Immunization Newsletter

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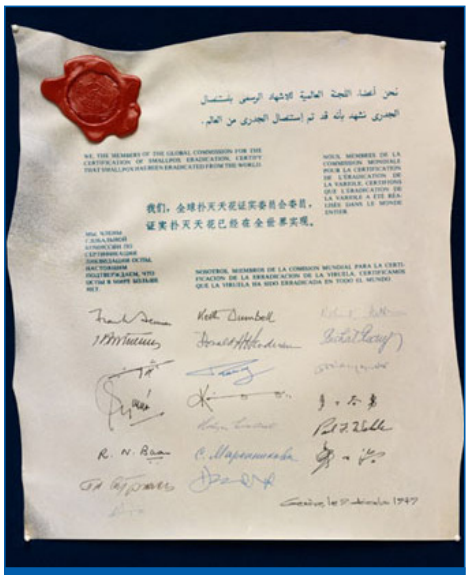
40 Years of Smallpox Eradication

December 2019 marks the 40th anniversary of global smallpox eradication. We are publishing an excerpt from the preface from WHO's "Final Report of the Global Commission for the Certification of Smallpox Eradication"[1] to commemorate this anniversary:

"At the beginning of the twentieth century smallpox affected every continent and virtually every country in the world at one time or another. Over the first half of the century it was eliminated from most countries of Europe, North America and Oceania, but it remained endemic in most of Africa, Asia and South America.

When the World Health Organization was set up in 1948 it singled out smallpox as the first disease whose control should be sought by all countries, but it was not until 1958 that there was an explicit call from the World Health Assembly for the worldwide eradication of smallpox. Another 28 countries became free of smallpox during the next decade, but in 1967 the disease was still endemic in 33 countries with a total population of 1200 million and in that year, it caused an estimated 10-15 million cases, with some 2 million deaths.

In 1966 the World Health Assembly took the decisive step of calling for an intensified smallpox eradication programme. For the first time, too, the eradication programme received substantial support from the regular budget of WHO. As a result, country after country achieved eradication, and in 1977 global eradication appeared imminent. […]



Certificate of Eradication. Official certificate signed on 9 December 1979, by members of the Global Commission certifying the global eradication of smallpox.[2] Photo: WHO.

In October 1977 the Director-General of WHO convened a group of experts from countries throughout the world to advise the Organization on the nature of the measures that should be taken to convince the Organization and all health authorities that eradication had been achieved. […] The experts recommended that the Director-General should formally establish a Global Commission for the Certification of Smallpox Eradication; (1) to review the programme in detail; (2) to recommend such additional activities as it deemed necessary to be certain that eradication had been achieved;

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[1] "Final Report of the Global Commission for the Certification of Smallpox Eradication." Published by WHO in December 1979. Accessible at https://www.who.int/csr/disease/smallpox/resources/en/

[2] Excerpted from "Smallpox Zero: An Illustrated History of Smallpox and its Eradication" by Jonathan Roy.

IN THIS EDITION

What I Have Learned...

By Dr. Akira Homma, Doctor of Veterinary Medicine, Doctor of Science, Senior Scientific and Technological Advisor — Bio-Manguinhos/Fiocruz

My professional life has always involved vaccines and vaccinations, and PAHO/WHO has been an important part of different periods in my life. From 1969 to 1971, a PAHO post-doctoral fellowship allowed me to study in the Department of Virology and Epidemiology at the Baylor College of Medicine in Houston, Texas. From 1991 to 1997, I acted as PAHO Regional Advisor on Biologics. This was an extremely important period in my professional education, working with the countries of the Region of the Americas on issues specific to vaccines and vaccinations.

In the Region, our immunization programs seek to improve vaccine quality, motivating countries to strengthen their regulatory agencies to guarantee the quality of the vaccines used in immunization programs. In 1994, we developed the Regional System for Vaccines (SIREVA) with financial support from the Canadian International Development Agency (CIDA). This project facilitated the creation of working groups for epidemiological studies of Streptococcus pneumoniae in order to identify the prevalent serotypes in the Region before introducing vaccines. SIREVA sought to foment technical activities for vaccine development in Latin America, with strong support from the government of Mexico.

Dr. Ciro de Quadros, whom I met at the National School of Public Health in Rio de Janeiro in 1968, provided me with opportunities to contribute in this field. He offered strong leadership, a shrewd spirit, daring, dynamism, and persistence, with a sharp focus on achieving results in the area of immunization. Disease prevention through vaccination was an objective throughout Ciro's life. He was a vaccinator from the outset of his professional career, participating in smallpox immunization in Brazil and Africa. Because of his unique work, his successes, and his contributions to public health in the Americas and around the world, in 2014 PAHO/WHO honored him a Public Health Hero.

