
PLAN OF ACTION FOR THE SUSTAINABILITY OF MEASLES, RUBELLA, AND CONGENITAL RUBELLA SYNDROME ELIMINATION IN THE AMERICAS 2018-2023: FINAL REPORT**Background**

1. The purpose of this document is to present the final report on the Plan of Action for the Sustainability of Measles, Rubella and Congenital Rubella Syndrome Elimination in the Americas 2018–2023 (Document CSP29/8) (1), adopted in 2017 by the 29th Pan American Sanitary Conference through Resolution CSP29.R11 (2), to the Governing Bodies of the Pan American Health Organization (PAHO). This plan of action was adopted in order for Member States to take necessary steps to ensure the sustainability of eliminating the aforementioned diseases. In 2019 and 2021, PAHO obtained progress reports to evaluate achievement of the indicators and targets of the four strategic lines of action (3, 4).
2. To date, the Region of the Americas has been the only region worldwide to achieve elimination of measles, rubella, and congenital rubella syndrome (CRS). Elimination of the endemic measles and rubella viruses was verified by an international committee of experts after a long verification process in all countries and territories of the Region between 2011 and 2016. The first achievement was the region-wide elimination of rubella and CRS, verified in April 2015. The last endemic case of rubella was reported by Argentina in 2009, and the last endemic case of CRS by Brazil that same year. The second achievement was measles elimination, verified in September 2016 (4).
3. The Region then lost its measles-free status in 2018, as endemic transmission was re-established in the Bolivarian Republic of Venezuela (and in Brazil the following year) due to sustained circulation of the same genotype of the measles virus for more than 12 months in each country (5). A further 16 countries reported measles outbreaks between 2018 and 2023 amid other challenges, such as the COVID-19 pandemic.

Between 2018 and 2023, the Region reported a total of 49 187 confirmed cases of measles in 18 countries as a result of virus importation from other regions of the world. The last endemic case of measles during this period was reported by Brazil in July 2022.

Analysis of Progress Achieved

4. In November 2023, during the annual meeting of the Regional Commission for Monitoring and Reverification of Measles, Rubella, and Congenital Rubella Syndrome Elimination determined that: *a)* no country in the Region has endemic circulation of the measles or rubella viruses; *b)* Brazil is pending reverification of measles elimination; *c)* the Bolivarian Republic of Venezuela has been reverified as measles-free; and *d)* four countries have been classified as undetermined because of insufficient data

to reverify them as free of measles, rubella, and CRS. All countries and territories have maintained rubella and CRS elimination since the date of regional verification in April 2015, except for the 4 countries classified as undetermined pending verification.

5. This report has been organized in accordance with the 4 strategic lines of action set forth in the plan of action and evaluates the extent to which the targets of its 12 indicators have been achieved. Overall, 5 targets were achieved, 1 partially achieved, and 6 were not achieved due to the negative impact of the COVID-19 pandemic on vaccination coverage and epidemiological surveillance indicators. Assessment of the indicators follows the criteria for rating outcome and output indicators 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) (6).

Strategic line of action 1: Guarantee universal access to measles and rubella vaccination services for the population targeted in the routine vaccination program and other at-risk age groups

6. Between 2020 and 2023, the COVID-19 pandemic had a negative impact on regional vaccination coverage. Of the 35 Member States, only 14 achieved 95% coverage or higher with the first dose of the measles, mumps, and rubella vaccine in 2018; 16 in 2019; 8 in 2020; 6 in 2021; and 9 in 2022. For the second dose, 9 countries achieved 95% coverage or higher in 2018; 9 again in 2019; 5 in 2020; 2 in 2021; and 5 in 2022.

7. At the time of writing, official vaccination data for 2023 are not available, and will not be available until August 2024. Therefore, achievement of the targets of the first 4 indicators of this strategic line of action will be evaluated against 2022 data. Final data will be presented to the 61st Directing Council.

