Pan American Health Organization
World Health Organization
REGIONAL OFFICE FOR THE Americas

59th DIRECTING COUNCIL

73rd SESSION OF THE REGIONAL COMMITTEE OF WHO FOR THE AMERICAS

Virtual Session, 20-24 September 2021

Provisional Agenda Item 8.10

CD59/INF/10
19 July 2021
Original: English

PLAN OF ACTION ON ANTIMICROBIAL RESISTANCE: FINAL REPORT

Background

1. This document reports on the status of implementation of the Plan of Action on Antimicrobial Resistance (Document CD54/12, Rev. 1) *(1)*, approved by the Governing Bodies of the Pan American Health Organization (PAHO) in October 2015 through Resolution CD54.R15 *(2)*. The goal of the Plan of Action is for Member States to take necessary actions, 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 medicines and other health technologies. The Plan fits within the framework of universal health coverage, specifically with regard to timely access to quality medicines, and is in line with the Global Action Plan on Antimicrobial Resistance endorsed at the 68th World Health Assembly in May 2015 *(3)*.

2. Recognizing the solid evidence on the estimated burden of disease and economic impact of antimicrobial resistance (AMR) *(4, 5)*, and understanding that the situation is a global crisis that endangers sustainable development, the United Nations General Assembly has approved several political declarations on antimicrobial resistance since 2016 *(6-8)*. Furthermore, over the past year the COVID-19 pandemic has imposed additional challenges with respect to AMR. As they respond to the pandemic, Member States have been faced with increases in AMR infections and novel multidrug-resistant pathogens resulting from the high antibiotic use in COVID-19 patients and disruptions to infection prevention and control practices.

Analysis of Progress Achieved

3. The assessment of the indicators follows the criteria for rating outcome and output indicators at regional level as presented in Annex B of Addendum I to the Report of the End-of-Biennium Assessment of the PAHO Program and Budget 2018-2019 / Final Report on the Implementation of the PAHO Strategic Plan 2014-2019 (Document CD58/5, Add. I).

4. Overall, progress toward the targets set by the Plan of Action on Antimicrobial Resistance was significant. Of the 21 targets, 14 (67%) were achieved, and 11 of these 14 (52% of the total) were exceeded. Six targets (29%) were partially achieved. Despite countries' progress, one target was unachieved during the implementation period of this Plan of Action largely negatively impacted by changes in global measurement of the indicator.

5. In total, 34 countries have completed or are in the process of developing a national plan of action, recognizing AMR as a priority issue that requires intersectoral action by the health, agriculture, and livestock sectors *(9)*. The Pan American Sanitary Bureau (PASB) supported Member States in developing multisectoral approaches and building capacities. PASB also facilitated the exchange of knowledge and best practices among Member States in establishing integrated surveillance, monitoring antimicrobial use/consumption across sectors, and strengthening infection prevention and control practices, especially in the context of the COVID-19 pandemic. Nevertheless, despite the considerable efforts of Member States, some gaps persisted, as reflected in the six partially achieved targets. Progress could be further jeopardized by the impact of the COVID-19 pandemic should the AMR response not be prioritized and sustained.

6. Progress has been made in all five of the strategic lines of action described in the Plan of Action. The specific status of the objectives and indicators is summarized in the tables below.

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

Objective 1.1: Promote the need for recognition of antimicrobial resistance as a priority intersectoral action	
Indicator, baseline, and target	**Status**
1.1.1 Number of countries that have campaigns on antimicrobial resistance and rational use aimed at the general public and professional sectors Baseline (2015): 9 Target (2020): 20	***Exceeded.*** In 2020, 27 countries worked to raise awareness and understanding of AMR risks to human health through participation in World Antimicrobial Awareness Week activities or national campaigns. The decrease in the number of countries conducting such activities (there were 31 in 2017) may be attributed to the impact of the COVID-19 pandemic.
1.1.2 Number of countries that carry out intersectoral activities to contain antimicrobial resistance, including professional training activities Baseline (2015): 5 Target (2020): 10	***Exceeded.*** By 2020, 11 countries had carried out training and educational activities from a One Health perspective. Subregional activities were conducted by PASB and by the Council of Ministers of Health of Central America and the Dominican Republic (COMISCA), covering 14 Caribbean and eight Central American countries, respectively.