I first participated in PAHO's Technical Advisory Group (TAG) on Vaccine-preventable Diseases at the meeting in Guatemala, in my role as a PAHO professional speaking about vaccine quality; and when I left the position of Regional Advisor on Biologics in 1997, Ciro invited me to join the TAG, which pleased me enormously. Since then, I have taken part in all TAG meetings. I learned important lessons from TAG chair Dr. Donald Henderson, former coordinator-general of the WHO Global Smallpox Eradication campaign, and from Ciro de Quadros, in preliminary discussions to identify the most important actions and issues to be addressed by the TAG. In this period, meetings were organized so that each issue was presented briefly by a PAHO professional. Then the countries presented strategies and results, followed by an in-depth discussion of divergences and outcomes. Dr. Henderson made use of his experience, knowledge,

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(3) to report to the Director-General when it was satisfied that eradication had been achieved, and (4) to recommend such additional measures as it considered necessary for the post-eradication era. The Executive Board in January 1978 and the Thirty-first World Health Assembly in May 1978 endorsed the establishment of the Global Commission.

The Global Commission met in December 1978 to review the programme and to advise on subsequent activities. It met again in December 1979 to assess progress, and at that meeting made the final recommendations that are presented in this report. […] The procedures employed for the certification of eradication are described, as well as the findings of 21 different international commissions that visited and reviewed programmes in 61 countries. These findings provide the evidence for the Commission's conclusion that the global eradication of smallpox has been achieved. In recording this achievement, the Global Commission pays tribute to the international cooperation received in the programme and to the devoted work of hundreds of thousands of health workers of all levels in many countries of the world that made it possible." ■

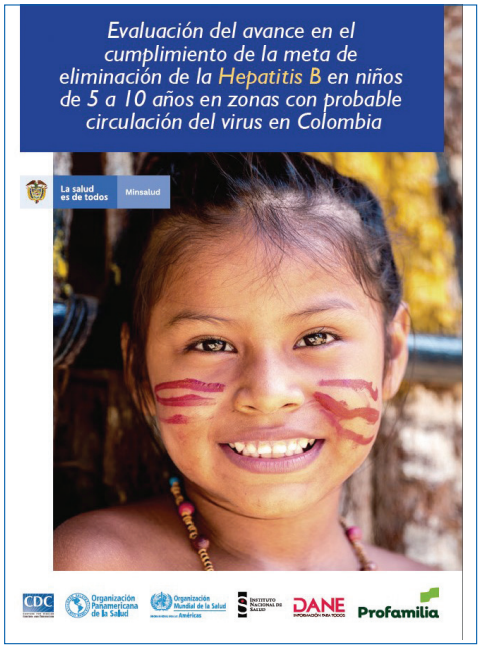
Advancing toward the Elimination of Hepatitis B in 5- to 10-year-old Children in High-risk Areas of Colombia

Within the framework of the global goal to eliminate hepatitis B virus (HBV) infection by 2030, PAHO's Technical Advisory Group (TAG) on Vaccine-preventable Diseases[3] requested that the countries of the Region of the Americas assess the feasibility of eliminating perinatal and childhood transmission of HBV in the Region. This means achieving a prevalence of 0.1% or less when testing for the hepatitis B surface antigen (HBsAg) in children under 5 years of age. To confirm this achievement, the Centers for Disease Control and Prevention (CDC) and PAHO proposed that the Colombian Ministry of Health and Social Protection (MSPS) evaluate the elimination status of hepatitis B in the country, following a two-stage protocol.

In the first stage, CDC, PAHO, and MSPS identified the 36 municipalities (among the 1,122 municipalities in Colombia) with the greatest circulation of the virus, based on epidemiological information. This information included data from seroprevalence studies and on hepatitis B virus rates in pregnant women, as well as coverage of the third dose of the pentavalent vaccine and institutional childbirth as a proxy for application of the birth dose. These are considered factors that can affect the risk of HBV transmission, but that may not be reflected in the rate seen in pregnant women due to underreporting.

In the second stage, Profamilia (a Colombian non-governmental organization) carried out a classification survey in the priority municipalities to determine whether HBV prevalence in 5-10-year-olds is less than or equal to 0.001. It was established that a probability sample of 3,160 children aged 5 to 10 would be sufficient to assess the hypothetical prevalence of HBV ≤ 0.001 with 95% confidence and 90% power. Multistage probability sampling was used: in the first sampling stage, city blocks were selected in urban areas and sectors in rural areas; in the second stage, homes with eligible-age children were selected; in the third, one child in each home was randomly selected for the study. The person responsible for each selected child was interviewed to obtain basic information on the characteristics of the homes and on specific vaccines. In each case, informed consent was obtained from the person responsible for the child selected to participate in the survey, and informed assent was obtained from the child for application of the Vikia HBsAg test.

Prior to administration of the survey, a pilot study was conducted for field evaluation of the instruments and quality control system, and to



standardize the strategy for field work. The study, including the procedures to be carried out with the participating population, was presented to the government authorities in the priority municipalities to ensure their approval and support. In addition, a meeting was held with delegates of the Health Subcommittee of the Permanent Table for Consensus-building with Indigenous Peoples and Organizations in order to socialize the project and obtain support for it. As a result of this consensus-building process, the survey included questions of special interest to the communities, such as reading and writing in their own language, knowledge of "law of origin" (i.e., their own legal system), and the health care provided by traditional practitioners.

When the questionnaire had been validated and standardized, the field team received training on: identifying homes and children for sampling; use of survey techniques, questionnaires, and monitoring forms; use of the data entry app; channeling people with possible positive results to the health and social security system (SGSSS); and conducting and reading the Vikia HBsAg rapid test.

