support of the WHO Regional Office for Europe and the Dutch "National Institute for Public Health and the Environment", within the Proof-of-principle antimicrobial resistance routine diagnostic surveillance project, the "Reference Laboratory Center" branch (hereinafter referred to as the RLC branch) of NCDC SNCO of the RA Ministry of Health and 4 MCSPOs were regularly provided with relevant necessary consumables (reagents, nutrient media, accessories, etc.) to carry out microbiological testing.
24. The main objectives of the Proof-of-principle antimicrobial resistance routine diagnostic surveillance project were:
    1) availability of preliminary information on the main drug-resistant pathogens of bloodstream infections,

2) introduction of the principles of rational use of antimicrobials,
3) improvement of the diagnostic level of microbiological testing and infection control measures.

25. Within the Proof-of-principle antimicrobial resistance routine diagnostic surveillance project, 2052 blood samples were collected from patients of 4 inpatient MCSPOs with 102 microorganisms detected as a result of testing. Mainly, the following pathogens included in the epidemiological surveillance of Central Asian and European Surveillance of Antimicrobial Resistance network were isolated: *32 Staphylococcus aureus (S. aureus), 17 Escherichia coli (E. coli), 9 Klebsiella pneumoniae (K. pneumoniae), 8 Enterococcus (5 E. faecalis, 3 E. faecium), 1 Streptococcus pneumoniae (S. pneumoniae), 2 Acinetobacter (Acinetobacter spp.), 2 Pseudomonas aeruginosa (P.aeruginosa), 1 Candida (Candida spp.).* 63.8% of patients received an antibiotic before blood sampling, 80% of which were children. 44.6% of patients were female and 55.4% were male; patients by age group: 35% - 0-1 months old (positive result: 1.7%), 10. 7% - 1-12 months old (positive result 4.6%), 21.4% - 1-5 years old (positive result 3.9%), 12.3% - 6-17 years old (positive result 3.2%), 13.5% - 18-64 years old (positive result 12.0%), 7.1% - 64 years and older (positive result 15.2%).
26. Since 2016, the RLC branch of NCDC SNCO of the Ministry of Health and microbiological laboratories of 10 MCSPOs (including 2 regional ones) regularly participate in the external quality assessment implemented by the Central Asian and European Surveillance of Antimicrobial Resistance network (CAESAR). At the same time, since January 2018, "Antimicrobial susceptibility testing of microbial cultures and the study of resistance mechanisms in case of urinary tract infections" program has been implemented, the purpose of which is the implementation of control and monitoring of resistant and/or multi-resistant strains through susceptibility testing and detection of resistance mechanisms within retrospective and prospective testing of pathogens isolated from urine samples aimed at diagnosing urinary tract infections. All program research, data summarization and analyses were carried out on the basis of the microbiological laboratory of the RLC branch of NCDC SNCO of the Ministry of Health.
27. By Order No. 3173-A of 10 December 2018 of the Minister of Health, the "Procedure for venous blood sampling for microbiological testing" was approved which is intended for healthcare professionals providing medical care and service - doctors, biological sample collectors, and those responsible for their storage and transportation. The Procedure will help healthcare professionals to perform timely sampling for microbiological testing, obtain reliable results and will enable to organize timely and targeted antimicrobial treatment.

28. Not in all MCSPOs in Armenia are antimicrobial stewardship regulations fully in place and/or available.
29. On 10 June 2019, Order No. 1529-L of the Ministry of Health "On approving antibiotic stewardship groups and selection criteria" was adopted (based on WHO "Model List of Essential Medicines (March 2017/ 20th edition)").
30. Within the framework of the UN FAO project Reducing the Advance of Antimicrobial Resistance in Food and Agriculture funded by the Russian Federation the following activities were implemented:

1) Analyses of regulatory/legal framework and policies regarding the use of antimicrobials in food industry, agriculture, fish and animal farming, and development of recommendations aimed at strengthening the national policies in the field of antimicrobial resistance and the use of antimicrobial agents;

2) Assessment of national AMR surveillance and detection capacities and laboratories using the FAO Assessment Tool for Laboratories and AMR Surveillance System and provision of recommendations for strengthening AMR surveillance in the Republic of Armenia;

