Immunization Newsletter

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Cholera vaccination campaign in Haiti. ©PAHO/WHO.

In this issue:

Oral Cholera Vaccination on the Island of Hispaniola

Current situation in Haiti

After more than three years with no cases of cholera reported in Haiti, authorities reported two confirmed cases of *Vibrio cholerae* O1 in the greater Port-au-Prince area on 2 October 2022. As of 21 February 2023, the Haitian Ministry of Health Department of Epidemiology, Laboratories, and Research (DELR, using its French acronym) reports 32 574 suspected cases of cholera across the 10 departments of the country, as well as 2377 confirmed cases. Of these, 17 648 (54.2%) suspected cases and 1262 (53.1%) confirmed cases have been reported in the department of Ouest, where the capital Port-au-Prince is located. To date, DELR reports 389 deaths from cholera in clinical settings, and another 205 deaths found in the community.

Because of multiple logistics difficulties (e.g., severe security concerns that render case investigation and sample collection very difficult, widespread scarcity of fuel and consequent delays in receiving and processing samples, as well as delays in data collection and transfer because of poor internet connectivity), these figures are almost certainly underestimates of the true scale of the epidemic.

Current situation in the Dominican Republic

On 27 October 2022, the Dominican Republic reported the first two confirmed cases of cholera in its territory. These were imported cases from Haiti and one was detected at the border (Dajabon) and the other case in the east of the country (Higuey province). Since then, another 58 cases have been confirmed across nine provinces, of which 23 were in the National district and another 15 in Santo Domingo del Este (as of 15 February 2023).[1]

With the use of rapid diagnostic tests, surveillance has been strengthened countrywide with a particular attention at the border. Epidemiological investigations showed that in addition to imported cases, local transmission has occurred. To date, no deaths have been reported. Other control pillars, such as social mobilization in the communities and water, sanitation, and hygiene (WASH) activities, have been implemented in the risk areas.

Limited global stockpile

As of 1 February 2023, at least 18 countries continue to report cholera cases, including Haiti and the Dominican Republic.[2] Therefore, resources for outbreak response – including doses of oral cholera vaccine (OCV) – are scarce at the global level. Within this context of limited stockpile, the International Coordinating Group (ICG) indicated the temporary suspension of the two-dose strategy (publication on 19 October 2022),[3] until further notice.

1 Government of the Dominican Republic, Ministry of Public Health. Ministry of Public Health notifies two new cases of Cholera, totaling up to 19 in the country. Santo Domingo; 2023. Available from: Ministerio de Salud Pùblica notifica dos nuevos casos de Cólera, suman 19 en el país - Ministerio de Salud Pública (msp.gob.do)

2 World Health Organization. Cholera – Global situation. Geneva: WHO; 2023. Available from: https://www.who.int/emergencies/disease-outbreak-news/item/2023-DON437

3 World Health Organization. Shortage of cholera vaccines leads to temporary suspension of two-dose strategy, as cases rise worldwide. Geneva: WHO; 2022. Available from: Shortage of cholera vaccines leads to temporary suspension of two-dose strategy, as cases rise worldwide (who.int)

Original SAGE recommendations regarding the OCV

In 2017, WHO's Strategic Advisory Group of Experts (SAGE) on immunization had recommended that the vaccination series for each of the three OCV currently available include two or three doses (depending on the age of the subject).[4] However, the ICG's decision to curtail OCV dose allocation to a one-dose series requires a review of the scientific literature to assess the effectiveness of such a strategy. Examples are reported here from two countries.

A 2016 study of the effectiveness of a one-dose series of OCV in Bangladesh recorded that the vaccine protective efficacy was 40% (95% CI, 11-60%; 0.37 cases per 1000 vaccine recipients vs. 0.62 cases per 1000 placebo recipients) against all cholera episodes; 63% (95% CI, 24-82%; 0.10 vs. 0.26 cases per 1000 recipients) against severely dehydrating cholera episodes; and 63% (95% CI, −39-90%), 56% (95% CI, 16-77%), and 16% (95% CI, −49%-53%) against all cholera episodes among persons vaccinated at the age of 5 to 14 years, 15 or more years, and 1 to 4 years, respectively, although the differences according to age were not significant (P = 0.25). Adverse events occurred at similar frequencies in the two groups.[5] Therefore, a single dose of the oral cholera vaccine was deemed to be efficacious in older children (≥5 years of age) and in adults in a setting with a high level of cholera endemicity.

In Juba, South Sudan, a case cohort survey conducted after a field deployment of a single dose of oral cholera (Shanchol) reported that the unadjusted single-dose vaccine effectiveness was 80.2% [95% CI, 61.5–100.0] and after adjusting for potential confounders was 87.3% [70.2–100.0].[6]


Cholera vaccination campaign in the Dominican Republic. ©PAHO/WHO.

