



AFRICA HEALTH  
ORGANISATION

# TACKLING ANTIMICROBIAL RESISTANCE

## ANTIMICROBIAL RESISTANCE

### AHO PLAN OF ACTION ON ANTIMICROBIAL RESISTANCE

2020-2030

## Partners



# Preface

Antimicrobial resistance increases mortality, morbidity, and health expenditures. It is a global phenomenon that has worsened in recent decades through the inappropriate use of antimicrobial drugs in human and veterinary medicine, through the lack of preventive and control measures for health-care-associated infections, and through the failure to develop new antimicrobial drugs. Its indirect consequences cause sizeable financial losses.

With a view to monitoring the development of antimicrobial resistance and proposing measures that would limit its spread, some countries are organizing integrated surveillance of antimicrobial resistance. The objective of these programs is to provide descriptive data and trends in the patterns of susceptibility or resistance in zoonotic and foodborne pathogens, and to create a select group of collegial bodies to identify unusual or high levels of resistance to antimicrobial drugs in humans, animals, and foods containing antimicrobial drugs.

The inappropriate use of antimicrobial drugs, both in humans and in animal health, is one of the determinants of antimicrobial resistance. Worldwide, more than 50% of these drugs are prescribed, dispensed, or sold inappropriately. This inappropriate use occurs at all levels of the health system, both in the public and private sectors. Taking action in different areas, such as educational, management, diagnosis, regulation, and economy, can improve the use of antimicrobial drugs by 63% and decrease the number of prescriptions by 23%. For some types of antimicrobial drugs, such as first-line tuberculosis drugs, these measures have been implemented consistently and there are few countries in the Region where these drugs can be obtained without a prescription. Regulations and the strict enforcement of standards for dispensation and sales have been initially effective, but a sustainable and coordinated approach needs to be encouraged in order to maintain this change. In addition, regulatory measures are needed to guarantee the quality of antimicrobial drugs, as well as sustained strategies and interventions to ensure evidence-based selection and rational use in accordance with clinical practice guidelines.

It is estimated that 10% of all patients who receive hospital care develop a health-care-associated infection. In recent years, the Africa experienced a series of outbreaks caused by multidrug-resistant bacteria, impacting lives and hospital costs. Not all countries have functioning national programs in place for the prevention of hospital infections, nor do they all monitor or control the profiles of multidrug-resistant bacteria in hospitals.



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## **Introduction**

1. Antimicrobial resistance increases mortality, morbidity, and health expenditures. It is a global phenomenon that has worsened in recent decades through the inappropriate use of antimicrobial drugs in human and veterinary medicine, through the lack of preventive and control measures for health-care-associated infections, and through the failure to develop new antimicrobial drugs. Its indirect consequences cause sizeable financial losses.

2. This Plan of Action on Antimicrobial Resistance is associated with other already existing plans of action on infectious diseases such as HIV infection, malaria, and tuberculosis.

3. For more than two decades Africa has been a pioneer in confronting this problem from a public health perspective but, despite the proposals, initiatives, and efforts made, work still needs to be stepped up to make an impact on the containment of antimicrobial resistance and to quantify this impact.

4. The purpose of this ten-year Plan of Action (2020-2030) is to provide guidelines to contain and reduce the impact of antimicrobial resistance and, insofar as possible, to ensure continuation of the treatment and prevention of infectious diseases with safe and effective quality drugs, responsibly used and accessible to those who need them. This objective is in the framework of universal health coverage, specifically with regard to timely access to quality drugs.

5. This Plan is based on the following elements and experiences: *a)* the draft global action plan on antimicrobial resistance drawn up by WHO, presented at the 68th World Health Assembly;<sup>1</sup> *b)* the work done in Africa during almost two decades; *c)* contributions from the Expert Group, both within and outside the Organization; *d)* the results of consultation and intersectoral dialogue; and *e)* contributions received from various ministries of health in Africa.

## **Background**

6. In the roundtable debate on antimicrobial resistance (*1*), held by AHO 2018, the Member States requested that the AHO prepare, and present to the Governing Bodies, a strategy and plan of action to contain antimicrobial resistance that would serve as guidance for national policies and operating plans.

7. In December 2018, AHO's Technical Advisory Group on Antimicrobial Resistance reported to AHO's Director on the importance of developing national plans and priority activities to contain antimicrobial resistance. These national plans would have to be based on a plan of action.

8. The Governing body requested, that the AHO prepare a draft action plan. The proposal presented was prepared through a consultative process with the Member States, intergovernmental agencies, civil society organizations, regulatory and public health agencies, industry associations, professional organizations, and patient groups.

