The third annual meeting of the Regional Monitoring and Re-verification Commission for Measles, Rubella, and Congenital Rubella Syndrome Elimination (the Regional Commission) was held from 14 to 16 November in Brasília, Brazil.

The objectives of the meeting were to:

1. Conduct a comprehensive review of annual country reports for the period 2021–2023 in order to monitor and re-verify measles, rubella, and congenital rubella syndrome (CRS) elimination in the Americas.
2. Prepare specific recommendations following annual reviews of the national reports, noting compliance with the Regional Commission’s previous recommendations.
3. Continue political advocacy at the highest level to maintain measles and rubella elimination in the Region.

PAHO’s Technical Advisory Group (TAG) on Vaccine-preventable Diseases provides regional recommendations on dengue and respiratory syncytial virus vaccines and issues a statement on the ongoing COVID-19 vaccination efforts

[This article was originally published on the PAHO website, available from: https://www.paho.org/en/news/11-1-2024-paho-technical-advisory-group-tag-immunization-provides-regional-recommendations].

The Technical Advisory Group (TAG) on Vaccine-preventable Diseases of the Pan American Health Organization (PAHO) held its XI ad hoc virtual meeting on 21 November 2023 to consider the evidence on the safety and efficacy of the tetravalent live-attenuated dengue vaccine developed by Takeda (TAK-003®) as well as the safety and efficacy of the maternal RSVPreF vaccine (Abrysvo®) for the prevention of respiratory syncytial virus (RSV) and associated disease in infants.

> Continue on page 3...
Virtually all the countries and territories that submitted annual reports to the Regional Commission for the 2021–2023 period participated in the meeting. As a result of this process of providing evidence to support elimination, a three-day discussion was held, with virtual interactions between the presidents of the national elimination sustainability committees and the ministries of health. An in-person meeting was held with the presidents of the sustainability committees and managers of epidemiological surveillance, laboratories, and immunization in Brazil and the Bolivarian Republic of Venezuela, the two countries with reestablished endemic transmission of measles in 2018 and 2019, respectively. At the end of the meeting, the Regional Commission placed the countries in five categories:

1. **Verified**: Countries that have consistently maintained measles and rubella elimination.
2. **Endemic**: Countries where the measles or rubella virus (same genotype and lineage) has circulated for a period of 12 months or more.
3. **Pending re-verification**: Countries that have interrupted endemic transmission of the measles or rubella virus, but with insufficient data to be re-verified as free of measles or rubella.
4. **Re-verified**: Countries that lost their measles- or rubella-free status and were re-verified.
5. **Undetermined**: Countries with insufficient data and/or data quality issues that hindered confirmation of whether they have maintained or lost verification of elimination at the national level. This definition is under review by the Commission to make it more explicit. It will be updated after the publication of this newsletter.

At the end of the meeting, the countries received the Commission’s main conclusions and recommendations. The Commission classified the countries, using the categories defined above:

- **Verified**: It was verified that Argentina, Bolivia (Plurinational State of), Canada, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, the English-speaking Caribbean, the French Overseas Departments, Ecuador, El Salvador, Guatemala, Mexico, Nicaragua, Paraguay, United States of America, and Uruguay maintained measles and rubella elimination.

- **Pending re-verification**: After a detailed analysis of the country reports, the Commission recognized that Brazil has achieved significant recovery through its “Health with Science” initiative. No endemic measles cases have been reported for more than a year (date of rash onset in last case was 5 June 2022), and coverage and reporting rates have improved. However, vaccination coverage is not homogeneous, and coverage and surveillance objectives have not been achieved. The country sustained rubella and CRS elimination.

- **Re-verified**: The Commission recognizes the enormous efforts made by the Bolivarian Republic of Venezuela to interrupt endemic transmission of the measles virus (date of rash onset in last endemic case was 11 August 2019). This re-verification is based on efforts toward sustainability, reflected in a significant reduction in silent municipalities, intense active case searches, adequate investigation, a follow-up campaign with 88% coverage, and budget allocations for vaccination. However, concerns remain about specific surveillance targets and suboptimal CRS reporting rates in 2022.

- **Undetermined**: The four countries classified as undetermined are Haiti, Honduras, Panama, and Peru. Although no confirmed cases of measles, rubella, or CRS have been documented, the data provided by these countries are insufficient for the Commission to make a conclusive evidence-based decision.
Recommendations

In general, the Commission supported the conclusions of the respective countries. The Commission recommended visits to Brazil, Venezuela (Bolivarian Republic of), Honduras, Panama, and Peru in 2024 to address general issues of concern. It was also strongly recommended that Argentina, Paraguay, and the French Overseas Departments make considerable efforts to address deficiencies in population immunity and surveillance.

Another recommendation is to use the sensitive case definition of fever and maculopapular rash, as recommended by the PAHO Technical Advisory Group (TAG) on Vaccine-preventable Diseases. Countries were urged to lower the age for the second dose of the measles, mumps, and rubella (MMR) vaccine to 18 months or when the first diphtheria, tetanus, and pertussis booster (DTaP) is given. Countries that carry out mass vaccination campaigns must achieve 95% of the target in at least 80% of their municipalities, or conduct documented mop-up interventions and rapid vaccination monitoring activities in municipalities with the worst results in 2023.

PAHO is committed to supporting all countries in the use of tools for risk analysis, micro-planning, high-quality vaccination campaigns, strengthening the regular program, strengthening epidemiological surveillance, and preparing a rapid response to outbreaks of measles, rubella, and CRS.