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

Objective 2.1: Maintain and improve national resistance surveillance systems to monitor the impact of resistance on public health	
Indicator, baseline, and target	**Status**
2.1.1 Number of countries that annually provide laboratory-based data on antimicrobial resistance Baseline (2015): 20 Target (2020): 35	***Partially achieved.*** As of 2020, 23 countries provided laboratory AMR data to PASB on an annual basis. Twenty of these countries are members of the Latin American Network for Antimicrobial Resistance Surveillance (ReLAVRA) *(10, 11)*. Through PASB's cooperation among countries for health development (CCHD), Argentina and CARICOM Member States joined forces to improve AMR surveillance in 14 Caribbean countries.
2.1.2 Number of countries in patient-centered antimicrobial drug resistance surveillance networks Baseline (2015): 0 Target (2020): 10	***Exceeded.*** As of 2020, 17 countries had set up patient-centered AMR surveillance. A majority of these countries (15) did so through the ReLAVRA network, which aligned its approach with the Global Antimicrobial Resistance Surveillance System (GLASS) methodology to facilitate countries participating in both. Seven countries have officially joined GLASS *(12)*.
2.1.3 Number of countries that report and analyze the use of antimicrobial drugs in humans and animal Baseline (2015): 2 Target (2020): 5	***Exceeded.*** As of 2020, six countries reported having national monitoring systems for consumption/use of antimicrobials in humans and animals. Another six have designed them *(9)*. Nine countries reported and analyzed data on consumption and use of antimicrobial drugs in humans, while 18 reported antimicrobial use data in animals to the World Organisation for Animal Health (OIE) *(13)*.
Objective 2.2: Develop a national resistance surveillance system that includes data on zoonotic pathogens transmitted through food and through direct contact	
Indicator, baseline, and target	**Status**
2.2.1 Number of countries and territories with multisectoral collaboration mechanisms to implement integrated antimicrobial resistance surveillance programs Baseline (2015): 3 Target (2020): 11	***Exceeded.*** By 2020, 13 countries had implemented an integrated AMR surveillance program or started to develop one with multisectoral collaboration.

Objective 2.3: Promote the monitoring of HIV resistance to antiretrovirals in the countries of the Region	
Indicator, baseline, and target	**Status**
2.3.1 Number of countries that monitor HIV antiretroviral resistance in accordance with PAHO/WHO recommendations Baseline (2015): 3 Target (2020): 15	***Partially achieved.*** In 2020, six countries were monitoring HIV antiretroviral resistance in line with HIV drug resistance surveillance guidelines of the World Health Organization (WHO) *(14, 15)*. Additionally, implementation was in progress in 11 countries and at different stages of planning in nine countries.
Objective 2.4: Have up-to-date information on the magnitude and trend of multidrug-resistant TB, to help strengthen the prevention of resistance	
Indicator, baseline, and target	**Status**
2.4.1 Number of countries that perform susceptibility testing on 100% of previously treated TB cases Baseline (2015): 3 Target (2020): 12	***Partially achieved.*** As of 2019, four countries were performing drug susceptibility testing (DST) on 100% of previously treated tuberculosis (TB) cases. With the progressive implementation of molecular diagnostic methods in all countries, the percentage of previously treated patients with DST is increasing, and six countries have already reached more than 85% *(16)*. Global 2020 TB data will be available in October 2021.
2.4.2 Number of countries that diagnose more than 85% of estimated cases of multidrug-resistant TB among reported tuberculosis cases Baseline (2015): 6 Target (2020): 16	***Not achieved.*** As of 2019, two countries were diagnosing more than 85% of estimated cases of multidrug-resistant TB (MDR-TB), including rifampicin-resistant TB (RR-TB), among reported TB cases, in accordance with the current WHO classification of drug-resistant TB *(16)*. Due to the difficulties in detecting and diagnosing MDR-TB cases, progress, despite substantial efforts, has been slow.
Objective 2.5: Have evidence obtained through studies that monitor antimalarial drug efficacy and resistance, to help improve treatment quality	
Indicator, baseline, and target	**Status**
2.5.1 Number of countries that conduct periodic studies that monitor antimalarial drug efficacy and drug resistance[1] Baseline (2015): 6 Target (2020): 11	***Exceeded.*** Therapeutic efficacy studies and surveillance with molecular markers have been implemented in 15 countries to monitor drug efficacy and resistance, pursuant to PAHO/WHO guidelines *(17)*.