## **Situation Analysis**

9. Antimicrobial resistance has been documented since the discovery of antibiotics and has increased considerably in recent decades, leading to the appearance of pathogens for which effective antibiotic treatment is not at present available. In terms of magnitude and trends, antimicrobial resistance can be determined only by qualified microbiology laboratories..

10. With a view to monitoring the development of antimicrobial resistance and proposing measures that would limit its spread, some countries are organizing integrated surveillance of antimicrobial resistance. The objective of these programs is to provide descriptive data and trends in the patterns of susceptibility or resistance in zoonotic and foodborne pathogens, and to create a select group of collegial bodies to identify unusual or high levels of resistance to antimicrobial drugs in humans, animals, and foods containing antimicrobial drugs.

11. The inappropriate use of antimicrobial drugs, both in humans and in animal health, is one of the determinants of antimicrobial resistance. Worldwide, more than 50% of these drugs are prescribed, dispensed, or sold inappropriately. This inappropriate use occurs at all levels of the health system, both in the public and private sectors. Taking action in different areas, such as educational, management, diagnosis, regulation, and economy, can improve the use of antimicrobial drugs by 63% and decrease the number of prescriptions by 23%. For some types of antimicrobial drugs, such as first-line tuberculosis drugs, these measures have been implemented consistently and there are few countries in the Region where these drugs can be obtained without a prescription. Regulations and the strict enforcement of standards for dispensation and sales have been initially effective, but a sustainable and coordinated approach needs to be encouraged in order to maintain this change. In addition, regulatory measures are needed to guarantee the quality of antimicrobial drugs, as well as sustained strategies and interventions to ensure evidence-based selection and rational use in accordance with clinical practice guidelines. The impact of policies and interventions can be evaluated by monitoring data on prescriptions and sales and, in general, through studies of drug use.

12. It is estimated that 10% of all patients who receive hospital care develop a health-care-associated infection. In recent years, the Africa experienced a series of outbreaks caused by multidrug-resistant bacteria, impacting lives and hospital costs. Not all countries have functioning national programs in place for the prevention of hospital infections, nor do they all monitor or control the profiles of multidrug-resistant bacteria in hospitals. The presence of multidrug-resistant bacteria in the environment, the lack of programs for rational use of antimicrobial drugs, inadequate hospital infrastructure that fails to control aerosol-transmitted infections like tuberculosis, and the lack of timely, high-quality microbiological diagnosis lead to the prescription of wide-spectrum antibiotics that induce resistance to microorganisms.

13. In 2013, 44% of the people estimated to be HIV-infected had access to antiretroviral therapy (ART); this represents the highest coverage level in the world among low- and middle-income countries. In recent years, the region has shown great advances in the responsible and optimized use of ART, and in 2013, 77% of people in treatment presented a suppressed viral load. However, about 7.7% of people with HIV show transmitted or primary resistance before beginning ART, which may compromise the effectiveness and ability of countries to meet the universal access targets (the “90-90-90” targets) by 2020. AHO is coordinating a regional initiative called the HIV Drug Resistance Technical Cooperation Network, the main objective being to support the implementation of drug resistance monitoring and the strategic use of data for public health policies and actions in Africa.

14. Drug-resistant tuberculosis is the result of poor management of the disease. Resistant strains develop in response to a poor treatment regimen, poor administration, or poor adherence to treatment. The prevalence of multidrug resistance<sup>3</sup> in Africa, including new and previously treated cases, was 2.2% in 1994 and 13.2% in 2002. In 2013, while resistance had increased throughout the world, prevalence rates in the Americas remained unchanged. Various initiatives were implemented to strengthen prevention measures and the programmatic treatment of resistance: the Expansion Plan for

the Programmatic Management of Multidrug-resistant Tuberculosis (2010) was prepared and implemented; the Regional Committee (2011) was established to strengthen technical assistance for the proper management of drug resistance and rational use of second-line tuberculosis drugs acquired at accessible prices through the AHO Strategic Fund; laboratory networks were strengthened for monitoring this; and new technologies were introduced for the diagnosis and detection of drug resistance. Currently, the countries of the Region offer diagnosis, treatment, and monitoring of drug-resistant tuberculosis free of charge for everyone affected.