Contributors: Desirée Pastor, Gloria Rey-Benito, Pamela Bravo, Alvaro Whittembury, Regina Duron, and Daniel Salas, PAHO/CIM.
Session 2: Maternal vaccine against respiratory syncytial virus (RSV)

- Globally, RSV is the most common cause of pneumonia and bronchiolitis in infants. It is also the leading cause of hospitalizations and deaths in the first six months of life. In the Americas, most RSV-associated hospitalizations are reported among children younger than 5 years, especially in infants younger than 6 months.
- At this time, the maternal RSVPreF vaccine (Abrysvo®) for the prevention of RSV-associated disease in infants produced by Pfizer is the only vaccine on the market with approval from the U.S. Food and Drug Administration (FDA) and the European Medicines Agency (EMA) for use in pregnant women.
- In clinical trials, the maternal vaccine has been shown to be effective at preventing severe RSV-associated disease in infants from birth through 6 months of age. In addition, the vaccine demonstrated a favorable safety profile for both mother and infant. In the clinical trial, an excess of preterm births was observed in the vaccinated group versus placebo, although the difference was not statistically significant.
- Currently, there are considerable information gaps related to the effectiveness, impact, and cost-effectiveness of this vaccine.
- If any country or territory of Latin America or the Caribbean elects to introduce the maternal RSVPreF vaccine, PAHO recommends its use in pregnant women at 32–36 weeks of gestation to prevent RSV disease in infants while minimizing the risk of preterm birth.

Session 3: Statement from the TAG on the COVID-19 vaccination efforts in the Americas

- Since March 2020, the Americas have reported 193 million confirmed cases of COVID-19 and 2.97 million deaths – making it the region with the highest case fatality rate in the world.
- To date, the countries and territories in the Americas have administered more than 2.1 billion doses of vaccine against COVID-19. Despite this effort, only 71.3% of the population in Latin America and the Caribbean have been fully vaccinated against this disease, with differences in coverage across countries and risk groups.
- After four years of the pandemic, most people in the world have some immunity against the SARS-CoV-2 virus through infection, vaccination, or both. In addition, significant reductions in severe disease and death related to SARS-CoV-2 have been observed across all age groups.
- At this stage of the pandemic, the benefits of a two-dose primary vaccination series have become limited. Countries can reduce their morbidity and mortality rates by ensuring that all persons receive at least one dose of the COVID-19 vaccine.
- PAHO and the TAG reiterated the recommendations of the WHO SAGE regarding the need to strengthen and maintain vaccination activities against COVID-19 – especially for high-risk priority groups (i.e., older adults, pregnant women, persons with comorbidities, immunocompromised persons, and health workers).

Charting the path forward: reflections on PAHO’s Communicable Diseases Elimination Initiative and future directions

In 2019, building upon regional communicable disease elimination successes, the PAHO Directing Council approved the “Elimination Initiative” (EI). This initiative seeks to eliminate over 30 communicable diseases and related conditions in the Americas by 2030 (Figure 1). The targeted diseases, including vaccine-preventable, neglected infectious, waterborne, foodborne, vector-borne, sexually transmitted, and zoonotic diseases, as well as tuberculosis, cervical cancer, and epidemic meningitis, significantly impact public health and population well-being. They are considered scientifically and technically feasible to eliminate. These diseases predominantly affect vulnerable, marginalized, or underserved populations, encompassing women and girls, Indigenous communities, Afro-descendants, rural populations, lesbian, gay, bisexual, transgender, queer, and intersex (LGBTQI+) persons, migrants, prisoners, and other stigmatized groups. Furthermore, the EI aims to eliminate open defecation and the use of polluting biomass cooking fuels.

This innovative and forward-looking initiative prioritizes four essential pillars to achieve the elimination targets:

1. Strengthening health systems;
2. Enhancing information and surveillance systems;
3. Addressing environmental and social determinants of health;
4. Increasing financial resources and governance.
In the Americas, among the 30 diseases prioritized under the EI, 11 currently have vaccines to prevent them. The Americas have consistently demonstrated the transformative potential of vaccination in the fight against diseases. From becoming the first region in the world to eliminate the transmission of smallpox in 1971 (eradicated in 1980) and polio in 1994, to extending the elimination to other diseases, such as endemic measles, rubella, and congenital rubella syndrome in subsequent years, it has shown what can be achieved when nations unite for common health objectives. Vaccination has also played a pivotal role in advancing regional progress toward eliminating hepatitis B, controlling yellow fever outbreaks, and mitigating the impact of the COVID-19 pandemic. It is currently a key tool in the strategy for eliminating cervical cancer as a public health problem.

These achievements owe their realization to the tireless work of numerous healthcare workers who have served as the cornerstone of vaccination efforts in the Americas. Their unwavering commitment extends beyond vaccine administration, encompassing pivotal roles in community education, dispelling myths, and fostering trust in medical science. Often working in resource-scarce and challenging conditions, they navigate difficult terrain, face multiple barriers, and take risks to ensure that even remote populations receive vaccination. Their standing as trusted figures within their communities is paramount. Without their dedication to public health, successful disease prevention and elimination of many diseases would be unattainable.

Malaria is among the mosquito-borne diseases proposed to be eliminated from all endemic countries in the Americas. Eliminating malaria in these countries depends on correcting basic gaps in access to diagnosis and treatment in rural contexts where efforts to strengthen primary care for malaria response could complement action to overcome challenges of vaccine-preventable and other neglected infectious diseases. It is worth noting that while a malaria vaccine has been recommended by WHO, it is primarily indicated in regions with notable mortality in children and moderate to high transmission rates specifically by Plasmodium falciparum.

A key strength of this initiative lies in its drive to integrate diverse disease approaches, envisioning how different strategies can work cohesively within existing or new frameworks. Integrated public health interventions within vaccination strategies in the Region have proved successful. For instance, introducing the hepatitis B birth dose in natal care settings significantly increased vaccination rates, contributing to achieving the elimination of mother-to-child transmission of this disease. Additionally, in Central and South American countries, the integration of deworming within immunization campaigns has protected children from vaccine-preventable diseases and from the devastating impact of soil-transmitted helminthiasis, which can lead to malnutrition and anemia.

Access to essential health products and medicines is critical for countries in the Americas to achieve the EI targets. PAHO’s Revolving Funds are mechanisms that facilitate the procurement of vaccines and corresponding supplies for immunization programs, essential medicines, medical supplies, and other health-related products. These ensure equitable access to vaccines and a broad range of pharmaceuticals and health commodities at competitive prices. The Revolving Funds are part of a larger technical cooperation package that supports countries’ efforts to achieve the EI targets.