3) Conducting a training on standards (good practices and protocols) and tools/guidelines to support laboratory testing (including provision of all necessary reagents and supplies), and compilation of data (e.g. for phenotype profile, for strain inventory and repository) and carrying out of proficiency testing on antibiotics susceptibility testing;

4) FAO carried out surveys in Armenia on antimicrobial use (AMU) in agriculture, namely priority livestock production systems, field veterinarians, veterinary pharmacies, and feed mills. The survey was the first of its type that provides a comprehensive overview of the country situation on AMU in the livestock sector, including the sources of antibiotics, the main use patterns (e.g. the common routes of administration; the aim of use, such as treatment, prevention or growth promotion; and the use in different age groups), the main indications of antimicrobial treatment, drugs used in different animal species, the handling of antibiotics, and awareness of AMR.

31. With the support of the UN FAO and the Russian Federation, "Reducing the Advance of Antimicrobial Resistance in Food and Agriculture" project was implemented jointly with the Ministry of Agriculture and the Food Safety Inspectorate. It also included scientific research.
32. According to the results of Good Manufacturing Practice (GMP) compliance inspection carried out by the "Scientific Centre of Drug and Medical Technology Expertise after Academician Emil Gabrielyan" CJSC of the Ministry of Health of the Republic of Armenia, 8 drug manufacturers were awarded GMP compliance certificates.

33. In the framework of activities aimed at ensuring the quality and safety of medicines in the Republic of Armenia, activities for the regulation of circulation of antimicrobials are already being implemented, while the widespread use of antimicrobials in the fields of healthcare, veterinary medicine and food production requires inter-agency cooperation. In many countries, including the Republic of Armenia, the use of antimicrobial medicines in veterinary medicine, agriculture, and food is not controlled, and the available information is insufficient, which is an additional factor in the development of antimicrobial resistance.
34. By the orders of the Minister of Health, the following guidelines/procedures were approved, which include clear instructions for the appropriate use of antimicrobials:
    1) The procedure (temporary) for the management of patients with the coronavirus disease (COVID-19) (Order No. 2051-A of 30 June 2020 of the Minister of Health),
    2) Clinical guidelines for the management of community-acquired pneumonia (Order No. 1856-A of 11 June 2020 of the Minister of Health),
    3) Guidelines/algorithms for the treatment of acute respiratory tract infections, community-acquired pneumonia, pharyngitis, urinary tract infections, coronavirus disease (COVID-19) in adults, community-acquired pneumonia, otitis media and acute respiratory infection in children (prescribing antimicrobial medicines) in primary health care (Order No. 126-L of 21 January 2021 of the Minister of Health).
    4) Procedure for organizing medical care and service for patients with coronavirus disease (COVID-19) in outpatient setting (Order No. 15-N of 16 March 2022 of the Minister of Health).
35. Management of the Register of antimicrobial medicines is done by the "Scientific Centre of Drug and Medical Technology Expertise after Academician Emil Gabrielyan" CJSC of the Ministry of Health of the Republic of Armenia covering data on antimicrobials imported commercially and as humanitarian aid and produced and consumed in the Republic of Armenia (name, pharmaceutical form, dosage, release form, manufacturing organization, country of origin, anatomical, therapeutic, chemical code, prescribed daily dose, imported or produced quantity) throughout 2002-2022. According to the results of data analysis, the rates of use of third-generation cephalosporins, macrolides, and quinolones are still high, while according to the new WHO classification, they are antibiotics with higher resistance potential of the WATCH group, which should be used by indication in limited cases if alternative medicines are not available. The highest rate of consumption of antimicrobial agents was recorded in 2020. The "Scientific Centre of Drug and Medical Technology Expertise after Academician Emil

Gabrielyan" CJSC of the Ministry of Health of the Republic of Armenia is also a member of the Antimicrobial Medicines Consumption Network (AMC Network) in non-European Union countries coordinated by the Regional Office for Europe of the World Health Organization, the latest report whereof is available at https://www.who.int/europe/publications/i/item/9789289058278.