Objective 1.1: Achieve at least 95% vaccination coverage in children under 5 in order to achieve high immunity in the general population	
Indicator, baseline, and target	Status
<p>1.1.1 Number of countries reporting 95% coverage or higher at the national level with the first dose of MMR vaccine</p> <p>Baseline (2015): 20/35 countries^a Target (2023): 30/35 countries^b</p>	<p>Not achieved. In 2022, 9 countries reported 95% coverage or higher.</p>
<p>1.1.2 Number of countries reporting 95% coverage or higher with the first dose of MMR vaccine in at least 80% of municipalities (or equivalent political division)</p> <p>Baseline (2015): 15/35 countries^a Target (2023): 25/35 countries^b</p>	<p>Not achieved. In 2022, 2 countries reported 95% coverage or higher in at least 80% of municipalities. Six countries did not report this indicator in their joint reports to the World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF).</p>

Objective 1.1: Achieve at least 95% vaccination coverage in children under 5 in order to achieve high immunity in the general population	
Indicator, baseline, and target	Status
<p>1.1.3 Number of countries reporting 95% coverage or higher at the national level with the second dose of MMR vaccine</p> <p>Baseline (2015): 6/30 countries^a Target (2023): 15/30 countries^b</p>	<p>Not achieved. In 2022, 5 countries reported 95% coverage or higher.</p>
<p>1.1.4 Number of countries reporting 95% coverage or higher with the second dose of MMR vaccine in at least 80% of municipalities (or equivalent political division)</p> <p>Baseline (2015): 4/30 countries^a Target (2023): 12/30 countries^b</p>	<p>Not achieved. In 2022, 1 country reported 95% coverage or higher and 6 countries did not report this indicator in their joint reports to WHO and UNICEF.</p>
<p>1.1.5 Number and proportion of countries that conduct follow-up campaigns and achieve at least 95% of the national target</p> <p>Baseline (2015–2016): 4/6 countries (66%) Target: 80%^c</p>	<p>Not achieved. Between 2018 and 2023, 16 countries conducted follow-up campaigns, of which 50% reached the goal of achieving at least 95% of the national target.</p>

^a When the plan of action was drafted in 2017, only 30 countries included the second dose of MMR vaccine in their national vaccination schedules.

^b Currently, all 35 Member States have added the second dose of MMR vaccine to their national immunization schedules.

^c The number of countries that reach the target will be determined by how many implement campaigns between 2018 and 2023. The objective is for at least 80% of countries to achieve the 95% national target.

Strategic line of action 2: Strengthen the capacity of epidemiological surveillance systems for measles, rubella, and congenital rubella syndrome

8. The COVID-19 pandemic significantly affected the reporting of suspected cases, and surveillance systems have yet to be restored in half of the countries. This is due, among other causes, to the lack of human resources available to carry out surveillance activities, given that during the COVID-19 pandemic they were reassigned to implementing mitigation measures. In countries that had active measles outbreaks in 2020, the number of cases declined, possibly because physical distancing measures prevented circulation of the virus. Subsequently, in 2022 and 2023, the Region met the expected reporting rate of 2 per 100 000 population and, at the subregional level, an increase in the number of countries achieving this indicator has been observed since 2023.

Objective 2.1: Monitor the quality and sensitivity of epidemiological surveillance of measles, rubella, and congenital rubella syndrome	
Indicator, baseline, and target	Status
<p>2.1.1 Number of countries that meet the established minimum annual rate of suspected measles/rubella cases (at least 2 per 100 000 population) plus at least three of the following five additional indicators:</p> <p>1) At least 80% of suspected cases are adequately investigated. 2) Adequate serum samples are obtained from at least 80% of suspected cases. 3) At least 80% of samples reach the laboratory within five days. 4) At least 80% of laboratory results are reported within four days. 5) The annual rate of suspected cases of congenital rubella syndrome is at least 1 per 10 000 live births.</p> <p>Baseline: 6/33^a Target: 15/33</p>	<p>Partially achieved. A total of 9 countries met the established minimum annual rate of at least 2 suspected measles or rubella cases per 100 000 population and met at least 3 of the other 5 indicators.^b</p>
<p>2.1.2 Number of countries with an active surveillance system for congenital rubella syndrome</p> <p>Baseline (2015): 12/33^a Target (2023): 20/33</p>	<p>Not achieved. A total of 8 countries reported suspected cases of CRS to PAHO annually, with rates between 0.5 and 1 per 10 000 live births (in the context of an expected rate of at least 1 suspected case of CRS per 10 000 live births).^b</p>

^a Only 33 countries report suspected cases of measles, rubella, and CRS to PAHO.

^b Data up to epidemiological week 52 of 2023.