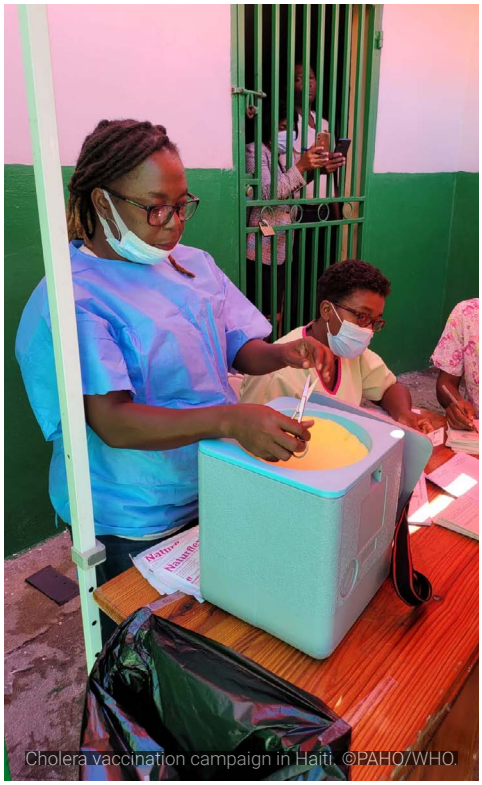
Furthermore, a mathematical model published in April 2022 assessed the effectiveness of a vaccination strategy with one and two doses in minimizing cumulative overall infections, symptomatic infections, and deaths. Haiti was one of the three countries for whom a mathematic model was fit. The study found that, in the short term (1 year) when there is limited vaccine supply, it is optimal to vaccinate individuals aged 5 years or older with one dose and children younger than 5 years old with two doses. Across the three settings, these optimal strategies prevent the most cases, save the most lives, and avert 1.2 to 1.8 times as many cases and deaths as the standard two-dose untargeted strategy. The results support that if vaccine supply is limited, under an outbreak setting, mass vaccination campaigns with a single dose of OCV may prevent more cases and save more lives than a standard two-dose untargeted campaign.[7]

All WHO guidelines and technical documents stress that vaccination against cholera is one of the multiple strategies that a country can adopt to interrupt disease transmission. Community-based WASH operations and case management remain the cornerstones of any response and should be implemented in tandem with vaccination activities.[4]

Request of OCV doses to the ICG – Haiti

On 6 October 2022, PAHO completed the draft request for OCV from the Haitian Ministry of Health to the ICG. This request included doses of OCV for the departments of Ouest and Centre, where the majority of cases have been reported since the start of the outbreak. The Haitian Ministry of Health submitted the finalized application on 15 November 2022. The request included 1 789 744 OCV doses. According to the application, Haiti planned to administer one dose of OCV to 1 640 411 persons aged 1 year or older in the departments of Ouest (municipalities of Port-au-Prince, Carrefour, Delmas, Cité Soleil, camps for internally displaced persons [IDP], and the civil prisons of Carrefour and Port-au-Prince), and of Centre (municipality of Mirebalais and the civil prison). A second dose was requested for all children aged 12 to 59 months.

On 25 November 2022, the ICG approved Haiti's request for 1 640 411 doses of the OCV Euvichol-Plus. This amount allows the country to administer a single dose to all eligible persons aged 1 year or older. At the same time, the ICG denied the additional doses that would have made the second round possible among children younger than 5 years. All areas identified for vaccination operations were accepted. The ICG released immediately the first round of OCV doses (1 170 800), which arrived in the country on 12 December 2022.


Cholera vaccination campaign in Haiti. ©PAHO/WHO.

Request of OCV doses to the ICG – Dominican Republic

On 5 January 2023, the Ministry of Health of the Dominican Republic submitted a request to the ICG for 85 000 doses of OCV vaccine. On 9 January 2023, the ICG approved the request, attributing Euvichol-Plus to the country. The vaccines will be used to administer a one-dose series to persons aged 1 year and older in the four neighborhoods of the capital Santo Domingo, where the outbreak is currently located. The doses arrived in country on 23 January 2023.[8]

[4] World Health Organization. Cholera vaccines: WHO position paper – August 2017. Geneva: WHO; 2017. Available from: https://www.who.int/publications/i/item/who-wer9234-477-500
[5] Qadri F, Wierzba TF, Ali M, Chowdhury F, Khan AI, Saha A, et al. Efficacy of a single-dose, inactivated oral cholera vaccine in Bangladesh. N Engl J Med 2016;374:1723–1732; doi: 10.1056/NEJMoa1510330. Available from: https://www.nejm.org/doi/full/10.1056/nejmoa1510330
[6] Azman AS, Parker LA, Rumunu J, Tadesse F, Grandesso F, Deng LL, et al. Effectiveness of one dose of oral cholera vaccine in response to an outbreak: A case-cohort study. Lancet Global Health 2016;4(11):e856–e863; doi: 10.1016/S2214-109X(16)30211-X. Available from: https://www.sciencedirect.com/science/article/pii/S2214109X1630211X?via%3Dihub
[7] Leung T, Eaton J, Matrajt L. Optimizing one-dose and two-dose cholera vaccine allocation in outbreak settings: A modeling study. PLoS Negl Trop Dis. 2022;16(4):e0010358. Available from: https://doi.org/10.1371/journal.pntd.0010358
[8] Pan American Health Organization. PAHO accompanies the Ministry of Health in response against cholera in the DR. Santo Domingo: PAHO; 2023. Available from: https://www.paho.org/es/noticias/5-1-2023-ops-acompana-ministerio-salud-respuesta-contra-colera-rd

Cholera vaccination campaign in Haiti. ©PAHO/WHO.

Results of the OCV campaign in Haiti – Phase 1

Final results compiled on 15 February 2023 by the PAHO country office report that – over the 1 112 223 eligible persons across 6 municipalities in 2 departments (Ouest and Centre) – a total of 850 067 (760%) have received one dose of OCV. In Ouest department, the results report a coverage rate of 69.9%. In Centre department, the reported coverage rate is 100%.

The Ministry of State for Public Health and Population (MSPP) has submitted these results to the ICG and requested the second batch of OCV (469 611 doses) to continue vaccination operations in the departments of Artibonite, Nord-Ouest, and an additional 3 municipalities in the department of Centre.