36. Due to the COVID-19 pandemic, non-targeted prescription of antimicrobial medicines, as well as purchase of these medicines from pharmacies without a prescription has increased significantly, despite the fact that according to the RA Government's Decision No 1080-N of 15 August 2019, all anti-infectives for systemic use, including antibacterial, antifungal, antimycobacterial and antiviral medicines can only be dispensed on prescription. Due to that circumstance, assessment of the patterns of use of antimicrobial medicines purchased from pharmacies during the COVID-19 pandemic became a necessity. According to the results of the analysis of data collected on **2360** antimicrobial agents provided to 1932 customers in July-September 2020, in 75 community pharmacies of 5 regions of the republic and the city of Yerevan (25 in Yerevan, 50 in regions), 52.1% of medicines were provided without a prescription, 47.9% on prescription; moreover, among the dispensed oral dosage forms the most frequently dispensed agent was azithromycin and among injectable dosages ceftriaxone, which are WATCH group antimicrobials (63.9%) under the WHO AWaRe classification. The share of antifungal medicines (17.3%), which in most cases (98.2%) are provided together with antibacterials, is of particular concern. According to the recorded indications, the leader is the upper respiratory tract infection (33.18%), other indications are in the second place (29.79%), and COVID-19 (13.39%) is the third. The analysis of the results of the survey is available at https://apps.who.int/iris/handle/10665/355796.

4. PROGRAM VISION

37. In the process of development and implementation of AMR and antimicrobial consumption policy, close cooperation, joint and effective work of various agencies is required in order to minimize the spread of existing drug-resistant bacteria among humans and animals, the emergence of new drug-resistant bacteria, and the burden of infections with drug-resistant forms, as well as to enable future generations to have access to effective antimicrobials.
38. The Program is in line with WHO Global Strategy for Containment of Antimicrobial Resistance and methodological recommendations:

39. Program objectives are as follows:

1) Development of a policy for the regulation of AMR control and antimicrobial consumption under the concept of "One Health", ensuring intersectoral cooperation;
2) Continuous development of infection prevention and control and AMR monitoring system in MCSPOs and increase of the efficiency of the information system ensuring the surveillance system;
3) Ensuring appropriate oversight of prescription and dispensing processes, at the same time raising awareness of both healthcare professionals, the patients and the public through educational campaigns;
4) Development and implementation of clinical guidelines (standards, patient management protocols) on various diseases;
5) Development of a legal framework and relevant procedures (selection of the right medicine, the right dose, the right route of administration and the right duration of treatment) to reduce the use of broad-spectrum antimicrobials and to ensure discussion with doctors around the analysis of prescriptions with the purpose of making antimicrobial stewardship mandatory in MCSPOs;
6) Continuous development of the capacities for laboratory investigations of AMR in the fields of healthcare, agriculture and food safety;
7) Continuous capacity building of the professionals of the sectors of healthcare, food safety, agriculture, and environment regarding AMR and appropriate use of antimicrobial agents, and raising public awareness within the framework of "One Health";
8) Implementation of measures aimed at preventing antimicrobial resistance in the fields of agriculture, environment, and food safety, continuous enhancement of laboratory capacities, regulation of the legislative framework.

40. To address those objectives, 7 activity directions are identified:

1) Formation of intersectoral management mechanisms for the prevention and control of antimicrobial resistance aimed at ensuring comprehensive cooperation of the agencies and other stakeholders involved in the sector, which will allow the stakeholders to jointly assess the needs and capacities and ensure a systemic approach to addressing the problem under the concept of "One Health";
2) Expansion of the surveillance and monitoring system for the prevention and control of antimicrobial resistance aimed at reducing the emergence of new drug-resistant bacteria and the spread of drug-resistant pathogens in humans, animals and the environment via implementation of monitoring, which will allow having collected data in all areas contributing to risk assessment

and decision making.