[1] Progress on this indicator as part of the Plan of Action for Malaria Elimination 2016-2020 is assessed using a baseline of 14 countries and a target of 17, which would classify it as partially achieved.

Objective 2.6: Have a regional research agenda that can generate evidence applicable to public health on effective mechanisms for containing antimicrobial resistance	
Indicator, baseline, and target	**Status**
2.6.1 Preparation of a regional research agenda on public health actions to contain antimicrobial resistance Baseline (2015): 0 Target (2020): 1	***Achieved.*** A regional research agenda on public health actions for containing AMR was developed through a literature review and consultation with experts.

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

Objective 3.1: Establish strategies to boost national capacities to contain, treat, prevent, monitor, and communicate the risk of diseases caused by multidrug-resistant organisms	
Indicator, baseline, and target	**Status**
3.1.1 Number of countries with infection prevention and control programs that include national data on health care-associated infections Baseline (2015): 9 Target (2020): 18	***Exceeded.*** As of 2020, 24 countries had an infection prevention and control program that included mandatory surveillance for health care-associated infections.
3.1.2 Number of countries in which infection prevention and control capacities are evaluated Baseline (2015): 13 Target (2020): 18	***Exceeded.*** As of 2020, 28 countries had conducted evaluations of infection prevention and control capacities using a standardized guide *(18-20).*
3.1.3 Number of countries that have an evaluation of their health infrastructure with regard to the control of aerosol-transmitted infections Baseline (2015): 0 Target (2020): 10	***Exceeded.*** By 2020, 31 countries had evaluated their health infrastructure with regard to the control of aerosol-transmitted infections *(18)*.

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

Objective 4.1: Establish national strategies to mitigate antimicrobial resistance and monitor the rational use of antibiotics, including strengthening the role of antibiotics committees	
Indicator, baseline, and target	**Status**
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 Baseline (2015): 3 Target (2020): 14	***Exceeded.*** In 2020, according to the global monitoring of country progress on AMR self-assessment *(9)*, 34 countries had a national action plan in place and all countries had initiated AMR containment actions.
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 Baseline (2015): 5 Target (2020): 15	***Exceeded.*** By 2020, 17 countries had created a national intersectoral group to promote the appropriate use of antimicrobial drugs and prevent the spread of infections *(9)*.
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 Baseline (2015): 5 Target (2020): 15	***Partially achieved.*** As of 2020, eight countries had produced reports and recommendations to promote the rational use of antimicrobials and prevent the spread of infection in humans; seven countries had done the same with respect to animals *(9)*. Fifteen countries implemented guidelines/practices for the appropriate use of antimicrobials in humans.
4.1.4 Number of countries where nonprescription antibiotics are sold, despite regulations to the contrary Baseline (2015): 15 Target (2020): 11	***Achieved.*** As of 2020, nonprescription antibiotics were sold for human use in 11 countries, despite regulations in place. Fourteen countries had laws/regulations on prescription and sale of antimicrobials for animal use, and 11 prohibited the use of antibiotics for growth promotion *(9)*.