Preliminary results of the OCV campaign in the Dominican Republic

Vaccination operations have been launched in 12 health areas in the affected districts and along the border with Haiti. To date, 21 086 doses have been administered among all eligible persons aged 1 year or older. In the city of Santo Domingo, vaccine doses are offered at the Hospital Dr. Francisco Moscoso Puello, as well as through door-to-door operations in affected neighborhoods.

Contributed by:

Didobeu Charles Etienne Dago from the PAHO country office in Haiti and **Martin Acosta** from the PAHO country office in the Dominican Republic. •

Second Annual Meeting of the Measles and Rubella Elimination Regional Monitoring and Re-Verification Commission

Introduction

Health services have not fully recovered from the COVID-19 pandemic and a global disruption in routine immunization systems has weakened the quality of immunization programs, leaving millions of children vulnerable to vaccine-preventable diseases (VPDs). Measles is an imminent threat as it will be the fastest returning VPD in every region. In addition, measles and rubella surveillance continues to be suboptimal, affecting the timely detection of confirmed cases, and thus preparedness of a rapid response to limit virus spread if an importation occurs.

The second annual meeting of the Measles and Rubella Elimination Regional Monitoring and Re-Verification Commission (RVC), held during 15–17 November 2022, provided Member States the forum to update the RVC on the implementation of the recommendations made in the previous year to sustain their elimination gains. The meeting also provided an opportunity for six additional countries to present updated national reports using the published Regional Framework for the Monitoring and Re-Verification of Measles, Rubella, and Congenital Rubella Syndrome Elimination in the Americas, Revised edition.[9]

Dr. Jon Andrus served as chair of the meeting, and Dr. Tracy Evans-Gilbert and the Pan American Health Organization (PAHO) technical secretariat served as rapporteurs. Other members of the commission present included: Dr. Jorge Boshell, Dr. Merceline Dahl-Regis, Dr. Angela Gentile, and Dr. Susan Reef. Drs. Jose Ignacio Santos and Marilda Siqueira attended virtually. Dr. Daniel Salas, Dr. Desiree Pastor, Dr. Gloria Rey-Benito, and Ms. Pamela Bravo participated as the PAHO technical secretariat and coordinated the whole country review process during the year 2022.

The elimination of rubella and congenital rubella syndrome (CRS) in the Americas was achieved and verified in April 2015 and has been sustained for 13 years by all Member States, since the last endemic cases in 2009. Measles elimination in the Americas was achieved and verified in September 2016; however, the Bolivarian Republic of Venezuela and Brazil reestablished endemic transmission and those countries are now on their way to be reverified as free of measles once they accomplish RVC recommendations.

Since the implementation of social distancing and other response measures due to the COVID-19 pandemic, endemic measles transmission in Brazil has declined, but reverifying measles virus interruption requires a process of proving evidence to the RVC in 2023. Measles importations have occurred in other countries with limited transmission. Of serious concern, over the last 6 years, vaccination coverage for all antigens in the Americas has declined substantially. Only the regional office for Africa has lower vaccination coverage levels with the third dose of the diphtheria–tetanus–pertussis (DTP3) vaccine among the six regions of the World Health Organization (WHO).

Concomitantly, levels of surveillance performance of measles and rubella have also declined, especially during the COVID-19 pandemic. The RVC recognizes the critical need to strengthen health systems, while closing the immunity and surveillance gaps for measles and rubella. Reversing the declining trends in the prevention strategies for measles, rubella, and other VPDs provides the opportunity to strengthen the overall performance of health systems. Dominican Republic and Nicaragua are recent examples of best practices for success with their measles–rubella follow-up vaccination campaigns, with 97% and 98% respective completion of measles/rubella goals.

The RVC commends the Member States' national immunization programs for initiating and implementing recommendations from the meeting in 2021. It also appreciates the submission of six country reports (Costa Rica, Cuba, French Overseas Departments, Haiti, Panama, and Uruguay) from countries that did not submit their reports in the 2021 year. These reports were extremely valuable for completely assessing the regional challenges relevant for sustaining measles and rubella elimination in the whole Region of the Americas.

[9] Pan American Health Organization. Regional Framework for the Monitoring and Re-Verification of Measles, Rubella and Congenital Rubella Syndrome Elimination in the Americas. Revised edition. Washington, DC: PAHO; 2022. Available from: https://iris.paho.org/handle/10665.2/56855

Countries followed the standardized, published PAHO Regional Framework for the Monitoring and Re-Verification of Measles, Rubella, and Congenital Rubella Syndrome Elimination in the Americas to guide their national reporting to the RVC. In addition, the PAHO secretariat provided an updated template and technical guidance to facilitate the reviews conducted by the members of the RVC. During the meeting, RVC reviewers highlighted their key findings and recommendations. The moderator for each session facilitated dialogue between the RVC, the chair of the National Sustainability Committee, and ministry of health country representatives. An in-camera meeting for the RVC members and PAHO secretariat was held at the end of each day to discuss and finalize the conclusions and recommendations of the meeting to be included in the final report of the RVC.

To that end, the specific conclusions and recommendations for each country as put forward by the PAHO RVC were officially sent to the health authorities. Considering the global threat of measles outbreaks, the RVC sincerely hopes that these recommendations can be used to galvanize the necessary political and financial support to prioritize sustaining measles and rubella elimination in countries and for achieving the reverification of elimination in two countries that lost their measles-free status. These recommendations are meant to be practical. As such, they cover the RVC's specific concerns about surveillance, laboratory performance, outbreak rapid response, and closing immunity gaps as top priorities for reestablishing the leadership role of countries of the Americas, globally.