3) Continuous development of laboratory capacities for relevant investigations on antimicrobial resistance aimed at enhancing laboratory testing capacity in the fields of healthcare, food safety, agriculture and the environment, which will allow an accurate diagnosis as a result of laboratory investigations in accordance with international standards, which will serve as a basis for effective treatment;
4) Development of mechanisms ensuring appropriate infection prevention and control in MCSPOs aimed at minimizing the morbidity and mortality rates caused by drug-resistant pathogens, which will allow to reduce the emergence and spread of drug-resistant pathogens, as well as improve the quality of medical care and service, ensuring the safety of patients;
5) Monitoring the use of antimicrobial agents in humans and animals and improvement of control over circulation with the goal of minimizing non-targeted use of antimicrobials in humans and animals, which will inform policy decisions within the framework of intersectoral cooperation based on the available information on drug-resistant pathogens in both humans and animals;
6) Enhancement of the knowledge and capacity building of professionals in the fields of healthcare, agriculture, food safety and the environment regarding antimicrobial consumption and types of drug-resistant pathogens, as well as increasing public awareness of the importance of rational use of antimicrobials aimed at continuous capacity building of the professionals in healthcare, agriculture and food safety and raising public awareness within "One Health", which will allow to have qualified specialists.
7) Development of mechanisms for the implementation of antimicrobial stewardship aimed at ensuring appropriate control of the processes of drug prescription and dispensing, which will allow to have an antimicrobial stewardship in MCSPOs contributing to the correct selection and targeted prescription of antimicrobial medicines by the physicians.

41. Implementation of the Program will contribute to:

1) Development of human resource capacities in the fields of healthcare, agriculture, food safety and the environment;
2) Enhancement of laboratory capacities in the fields of healthcare, agriculture, food safety and the environment;
3) Ensuring intersectoral cooperation at all government levels and effective work around the concept of "One Health";
4) Regulation and reduction of non-targeted use of antimicrobials in humans and animals;

42. The activities will be implemented in 2 phases:

1) **Phase** 1. “Ensuring intersectoral cooperation and implementation of regular activities aimed at the prevention and control of antimicrobial resistance” in 2024-2025. The kick-off phase is key to ensuring the progress of the activities. It is addressed to all stakeholders in order to involve them in the effective implementation of the established activities.

2) **Phase** 2. “Prevention of antimicrobial resistance and appropriate use of antimicrobials” in 2026-2027. At this stage, international approaches and mechanisms aimed at AMR prevention and control will be adopted and implemented.

5. REPORTING, MONITORING AND EVALUATION

43. The implementation and operation of an effective system of Program monitoring, reporting and evaluation are one of the key elements. At the end of the timeframe of each activity, summary information will be submitted to the Staff of the RA Prime Minister, and at the end of each phase, a comprehensive evaluation report will be prepared. It will include analysis and evaluation of progress towards goals, outcomes, as well as failures and lessons learned.
44. Regulation and monitoring of the processes aimed at the prevention and control of antimicrobial resistance in the MCSPOs, as well as the development and implementation of monitoring and evaluation tools will be carried out by the Ministries of Health, Economy, Education, science, culture and sports, Territorial administration and infrastructure of the Republic of Armenia and the Yerevan Municipality, each within its jurisdiction.
45. Professional Medical associations, by consent, will play an important role in matters of external monitoring and improvement of the process of AMR prevention and control.

6. FINANCING

46. Financing of the Program activities is expected from the following sources:

1) Earmarked funding by international organizations;
2) Other sources not prohibited by the legislation of the Republic of Armenia.

7. RISKS OF PROGRAM IMPLEMENTATION

47. Inadequate capacities of laboratories, human resources, bodies in charge, ineffective dialogue or perception during the Program implementation in MCSPOs;

48. Actions aimed at reducing risks. ongoing awareness, needs identification and capacity building, involvement of experts, implementation of additional educational programs.

Annex 2
to Joint Order N 161-L of 15 January 2024
of the Minister of Health
to Joint Order N 106-L of 23 January 2024
of the Minister of Economy

INTER-AGENCY ACTION PLAN 2024-2027
FOR ANTIMICROBIAL RESISTANCE CONTROL AND PREVENTION PROGRAM

Activity	Responsible agency	Co-implementing agency	Implementation period	Expected result	Expected financial resources and sources	Outcome indicator
Direction 1. Formation of intersectoral management mechanisms for the prevention and control of antimicrobial resistance						
1) Adoption by the Minister of Health of a decision "On establishing a standing working group for the implementation of activities aimed at antimicrobial resistance and regulation of antimicrobial consumption, and approving the working procedure of the working group"	Ministry of Health	Ministry of Economy Ministry of Education, Science, Culture and Sports (by consent) Ministry of Environment (by consent) Ministry of Territorial Administration and Infrastructure (by consent)	2024	Ensuring the process of organization and coordination of ongoing activities aimed at the prevention of antimicrobial resistance in various agencies, including situational and gap analysis, reporting of the work done.	Financing not required	Established working group