Strategic line of action 3: Develop national operational capacity to maintain measles and rubella elimination

9. Starting 2021, national elimination sustainability committees were established to monitor operational plans and collect evidence on the development of national operational capacity. These committees have endorsed and submitted their countries' reports to the Regional Commission for Monitoring and Reverification of Measles and Rubella Elimination, so that, as of 2023, a total of 23 countries were in compliance with this indicator. Only one country did not submit its report in 2023.

Objective 3.1: Implement and monitor plans to ensure the sustainability of elimination by strengthening national response capacity in the event of imported cases of measles, rubella, or congenital rubella syndrome	
Indicator, baseline, and target	Status
<p>3.1.1 Number of national committees that monitor the plans of sustainability of measles and rubella elimination</p> <p>Baseline (2016): 24^a Target: 24^a</p>	<p>Achieved. As of 2023, a total of 24 national committees had been created in response to the mandate of establishing national measles and rubella elimination sustainability committees starting 2021.</p>

Objective 3.1: Implement and monitor plans to ensure the sustainability of elimination by strengthening national response capacity in the event of imported cases of measles, rubella, or congenital rubella syndrome	
Indicator, baseline, and target	Status
<p>3.1.2 Number of countries that present annual reports on the implementation of their plans to ensure the sustainability of measles and rubella elimination</p> <p>Baseline (2015): 35 Target (2023): 35</p>	<p>Achieved.^b In 2023, in response to the mandate of presenting annual reports on the sustainability of their elimination of measles and rubella starting 2021, 34 out of 35 countries^c submitted their annual reports.</p>

^a There are 24 national committees: one each for 23 countries and one subregional committee for the English-speaking Caribbean.

^b Since the adoption of this plan of action and in accordance with the progress report presented in 2021, the baseline for this indicator has been adjusted down.

^c The number of countries required to submit annual sustainability reports is all 35 Member States. However, the 12 Member States of the English-speaking Caribbean plus Suriname consolidate their annual reports into a single subregional report.

Strategic line of action 4: Establish standard mechanisms for rapid response to imported cases of measles, rubella, and congenital rubella syndrome in order to prevent the reestablishment of endemic transmission in the countries

11. Between 1 January 2018 and 31 December 2023, the Region of the Americas reported a total of 49 187 confirmed cases of measles in 18 countries. All actively responded with their own rapid response teams and financial and human resources to face the challenges involved in controlling their outbreaks, and the Pan American Sanitary Bureau maintained technical cooperation with Member States to strengthen national rapid response capacities for measles outbreaks.

12. In so doing, 16 of the 18 countries that experienced measles outbreaks were able to halt transmission of the virus before 12 months and thus maintain measles-free status. One of the other two countries achieved this in 2023. All countries have achieved and maintained verification of rubella and CRS elimination, except for the 4 countries classified as undetermined pending verification.

Objective 4.1: Establish plans and rapid response teams in the countries to deal with imported cases of measles, rubella, and congenital rubella syndrome in order to prevent the reestablishment of endemic transmission	
Indicator, baseline, and target	Status
<p>4.1.1 Number of countries and territories in which endemic transmission of measles or rubella virus has been reestablished</p> <p>Baseline (2016): 0/47^a Goal: 0/47^a</p>	<p>Achieved. All 18 countries that had measles outbreaks during the implementation of the plan of action (between 2018 and 2023) succeeded in stopping transmission of the measles virus.</p> <p>Venezuela and Brazil halted endemic transmission of the measles virus in 2019 and 2022, respectively. The Commission reverified Venezuela as measles-free and has accepted evidence of interruption of endemic virus circulation in Brazil, which remains pending reverification as it moves to comply with other recommendations.</p>