The EI recognizes the pressing need to address social and environmental determinants of health to achieve the elimination targets. Health outcomes are not solely determined by biology; they are significantly shaped by the environment, lifestyle, socioeconomic conditions, and cultural contexts. Inequities in accessing and receiving quality prevention, diagnosis, and treatment for communicable diseases pose major obstacles to the 2030 elimination agenda.

An illustrative example of an intersectoral approach to addressing social determinants of health and inequities is Brazil’s recent establishment of the Interministerial Committee for the Elimination of Tuberculosis and Other Socially Determined Diseases. This initiative reflects a renewed political commitment to the health agenda, where various sectors collaborate to tackle the multifaceted factors influencing health, providing a more comprehensive solution. Within the framework of the EI, collaboration with other sectors, such as finance, education, welfare, and environment, among others, will be essential for developing national initiatives and ensuring the necessary resources.

Since the EI launch in 2019, countries in the Americas have made commendable progress in the elimination of communicable diseases, despite the devastating impact of the COVID-19 pandemic. Remarkably, this global crisis served as a catalyst, not just as a challenge. The pandemic amplified the importance of establishing more robust and resilient healthcare systems and sparked rapid advancements, some of which include the inception of novel technologies, and a pronounced shift toward community-based service delivery. Even during the COVID-19 pandemic, one country was certified for the elimination of mother-to-child transmission of HIV and congenital syphilis and another for the elimination of malaria.

The PAHO EI offers countries a distinct chance to address national public health priorities comprehensively and synergistically, capitalizing on health service innovations, digital technologies, and strategic information for decision-making. To advance the elimination agenda, essential steps include investing in the healthcare workforce and strengthening primary healthcare systems closely connected to communities.

The Americas have the potential to eliminate numerous communicable diseases in our lifetime, but this requires us to advocate for a future free from preventable communicable diseases. The EI offers a unique opportunity to shift public health strategies from program-specific and vertical approaches to a dynamic integration of services with people at the center. Effective collaboration at local, national, and regional levels is vital to achieving the goal of eliminating over 30 communicable diseases by 2030.
I envision a future where all countries in the Americas champion the health and well-being of their populations. The lessons learned from the COVID-19 pandemic, as well as from previous elimination experiences, present countries with an opportunity to leverage the Elimination Initiative and accelerate its pace. Other opportunities include the arsenal of vaccines, diagnostics, medicines, and other technologies available through PAHO, as well as the push for digital health and a deeper understanding of health inequalities and increased community engagement. I am convinced that the Region of the Americas is in a unique position to take the response to eliminating communicable diseases and related conditions to a new high, and that includes the elimination of as many as 30 of them by 2030.

Dr. Jarbas Barbosa da Silva Jr., PAHO Director

Vaccination is an indispensable tool for long-term success in sustaining the elimination of diseases and even eradicating some of them. Immunization has been, is, and will remain a fundamental pillar in the twenty-first century response to communicable diseases. The Expanded Program on Immunization is a key player in the EI's efforts.


Download the brochure from: [https://iris.paho.org/handle/10665.2/58143](https://iris.paho.org/handle/10665.2/58143).

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## Updated list of candidates for elimination by 2030

**Technically and scientifically feasible**

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<thead>
<tr>
<th>Elimination</th>
<th>Elimination of environmental determinants of health</th>
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<tr>
<td>Bacterial meningitis epidemics</td>
<td>Open defecation</td>
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<td>Cervical cancer</td>
<td>Polluting biomass cooking fuels</td>
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<td>Chagas disease</td>
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<td>Cholera</td>
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<td>Congenital Chagas</td>
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<td>Congenital syphilis</td>
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<td>Cystic echinococcosis/hydatidosis</td>
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<td>Fascioliasis</td>
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<td>Hepatitis B and C</td>
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<td>Hepatitis B, mother-to-child-transmission</td>
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<td>HIV, mother-to-child-transmission</td>
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<td>HIV/AIDS</td>
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<td>Human rabies transmitted by dogs</td>
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<td>Leprosy</td>
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<td>Lymphatic filariasis</td>
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<td>Onchocerciasis</td>
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<td>Plague</td>
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<td>Schistosomiasis</td>
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<td>Sexually transmitted infections</td>
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<td>Soil-transmitted helminthiasis</td>
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<td>Trachoma</td>
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<td>Tuberculosis</td>
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**Eradication**

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<td>Congenital rubella</td>
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<td>Measles</td>
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<td>Neonatal tetanus</td>
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<td>Poliomyelitis</td>
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<td>Rubella</td>
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<td>Yellow fever epidemics</td>
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**Figure 1. Diseases and conditions under consideration for elimination as of September 2023**

**Contributors:** Nathalie El Omeiri, Massimo Ghidinelli, Martha Saboya, Roberto Montoya, Natalia Toscano, Daniel Salas, Martha Velandia, Santiago Cornejo, and Sylvain Aldighieri, PAHO.
Toward the elimination of diseases associated with human papillomavirus infection in the French Caribbean: implementation of a mass vaccination campaign in schools since October 2023

Vaccination against human papillomavirus (HPV) infection was introduced into the French vaccination schedule in 2007 for girls and in 2021 for boys, with moderate participation in the French Caribbean. Vaccination coverage against HPV infection remains low compared to the target established by the French national cancer control strategy: 80% vaccination coverage of girls (aged 11–14 years) by 2023. In 2022, coverage in Guadeloupe and Martinique was estimated at 26.5% and 17.6%, respectively, in 15-year-old girls (2007 birth cohort) for a single dose of vaccine; and 19.3% and 12.1% in 16-year-old girls (2006 cohort) for the complete vaccination schedule. This level was insufficient to prevent the circulation of HPV. These figures were lower than those recorded at the national level (48.8% among 15-year-old girls [2007 cohort] for one dose of HPV vaccine and 42.4% among 16-year-old girls [2006 cohort] for the complete vaccination schedule). The situation is less favorable for boys in the 2007 cohort who have started the vaccination schedule: their vaccination coverage was 3.1% in Guadeloupe and 2.3% in Martinique for the same year (2022).