		Inspection Bodies' Coordination Bureau (by consent) Health and Labor Inspectorate (by consent)				
Direction 2. Expansion of the surveillance and monitoring system for the prevention and control of antimicrobial resistance						
1. Continue cooperation with the Central Asian and European Surveillance of Antimicrobial Resistance Network (CAESAR)	Ministry of Health	Ministry of Territorial Administration and Infrastructure (by consent) Yerevan Municipality (by consent) Private medical organizations (by consent)	2024-2027	Exchange of information on the circulation of antimicrobial drug-resistant microorganisms, methodology for susceptibility testing within the framework of CAESAR	Financing not required	Collection of indicators and information on AMR from at least 5 inpatient medical care and service providing organizations, annual data entry into the CAESAR system, data reflection in the annual report, comparison of indicators and trends in the countries involved in the network, once a year

						participation of at least 10 inpatient medical care and service providing organizations and the microbiological laboratories of the Reference Laboratory Center branch of NCDC CJSC of the Ministry of Health in the external quality assessment conducted by UK NEQAS
2. Join the Global Antimicrobial Resistance and Use Surveillance System (GLASS)	Ministry of Health	Food Safety Inspectorate (by consent) Health and Labor Inspectorate (by consent)	2026-2027	Availability, collection and reporting/entry of information on the circulation of drug-resistant microorganisms in the world	Financing not required	Providing information to the Global Antimicrobial Resistance and Use Surveillance System (GLASS) at established

						intervals **once** a year from at least **3** medical care and service providing organizations.
3. Creation and operation of a monitoring system for drug-resistant infections in medical care and service providing organizations	Ministry of Health	Ministry of Territorial Administration and Infrastructure (by consent) Yerevan Municipality (by consent) Private medical organizations (by consent)	2024	Creation of an electronic database on drug-resistant microorganisms circulating in medical care and service providing organizations, as well as ensuring targeted selection of antimicrobials for empiric treatment	Other sources not prohibited by the RA legislation	Availability of an electronic database on drug-resistant microorganisms in at least 4 medical care and service providing organizations.
4. Join AMR Global surveillance systems for food and agriculture created by FAO, namely the International FAO Antimicrobial Resistance Monitoring (InFARM) IT platform/system.	Ministry of Economy	Food Safety Inspectorate (by consent)	2025	Exchange of date on AMR in the fields of food and agriculture	Financing not required	Availability of information on the platform/system. Providing test results of at least 30 samples per year to FAO Antimicrobial Resistance

						Monitoring (InFARM) IT platform/system. Once a year, analysis of information related to the region available on the (InFARM) IT platform.
5. Determining antimicrobial resistance mechanisms in animal products and raw materials in the Republic of Armenia through a monitoring program	Food Safety Inspectorate (by consent)	Health and Labor Inspectorate (by consent)	2025-2027 Ongoing	Determination of antimicrobial resistance in animal products and raw materials in the Republic of Armenia on an ongoing basis	Other sources not prohibited by the RA legislation	Availability of information on antimicrobial resistance mechanisms in animal products and raw materials in the RA as a result of testing of at least 30 samples.
6. Determining antimicrobial resistance in biological materials obtained from animals in the	Food Safety Inspectorate (by consent)		2025-2027 Ongoing	Determination of antimicrobial resistance in biological materials obtained from animals in the	Other sources not prohibited by the RA legislation	Availability of information on drug resistance in biological material

Republic of Armenia through a monitoring program				Republic of Armenia on an ongoing basis		obtained from animals in the RA as a result of testing of at least 30 samples.
Direction 3. Continuous development of laboratory capacities for relevant investigations on antimicrobial resistance						
1. Development of mechanisms and basis before the designation of a reference laboratory for determination of antimicrobial resistance	Ministry of Health	Ministry of Economy Inspection Bodies' Coordination Bureau (by consent)	2027	Ensuring legal and financial basis before the designation of a reference laboratory for the determination of antimicrobial resistance	Other sources not prohibited by the RA legislation	Availability of a necessary developed legal act(s)
2. Regular review, update and standardization of methodologies for antimicrobial susceptibility determination, identification of resistance mechanisms	Ministry of Health	Food Safety Inspectorate (by consent) Ministry of Economy	2024-2027	Annually revised standards	Financing not required	Provision of revised or updated methodology to at least 5 laboratories
3. Formation of unified approaches to detection of microorganisms, determination of susceptibility and AMR monitoring system	Ministry of Health	Ministry of Economy Food Safety Inspectorate (by consent)	2027	A unified approach to microbiological testing among humans and animals within the framework of "One Health"	Other sources not prohibited by the RA legislation	Ensuring a legal basis for the establishment of a monitoring system of AMR in humans and animals.