15. With respect to surveillance of antimalarial efficacy and drug resistance, a surveillance network has been in place since 2001, for the Surveillance of Antimalarial Drug Resistance. Through this network and with the support of the Malaria Initiative, surveillance of antimalarial efficacy and drug resistance was conducted. Work was undertaken to review and adapt WHO protocols to the realities of the Region in order to conduct studies to monitor the efficacy of the antimalarials in use. The results of these studies, carried out from 2002 to 2008, showed that *Plasmodium falciparum* was resistant to chloroquine in the Amazon basin countries, leading those countries to modify their treatment regimens and initiate combined treatments with artemisinin derivatives (28). Due to reports of artemisinin-resistant malaria in the Mekong area, new strategies have been implemented, for example, monitoring of *Plasmodium falciparum* cases on the third day of treatment, and analysis of possible molecular markers. However, this type of resistance has not been detected to date in the Region. Other key lines of work for preventing antimalarial drug resistance are the improvement of diagnostic quality through the Program for External Performance Evaluation in Microscopic Diagnosis of Malaria, and support to the countries for quality control of antimalarials. Africa should be vigilant so as to prevent and eliminate any case resistant to artemisinin derivatives that may be introduced.

16. In the field of animal husbandry, more antimicrobial drugs are used in healthy animals for human consumption than are used in the treatment of human patients. In animal husbandry, antimicrobial drugs are used to prevent disease and stimulate growth, and are administered to many animals simultaneously and en masse. Some of these antimicrobial drugs are the same as those used in human medicine, which implies the risk of resistant bacteria emerging and spreading. The spread of resistant bacteria through food and direct contact is well documented in the literature. Another potential risk is the spread of resistant genes through food. Problems associated with the use of antibiotics in animal husbandry, including cattle, birds, and farmed fish, are increasing regionally and worldwide, leading to a growing awareness of the urgent need to take action.

17. The World Economic Forum has stated that the dissemination of antimicrobial-resistant bacteria has had an impact on the entire world, although its impact is likely greater in countries with fewer economic resources, since pathogens are spread by poor hygiene, polluted water sources, overpopulation in urban areas, and civil conflict. It is estimated that in the United States of America, 23,000 lives are lost each year to resistant infections that cost the health system US\$ 21-34 billion<sup>4</sup> a year. In some African countries, more than half of hospital infections are caused by resistant pathogens. Gross domestic product losses have been estimated at 0.4% to 1.6% (34). Antimicrobial resistance affects the world economy, which means that solid economic arguments must be prepared and disseminated in defence of long-term sustainable investment to address the problem and, in particular, to ensure access to financial and technical support. The economic impact of the direct and indirect costs of multidrug resistance is huge. Whereas drugs to treat non-resistant TB cost \$25 over six months, the drug costs of treating multidrug-resistant TB are approximately \$5,000 over 24 months.

## Plan of Action (2015-2020)

### Goal

18. The goal of the Plan of Action is for Member States to take all necessary action possible in accordance with their context, needs, and priorities, to ensure their capacity to treat and prevent infectious diseases through the responsible and rational use of safe, effective, accessible, and affordable quality-assured drugs.

### Strategic Lines of Action

#### *Strategic Line of Action 1: Improve awareness and understanding of antimicrobial resistance through effective communication, education, and training*

19. Measures that raise awareness of antimicrobial resistance, such as public communication programs for professionals in human health, animal health, and agriculture, and for consumers, help promote changes in conduct. An introduction to antimicrobial resistance should be promoted as a basic subject in professional education, training, certification, and development in the health, agriculture, and livestock sectors.

Objective	Indicator	Base (2019)	Target (2030)
1.1 Promote the need for recognition of antimicrobial resistance as a priority intersectoral action	1.1.1 Number of countries that have campaigns on antimicrobial resistance and rational use aimed at the general public and professional sectors	5	20
	1.1.2 Number of countries that carry out intersectoral activities to contain antimicrobial resistance, including professional training activities	7	17

#### *Strategic Line of Action 2: Strengthen knowledge and scientific grounding through surveillance and research*

20. The magnitude and trend of resistance is established through laboratory monitoring and epidemiological surveillance. High-quality routine laboratory data are the basis for initiating monitoring. This must be complemented by clinical data to help determine the public health impact, to estimate the burden of disease, and to quantify the economic consequences.

21. It is vital to work toward ensuring that antimicrobial drugs used in human medicine are gradually eliminated in animals destined for human consumption, and to improve their use in this sector through regulations, education, guidelines, and monitoring of both use and resistance. This requires integrated surveillance systems that provide continuously updated information on foodborne

pathogens, their spread, and the state of antimicrobial resistance, in order to create risk profiles, evaluate and manage this risk, and measure the impact of interventions.