Objective 4.1: Establish plans and rapid response teams in the countries to deal with imported cases of measles, rubella, and congenital rubella syndrome in order to prevent the reestablishment of endemic transmission	
Indicator, baseline, and target	Status
<p>4.1.2 Percentage of countries and territories with measles or rubella outbreaks that have a rapid response team trained to prevent the spread of transmission of the viruses that cause these diseases</p> <p>Baseline: 100% Target: 100%</p>	<p>Achieved. All countries deployed rapid response teams to stop their measles outbreaks.</p> <p>PAHO supports the training of these rapid response teams with two self-learning courses available to all health personnel in the Region via its Virtual Campus for Public Health platform. It also provides technical cooperation to support the response to outbreaks of these diseases.</p>
<p>4.1.3 Percentage of countries and territories with measles or rubella outbreaks that have a rapid response plan for dealing with imported cases</p> <p>Baseline: 100% Target: 100%</p>	<p>Achieved. All countries with measles outbreaks between 2019 and 2022 implemented an outbreak rapid response plan; endemic transmission was halted in 2 countries and the resumption of transmission was prevented in 16 countries that had outbreaks due to imported or import-associated cases.</p>

^a There are 47 countries and territories (35 countries and 12 territories) in the geographic area covered by the Region of the Americas and all of them must remain free from measles and rubella in order to maintain their elimination status.

Lessons Learned

13. The negative impact of the COVID-19 pandemic on the routine activities of national immunization programs from 2020 onwards severely affected vaccination coverage and epidemiological surveillance indicators, which in turn had an impact on compliance with the indicators of two of the strategic lines of the plan of action. The sustainability of measles and rubella elimination in the Region was achieved during the reporting period thanks to the political commitment of the ministers of health of the Region, who prioritized this issue in their public health agendas. However, the epidemiological context of these diseases between 2021 and 2023 was characterized by geometric growth of cases worldwide (2021: 59,619; 2022: 171,153; 2023: 321,582), which jeopardizes the sustainability of elimination in our Region unless additional financial resources are invested in implementing operations to strengthen vaccination, high-quality epidemiological surveillance, and risk analysis; support laboratory networks; and prepare for a rapid response to measles and rubella outbreaks.

Action Needed to Improve the Situation

14. In light of the advances and challenges described in the present report, the following actions and recommendations for the future are presented for consideration by the Member States:

- a) Increase financial investment to implement three specific actions to sustain measles and rubella elimination in each country: increase vaccination coverage, increase the quality of epidemiological surveillance of measles and rubella, and prepare for rapid response to outbreaks of imported cases from other regions of the world.

- b) Implement the technical recommendations of external advisory bodies, such as the Regional Commission for Monitoring and Reverification of Measles, Rubella, and Congenital Rubella Syndrome Elimination.
- c) Implement follow-up national immunization campaigns every four years or whenever the number of susceptible children reaches the size of a cohort of newborns in the country.
- d) Apply the risk analysis tool to identify high-risk municipalities and design more effective local strategies in which vaccination, surveillance, and training are integrated into rapid response to sustain elimination.
- e) Maintain high-quality epidemiological surveillance, achieving the established rate for suspected case reporting and at least three of the five indicators for rapid detection of imported cases.
- f) Strengthen the capacity of the measles and rubella laboratory network for serological diagnosis and viral detection capabilities that ensure the highest possible diagnostic sensitivity and specificity.
- g) Continue verifying elimination annually, as well as presenting national elimination sustainability plans and reports to the Regional Commission for Monitoring and Reverification of Measles, Rubella, and Congenital Rubella Syndrome Elimination, with a view to reverifying the Region as free of endemic circulation of these viruses.
- h) Implement the policy on Reinvigorating Immunization as a Public Good for Universal Health (Document CD59/10) (8), adopted by the 59th Directing Council of PAHO in 2021 (Resolution CD59.R13) (9), which sets out PAHO's approach and a strategic framework for reinvigorating immunization programs in the Region in order to achieve increased funding for the operational activities of national immunization programs and thus expand human resources, logistics, procurement of vaccines and supplies, and cold-chain infrastructure.
- i) Integrate microplanning into national immunization programs as a tool to increase efficiency and to focus routine and intensified immunization activities, such as national follow-up vaccination campaigns.
- j) Strengthen vaccination activities by lowering the age of the second dose of the MMR vaccine to 15 or 18 months so that it is administered simultaneously with the first booster dose of the DTP vaccine in order to reduce the dropout rate between the first and second doses of the vaccine as much as possible and to ensure that every child in the Region can be protected in a timely manner.
- k) Improve information systems so that efficient, timely, and nominal vaccination records with complete and standardized data are available, as well as modern tools for geolocation and more efficient planning of immunization operations.

Action by the Executive Committee

15. The Executive Committee is invited to take note of this report and make any comments it deems pertinent.

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