		Health and Labor Inspectorate (by consent)				
Direction 4. Creation of mechanisms ensuring infection prevention and control in medical care and service providing organizations						
1. Adoption by the Minister of Health of the Order "On approving the national program 2024-2028 for the prevention of healthcare-associated infections and the action plan"	Ministry of Health		2024	Availability of appropriate measures for the prevention and control of drug-resistant and other infections in medical care and services providing organizations	Financing not required	Availability of the national program 2024-2028 for the prevention of healthcare-associated infections and the action plan.
Direction 5. Monitoring the use of antimicrobial agents in humans and animals and improvement of control over circulation						
1. Conduct monitoring of antimicrobial use in accordance with WHO methodology, ensuring participation in the global program (GLASS-AMC)	Ministry of Health		2024-2027	A database on the use of antimicrobials to identify trends, correlate with resistance monitoring data, compare with data from other countries, and inform regulatory decisions, as well as data sharing	Other sources not prohibited by the RA legislation	Regular provision of data to the global program (GLASS-AMC)
2. Creation of a system for the monitoring of antimicrobial use	Ministry of Health		2024-2026	Development and testing of a protocol for monitoring the use of antimicrobials in a	Other sources not prohibited by	Availability of a system for the monitoring of antimicrobial

in inpatient medical care and service providing organizations				medical care and service providing organization and creation of an electronic database	the RA legislation	use in at least 3 inpatient medical care and service providing organizations
3. Develop and implement short-term epidemiological research projects in pharmacies to identify trends in antimicrobial use	Ministry of Health		2024-2027	A research database of antimicrobial use to identify trends, correlate with resistance monitoring data, compare with data from other countries, and inform regulatory decisions	Other sources not prohibited by the RA legislation	Availability of research data from at least 50 pharmacies within the established time limit
4. Creation of a system for the monitoring of antimicrobial consumption in animals	Ministry of Economy	Food Safety Inspectorate (by consent) Ministry of Health	2026-2027	Availability of a database on antimicrobial consumption in animals	Other sources not prohibited by the RA legislation	Availability of a database on antimicrobial consumption in animals
5. Analysis of the legal framework on the circulation and regulation of antimicrobial agents used in agriculture, particularly in veterinary medicine and livestock farming	Ministry of Economy	Food Safety Inspectorate (by consent) Ministry of Health (by consent) Ministry of Territorial Administration and	2024-2027	Creation of legal basis for the regulation of the legal framework	Financing not required	Availability of an analysis

		Infrastructure (by consent) Health and Labor Inspectorate (by consent)				
6. Analysis, inventory of current legislative and other legal acts preventing and regulating environmental emissions (wastewater, waste) and development of mechanisms regulating the legal framework aimed at prevention and control of antimicrobial resistance	Ministry of Territorial Administration and Infrastructure (by consent)	Ministry of Health Ministry of Economy Inspection Bodies' Coordination Bureau (by consent) Ministry of Environment (by consent)	2024-2027	Regulation of the legal framework aimed at the reduction of residual antimicrobials in the environment	Financing not required	Availability of an analysis of current legislative and other legal acts.
7. Setting conditions for the use for veterinary purposes of systemic antimicrobials for human use and the list of antimicrobials	Ministry of Health	Ministry of Economy Inspection Bodies' Coordination Bureau (by consent)	2024-2026	Availability of a legal basis to restrict the use of antibacterials, intended for humans, for the treatment of animals and prevention of diseases	Financing not required	Availability of the conditions for the use for veterinary purposes of systemic antimicrobials for human use and the list of antimicrobials.