22. It is critical to facilitate the development of adequately financed regional and national research agendas on antimicrobial resistance, as well as establishing research mechanisms to generate evidence on which to base and evaluate policies in this field. Specialized centers offer important support for conducting research on this issue. In this context, epidemiological surveillance is indispensable for monitoring the effectiveness of public health actions.

<b>Objective</b>	<b>Indicator</b>	<b>Base (2019)</b>	<b>Target (2030)</b>
<b>2.1</b> Maintain and improve national resistance surveillance systems to monitor the impact of resistance on public health	<b>2.1.1</b> Number of countries that annually provide laboratory-based data on antimicrobial resistance	5	15
	<b>2.1.2</b> Number of countries in patient-centered antimicrobial drug resistance surveillance networks	0	10
	<b>2.1.3</b> Number of countries that report and analyze the use of antimicrobial drugs in humans and animals	5	15
<b>2.2.</b> Develop a national resistance surveillance system that includes data on zoonotic pathogens transmitted through food and through direct contact	<b>2.2.1</b> Number of countries and territories with multisectoral collaboration mechanisms to implement integrated antimicrobial resistance surveillance programs	7	10
<b>2.3</b> Promote the monitoring of HIV resistance to antiretrovirals in the countries of the Region	<b>2.3.1</b> Number of countries that monitor HIV antiretroviral resistance in accordance with PAHO/WHO recommendations	4	11
<b>2.4</b> Have up-to-date information on the magnitude and trend of multidrug-resistant TB, to help strengthen the prevention of resistance.	<b>2.4.1</b> Number of countries that perform susceptibility testing on 100% of previously treated TB cases	4	10
	<b>2.4.2</b> Number of countries that diagnose more than 85% of estimated cases of multidrug-resistant TB among reported tuberculosis cases	3	10
<b>2.5</b> Have evidence obtained through studies that monitor antimalarial drug efficacy and resistance, to help	<b>2.5.1</b> Number of countries that conduct periodic studies that monitor antimalarial drug efficacy and drug resistance	0	10



improve treatment quality			
<b>2.6</b> Have a regional research agenda that can generate evidence applicable to public health on effective mechanisms for containing antimicrobial resistance	<b>2.6.1</b> Preparation of a regional research agenda on public health actions to contain antimicrobial resistance	0	5

***Strategic Line of Action 3: Reduce the incidence of infections through effective sanitation, hygiene, and preventive measures***

23. Preventive measures can often be easily implemented as a cost-effective strategy to reduce health-care-associated infections without a large financial investment. National and hospital programs for infection prevention and control, which monitor the appearance of infections, prevent their dissemination, and contain outbreaks in health facilities, can reduce health-care-associated infections in general and infections caused by multidrug-resistant microorganisms in particular.

<b>Objective</b>	<b>Indicator</b>	<b>Base (2019)</b>	<b>Target (2030)</b>
<b>3.1</b> Establish strategies to boost national capacities to contain, treat, prevent, monitor, and communicate the risk of diseases caused by multidrug-resistant organisms	<b>3.1.1</b> Number of countries with infection prevention and control programs that include national data on health-care-associated infections	3	10
	<b>3.1.2</b> Number of countries in which infection prevention and control capacities are evaluated	5	10
	<b>3.1.3</b> Number of countries that have an evaluation of their health infrastructure with regard to the control of aerosol-transmitted infections	0	5

***Strategic Line of Action 4: Optimize the use of antimicrobial drugs in human and animal health***

24. This strategic line will be undertaken in conjunction with the Strategy for Universal Access to Health and Universal Health Coverage (35), given that rational use is a component of access to medicines. This means establishing strategies at the national level to mitigate resistance, including monitoring the use of antimicrobial drugs and strengthening antibiotics committees. Monitoring the degree of progress of these national strategies will help determine how antibiotics are being used in

human beings and in animal husbandry, and will validate regulations on the prescription and sale of antimicrobial drugs.