In order to implement the survey, it was essential to gain the support of local and indigenous authorities in the municipalities and to previously identify the sample of homes to be surveyed. This facilitated access to the selected neighborhoods and villages, identification of translators to conduct the surveys in indigenous communities where Spanish is not spoken or understood, and the activation of channels for the prevention and care of hepatitis B.

By conducting the survey through the Computer Assisted Personal Interviewing (CAPI) system, data entry times were reduced, data quality was improved, and daily monitoring of implementation and response rates was made possible. In addition, the use of tablets facilitated photographic registry of both the test and the vaccination card, contributing to quality control and report verification, which are essential for database clean-up.

Different means of transportation were used to access the municipalities (by air, land, river, horse, motorbike, on foot). To optimize the use of time and resources when it was necessary to travel a long way from the municipal seat of government to the villages, the field team stayed overnight in the homes of people participating in the survey. In the Orinoquía and Amazon regions, it was necessary to plan trips to municipalities and villages in advance, since there is only one regular airline, demand is high, and access to some locations in these departments is possible only on expensive private airlines.

In general, the survey was well received, partic-

[3] First ad hoc meeting of the PAHO Technical Advisory Group (TAG) on Vaccine-preventable Diseases, 2016, Final Report: https://www.paho.org/hq/index.php?option=com_content&view=article&id=1862:reports-technical-advisory-group-vaccine-preventable-diseases&Itemid=39430&lang=en.

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ularly in remote areas with more scattered populations, where there are fewer health facilities. A 94% response rate was achieved. There was only one municipality where the survey could not be used because no Vikia HBsAg tests were available in the country and it took more than two months to import them, by which time the field team had completed its work on the survey.

The greatest difficulties in the field work involved the long journeys through sparsely populated rural areas, with poor road conditions. In some areas with river access, climatic conditions made travel slower than had been planned (since rivers go dry in certain areas in summertime). Guides were hired and different forms of transportation were provided by people known in the local area. This facilitated the survey teams' access to places with public safety problems or where criminal groups were present.

The interviewers conducted educational activities that provided household residents with information on hepatitis B, how it is transmitted, its complications, and how it can be prevented, emphasizing the importance of receiving the complete vaccination schedule. A leaflet with information on hepatitis B was designed and it was presented in each visited home. The indigenous households felt more identified with the leaflet, which showed an indigenous girl on the front; some Afro-Colombian homes, meanwhile, asked why there was no one representing their people. This educational strategy, combined with monitoring by the people in charge of the Expanded Program on Immunization (EPI), facilitated acceptance of the Vikia HBsAg test in households that had rejected it because the person responsible for the children living there initially believed it was not necessary since the children had already received the complete vaccine series.

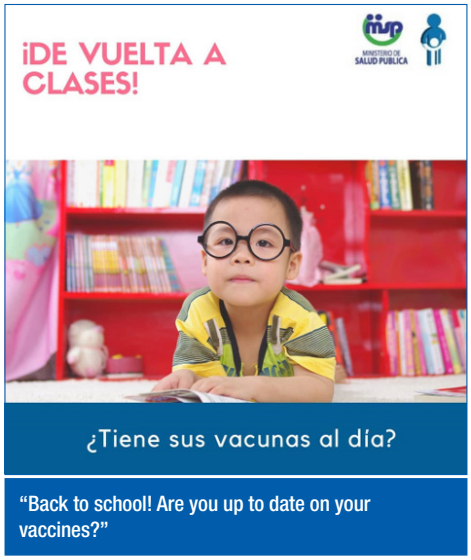
The results of the serological survey showed that no child was reactive to the rapid tests for hepatitis B, indicating that Colombia had probably achieved the goal of eliminating mother-to-child transmission of hepatitis B as a result of three decades of immunization programs and campaigns.

This study helps to estimate the prevalence of hepatitis B in children between 5 and 10 years of age, using an innovative two-stage methodology. It offers a moderately-priced option for monitoring progress toward the goal of eliminating hepatitis B in resource-limited countries that have good epidemiological data and disaggregated records that enable local-level analysis of hepatitis B in pregnant women, adults, and children, vaccination coverage against hepatitis B in newborns and coverage of the third dose of pentavalent vaccine, coverage of institutional childbirth, and, in particular, previous HBV prevalence studies. ■

Contributors:
CDC, PAHO, MSPS, Asociación Profamilia de Colombia.

VacunateRD, the Immunization Program in the Dominican Republic Taking a Step towards Innovation in Social Communication*

Social media platforms are vital to reaching a wide segment of the population; hence, they are an essential component of the communications strategies for any immunization program. Considering this reality, the Expanded Program on Immunization (EPI) of the Dominican Republic, with the support from the Pan American Health Organization/World Health Organization (PAHO/WHO), integrated the use of social media into its education and communication strategies.



"Back to school! Are you up to date on your vaccines?"

A direct communication channel has been established with the community under the @VacunateRD handle on Instagram and Facebook. Through these platforms, the users' questions are answered; timely assistance is provided by referring people to vaccination posts around their areas; and key messages are promoted about the regular immunization program and events, as was the case with 2019's Vaccination Week in the Americas (VWA).