The RVC sincerely appreciates the outstanding quality of the national reports, rich in data and other complementary evidence. Cuba, although presenting 2020–2021 data, will follow up with the analysis report for 2016–2019 within the next three months. Given circumstances, the lack of evidence included in the report from Haiti prevented the RVC from reaching a final classification using the existing PAHO published guidelines. The rich discussion during the meeting regarding Haiti reinforced the need for all committed partners and stakeholders to take urgent action.

Conclusions and recommendations

All 35 Member States have sustained elimination of rubella and congenital rubella syndrome (CRS), including Brazil and the Bolivarian Republic of Venezuela. Regarding measles, countries were grouped into four categories: (1) endemic for measles transmission; (2) measles and rubella sustained elimination; (3) indeterminate with major concerns, to accommodate Haiti, where large gaps in epidemiological, immunity, and surveillance data and data quality were detected amid widespread violence and political instability; and (4) pending reverification for measles elimination.

Measles and influenza vaccination campaign in Brazil, May 2022. ©Karina Zambrana, PAHO/WHO

- **Endemic for measles**

Following a detailed analysis of the country reports, Brazil intensified immunization activities, epidemiological surveillance, and strengthened laboratory response during the period, which significantly reduced the territorial area of virus circulation in the country. However, measles transmission remains in many municipalities, and a large segment of the population has low immunization coverage. A country visit by RVC members was conducted in August 2022, and the implementation of the recommendations are pending, including the planning of a high-quality follow-up campaign in 2023. The RVC congratulates the Ministry of Health on its commitment to implementing the plan of action to interrupt measles virus circulation, monitoring, and reverification of its elimination and awaits the progress of these activities.

- **Indeterminate with major concerns**

Haiti was classified as indeterminate with major concerns, although the country has not confirmed any measles and rubella cases for the reporting period (2016–2021). Data gaps and quality issues for notification, surveillance, and vaccination coverage amid financial limitations, social arrest, and other challenges threatened the sustainability of elimination, requiring immediate intervention. Recommendations included broad-based partnerships to reinstate routine immunization and surveillance activities and the implementation of a high-quality follow-up vaccination campaign with multiple antigens as a priority.

- **Sustained elimination**

Argentina, the Plurinational State of Bolivia, Canada, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, the English-speaking Caribbean, the French Overseas Departments, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and the United States of America were verified as having sustained elimination.

- **Pending reverification of measles elimination**

The Bolivarian Republic of Venezuela has reported zero confirmed measles cases since the last documented endemic cases in August 2019. The RVC applauds the excellent progress toward the sustainability of elimination by exceeding the minimum notification rate in the country, reducing silent municipalities, and starting the implementation of a follow-up vaccination campaign against polio, measles, and rubella in 2022. However, due to large immunity gaps, the Bolivarian Republic of Venezuela cannot be reverified as a country that has sustained measles elimination. The RVC will maintain the country as pending of reverification and will revisit this decision upon completion of the follow-up campaign targeting 95% coverage during 2023.

Contributed by: Octavia Silva, Desiree Pastor, Pamela Bravo, Gloria Rey-Benito, and Daniel Salas. •

UPDATE OF THE WHO RECOMMENDATIONS FOR VACCINATION AGAINST COVID-19

The World Health Organization updated its recommendations on vaccination against COVID-19.

The updates are based on evidence emerging from the:

- Ongoing monitoring of the disease.
- Protection that the population already developed against COVID-19 through previous infection or vaccination.
- Epidemiological situation, availability of diagnostic tests and access to therapeutic options.

Below you can see for whom, when and how many doses are recommended for different groups of people.

HIGH PRIORITY GROUP

People in this group have the highest risk of becoming seriously ill or dying. Any decrease in vaccine effectiveness, however small, increases the number of cases who experience severe illness or death.

Therefore, they should be vaccinated with the primary series and one booster dose.

Should receive **one additional booster dose 6 months** after the last dose:

a. Oldest adults (aged 75 years or older).[1]
b. Older adults with comorbidities (60 to 75 years old).[2]
c. Persons aged 6 months or older with compromised immune systems.[2,3]
d. Pregnant persons.[4]

Should **receive one additional booster dose 12 months after** the last dose:

e. Older adults (60 to 75 years).[1]
f. Adults with comorbidities or severe obesity (18 to 59 years old).
g. First-line healthcare workers.

LOW PRIORITY GROUP

COVID-19 disease is rarely lethal in healthy children and adolescents with NO COMORBIDITIES.

Healthy children and adolescents between 6 months and 17 years should be vaccinated with the primary series and with one booster dose according to the country context.

Additional booster doses are not recommended.

MEDIUM PRIORITY GROUP

People in this group have a low risk of becoming seriously ill, needing hospitalization, or dying. In addition, when vaccinated, they have the highest level of protection against serious illness and death and if they contract the virus, and the illness is usually mild or asymptomatic.

Should be vaccinated with the primary series and one booster dose:

- All healthy persons older than 17 years.
- Children and adolescents from 6 months to 17 years with comorbidities that increase their risk of severe disease.

Additional booster doses are not recommended.

1 Depending on the definition established in each country.
2 Vaccine effectiveness is lower in persons with compromised immune systems. Personal protective measures, vaccination of close contacts and early treatment in case of infection are still recommended.
3 The 6-month interval should be discussed with the individual's health care provider.
4 This subgroup should receive a dose during pregnancy if their last dose was 6 months ago.

More information: https://www.paho.org/en/covid-19-vaccines

Source: Infographic published by the Pan American Health Organization. Update of the WHO recommendations for vaccination against COVID-19 - Infographic. Available from: https://www.paho.org/en/documents/update-who-recommendations-vaccination-against-covid-19-infographic

#EACHVACCINECOUNTS COVID-19 GET UP-TO DATE

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Digital certificates as an example of digital transformation in immunization

The need to work with digital processes during the COVID-19 pandemic resulted in innovations in digital health documents. COVID-19 vaccination certificates, laboratory test results, and history of SARS-CoV-2 infection have become relevant documents when a person must prove this information.