Direction 6. Enhancement of the knowledge and capacity building of professionals in the fields of healthcare, agriculture, food safety and the environment regarding antimicrobial consumption and types of drug-resistant pathogens, as well as increasing public awareness of the importance of rational use of antimicrobials						
1. By order of the Minister of Health, adopt guideline(s) on the prevention of antimicrobial resistance and appropriate use of antimicrobials	Ministry of Health	Non-governmental organizaton(s) (by consent) International organizations (by consent)	2024-2026	Adoption of guideline(s) on antimicrobial resistance and appropriate use of antimicrobials in accordance with international approaches and WHO methodological recommendations	Other sources not prohibited by the RA legislation	Availability of at least 3 guidelines
2. Development and endorsement by a legal act of guideline(s) on antimicrobial use for agricultural entities and veterinarians	Ministry of Economy	Inspection Bodies' Coordination Bureau (by consent) Food Safety Inspectorate (by consent)	2025	Availability of published guideline(s)	Other sources not prohibited by the RA legislation	Availability of at least 2 guidelines
3. Ensure participation of agricultural and environmental professionals in seminars and meetings on appropriate use of antimicrobials and antimicrobial resistance	Ministry of Economy	Food Safety Inspectorate (by consent) Ministry of Environment (by consent) Ministry of Health	2024-2027	Increased awareness among agricultural professionals on the prevention of antimicrobial resistance	Other sources not prohibited by the RA legislation	Participation of at least 30 agricultural and environmental professionals in seminars, trainings and meetings on

		Ministry of Territorial Administration and Infrastructure (by consent)				appropriate use of antimicrobials and antimicrobial resistance
4. Organize dissemination of knowledge among the population about antimicrobial use and antimicrobial resistance, including dissemination of informational and educational materials, organization of social advertising, campaigns, preparation and publication of annual report(s) on the implemented programs	Ministry of Health	Ministry of Economy Ministry of Territorial Administration and Infrastructure (by consent) Ministry of Environment (by consent) Food Safety Inspectorate (by consent)	2024-2027	Increased awareness among the population of the prevention of antimicrobial resistance, annual evaluation of progress and wrap-up of programs	Other sources not prohibited by the RA legislation	Annually at least 1 implemented public awareness activity
Direction 7. Development of mechanisms for the implementation of antimicrobial stewardship						
1. Adoption by the RA Minister of Health of the Order "On establishing a working group for the implementation of antimicrobial stewardship, approving the working procedure and action plan of the working group	Ministry of Health	International organizations (by consent)	2024-2025	Implementation of antimicrobial stewardship program in accordance with international approaches and WHO recommendations	Financing not required	Availability of a legal act

2. Development of legal acts and protocols to ensure antimicrobial stewardship in medical care and service providing organizations	Ministry of Health	International organizations (by consent)	2025-2027	Availability of a legal basis and set of tools in medical care and service providing organizations to establish advisory committees to ensure antimicrobial stewardship	Financing not required	Availability of a legal act/protocol
3. Introduction of medical, nursing and pharmaceutical undergraduate and post-graduate educational programs on antimicrobial stewardship	Ministry of Education, Science, Culture and Sports (by consent)	Ministry of Health International organizations (by consent)	2026-2027	Expanding the knowledge of healthcare professionals on antimicrobial stewardship, continuous enhancement of skills and capacities	Financing not required	Introduced educational programs
4. Implementation of regular monitoring of antimicrobial prescription practices in hospitals and primary health care facilities in accordance with WHO methodology (PPS)	Ministry of Health	International organizations (by consent)	2024-2027	A research database of antimicrobial use to identify trends, correlate with resistance monitoring data, compare with data from other countries, and inform regulatory decisions	Other sources not prohibited by the RA legislation	Monitoring of antimicrobial prescription practice implemented regularly in at least 3 hospitals and 3 primary health care facilities in accordance

						with WHO methodology (PPS)
5. Introduce a new tool(s) in the outpatient medical records of children for the purpose of justifying antibacterial therapy	Ministry of Health		2024	Add a field in the medical record regarding the quality control of medical care and service provided to children in outpatient settings and the justification of antibacterial therapy, in particular, dosage, AWaRe group selection, combinations, thus making prescription of antibacterial therapy controllable	Financing not required	A tool introduced in the primary healthcare level