Objective	Indicator	Based (2019)	Target (2030)
4.1 Establish national strategies to mitigate antimicrobial resistance and monitor the rational use of antibiotics, including strengthening the role of antibiotics committees	4.1.1 Number of countries that have a written strategy for containing antimicrobial resistance (year of latest update), with a plan to measure results	6	20
	4.1.2 Number of countries that have created and funded a special national, intersectoral group to promote the appropriate use of antimicrobial drugs and prevent the spread of infections	7	17
	4.1.3 Number of countries that have produced, through a funded national intersectoral group, reports and recommendations to promote the appropriate use of antimicrobial drugs and prevent the spread of infections	5	10
	4.1.4 Number of countries where non-prescription antibiotics are sold, despite regulations to the contrary	20	10

***Strategic Line of Action 5: Prepare economic arguments for sustainable investment that takes into account the needs of all countries, and increase investment in new drugs, diagnostic tools, vaccines, and other actions***

25. Economic arguments should reflect the need for capacity-building and, in particular, for training in environments with limited resources, as well as the need for new and accessible interventions, including medicines, diagnostic tests, and vaccines. Economic impact should be evaluated in terms of the health burden and the broader socioeconomic burden of antimicrobial resistance; and the cost of doing nothing should be compared with the cost and advantages of taking action. These evaluations and the generated evidence should be used to encourage Member States, technical partners, and scientific leaders to increase investment in the development of new drugs, diagnostic methods, and vaccines.

26. It is necessary to invest urgently in the development of new drugs, diagnostic tools, and vaccines. The lack of investment in new antibiotics partly reflects the fear that resistance is rapidly spreading and that returns on investment will be limited by restricted use. Currently, most of the main pharmaceutical companies have stopped or slowed the pace of research in this area (36). There is a

need for new processes that facilitate renewed investment in research and development of new antibiotics and that guarantee that the use of new products will be governed by a public health framework that maintains the effectiveness and longevity of the products, while ensuring their availability and access for the people who need them.

<b>Objective</b>	<b>Indicator</b>	<b>Base (2019)</b>	<b>Target (2030)</b>
<b>5.1</b> Generate and systematize evidence to document the economic impact of antimicrobial resistance	<b>5.1.1</b> Number of countries that produce studies that quantify the economic impact of antimicrobial resistance	10	20
<b>5.2</b> Promote intersectoral cooperation for greater efficiency in the development, introduction, regulation, and use of new antimicrobial drugs, diagnoses, and vaccines	<b>5.2.1</b> Number of countries that are advancing in the development of agreements or new regulatory measures to evaluate new vaccines, diagnostic methods, and antimicrobial drugs, and that have included these in their health agendas	5	10
<b>5.3</b> Develop a mechanism for exchanging information and experts among government, private sector, academia, and industry	<b>5.3.1</b> Available mechanism for the exchange of information and experiences between different sectors	0	1

### **Monitoring and Evaluation**

27. This Plan of Action helps achieve the objectives of category of the Strategic Plan of the Pan Africa Health Organization 2020-2030 and is directly related to program area 5.2 and outcomes 5.2.1 and 5.2.2. Synergistically, this Plan helps implement program areas 5.3, 5.4, and 5.5. It is expected to have an impact on category 1, particular, program areas 1.1, 1.2, and 1.3, and on category 4, program area 4.3. Annex B lists other expected results of the Organization, to which this Plan contributes.

28. This Plan of Action helps achieve the objectives of the Global Action Plan on Antimicrobial Resistance presented at the 68th World Health Assembly.

29. Monitoring and evaluation of this Plan will comply with the Organization's results-based management framework, and with its performance, monitoring, and evaluation processes. As a result, PAHO is planning a mid-term evaluation (2017) and a final evaluation (2020), with contributions from the annual reports prepared by the countries, in order to document the progress made in achieving the indicators.

## **Financial Implications**

30. Implementation of the proposal includes expenditures for technical and administrative personnel and for cooperation activities over ten years. It is estimated that a total of \$600,000,000 will be required. This amount does not include programmatic contributions for the prevention and control of specific diseases, such as tuberculosis, malaria, and HIV infection.

31. To achieve the objectives and goal of the proposed Plan of Action, the commitment of member countries, collaborating centers, and other partners in the field of antimicrobial resistance is essential. The Plan cannot involve the Bureau alone, but requires investments by the Member States in the preparation and implementation of national plans to contain antimicrobial resistance. Admittedly, national procedures are diverse in nature, but efforts must focus on improving laboratory quality, meeting regulatory requirements, and prioritizing actions in accordance with an analysis of the five strategic lines.

32. The organisation will facilitate this work and support the countries in preparing, implementing, and supervising their national plans; directing and coordinating support to evaluate and meet the countries' funding needs; and publishing biennial progress reports that will include an evaluation of the countries and organizations that have plans in place, their progress in implementing the plans, and the effectiveness of the measures included in regional plans and the global plan.

33. With regard to the budgetary implications of interventions, it is essential that partners in the financial and economic sectors be involved; they must propose the economic arguments for national and international funding of the fight against antimicrobial resistance, and must evaluate the cost of implementing this Plan of Action and the cost of not adopting any plan.

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