The World Health Organization (WHO) has developed a series of technical guidelines for COVID-19-related digital documentation. In line with these guidelines, the Pan American Health Organization (PAHO) has provided technical cooperation to the countries of the Region of the Americas to undertake collaborative and intensive work allowing countries to implement a safe and interoperable digital vaccination certificate. The certificate must be accessible to both the vaccinated person and authorized health personnel. A person's current immunization status should be documented, in order to protect against COVID-19 and ensure continuity of care, or to check vaccination for purposes other than medical care. **Table 1** indicates the different uses of the certificates, which will depend on the digital maturity and local context of the country where these solutions are implemented.

The vaccination certificate project is part of the Regional Public Goods (RPG) initiative of the Inter-American Development Bank (IDB). At PAHO, it is under the leadership of the Department of Evidence and Intelligence for Action in Health, with technical support from the Comprehensive Family Immunization Unit. The National Center for Health Information Systems (CENS) of Chile is responsible for implementing the project. This initiative is part of the *Roadmap for the Digital Transformation of the Health Sector in the Region of the Americas,* approved by PAHO Member States at the 59th Directing Council.[10]

In order to advance the development of digital certificate projects, an initial meeting was organized in the city of Santiago, Chile between 30 May and 1 June 2022, which brought together 150 participants from 17 countries, international organizations, universities, collaborating centers and specialized networks.[11] Plenary sessions, workshops, project discussion sessions and bilateral meetings were held to identify indicators of progress, discuss risks, and identify critical factors for their success throughout the Region.

This meeting represented a technical milestone, as for the first time it was possible to develop a proof of concept related to cross-border interoperability in health using digital COVID-19 vaccination certificates among countries participating in the RPG initiative. This was intended to demonstrate the feasibility of countries accessing, exchanging, integrating, and using COVID-19-related data cooperatively, as part of a scalable process of adopting WHO guidelines and international trust and interoperability standards and frameworks.[12]

Meeting participants also discussed how to strengthen digital transformation processes within national immunization programs in the Region of the Americas, with digital COVID-19 vaccination certificates serving as an example of this transformation. Some representatives of the participating countries presented their experience, including the Ministry of Health and Social Protection of Colombia, which presented the validation of its digital certificate to the European Union.

In addition, the *DDCC:VS Readiness Assessment Tool,* developed by PAHO based on the *Digital Documentation of COVID-19 Certificates: Vaccination Status,*[3] was presented in order to appreciate the degree of maturity of health information systems in terms of digital documentation of COVID-19 certificates.[13] For this purpose, work was done to analyze and optimize its components, with discussion of how to advance implementation in a coordinated manner.

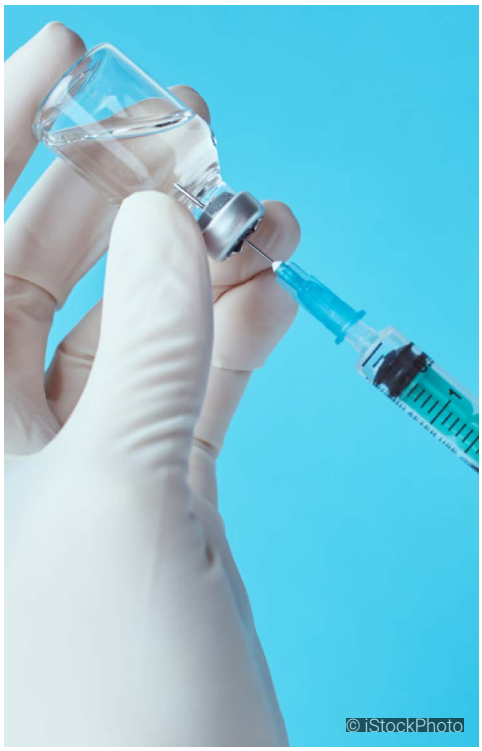


Table 1. Potential uses of digital documentation certificates

Continuity of care	Proof of vaccination
• Provides a basis for health workers to offer a subsequent dose and/or appropriate health services.	• Establishes the vaccination status of individuals in surveys monitoring coverage.
• Provides schedule information for an individual to know whether another dose, and of which vaccine, is needed, and when the next dose is due.	• Establishes vaccination status after a positive COVID-19 test, to understand vaccine effectiveness.
• Enables health workers to investigate adverse events supposedly attributable to vaccination or immunization (ESAVI) (vaccine safety), as per existing guidance.	• Indicates vaccination status for work.
	• Indicates vaccination status for university studies.
	• Indicates vaccination status for international travel.[a]

Note: [a] In the context of international travel, in accordance with advice from the eighth meeting of the International Health Regulations (2005) Emergency Committee on COVID-19, held on 14 July 2021, countries should not require proof of COVID-19 vaccination as a condition for travel. See World Health Organization. Statement on the Eighth Meeting of the International Health Regulations (2005) Emergency Committee regarding the coronavirus disease (COVID-19) pandemic. Geneva: WHO; 2021. Available from: https://www.who.int/news/item/15-07-2021-statement-on-the-eighth-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-coronavirus-disease-(covid-19)-pandemic

Source: World Health Organization. Digital Documentation of COVID-19 Certificates: Vaccination Status: Technical Specifications and Implementation Guidance, 27 August 2021. Washington, D.C.: WHO; 2021. Available from: https://apps.who.int/iris/handle/10665/343361

[10] Pan American Health Organization. Roadmap for the Digital Transformation of the Health Sector in the Region of the Americas [Resolution CD59.R1]. 59th Session of the Directing Council, 73rd Session of the Regional Committee of WHO for the Americas; 20–24 September 2021. Washington, DC: PAHO; 2021. Available from: https://www.paho.org/en/documents/cd59r1-roadmap-digital-transformation-health-sector-region-americas

[11] Bahamas, Belize, Bolivia (Plurinational State of), Chile, Colombia, Costa Rica, Dominica, Dominican Republic, Ecuador, El Salvador, Honduras, Nicaragua, Panama, Paraguay, Peru, Suriname, and Uruguay.