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

Objective 5.1: Generate and systematize evidence to document the economic impact of antimicrobial resistance	
Indicator, baseline, and target	**Status**
5.1.1 Number of countries that produce studies that quantify the economic impact of antimicrobial resistance Baseline (2015): 11 Target (2020): 20	***Partially achieved.*** A literature search identified 13 countries that have conducted studies to quantify the economic impact of AMR.
Objective 5.2: Promote intersectoral cooperation for greater efficiency in the development, introduction, regulation, and use of new antimicrobial drugs, diagnoses, and vaccines	
Indicator, baseline, and target	**Status**
5.2.1 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 Baseline (2015): 6 Target (2020): 11	***Partially achieved.*** In 2020, eight countries worked on agreements or new regulatory measures to evaluate new vaccines, diagnostic methods, and antimicrobial drugs, and included these measures in their health agendas.
Objective 5.3: Develop a mechanism for exchanging information and experts among government, private sector, academia, and industry	
Indicator, baseline, and target	**Status**
5.3.1 Available mechanism for the exchange of information and experiences between different sectors Baseline (2015): 0 Target (2020): 1	***Achieved.*** The Tripartite Alliance (PAHO-FAO-OIE) is working closely with seven countries to set up mechanisms for exchanging information and experiences between government, the private sector, academia, and industry *(21)*.

Lessons Learned

7. Member States have led major efforts to prevent and contain AMR in recent years. Political commitment, multisectoral coordination and integration, and evidence-informed interventions have been instrumental in their success. The Tripartite Alliance between PAHO, the Food and Agriculture Organization of the United Nations (FAO), and the World Organisation for Animal Health has played an important role in supporting innovative integration models that could be replicated in the Region. Horizontal technical cooperation has catalyzed advances in the AMR response. Despite progress, important challenges

remain to be addressed. These include the increase in resistant health care-associated infections in the context of the COVID-19 pandemic; the reduction in resources allocated to AMR; the uneven involvement of the human, animal, and environmental sectors in conducting holistic AMR action; and sensitivities related to the pharmaceutical industry and the food production sector.

Actions Needed to Improve the Situation

8. Considering the results and challenges described, the following actions are presented for the consideration of Member States:

a) Sustain progress on AMR through its continued prioritization on the political agenda, strong governance integrating all sectors under a One Health approach, and adequate human and financial resources for implementation and monitoring.

b) Integrate AMR-relevant activities into existing national health plans and plans of action for health security; universal health care and primary health care strategies; the UN Sustainable Development Cooperation Framework; and national plans on HIV, TB, malaria, sexually transmitted infections, and food safety, among others.

c) Enforce regulations for the dispensing of antimicrobials only by prescription, implement local antimicrobial stewardship programs, and continue monitoring the use and consumption of antimicrobials in humans and animals.

d) Leverage surveillance data to estimate AMR burden and integrate the monitoring of AMR and antimicrobial use/consumption across sectors under a One Health approach in order to strengthen evidence-based AMR policy and interventions.

e) Pay urgent attention to improving the prevention and control of health care-associated infections in the context of COVID-19 and respond to emerging AMR of public health importance. This includes the spread of carbapenemase-producing pathogens, the emergence of novel AMR mechanisms, significant increases in resistant Gram-negative bacilli, emergence of pathogens such as *Candida auris* or unusual increases of such pathogens in COVID-19 patients, resistance to new drugs such as ceftazidime-avibactam, and excessive increases in resistance to colistin.

f) Assess the impact of high antimicrobial use during the COVID-19 pandemic on human health, the environment, animal health, and food production.

g) Sustain the current momentum toward improved public knowledge regarding infection prevention and control through continuous education and targeted interventions for behavior change to improve antimicrobial stewardship.

h) Prioritize and monitor the progress of the One Health approach to AMR, including integrated surveillance in humans, animals, and the environment, and monitoring of regulation and use of antimicrobials across sectors *(22, 23)*.

9. With support from PASB, Member States should make investments to ensure universal access to new diagnostic methods for testing drug susceptibility, including molecular techniques. Regarding tuberculosis, Member States should continue working on testing and improving routine surveillance for drug-resistant cases. In the area of HIV/AIDS, Member States should urgently address the emergence of resistance to antiretroviral medicines and align the HIV component of national AMR action plans with the new WHO Global Action Plan on HIV Drug Resistance *(24, 25)*. With respect to malaria, the decline in cases has made it more difficult to carry out therapeutic efficacy studies (TES), the gold standard methodology for evaluating the efficacy of antimalarial drugs. In light of this situation, Member States are urged to continue monitoring the efficacy and resistance of antimalarials using molecular markers and TESs where possible *(17)*.