"Where do I get vaccinated?"

This project has had very good acceptance. Within the framework of VWA 2019, one message about the launch of the campaign had the following scope:

on Instagram: 110,324 people reached, 204,546 impressions (number of times the message was seen), 29,460 people watched the full video; 644 people became followers; 4,681 people interacted with the publication. While on Facebook, the same message reached 154,834 people, had 43,292 video views, and 4,077 interactions.

In addition, another message about the campaign was published, reaching 53,311 people; had 76,643 impressions and 852 interactions on Instagram. And on Facebook, 46,216 people were reached; 583,589 video views and 561 clicks on the advertising link.

"Protection begins in pregnancy."

The Dominican Republic will continue with this strategy through the production of innovative and attractive content in order to effectively inform the population about the importance of vaccination at the appropriate ages, and to promote the quality of vaccines offered in vaccination posts from the Ministry of Public Health. With this digital component, the aim is to reach as many people as possible without leaving anyone behind! ■

**This article was originally published in WHO's Global Immunization Newsletter in September 2019.*

Seven Frequently Asked Questions on the Hepatitis B Vaccine Birth Dose

1. How is hepatitis B transmitted?

Viral hepatitis B is a highly infectious disease which can be easily transmitted from a person infected with the hepatitis B virus (HBV) through blood, semen, and other bodily fluids[4]. As such, transmission often occurs through sexual contact, from mother to child at birth, needle sharing, or household exposure. Many who have the infection are asymptomatic, allowing the undetected virus to spread[5].

2. What are the risks of hepatitis B?

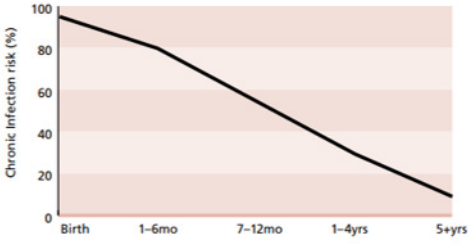
In 2016, it was estimated that 0.4% of the population in the Americas (approximately 4 million people) are infected with hepatitis B. Most countries in the Region are considered to have low prevalence (<2%), however, there are some areas in the Caribbean and Amazon Basin (areas with a high concentration of indigenous populations) with hepatitis B prevalence ranging from 2% to over 8%[6]. Without treatment, hepatitis B can become a chronic infection (defined as being hepatitis B surface antigen [HBsAg] positive).[6] Chronic hepatitis can develop into cirrhosis or liver failure which can progress to hepatocellular carcinoma (liver cancer) and often, death[5]. There is no cure for chronic hepatitis B, those affected can seek antiviral therapy[7]. Liver transplantation is sometimes considered. An estimate of 2,000 people die every year from a liver disease originating from hepatitis B[8].

3. Who is most at risk of being infected by hepatitis B?

Due to close contact with blood and cervical fluid, the most common route for mother-to-child transmission is at birth[5]. Mother-to-child transmission and early postnatal transmission are the most common causes of chronic hepatitis infection across the world[9]. Around 70-90% of babies born to infected mothers (HBsAg positive and particularly hepatitis e antigen [HBeAg] positive, indicating that HBV replication is highly active and that the blood and other fluid are highly contagious) will become infected by hepatitis B without intervention[10].

The likelihood of developing chronic hepatitis is inversely related to the age at which the infection was acquired (**figure 1**). While many are asymptomatic, up to 80-90% of infections acquired at infancy, 30-50% of infections acquired under the age of 6, and <5% infections acquired by older children, adolescents, and adults are likely to develop into chronic hepatitis. Twenty-five percent will risk premature death with no intervention[5,8].

Figure 1. Risk of Chronic HBV Infection by Age of Infection



Source: Source: World Health Organization Department of Immunization. *A Guide for Introducing and Strengthening Hepatitis B Birth Dose Vaccination*. Geneva; 2015. https://apps.who.int/iris/bitstream/handle/10665/208278/9789241509831_eng.pdf?sequence=1. Accessed October 1, 2019.

4. How can mother-to-child transmission of hepatitis B be prevented?

Given the risk of chronicity if infected at birth, the first 24 hours of life are a critical window. Substantial evidence has proven that vaccinating neonates within the first 24 hours of life prevents mother-to-child transmission and the development of a chronic HBV infection[5,11]. As such, PAHO, in accordance with the WHO, recommends that all countries in the Americas implement the universal hepatitis B birth dose in their national vaccination schedules, regardless of if the mother is known to be infected by hepatitis B[6]. As HBV does not always present symptoms, many pregnant women are unaware of their infection. Birth dose vaccination exists as a cost-effective safety net to account for this[12].

In countries with high disease endemicity or where HBV is mainly spread from mother to infant at birth, providing the first dose at birth is very important. Nevertheless, providing a first dose at birth even in countries with intermediate to low endemicity or where HBV is mainly spread from person-to-person during early childhood is particularly important as a great proportion of chronic infections are acquired through early transmission[13]. Additionally, neonates born to HBsAg-positive mothers (particularly if they are HBeAg positive) may also receive hepatitis B immunoglobulin (HBIG) within the first 24 hours of life in addition to vaccination which may provide added protection to newborns[5,9].