[12] World Health Organization. Digital documentation of COVID-19 certificates: vaccination status: technical specifications and implementation guidance, 27 August 2021. Washington, DC: PAHO; 2021. Available from: https://apps.who.int/iris/handle/10665/343361

[13] Pan American Health Organization. COVID-19 Vaccine Country Readiness Assessment Tool (VIRAT). Washington, DC: PAHO; 2020. Available at: https://www.paho.org/en/documents/covid-19-vaccine-country-readiness-assessment-tool-virat

The day concluded with the identification of major milestones to be considered in designing and using national roadmaps for the digital transformation of immunization programs, with an emphasis on the digital documentation of COVID-19 vaccination certificates, within the framework of document CD59/6, *Roadmap for the digital transformation of the health sector in the Region of the Americas,* the Immunization Agenda 2030 and Resolution CD59.R13 on *Revitalizing immunization as a public good for universal health.*[14,15,16]

In order to study progress and reflect on lessons learned regarding digital transformation, as well as to establish a regional work agenda for 2023 in the areas of telemedicine for noncommunicable diseases, digital documentation of COVID-19 vaccination, and artificial intelligence in the field of public health, a new meeting was held from 14–16 November 2022 in Panama City, with the participation of representatives of 13 countries, health authorities, development partners (IDB and World Bank), international experts, and technical experts from WHO and PAHO.[17] The meeting highlighted the importance of digital transformation for operating immunization programs throughout the life course, emphasizing the benefits of using these technologies to increase the impact of vaccination in all age groups.

The following topics were addressed during the meeting:

- This regional project's impact on immunization programs
- Expectations
- Problems
- Risks
- Successes
- Results achieved in countries where the program has been implemented (highlighting increased safety and veracity of the information on vaccination status)
- Usefulness of digital immunization information platforms for monitoring coverage, vaccine effectiveness and adverse events
- Interoperability facilitating recognition in other regions of the world
- Building base platforms for the integration of routine vaccines and others that are relevant regionally (such as the yellow fever vaccine)

A child is vaccinated against polio in Bolivia, October 2022. ©PAHO/WHO.

Currently, 10 countries in the Region of the Americas have completed the tools for assessing the maturity of information systems for digital COVID-19 vaccination certificates.[18] Four of them (Chile, Ecuador, Guatemala, and Paraguay) have completed all the established steps:

- **Step 1.** Review and validation of the critical data set
- **Step 2.** Installation and use of the HL7 FHIR server
- **Step 3.** Generation of digital certificates based on the WHO standard
- **Step 4.** Review and verification of the electronic certificate signature process

There are other countries that are part of the project but have already made progress in ensuring that their digital vaccination certificates are in compliance with Regulation (EU) 2021/953 of the European Parliament and of the Council of the European Union, which facilitates the right to free movement within the European Union.[19]

The exchange of visions, experiences, challenges, advancements, and lessons learned has contributed significantly to the implementation of digital documentation of COVID-19 certificates. Vaccination status is a relevant input for PAHO to measure the need for technical cooperation and improve immunization information systems, in order to strengthen activities so that countries can advance the digital transformation of their health sector and, specifically, in the field of immunization.

Contributed by: Martha Velandia, Marcela Contreras, and Pamela Burgos. •

PAHO is developing a pilot with the Plurinational State of Bolivia for implementation of monitoring and evaluation indicators, using data from its Nominal Electronic Immunization Registry

Nominal Electronic Immunization Registries (EIRs) have proven to be cost-effective tools for improving the performance of immunization programs. In the Region of the Americas, PAHO promotes the use of nominal EIRs and provides technical assistance to countries while planning and implementing these systems and the use of data.

The need to account for the COVID-19 vaccination process accelerated the establishment of these systems in the Region. Some of the benefits of nominal EIRs, both in terms of coverage and efficiency of the immunization strategy deployed, have been verified. However, there are opportunities to improve, for example, incorporating routine vaccination and integrating other program systems (stocks and events allegedly attributable to vaccination or immunization [ESAVI]) and the health sector, in addition to enhancing the use of data in terms of analysis, among others.

[14] Pan American Health Organization. Roadmap for the Digital Transformation of the Health Sector in the Region of the Americas [document CD59/6]. 59th Directing Council of PAHO, 73rd Session of the Regional Committee of WHO for the Americas; 20–24 September 2021. Washington, DC: PAHO; 2021. Available from: https://www.paho.org/en/documents/cd596-roadmap-digital-transformation-health-sector-region-americas
[15] World Health Organization. Immunization Agenda 2030. Geneva: WHO; 2021. Available from: https://www.immunizationagenda2030.org/
[16] Pan American Health Organization. Reinvigorating Immunization as a Public Good for Universal Health [Resolution CD59. R13]. 59th Directing Council of PAHO, 73rd Session of the Regional Committee of WHO for the Americas; 20–24 September 2021. Washington, DC: PAHO; 2021. Available from: https://www.paho.org/en/documents/cd59r13-reinvigorating-immunization-public-good-universal-health
[17] Argentina, Bahamas, Brazil, Chile, Ecuador, El Salvador, Honduras, Nicaragua, Paraguay, Panama, Suriname, Trinidad and Tobago, and Uruguay.
[18] Bahamas, Chile, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Paraguay, Suriname, and Uruguay.
[19] European Parliament, Council of the European Union. Regulation (EU) 2021/953 of the European Parliament and of the Council of 14 June 2021 on a framework for the issuance, verification and acceptance of interoperable COVID-19 vaccination, test and recovery certificates (EU Digital COVID Certificate) to facilitate free movement during the COVID-19 pandemic (Text with EEA relevance). Brussels: European Union; 2021. Available from: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32021R0953