Given this situation and in view of the successes reported by countries that have implemented HPV vaccination in schools, a presidential initiative was announced on 28 February 2023, launching a mass vaccination campaign against HPV infection in all 5th-year students (approx. 12 years old) who volunteered and who had parental authorization, starting in the 2023/2024 school year.1 This campaign was among the measures put in place by the Ministry of Health to strengthen prevention.2

During the first phase of the HPV vaccination campaign (October to November 2023), the Gardasil-9-valent vaccine was offered to volunteer students in 5th-year classes in public and private schools. This school-based HPV vaccination campaign, which also contributes to vaccination catch-up in general, targeted 9460 students in the French Caribbean: 5050 in Guadeloupe, 3847 in Martinique, 82 in Saint Barthélemy, and 481 in Saint Martin. The prospective collection of administrative data on vaccination will make it possible to evaluate administrative vaccination coverage in schools.3

"You can also protect them against HPV cancers." "Is HPV vaccination really safe? Yes! More than 100 million children have already been vaccinated worldwide, and all studies confirm that the vaccine is safe." Source: INCa, Ministry of Health and Prevention. Available from: https://www.e-cancer.fr/Comprendre-prevenir-depister/Reduire-les-risques-de-cancer/Vaccination-contre-les-cancers-HPV.
To better estimate overall vaccination coverage, all French regions, including the French Caribbean, will be randomly sampled in a national survey in March–April 2024. The objective of the survey is to estimate HPV vaccination coverage in the target population after the school vaccination campaign and to assess parents’ satisfaction. The specific objectives of this survey are to:

- Collect parents’ opinions regarding the different aspects of the campaign (types of information, communication tools, logistics, organization of sessions) to determine their degree of satisfaction;
- Describe the reasons for not accepting the proposed vaccination;
- Evaluate overall vaccination coverage and the coverage gained through the campaign (single dose; or two doses if one dose has already been received) for all children in 5th year and those born in 2011, for comparison with estimates from databases;
- Describe the places where vaccination is carried out (school, attending physician);
- Evaluate the campaign’s capacity to reduce social and territorial inequalities in HPV vaccination coverage.

Multidisciplinary research has been carried out on a regional scale to identify the determinants of acceptance of HPV vaccination in the French Caribbean. More specifically, a survey to determine parents’ preferences regarding communications about HPV vaccination was distributed in Guadeloupe in June 2023. Based on the results of the survey, vaccination and communication methods can be adapted for the second phase of the national HPV vaccination campaign, which will take place in schools between April and June 2024.

Authors: Florelle Bradamantis, Regional Health Agency of Guadeloupe, Saint Martin and Saint Barthélemy; Frédérique Dorléans, Lucie Léon, Mathilde Melin, and Jacques Rosine, Public Health France, Antilles Unit; Julien Thiria, Regional Health Agency of Martinique.

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**Expanded Program on Immunization methodology and performance monitoring tool for the Region of the Americas**

**Introduction**

In the field of public health, evaluations focus on analyzing the performance and implementation of programs and interventions. Quantitative and qualitative methods are used to obtain information about the progress made toward objectives, activities, costs, products, and expected impact. Evaluation results are used to maintain or modify program operations.

Over more than four decades, the Immunization Program in the Region of the Americas has accumulated extensive experience, evaluating the Expanded Program on Immunization (EPI) of Member States under the coordination and technical guidance of the Pan American Health Organization (PAHO). However, regional coverage of tracer vaccines has decreased considerably over the past decade, significantly affected by the COVID-19 pandemic. Today, the Region of the Americas is the world region with the lowest vaccination coverage. The risk of outbreaks of vaccine-preventable diseases is at its highest point in the last 30 years. In this context, it is important to conduct good situation analyses and implement actions that help to efficiently and effectively improve EPI performance and vaccination coverage.

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**National EPI performance monitoring methodology**

This urgent situation requires a comprehensive review of the performance of national immunization programs in the Americas. As part of technical support to Member States, PAHO has developed a diagnostic tool to evaluate the performance of 13 components of the EPI. Its purpose is to help national counterparts self-evaluate the performance of these components, and to identify potential achievements, challenges, obstacles, and actions that could support the development and implementation of an action plan.

The methodology establishes an approach to the 13 components of the EPI: (1) Political priority; (2) Planning and programming; (3) Organization and coordination; (4) Epidemiological and laboratory surveillance; (5) Human resources and financial management; (6) Training and supervision; (7) Information system; (8) Cold chain; (9) Vaccine and supply delivery; (10) Evaluation and research; (11) Social communication and demand creation; (12) Safe vaccination; (13) Implementation.4

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Objectives

The main objective is to promote and strengthen the achievement of strategic objectives in the country toward the control and elimination of vaccine-preventable diseases.

The following specific objectives are proposed:

- Characterize the country based on EPI data from the last five years in order to understand the national context, persistent challenges, and existing gaps.
- Determine the level of performance of each of the 13 components of the EPI, using a standardized tool.
- Analyze the level of performance achieved in each component of the EPI, the reasons for each level, and the main short- and medium-term challenges that would lead to improvement.
- Develop a short- and medium-term action plan (e.g., 12 months) to revitalize the national EPI, improve the performance of each component process, integrate COVID-19 vaccination activities into regular programs, reduce existing immunization gaps in the population, and determine whether additional evaluation or support is required to support a specific component.

Analysis and discussion of the questions included in the tool will guide the development of actions for improvement, including PAHO’s cooperation and the development, management, implementation, and monitoring of short- and medium-term action plans.

Description of the national EPI performance monitoring tool

The national EPI performance monitoring tool was developed by regional advisors in PAHO’s Special Program on Comprehensive Immunization (CIM), after a detailed review and selection of questions from the instruments for the international evaluation of the EPI, the country-led COVID-19 Intra-action Review (IAR), the COVID-19 vaccine Post-Introduction Evaluation (mini-cPIE), other regional immunization program evaluations (EVM, DQS, digital health maturity assessments, etc.), and technical documents, and based on the team’s knowledge and experience.