WHO has predicted that neonatal hepatitis B vaccination could prevent 80-95% of chronic cases[5]. One study found that the risk of infection for infants born to HBsAg-positive mothers increased significantly when the first dose of the hepatitis B vaccine was received 7 days after birth compared with those vaccinated 1–3 days after birth[9,13,14]. Similarly, a meta-analysis of several randomized controlled trials found that infants born to HBV-positive mothers were 3.5 times less likely to become infected when vaccinated at birth[9]. Likewise, a study done in Colombia on 1,214 children concluded that those who had received a newborn dose were as low as 0.09 times as likely to be hepatitis B-positive compared to those who had not received a birth dose[10].

5. What if a hepatitis B vaccine is not given within 24 hours of birth?

If administration within 24 hours has not happened, a later birth dose has some effectiveness in preventing mother-to-child transmission (perinatal). For this reason, PAHO/WHO recommends a delayed birth dose whenever the first dose is not available within 24 hours of birth. The effectiveness of preventing mother-to-child transmission decreases with each day the child is not immunized so it is critical to vaccinate the child as soon as possible, particularly within 3 days[13,14,15].

There are other ways a child can contract hepatitis B. Infants can be exposed to the virus through another caregiver, family member, or child[12]. The virus can remain infectious for up to 7 days on surfaces[7] and can be easily transmitted through saliva, breaks in the skin, food sharing, or razor sharing[11]. Households in endemic areas have 14-60% chance of being in contact with someone who is positive for chronic hepatitis B. For these reasons, vaccinating an infant with a late birth dose even after the first 7 days of life can be effective in protecting them from person-to-person transmission (horizontal)[11] and therefore remains beneficial followed later by the primary vaccination schedule. Any birth dose given after 24 hours should be reported as a late birth dose vaccination.

Newborn. Credit: PAHO/WHO.

6. How can the hepatitis B birth dose be integrated into the health system?

In general, there is a need to integrate birth dose vaccination within newborn care policies and practice. Facilities where deliveries occur should have the monovalent hepatitis B vaccine readily available in the delivery room or postnatal ward for birth dose administration. Infrastructure and procedures should be in place to allow for the birth dose of hepatitis B to be given in conjunction with vitamin K administration (in different anatomical locations). Similarly, BCG and hepatitis B vaccines may be administered to newborns simultaneously in different anatomical locations.[5] Also, immunization information systems should be adapted to include the registration and monitoring of the hepatitis B birth dose during the first 24 hours of life.

7. How does universal hepatitis B birth dose contribute towards hepatitis B elimination goals? What are the coverage targets for the Americas?

Eliminating mother-to-child transmission using birth dose vaccination is an important step towards hepatitis B elimination as a public health problem by 2030[5]. The TAG assessed that the elimination of mother-to-child transmission and early childhood horizontal transmission of hepatitis B is feasible in the Americas by 2020 through achieving vaccination coverage ≥95%, with one dose of the hepatitis B vaccine among all newborn babies (within 24 hours of birth) and with the third dose of the hepatitis B (or hepatitis-B-containing) vaccine among all children[6]. Currently the Region of the Americas has 72% coverage for the hepatitis B birth dose and 81% coverage for the hepatitis B third dose.[16] In order to achieve this goal of elimination of transmission PAHO urges countries to attain high vaccination coverage with the hepatitis B birth dose, as well as with the hepatitis B or hepatitis B-containing vaccines during the first year of life. Aiming to ensure high and homogenous coverage, countries should implement additional efforts, including strengthening the delivery at health facilities and outreach activities. ■

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[9] World Health Organization. Position Paper on Viral Hepatitis: Weekly Epidemiological Record. Geneva; 2017. https://apps.who.int/iris/bitstream/handle/10665/255841/WER9227.pdf;jsessionid=CEB6107AFFB2432EE967003A5EDC4C07?sequence=1. Accessed September 26, 2019.

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[13] World Health Organization. Position Paper on Viral Hepatitis: Weekly Epidemiological Record. Geneva; 2009. https://www.who.int/wer/2009/wer8440.pdf?ua=1. Accessed October 16, 2019.

[14] Marion SA, Pastore TM, Pi DW, Mathias RG. Long-term Follow-up of Hepatitis B Vaccine in Infants of Carrier Mothers. Am J Epidemiol. 1994;140(8):734-746.

[15] SAGE Hepatitis Working Group. Should Hepatitis B Vaccine within 7 Days Following Birth Be Used for the Prevention of Hepatitis B Virus Infection in Infants?; 2009. https://www.who.int/immunization/sage/2_Grade_table_Hep_B.pdf. Accessed October 16, 2019.

[16] PAHO-WHO/UNICEF. Country Reports through Joint Reporting Form (JRF). 2019.

Poliomyelitis Was Defeated in the Americas 25 Years Ago

On 21 October 2019, as part of World Polio Day, PAHO, Rotary International, and the United Nations Foundation held a joint event to mark the 25th anniversary of the Region of the Americas being certified as polio-free. Similar events were held in several countries in the Region. Three days later, on 24 October, the World Health Organization (WHO) announced certification of the eradication of wild poliovirus type 3 (WPV 3) by the Global Commission for the Certification of Poliomyelitis Eradication (GCC).