PAHO has conducted workshops to identify indicators for the monitoring and evaluation of the Expanded Program on Immunization (EPI).[20,21] For this purpose, it has used data from nominal EIRs, which incorporate the views of countries, experts, and associated institutions. It is worth noting that this information has been consolidated and is part of a technical document under development and which will soon be published.

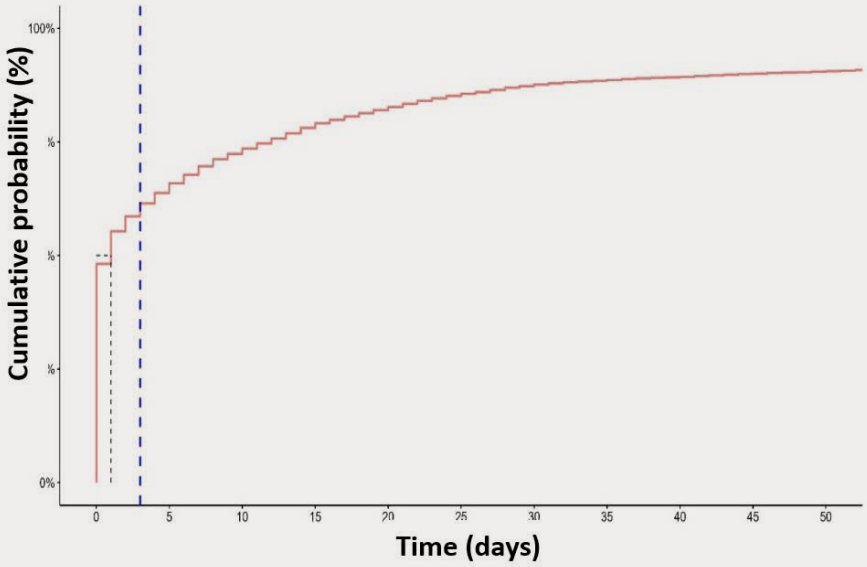
During the second half of 2022, PAHO and the Ministry of Health of the Plurinational State of Bolivia designed a pilot program to implement the indicators proposed in the technical document, for which they used real data from the country in a test environment and in accordance with Bolivia's information security and confidentiality measures. The program first analyzed the pertinence of indicators to assess the database content and structure; subsequently, a process was designed for those responsible for the national EPI to determine priorities; and finally, the indicators were selected and implemented.

The results were presented by PAHO in fruitful working meetings that identified opportunities for improvement, both for the registration system and for the conceptualization of the indicators.

Forty systematized indicators were presented, based on the workshops given by PAHO; 65% of the indicators were classified as eligible, with 98% consistency between PAHO and the country.[22] Of the 26 eligible indicators, 18 were identified as priorities for the country and, finally, the PAHO team selected 12 indicators to analyze using data from the Bolivian registry. Indicators were included from the three areas identified in the working groups: 1) start-up and operation, 2) data quality and 3) data use. Figure 1 provides an example of results from the timely registration indicator.

When implementing the indicators, it was possible to identify opportunities for improving the system design and the possibility of incorporating new validation rules that facilitate data entry by health personnel and provide more uniform data entry and quality. The need to deepen the analyses, modify proposed indicators, and incorporate new indicators into the document prepared by PAHO was also identified. Although the proposed objectives were achieved, help will continue to be provided in order to systematize these analyses, including training in R, a statistical computer tool, in order to strengthen knowledge and continue incorporating indicators that were not initially considered.

Figure 1. Results of the timely registration indicator for systematic vaccination (national electronic immunization registry of the Plurinational State of Bolivia)



Note: This indicator evaluates the period between vaccination and documentation in the national electronic immunization registry (EIR). All vaccinations should be registered as soon as possible, ideally immediately following administration; however, various factors, such as human resource limitations, access to the Internet, lack of computer equipment, the slowness of the system during high-demand campaigns, among others, can result in delays in data entry. The figure shows an inverted Kaplan–Meier graph with the timeliness of systematic vaccination registry considering 884 434 records entered from January 2019 to July 2022, in the Plurinational State of Bolivia's nominal EIR. The blue dashed line represents the goal set at the central level: three days. It is observed that approximately 65% of the registrations occur before the proposed objective. It should be noted that when analyzing COVID-19 vaccination data (n = 13.6 million), 91% of registrations occur prior to three days.

Implementing the nominal EIR allows new indicators to be incorporated for EPI monitoring and evaluation, expanding the view beyond coverage and aggregated data while improving analysis and decision-making in order to optimize program management and results. Using data and improving its quality give rise to a virtuous circle that allows decision-making to be based on increasingly reliable indicators.

In 2023, PAHO's Comprehensive Family Immunization Unit plans to continue promoting the design and implementation of nominal EIRs and the use of data. The pilot will likely be replicated in other countries of the Region of the Americas and a series of tools will be made available to countries and territories, allowing progress in the analysis of immunization program performance.