After implementing a pilot test of the tool in Guatemala and Guyana, PAHO contracted the company Acasus\(^\text{1}\) to review and improve the validity, reliability, objectivity, completeness, and consistency of each item (by component and maturity level), and to incorporate the lessons learned in the two countries.

Currently, the tool includes 196 questions in a matrix that orders each item by EPI component and administrative level: national (109 questions), subnational (provincial, departmental, state, municipal, or district [67 questions]), local (health facilities [20 questions]), and COVID-19 vaccination operations.

Each item is also ranked on a maturity scale with five possible levels of performance:

1. **Initial:** Components are insufficient or not available.
2. **Managed:** The available components are incomplete, not up to date, or not used appropriately.
3. **Defined:** The available components are implemented as functional parts of a routine system. No biases or problems are observed.
4. **Quantitative managed:** All components are available, reliable, complete, and up to date. There are some known biases or problems that could be improved.
5. **Optimized:** All elements are available, reliable, complete, up to date, and implemented in a standardized and efficient manner.

Implementation procedures

Application of the methodology includes three phases covering all stages. The entire procedure should take between three and four months to implement:

**Phase 1. Preparation:**
- a. Establish working groups.
- b. Compile information through a documentary review of the national EPI over the past five years.
- c. Prepare a situation analysis to summarize the results of the documentary review.
- d. Adapt the monitoring tool to the context and structure of the country’s EPI.

**Phase 2. Planning:**
- a. Plan and coordinate self-assessments at the national, subnational, and local levels.
- b. Implement self-assessments at the national, subnational, and local levels.

**Phase 3. Follow-up:**
- a. Use the scores to summarize the current performance level of the 13 components of the EPI.
- b. Draft the final report.
- c. Develop the national action plan, which will describe operations for the next 12 months.
- d. Implement the action plan with the support of the PAHO country office.

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\(^1\) Acasus. [Homepage]. Baar, Switzerland: Acasus; c2024. Available from: [https://www.acasus.com/](https://www.acasus.com/).
Sentinel surveillance of rotavirus in children under 5 years of age in the Region of the Americas

Rotavirus (RTV) is a member of the reovirus family. It has a viral genome consisting of 11 segments of double-stranded RNA with a viral envelope made up of viral proteins 7 and 4, known as VP7 and VP4. VP7 is the basis of the G genotypes and VP4 is the basis of the P genotypes. The VP7 and VP4 proteins induce production of virus-neutralizing antibodies that are important for immunity. Rotavirus infection causes watery diarrhea and vomiting that can lead to dehydration, electrolyte disturbances, shock, and death if rehydration therapy is not provided. High rates of rotavirus infection in the pre-vaccine era and the attributable risk of severe acute diarrhea in children under 5 years of age made it necessary to seek effective early-life interventions to reduce the burden of severe RTV gastroenteritis. These include the introduction of RTV vaccines along with other preventive and protective measures.

Next steps

PAHO offers technical and financial support to the countries of the Region in this self-assessment exercise. The Organization provides materials and tools, supported by regional and country advisors and PAHO international consultants.

Countries of the Region can access the materials for the national EPI methodology and performance monitoring tool in the four official languages on the CIM website.

Contributors: Margherita Ghiselli and Martha Velandia, PAHO/CIM.

Two key groups will be formed to manage and organize the implementation of the national EPI performance monitoring tool:

- The national coordination team (NCT) will be composed of representatives of the Ministry of Health and the national EPI, the CIM focal point or advisor at the PAHO country office, and an international or national consultant hired by PAHO to support all operations.
- The regional coordination team (RCT) involves all CIM regional advisors and international consultants who support this activity.

The tool is self-administered by the country’s national counterpart. PAHO CIM advisors serve as a secretariat, providing support and technical clarifications, but not helping to determine the final score.

The expected products of the self-assessment are:

- **Document review**: collection of data on the performance of each component of the EPI over the past five years.
- **Situation analysis**: general overview of the situation prior to the self-assessment.
- **Performance monitoring tool**: self-administration at national, subnational, and local levels.
- **Final report and presentation**: description of the current status of each component of the EPI and recommendations to improve its performance.
- **Action plan**: development of an action plan to close the most urgent gaps in the national EPI over the next 12 months.

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In 2016, RTV infection was responsible for around 130,000 deaths in children under age 5 worldwide, accounting for 29% of diarrhea deaths in this age group. After the RTV vaccine was introduced in Latin America and the Caribbean, it is estimated that, in children under age 5 in 2018, hospitalizations for RTV decreased by 64%, hospitalizations for acute gastroenteritis showed a 32.8% decline, and there were 53.5% fewer deaths due to RTV.

Quality surveillance data are crucial to accurately and precisely document the burden of gastroenteritis due to RTV and the impact of vaccines. World Health Organization (WHO) guidance on rotavirus surveillance establishes the following objectives, depending on whether or not the RTV vaccine is introduced (Table 1):

Table 1. Objectives of rotavirus surveillance

<table>
<thead>
<tr>
<th>All countries</th>
<th>Countries that have not introduced the rotavirus vaccine</th>
<th>Countries that have introduced the rotavirus vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine the epidemiology and burden of rotavirus hospitalizations</td>
<td>Generate information to facilitate and support the introduction of the rotavirus vaccine</td>
<td>Monitor the impact of vaccination on the disease, as well as changes in epidemiology and circulating strains after vaccine introduction</td>
</tr>
<tr>
<td>Document the spectrum of clinical presentations and outcomes of rotavirus cases</td>
<td>Estimate vaccine effectiveness using surveillance as a platform for special studies</td>
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<tr>
<td>Determine the age and seasonal distribution of rotavirus hospitalizations</td>
<td>Additional objective: Monitor the burden of other enteric pathogens such as enterotoxigenic Escherichia coli, Shigella, and norovirus</td>
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<tr>
<td>Identify the prevalent and circulating strains of rotavirus</td>
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In 2008, WHO created the Global Rotavirus Surveillance Network (GRSN) to unify sentinel surveillance platforms across the six WHO regions and standardize associated surveillance and laboratory procedures. Subsequently, in order to define and monitor trends in other pathogens associated with diarrheal disease, WHO created Global Pediatric Diarrhea Surveillance (GPDS), which includes all cases of hospitalization due to diarrhea. WHO analysis of 2021 GRSN and GPDS data indicates that 40 of 118 Member States participating in surveillance notified WHO; 25 of 43 countries participated in GPDS; and the notification of pediatric diarrhea cases decreased by 25% compared to 2019, among other results. A study based on GRSN and GPDS data on the death of children under 5 years of age during hospitalization for diarrhea showed a lower probability of death in cases due to RTV – possibly reflecting the use of RTV vaccines – but that a negative ELISA test result for RTV and dehydration were risk factors for death in all regions. Girls were found to be at risk in the Region of the Americas in particular.