Luis Fermín Tenorio, the last case of polio in the Region of the Americas, 1991. Credit: PAHO/WHO.

This is the second of the three types of wild poliovirus that have been eradicated globally. Only wild poliovirus type 1 continues to circulate in two countries: Afghanistan and Pakistan. No type of wild poliovirus has been detected in Africa since September 2016 and the entire region of Africa is eligible to be certified free from all types of wild poliovirus in June 2020.

In the Region of the Americas, the road to eradication began in May 1985 when PAHO proposed the goal of interrupting transmission of wild poliovirus in the Americas. All governments endorsed this proposal, which received support from agencies such as UNICEF, the United States Agency for International Development (USAID), Rotary International, the Inter-American Development Bank (IDB), and the Public Health Association of Canada (CPHA).

On 23 August 1991, Luís Fermín Tenorio was the last person to contract polio in the Americas. At two years of age, he was infected by wild poliovirus in Junín, Peru. Three years after the last case was reported, the GCC declared that transmission of the wild poliovirus had been interrupted in the Americas.

Although it has been 28 years since the last case was reported and 25 years since the declaration that this disease had been eliminated in the Americas, efforts to keep the Region polio-free must continue. If there is a single case of polio in the world, all the world's children are at risk.

The Regional Certification Commission (RCC) has expressed its concern about large gaps in vaccination coverage at the district level, and has called on countries to:

- Identify districts at risk and/or where coverage is under 50%, indicating the size of these populations;
- Implement and evaluate complementary activities or vaccination campaigns, as necessary;
- Identify barriers to polio vaccination and carry out a risk assessment to guide specific vaccination activities;
- Act with urgency to provide two doses of inactivated polio vaccine (IPV) (full or fractional) and achieve optimal coverage at the country and district levels, in line with the recommendations made by PAHO's Technical Advisory Group (TAG) on Vaccine-preventable Diseases in 2019.

The RCC has made these general recommendations on the following components:

Children showing vaccination marks on their fingers. Credit: WHO/Sigrun Roesel.

Vaccination coverage	- Countries should identify districts that report coverage above 100% in order to analyze the quality of the data (numerator and denominator); - The TAG recommends that countries should triangulate the information on the numerator and denominator with other sources of information when analyzing coverage at the subnational level.
Epidemiological surveillance	- Countries should ensure that standards are maintained for surveillance of acute flaccid paralysis (AFP), including detection of non-polio enteroviruses (NPEVs).
Risk assessment and risk mitigation	- Countries should disseminate WHO information on the risks of wild poliovirus type 1 (WPV1) and circulating vaccine-derived poliovirus (cVDPV) at all subnational levels; - Countries should carry out annual risk assessments and include the results in the annual report, including the evaluations made at the subnational level; - Consider mapping cases of other vaccine-preventable diseases in order to guide the assessment of the risk of polio importation; - Identify the importation risk (patterns of population movement), particularly across land borders, but also by air and sea, and address these risks in mitigation plans; - Countries should complete their mitigation plans in accordance with the methodology presented at the Sixth Regional Meeting on Polio, held in Guatemala City in December 2018.
Poliovirus containment	- Countries should maintain up-to-date electronic databases on survey processes, and an inventory of poliovirus materials.
Preparedness and response	- Countries should carry out an annual review of their response plans for events and outbreaks and should perform a Poliovirus Outbreak Simulation Exercise (POSE) at least every two years; - Countries with designated essential poliovirus facilities (dPEF) should address possible containment gaps as part of the POSE and should conduct a simulation exercise.

The work is not finished yet. Dr. Ciro de Quadros, pioneer in polio eradication and public health hero in the Region of the Americas said:
"Wherever there are weaknesses in vaccination coverage, epidemiological surveillance, or monitoring, wherever there is an unvaccinated child, and wherever a vaccination campaign is carried out without the commitment or the passion to achieve high coverage, the poliovirus will find unvaccinated children.[17]" ■

[17] Source: Independent Monitoring Board (IMB) of the Global Polio Eradication Initiative (GPEI), October 2015.

Dominican Republic Introduces Vaccination with the Tdap Vaccine among Pregnant Women*

Introduction of vaccination with the Tdap vaccine among pregnant women. Source: EPI, Ministry of Public Health, Dominican Republic.

The Dominican Republic initiated vaccination against diphtheria, tetanus and acellular pertussis of pregnant women starting the 27th week of gestation in 17 of the 40 provinces of the country, with the main objective of reducing pertussis cases among newborns and infants. This measure has been intended to benefit 20,086 pregnant women from October to December 2019. The decision to initiate vaccination in these provinces is given as part of the interventions carried out in response to the pertussis outbreak observed the Dominican Republic since 2018.

According to data reported to the surveillance system, 147 probable cases were reported vs 47 reported in 2017. Fifty-nine percent of the cases reported among children under one year old occurred in infants two months of age or younger. The lethality observed was 2.72% (4/147).