Contributed by: Plurinational State of Bolivia (Expanded Program of Immunization), Yenny Neira, Martha Velandia, Ignacio Castro, Marcela Contreras, and Pamela Burgos. •

Implementation of the Plurinational State of Bolivia's nominal electronic immunization registry began in 2018 and the process was accelerated due to the COVID-19 pandemic. The system was used for the collection and monitoring of individualized immunization data on the COVID-19 vaccine.

[20] World Health Organization. Global Immunization Newsletter: Workshop on data analysis with information from electronic immunization registries (EIRs). Geneva: WHO; October 2018:13. Available from: https://cdn.who.int/media/docs/default-source/immunization/gin/archives/gin-october-2018.pdf?sfvrsn=db1b8f27_2&download=true

[21] World Health Organization. Global Immunization Newsletter: Workshop on data analysis with information from electronic immunization registries (EIRs). Geneva: WHO; September 2019:6. Available from: https://cdn.who.int/media/docs/default-source/immunization/gin/archives/gin-september-2019.pdf?sfvrsn=5d4af8e6_2&download=true

[22] Indicators that could be analyzed considering the structure and variables contained in the database.

Final Classification of Cases in the Region of the Americas, 2022

Country	Total Suspected Cases Notified 2022	Confirmed Measles Cases 2022			Confirmed Rubella Cases 2022			Congenital Rubella Syndrome Cases (CRS) 2022		Reported Mumps Cases 2021	Reported Pertussis Cases 2021
	Measles/ Rubella	Clinical	Laboratory	Total	Clinical	Laboratory	Total	Suspected	Confirmed		
Anguilla	0	0	0	0	0	0	0	0	0	0	0
Antigua and Barbuda	0	0	0	0	0	0	0	0	0	0	0
Argentina	735	0	2	2	0	0	0	0	0	3,000	174
Aruba	0	0	0	0	0	0	0	0	0	0	0
Bahamas	1	0	0	0	0	0	0	0	0	0	0
Barbados	7	0	0	0	0	0	0	0	0	0	0
Belize	5	0	0	0	0	0	0	0	0	2	0
Bermuda	0	0	0	0	0	0	0	0	0	0	0
BES*	…	…	…	…	…	…	…	…	…	…	…
Bolivia (Plurinational State of)	253	0	0	0	0	0	0	0	0	2	0
Brazil	3,727	1	41	42	0	0	0	55	0	1,337	143
British Virgin Islands	0	0	0	0	0	0	0	0	0	0	0
Canada	…	0	3	3	…	0	0	0	0	14	32
Cayman Islands	0	0	0	0	0	0	0	0	0	0	0
Chile	298	0	0	0	0	0	0	80	0	1,758	29
Colombia	1,132	0	0	0	0	0	0	849	0	3,300	75
Costa Rica	20	0	0	0	0	0	0	5	0	77	2
Cuba	1,594	0	0	0	0	0	0	0	0	0	0
Curaçao	0	0	0	0	0	0	0	0	0	…	…
Dominica	0	0	0	0	0	0	0	0	0	0	0
Dominican Republic	138	0	0	0	0	0	0	0	0	832	8
Ecuador	311	0	1	1	0	0	0	0	0	142	0
El Salvador	570	0	0	0	0	0	0	223	0	164	1
French Guiana	…	…	…	0	…	…	…	…	…	…	…
Grenada	1	0	0	0	0	0	0	0	0	0	0
Guadeloupe	…	…	…	0	…	…	…	…	…	…	…
Guatemala	169	0	0	0	0	0	0	0	0	0	0
Guyana	0	0	0	0	0	0	0	0	0	0	…
Haiti	186	0	0	0	0	0	0	70	0	0	0
Honduras	145	0	0	0	0	0	0	17	0	248	8
Jamaica	9	0	0	0	0	0	0	0	0	0	0
Martinique	…	…	…	0	…	…	…	…	…	…	…
Mexico	2,529	0	0	0	0	0	0	0	0	2,329	22
Montserrat	0	0	0	0	0	0	0	0	0	0	0
Nicaragua	147	0	0	0	0	0	0	39	0	0	0
Panama	34	0	0	0	0	0	0	2	0	116	5
Paraguay	664	0	0	0	0	0	0	7	0	128	5
Peru	126	0	0	0	0	0	0	0	0	70	35
Puerto Rico	…	…	…	…	…	…	…	…	…	…	…
Saint Kitts & Nevis	0	0	0	0	0	0	0	0	0	0	0
Saint Lucia	0	0	0	0	0	0	0	0	0	0	0
Sint Maarten	0	0	0	0	0	0	0	0	0	…	…
St. Vincent and the Grenandines	0	0	0	0	0	0	0	0	0	0	0
Suriname	0	0	0	0	0	0	0	0	0	0	0
Trinidad and Tobago	0	0	0	0	0	0	0	0	0	0	0
Turks and Caicos	0	0	0	0	0	0	0	0	0	0	0
United States of America	…	…	118	118	…	0	0	…	0	694	6,126
Uruguay	0	0	0	0	0	0	0	0	0	143	44
Venezuela (Bolivarian Republic of)	1,859	0	0	0	0	0	0	0	0	42	0
Regional Total	**14,660**	**1**	**165**	**166**	**0**	**0**	**0**	**1,347**	**0**	**14,398**	**6,709**

…No information was provided
Source: M-R-CRS: ISIS and country reports; mumps and pertussis: Country reports through the electronic PAHO-WHO/UNICEF Joint Reporting Form (eJRF), 2022.
*Bonaire, St. Eustatius, and Saba
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