Case reporting to RTV surveillance networks in the Region was affected by the COVID-19 pandemic in 2020 and 2021, but the situation reversed in most countries in 2022 and 2023 (Figure 2), according to the information reported to VINUVA by GRSN and to VINUVA-cases by GPDS. Each case entered into RTV surveillance tools includes a stool sample for analysis of RTV (GRSN) and other enteropathogens (GPDS), following a series of steps in the surveillance process, as well as pathogen identification and genotyping.

In the Region of the Americas, there are opportunities for improvement in different aspects of RTV sentinel surveillance, including the quality of records and the resulting information reported to VINUVA; effective dissemination of national quality standards that affect surveillance practices; and laboratory performance. In technical cooperation meetings between the Pan American Health Organization (PAHO) and national surveillance teams, countries have shown interest and willingness to continuously improve RTV surveillance, including interoperation with other national information systems such as immunization registries. Some countries have migrated from a local manual vaccination registry (at the vaccination site) to centralized digital consolidation of immunization data. These improvements have a favorable impact on other systems and programs, such as RTV surveillance systems that collect information on RTV vaccination, including the number of doses received and the date of vaccination. This allows surveillance systems to collect comprehensive information that provides evidence of the impact of RTV vaccination and recognizes other pathogens associated with pediatric diarrhea.

The role of countries participating in RTV surveillance is very important, since they are the official source of reliable and representative information within the framework of sentinel surveillance. Countries’ adoption of RTV surveillance and the space it occupies in budget planning both strengthens technical capital and promotes quality of information. This makes it possible to monitor the trend of RTV and other enteropathogens, as well as the impact of RTV vaccination, which in turn serves to inform decision-making on RTV prevention and control. At PAHO’s country offices and at Headquarters, national teams have a technical–scientific counterpart and channeled access to resources for cooperation, including technical guidance in RTV surveillance, training in the use of the VINUVA platform, and partial funding for laboratory materials.

PAHO thanks the countries of the Region that participate in the GRSN and GPDS.

Figure 2. Suspected rotavirus cases reported to the Global Rotavirus Surveillance Network and Global Pediatric Diarrhea Surveillance by participating Member States in the Region of the Americas, 2020–2023

*Suspected cases of rotavirus reported through the WHO VINUVA platform as of 24 November 2023. Source: Global Rotavirus Surveillance Network and Global Pediatric Diarrhea Surveillance.

Contributors: Magdalena Bastías, Gloria Rey-Benito, and Martha Velandia, PAHO/CIM.

Sentinel surveillance of bacterial pneumonia and meningitis in children under 5 years of age in the Americas

In 1993, the Region of the Americas established the SIREVA network of laboratories for the surveillance of bacterial pneumonia and meningitis. In order to link epidemiological data with laboratory information, in 2007 the Pan American Health Organization (PAHO) began coordinating the sentinel surveillance network for bacterial pneumonia and meningitis in children under 5 years of age. In 2014, the network joined the global surveillance network managed by the World Health Organization (WHO).16

There were an estimated 236 000 deaths from meningitis and 2.5 million new cases worldwide in 2019. The burden was greatest in children under 5 years of age, with 112 000 deaths (17 per 100 000 population) and 1.28 million new cases (192 per 100 000). The highest proportion of deaths from meningitis in children under age 5 in 2019 was attributable to Streptococcus pneumoniae (17.3%), followed by Neisseria meningitidis (12.9%), and Klebsiella pneumoniae (12%). In newborns, the highest proportion of deaths due to meningitis was attributable to group B strep (GBS) (22.8%), followed by K. pneumoniae (17.1%), and viruses (15.3%). In Latin America and the Caribbean in 2019, mortality from meningitis in children under 5 years of age was estimated at 4.2 per 100 000 population, with an incidence of 52.1 per 100 000 — a reduction of 83% and 64%, respectively, compared to 1990.16

Pneumonia, the leading infectious cause of death in children worldwide, caused 740 180 deaths in children under 5 years of age in 2019, accounting for 14% of deaths in that age group, and 22% of deaths in children aged 1–5 years. S. pneumoniae and Haemophilus influenzae type b (Hib) were, in that order, the principal causative microorganisms of bacterial pneumonia in children.17

In the Region of the Americas, data provided by countries participating in sentinel surveillance and reported through VINUVA-cases between 2017 and 202318 account for 722 cases of laboratory-confirmed bacterial pneumonia caused by pathogens under surveillance (S. pneumoniae, H. influenzae, and N. meningitidis), as well as 737 confirmations of other microorganisms (Figure 3). In the same period, there were 166 laboratory-confirmed cases of bacterial meningitis caused by monitored pathogens, along with 156 confirmations of other microorganisms (Figure 4).

18 As of 24 November 2023.
The described period includes the years of the COVID-19 pandemic, with decreases and interruptions in the reporting of suspected cases of bacterial pneumonia and meningitis to the regional network in 2020, 2021, and 2022. In part, the decrease in reporting responded to reduced circulation of causal agents resulting from the measures taken to control the spread of the type 2 coronavirus that causes acute respiratory syndrome (SARS-CoV-2), including lockdowns, physical distancing, and the use of masks.