Currently, from epidemiological week 1 to 44 of 2019, 118 cases of pertussis have been reported vs. 119 cases reported in the previous year for the same period. Three deaths have been registered, for a lethality of 2.54% (3/118). The highest number of cases is observed in the province of Santo Domingo, followed by San Cristóbal, and the National District. Regarding the rate, San Cristóbal reached the highest lethality rate, 3.17/100,000 habitants, followed by Peravia with 2.55/100,000 habitants.

Prior to the start of vaccination, 19 training workshops were conducted for 795 health workers (collective health 112 and health institutions 683) with profiles of: EPI managers, those responsible for vaccination services, general practitioners, obstetricians, pediatricians, nurses and health promoters. It is expected that this measure will contribute to the reduction of cases of pertussis among newborns and infants. ■

**This article was originally published in WHO's Global Immunization Newsletter in December 2019.*

First Consultation to Develop New Information System for the Epidemiological Surveillance of Vaccine-preventable Diseases*

Consultation to improve PAHO's information system for VPD epidemiological surveillance. Credit: PAHO/WHO.

Twenty participants representing fourteen countries of the Region of the Americas and the Caribbean Subregion: Argentina, Brazil, Chile, Colombia, Dominican Republic, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, and Peru participated in the First Consultation to Develop New Information System for the Epidemiological Surveillance of Vaccine-preventable Diseases in Washington, DC on 10-11 December 2019.

The objective of this first consultation was to define, analyze and document the main requirements to develop a web-based surveillance system for vaccine-preventable diseases (VPDs). All countries in the Americas carry out VPD epidemiological surveillance, and PAHO's Comprehensive Family Immunization Unit (FPL/IM) collects information on epidemiological surveillance for VPDs in 21 countries and the Caribbean subregion.

The first consultation was also carried out to learn the current state of information systems for epidemiological surveillance for fourteen countries of the Region, and the requirements to implement a web-based surveillance system for VPDs. After standardized presentations from each country, participants described data flows for VPD epidemiological surveillance in their countries. They also contributed to three working groups that discussed the following: 1) characteristics of an information system for ideal epidemiological surveillance; 2) variables that are used in their countries for measles and; 3) variables that are used in their countries for acute flaccid paralysis. After this, participants defined some possible reports that they would like the new information system for epidemiological surveillance to have.

This consultation workshop was the first one organized by PAHO, however, it is necessary to continue collecting information so that the new information system for epidemiological surveillance responds to the information needs of countries, as well as regional and global levels.

Preliminary conclusions for the first consultation to develop a new information system for VPD epidemiological surveillance were: 1) consider

Participants from consultation to improve PAHO's information system for VPD epidemiological surveillance. Credit: PAHO/WHO.

characteristics of the current ISIS information system, which have been useful in the last decade; 2) note the importance of continuing to update the information system to have better data availability and quality; 3) continue consulting with countries to build a strong information system that facilitates sending and collecting data, to have quality analyses and improved decision-making. ■

**This article was originally published in WHO's Global Immunization Newsletter in December 2019.*

Final Classification of Cases in the Region of the Americas, 2019

Country	Total Suspected Cases Reported	Confirmed Measles Cases			Confirmed Measles Cases			Congenital Rubella Syndrome Cases (CRS)		Reported Mumps Cases	Reported Pertussis Cases
	Measles/Rubella	Clinical	Laboratory	Total	Clinical	Laboratory	Total	Suspected	Confirmed		
Anguilla	1	0	0	0	0	0	0	0	0	—	0
Antigua & Barbuda	4	0	0	0	0	0	0	0	0	0	0
Argentina	2034	0	17	17	0	0	0	0	0	7715	900
Aruba	0	0	0	0	0	0	0	0	0	5	1
Bahamas	1	0	0	0	0	0	0	0	0	0	0
Barbados	11	0	0	0	0	0	0	0	0	0	0
Belize	58	0	0	0	0	0	0	0	0	2	0
Bermuda	0	0	0	0	0	0	0	0	0	36	0
BES*	—	—	—	—	—	—	—	—	—	—	—
Bolivia	253	0	0	0	0	0	0	0	0	—	212
Brazil (a)	30104	0	10346	10346	0	0	0	0	0	74	0
Canada	—	—	29	29	—	—	—	0	0	787	1679
Cayman Islands	4	0	0	0		0		0		0	
Chile	591	0	23	23	0	0	0	0	0	14865	682
Colombia (a)	7185	0	208	208	0	0	0	316	0	19105	416
Costa Rica	66	0	0	0	0	0	0	0	0	127	36
Cuba	2596	0	0	0	0	0	0	0	0	0	0
Curaçao		0	0	0	0	0	0	0	0	—	—
Dominica	0	0	0	0	0	0	0	0	0	0	0
Dominican Republic	184	0		0		0	0	0	0	1572	147
Ecuador	1030	0	19	19	0	0	0	0	0	2699	30
El Salvador	522	0	19	19	0	0	0	0	0	2699	30
French Guiana	—	—	—	—	—	—	—	—	—	—	—
Grenada	1	0	0	0	0	0	0	0	0	0	0
Guadaloupe	—	—	—	—	—	—	—	—	—	—	—
Guatemala	519	0	1	1	0	0	0	0	0	440	67
Guyana	34	0	0	0	0	0	0	0	0	0	0
Haiti	213	0	0	0	0	0	0	0	0	—	9
Honduras	207	0	0	0	0	0	0	0	0	14761	74
Jamaica	216	0	0	0	0	0	0	0	0	0	0
Martinique	—	—	—	—	—	—	—	—	—	—	—
Mexico				0	0	0	0	0	0	—	783
Montserrat	1	0	0	0	0	0	0	0	0	0	0
Nicaragua	286	0	0	0	0	0	0	0	0	3	53
Panama	69	0	0	0	0	0	0	0	0	—	20
Paraguay	901	0	0	0	0	0	0	0	0	1626	53
Peru	1187	0	42	42	0	0	0	0	0	0	483
Puerto Rico	—	—	—	—	—	—	—	—	—	—	—
Sint Maarten (Dutch part)	0	0	0	0	0	0	0	0	0	1	0
St. Kitts & Nevis	0	0	0	0	0	0	0	0	0	0	0
St. Lucia	0	0	0	0	0	0	0	0	0	0	0
St. Vincent & the Grenadines	3	0	0	0	0	0	0	0	0	0	0
Suriname	3	0	0	0	0	0	0	0	0	9	—
Trinidad & Tobago	13	0	0	0	0	0	0	0	0	0	0
Turks & Caicos	0	0	0	0	0	0	0	0	0	0	0
United States	—	—	372	372	—	2	2	0	0	2251	13439
Uruguay	14	0	0	0	0	0	0	0	0	1645	187
Venezuela (a)	8005	3507	2272	5779	—	—	—	—	—	—	144
Virgin Islands (UK)	0	0	0	0	0	0	0	0	0	0	0
	56316	**3507**	**13329**	**16836**	**0**	**2**	**2**	**316**	**0**	**67890**	**21364**