Action by the Directing Council

10. The Directing Council is invited to take note of this report and provide any comments it deems pertinent.

References

1. Pan American Health Organization. Plan of action on antimicrobial resistance 2015-2020 [Internet]. 54th Directing Council of PAHO, 67th Session of the Regional Committee of WHO for the Americas; 2015 Sep 28-Oct 2; Washington, DC. Washington, DC: PAHO; 2015 (Document CD54/12, Rev. 1) [cited 2021 April 21]. Available from: http://www.paho.org/hq/index.php?option=com_docman&task=doc_download&gid=31280&Itemid=270&lang=en.

2. Pan American Health Organization. Plan of action on antimicrobial resistance 2015-2020 [Internet]. 54th Directing Council of PAHO, 67th Session of the Regional Committee of WHO for the Americas; 2015 Sep 28-Oct 2; Washington, DC. Washington, DC: PAHO; 2015 (Resolution CD54.R15) [cited 2021 April 21]. Available from: http://www.paho.org/hq/index.php?option=com_docman&task=doc_download&gid=31943&Itemid=270&lang=enPan American Health Organization.

3. World Health Organization. Global action plan on antimicrobial resistance [Internet]. Geneva: WHO; 2015 [cited 2021 April 21]. Available from: http://www.who.int/antimicrobial-resistance/publications/global-action-plan/en/.

4. Review on Antimicrobial Resistance. Tackling drug-resistant infections globally: final report and recommendations [Internet]. London: Review on Antimicrobial Resistance; 2016 [cited 2021 April 21]. Available from: https://amr-review.org/sites/default/files/160525_Final%20paper_with%20cover.pdf.

5. World Bank Group. Drug-resistant infections: a threat to our economic future [Internet]. Washington, DC: World Bank; 2017 [cited 2021 April 21]. Available from: http://documents.worldbank.org/curated/en/323311493396993758/pdf/114679-REVISED-v2-Drug-Resistant-Infections-Final-Report.pdf.

6. United Nations. Political Declaration of the High-level Meeting of the General Assembly on Antimicrobial Resistance [Internet]. 71st Session of the General Assembly of the United Nations; 2016 Oct 5; New York. New York: UN; 2016 (Resolution A/RES/71/3) [cited 2021 April 21]. Available from: http://www.who.int/antimicrobial-resistance/interagency-coordination-group/UNGA-AMR-RES-71-3-N1631065.pdf.

7. United Nations. No time to wait: securing the future from drug-resistant infections. Report to the Secretary-General of the United Nations. New York: UN; 2019. [cited 2021 April 21]. Available from: https://www.who.int/antimicrobial-resistance/interagency-coordination-group/final-report/en/.

8. United Nations. Political Declaration of the High-level Meeting on Universal Health Coverage [Internet]. 74th Session of the General Assembly of the United Nations; 2019 Oct 10; New York. New York: UN; 2019 (Resolution A/RES/74/2) [cited 2021 April 21]. Available from: https://undocs.org/en/A/RES/74/2.

9. World Health Organization, Food and Agriculture Organization of the United Nations, and World Organisation for Animal Health. Global database for tripartite antimicrobial resistance: country self-assessment survey [cited 2020 Mar 13]. Available from: https://amrcountryprogress.org/.

10. Corso A, Guerriero L, Pasterán F, Ceriana P, Callejo R, Prieto M, et al. Capacidad de los laboratorios nacionales de referencia en Latinoamérica para detectar mecanismos de resistencia emergentes. Rev Panam Salud Publica 2011;30(6):619–26. Available in Spanish from: https://www.paho.org/en/documents/pan-american-journal-public-health-special-issue-antimicrobial-resistance-vol-30-no-6-0.