At the same time, due to the reallocation of resources and nearly exclusive focus on strategies to manage the COVID-19 health emergency, reporting to the regional platform was interrupted at some sentinel sites. However, in 2023, PAHO and the national surveillance teams conducted a joint review of the analysis of data reported to VINUVA-cases, creating a space for reflection on the performance of sentinel surveillance, reporting, and data completeness. This led to the identification of needs and opportunities for strengthening and, in some cases, to the formulation of plans to improve surveillance, such as updating the associated health regulations, laboratory results, and serotyping, as well as strengthening and transferring molecular techniques to reference laboratories.

*Date of download and availability of data on PAHO's VINUVA platform: 24 November 2023
S. pneumoniae, H. influenzae, and N. meningitidis remain important etiological microorganisms in bacterial pneumonia and meningitis, as does GBS, whose isolates are spontaneously reported in VINUVA-cases, with possible migration to targeted surveillance in alignment with the WHO global initiative. Clinical suspicion, timely biological samples, and quality laboratory tests are essential for improving case diagnosis and public health decision-making. Although molecular assays have improved the identification of etiological microorganisms, it remains important to culture bacteria for additional studies that can better characterize the agent.

Greater and better generation of surveillance information on bacterial pneumonia and meningitis will strengthen epidemiological capacity and decision-making in health planning, especially for decisions on programmatic vaccination for the prevention of these diseases. Such decisions include the introduction of new vaccines, modified or updated vaccines, changes in the vaccination schedule, inclusion of new vaccination groups, and measurement of vaccination impact, among others. At PAHO’s country offices and at Headquarters, national surveillance teams have a technical–scientific counterpart and channeled access to resources for cooperation aimed at strengthening sentinel surveillance of bacterial pneumonia and meningitis.

PAHO thanks the countries of the Region of the Americas for their participation in sentinel surveillance of bacterial pneumonia and meningitis in children under 5 years of age.

Contributors: Magdalena Bastías, Gloria Rey-Benito, and Martha Velandia, PAHO/CIM.

Workshop on the preparation of scientific texts and articles on health in Bogotá, Colombia

An introductory workshop on the preparation of scientific texts and articles for two special issues of the Pan American Journal of Public Health that will focus on PAHO’s Special Program on Comprehensive Immunization (CIM) was held on 5–7 December 2023 in Bogotá, Colombia.

The workshop was aimed at authors whose manuscripts will appear in the two special issues of the Journal, addressing two topics of vital importance: lessons learned from the elimination of measles, rubella, and congenital rubella syndrome (CRS); and surveillance of events supposedly attributable to vaccination or immunization (ESAVI) in the Region of the Americas.

The meeting was held in person, with 55 guests from different countries of the Region in attendance. It was also transmitted electronically to the national vaccination teams, regulatory authorities, and institutions that will contribute 50 articles to the two special editions. The workshop was supported by the Journal’s editor-in-chief, Damián Vázquez, and by members of PAHO’s safe vaccination and measles/rubella team, led by Desirée Pastor, CIM advisor.

The objective of the workshop was to strengthen national capacities in writing articles to disseminate the lessons learned in different countries of the Region. It is expected that this will contribute to the historical legacy of successful experiences and best practices in the Region on these two topics. These experiences will be published in the Journal in late 2024.

The first issue will focus on implementation of PAHO’s regional ESAVI surveillance system, which was widely recommended at the First Regional Meeting on Safe Vaccination, held in Bogotá, Colombia, in April 2023. This issue will compile the progress and challenges of ESAVI surveillance in the Region, as well as lessons learned. It will also document advances in information systems, such as the interoperability of data on safe vaccination.

The second issue will bring together experiences and lessons learned in the countries regarding vaccination, surveillance, measles outbreak response, and the laboratory diagnosis network. It is important to highlight that this will help make new generations of health workers aware of the history of great efforts made by the countries of the Region to sustain the elimination of measles, rubella, and CRS.

The publication will be eminently scientific and must meet the Journal’s quality standards and its requirements for the veracity and reliability of data. Accordingly, the workshop was designed for members of the editorial board and, in particular, for officials and technicians of the participating institutions who will be authors and coauthors, some of whom have no experience in the production and publication of scientific articles.

The PAHO team had the opportunity to develop the main areas that will help authors begin or continue writing their articles, taking an appropriate approach and following the Journal’s requirements and guidelines. Work groups were organized to clarify aspects of scientific writing. Led by Damián Vázquez, the groups considered the characteristics of scientific language, how to communicate with precision and clarity, normative systems in scientific language, how to handle figures and symbols, the taxonomy of living beings, pharmaceutical nomenclature, and use of acronyms.

Contributors: Magdalena Bastías, Gloria Rey-Benito, and Martha Velandia, PAHO/CIM.
Janeth Olarte, a librarian specialized in health, gave training on access to sources of scientific literature. Felipe Molina, CIM international consultant representing the safe vaccination team, discussed considerations about articles on ESAVI surveillance in the Region of the Americas. He then gave a presentation on vaccine nomenclatures. PAHO consultants Diego Lemus and Carlos Falla talked about statistical analysis and how to present data and graphs. Following the morning’s discussions, group work was carried out in the afternoon, according to the specific topics that will be addressed in the special issues of the Journal.

This work allowed attendees to make headway in structuring and drafting their manuscripts, which were presented for discussion. Contributions from peers and trainers focused on enriching the texts, clarifying doubts, and moving forward in the editing and production of the articles, following the Journal’s scientific criteria.

This methodology allowed participants and authors to achieve greater clarity as they developed their articles. After three intense days of work, dates and steps were established for drafting, submission, and peer review prior to publication of the two special issues at the end of 2024.

**Contributors:** Claudia Ceron, Desirée Pastor, and Felipe Molina, PAHO/CIM.

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**Immunization information systems and data quality**

In November 2023, the data and information systems team of the PAHO Special Program on Comprehensive Immunization (CIM) participated in a technical cooperation visit to Lima, Peru, to learn about advances and new challenges for the immunization information system (IIS) and the impact that the COVID-19 pandemic has had on this component of the Expanded Program on Immunization (EPI).