11. Pan American Health Organization. Magnitude and trends of antimicrobial resistance in Latin America: ReLAVRA 2014, 2015, 2016. Summary report [Internet]. Washington, DC: PAHO; 2020 [cited 2020 April 16]. Available from: https://www.paho.org/en/documents/magnitude-and-trends-antimicrobial-resistance-latin-america-relavra-2014-2015-2016.

12. World Health Organization. Global Antimicrobial Resistance Surveillance System (GLASS) report: early implementation, 2020. Geneva: WHO; 2020 [cited 2020 March 13]. Available from: https://www.who.int/glass/resources/publications/early-implementation-report-2020/en/.

13. World Organisation for Animal Health (OIE). OIE annual report on antimicrobial agents intended for use in animals: better understanding of the global situation. Fourth report [Internet]. Paris: OIE; 2020 [cited 2021 March 13]. Available from: https://www.oie.int/fileadmin/Home/eng/Our_scientific_expertise/docs/pdf/A_Fourth_Annual_Report_AMU.pdf.

14. World Health Organization. Surveillance of HIV drug resistance in adults initiating antiretroviral therapy (pre-treatment HIV drug resistance). Concept note [Internet]. Geneva: WHO; 2014 [cited 2021 April 21]. Available from: http://www.who.int/hiv/pub/drugresistance/pretreatment_drugresistance/en/.

15. World Health Organization. Surveillance of HIV drug resistance in adults receiving ART (acquired HIV drug resistance). Concept note [Internet]. Geneva: WHO; 2014 [cited 2021 April 21]. Available from: http://www.who.int/hiv/pub/drugresistance/acquired_drugresistance/en/.

16. World Health Organization. Global tuberculosis report, 2020 [Internet]. Geneva: WHO; 2020 [cited 2020 Mar 13]. Available from: https://apps.who.int/iris/bitstream/handle/10665/336069/9789240013131-eng.pdf.

17. World Health Organization. World malaria report, 2020 [Internet]. Geneva: WHO; 2020 [cited 2020 Mar 13]. Available from: https://www.who.int/publications/i/item/9789240015791.

18. Pan American Health Organization. Rapid evaluation guide for hospital programs for prevention and control of nosocomial infections [Internet]. Washington, DC: PAHO; 2011 [cited 2021 April 21]. Available from: https://www.paho.org/hq/dmdocuments/2011/HAI-Evaluation-guide-2011-ENG.pdf.

19. World Health Organization. Guidelines and core components of infection prevention and control programmes at the national and acute health care facility level [Internet]. Geneva: WHO; 2016 [cited 2021 April 21]. Available from: https://www.who.int/gpsc/ipc-components-guidelines/en/.

20. World Health Organization. Interim practical manual: supporting national implementation of the WHO guidelines on core components of infection prevention and control programmes. Geneva: WHO; 2017 [cited 2021 April 21]. Available from: https://apps.who.int/iris/handle/10665/330073.

21. Pan American Health Organization. Working together to fight antimicrobial resistance [Internet]. Washington, DC: PAHO; 2020 [cited 2020 Mar 13]. Available from: https://www.paho.org/en/together-fight-antimicrobial-resistance.

22. World Health Organization. Integrated surveillance of antimicrobial resistance in foodborne bacteria: application of a One Health approach [Internet]. Geneva: WHO; 2017 [cited 2021 April 21]. Available from: http://www.who.int/foodsafety/publications/agisar_guidance2017/en/.

23. World Health Organization. WHO guidelines on use of medically important antimicrobials in food-producing animals [Internet]. Geneva: WHO; 2017 [cited 2021 April 21]. Available from: http://www.who.int/foodsafety/publications/cia_guidelines/en/.

24. World Health Organization. HIV drug resistance report 2017 [Internet]. Geneva: WHO; 2017 [cited 2021 April 21]. Available from: http://www.who.int/hiv/pub/drugresistance/hivdr-report-2017/en/.

25. World Health Organization. Global action plan on HIV drug resistance 2017-2021 [Internet]. Geneva: WHO; 2017 [cited 2021 April 21]. Available from: http://www.who.int/hiv/pub/drugresistance/hivdr-action-plan-2017-2021/en/.

- - -