The visit was attended by members of the National Center for Epidemiology and Disease Prevention and Control of the Peruvian Ministry of Health; the General Office of Information Technology (OGTI); the Lima East Directorate of Integrated Health Networks (DIRIS); health facilities (San Marcos and Alpha y Omega); CIM; and the PAHO/WHO country office in Peru.

Vaccination registries are essential to respond to the information needs of the different EPI stakeholders, and to calculate vaccination coverage and other relevant indicators for the management and success of the program.

The visit began with a technical roundtable, followed by visits to DIRIS in Lima East, and to the San Marcos and Alpha y Omega health facilities, where the IIS were reviewed, with a focus on their flows, use, interoperability with other systems, challenges, and opportunities for improvement.

Peru has a clear vision of the digital health agenda and has worked consistently to strengthen its IIS. It has a nominal electronic immunization registry (EIR) that was adopted nationally for COVID-19 and the regular vaccination schedule. This registry, led by the Ministry of Health through the new electronic health record system (SIHCE), has been implemented in 35% of health centers. The country uses a nominal census of children under 6 years of age, which is the population base for the EIR and the calculation of coverage and indicators. In addition, health authorities have made efforts to reach out to the entire population, and people can now access their routine and COVID-19 digital vaccination certificates through the Ministry of Health’s Immunization Card platform and app.21

At the subnational level, local developments have also been promoted, such as the Active Searches Dashboard operated by DIRIS Lima East for vaccine-preventable diseases.

The presentation of the results was attended by the Minister of Health, César Vásquez, and the Vice Minister of Public Health, Ricardo Peña. The Minister reiterated his strong commitment to the immunization program and to the health sector’s digital agenda.

It was agreed that the next activities would be focused on supporting the country by generating analyses and visualizations based on EIR data; reviewing and systematizing processes to ensure data quality; and strengthening georeferencing analysis capacities, among others.

Contributors: Pamela Burgos and Martha Velandia, PAHO/CIM.

Virtual self-learning course: Tools for monitoring integrated public health interventions. Vaccination and deworming for soil-transmitted helminth infections

The purpose of this course is to contribute to the continuous improvement of data quality and the timely use of data analysis, with a view to expanding coverage, making informed decisions, and implementing interventions that provide effective access to health care. The course can be accessed at: https://campus.paho.org/en/course/tools-monitoring-coverage-integrated-public-health-interventions.

Strengthening immunization data management

In immunization programs, the need to manage a large amount of data from nominal electronic immunization registries (EIRs) is a significant challenge made even more evident with the COVID-19 pandemic, when health information systems made millions of registries available in a short period of time. Consolidating and analyzing data through electronic spreadsheets and traditional tabulators proved insufficient, necessitating the use of more robust and versatile tools.

For this reason, and in order to strengthen the countries’ analytical capacities through efficient and sustainable tools, PAHO’s Department of Health Emergencies (PHE) and Special Program on Comprehensive Immunization (CIM) developed a course on the use of the R programming language and its environment, with a statistical focus. This type of tool is especially useful for analyzing and understanding the data used in immunization programs and for generating a wide variety of statistical and graphical techniques. In addition, R has the added advantage of being free and open-source software.

The course consisted of three modules and a total of 100 teaching hours over three weeks: one for distance learning and two for classroom learning, which was held in Bogotá, Colombia. The course was attended by 25 data managers from 17 countries in the Region of the Americas and five facilitators. During the course, participants formed groups that prepared a report based on the knowledge acquired in R and on the information needs of the countries, using data from the EIR and other data sources.

The following topics were covered:

- Vaccination coverage in Nicaragua, comparing different denominators.
- COVID-19 vaccination among people living with HIV in Uruguay.
- Progress of mpox vaccination in Chile.
- Vaccination coverage in the Dominican Republic.
- The status of vaccination coverage in Guatemala, in preparation for the measles vaccination campaign.

The CIM team at PAHO Headquarters organized a webinar where the participants presented the results of the analyses, resulting in a very fruitful discussion that enriched the presentations.

The next steps will be to provide training on advanced topics in the use of R and its environment to those responsible for data analysis in immunization programs in the countries of the Region. This will allow them to expand the range of efficient and sustainable tools available to them and will foster collaboration and joint development of health data analysis among countries.

Contributors: Pamela Burgos and Martha Velandia, PAHO/CIM.
## Final classification of measles, rubella, congenital rubella syndrome, mumps, pertussis, and diphtheria cases in the Region of the Americas, 2023

<table>
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<th>Confirmed measles cases 2023</th>
<th>Confirmed rubella cases 2023</th>
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<td>2115</td>
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<td>0</td>
<td>17</td>
<td>6</td>
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<tr>
<td>Venezuela (Bolivarian Republic of)</td>
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</table>

### Regional totals

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<th>Total suspected cases reported 2023</th>
<th>Confirmed measles cases 2023</th>
<th>Confirmed rubella cases 2023</th>
<th>Congenital rubella syndrome cases (CRS) 2023</th>
<th>Reported mumps cases 2022</th>
<th>Reported pertussis cases 2022</th>
</tr>
</thead>
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<td>14884</td>
<td>0</td>
<td>54</td>
<td>54</td>
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<tr>
<td>Regional total</td>
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<td>1622</td>
<td>1</td>
<td>1791</td>
<td>3284</td>
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</tbody>
</table>

*Updated 5 January 2024.*

*No information provided.*

*Notes:*

- a Bonaire, Sint Eustatius, and Saba.
- b Brazil data as of epidemiological week 2023-51.
- c Cuba data as of epidemiological week 2023-50.
- d Bolivarian Republic of Venezuela data as of epidemiological week 2023-48.

*Sources: Integrated Surveillance Information System (ISIS) and country reports to CIM/PAHO. Mumps and pertussis: Country reports through the electronic PAHO-WHO/UNICEF Joint Reporting Form (eJRF), 2023.*
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