—No information provided
Source: ISIS, MESS systems and country reports
*Bonaire, St. Eustatius and Saba
(a) Epidemiological update, measles, 1 November 2019, PAHO/WHO, Washington, D.C.
Updated: 26 November 2019

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HOMMA cont. from page 1

Akira Homma, Rio de Janeiro, 3 de setembro de 2019.

and great leadership to present a consensus for adoption by the countries.

These are different times, with rapid economic and political changes, both globally and regionally, as well as major advances in global science and technology. This is bringing new problems. Facing them will require further changes and new options. The Americas—whose high vaccination coverage made it the uncontested leader in immunization among WHO regions—received certification for the elimination of poliomyelitis in 1994, rubella in 2015, and measles in 2016, but had the lowest rates of mandatory reporting of vaccine-preventable diseases in the history of public health. In 2019, Venezuela and Brazil lost their certification of measles elimination, after outbreaks in 2017 were not controlled within a one-year period.

Measles epidemics have been occurring in several countries around the world, affecting Europe since 2017. Starting in Ukraine and spreading to dozens of other countries, there have been tens of thousands of cases and hundreds of deaths. Measles epidemics have also occurred in the Philippines and other Asian countries. The world faces great challenges if we are to maintain high and homogeneous coverage. These challenges include:

- lack of information about the importance of vaccination;
- difficult access to vaccination;
- fear of adverse reactions;
- fear of injections;
- fake news attributing problems to vaccination;
- economic conditions that make it impossible for caregivers to take children to vaccination posts;
- a false sense of security due to absence of disease;
- religious, political, or cultural beliefs contrary to vaccination;
- shortages of vaccines at vaccination posts;
- vaccination-related errors (e.g., incorrect diluent, wrong volume of vaccine, incorrect administration method, delay in care, lack of trained professionals, and lack of infrastructure). All these are among the problems contributing to low vaccination coverage.

These problems have causes that need to be addressed. Many of them already are being tackled by governments in different countries. In Brazil, information on vaccination campaigns against influenza, measles, and yellow fever has been more widely disseminated in the print and broadcast media than has been the case for many years. The Minister of Health has personally participated in many vaccination events, calling for public participation in various localities. However, the results have not been sufficient. In some places, such as Rio de Janeiro, despite intensive information campaigns, the coverage achieved in the vaccination campaign in June-August 2019 was far below the projected level (yellow fever < 60%; influenza <56%; and measles <60%). This situation requires urgent review and a search for new strategies and operational approaches, which may include:

- creation of multidisciplinary groups with participation from professionals and communities to seek and discuss solutions;
- establishment of new partnerships with society as a whole;
- integration of activities between public and private entities;
- identification and development of new champions at all levels of activity, including community leadership;
- inclusion of disease prevention through vaccination as a subject in educational curricula;
- specific options for each country to deal with low vaccination coverage.

In addition, it is necessary to invest in research on the measles situation, focusing on waning immunity to the measles virus and on genetic changes in the measles virus. A third dose of the measles vaccine for 19-20-year-olds could also be recommended. In short, there are many questions that can only be properly addressed and implemented after more research and scientific evidence becomes available.

These issues have emerged from the experience of all TAG members, and from conversations with representatives of various countries and with PAHO professionals, who are indefatigable in serving needs and seeking knowledge and better approaches to vaccination in the Americas—efforts that focus on the search for the best policies for the prevention of vaccine-preventable diseases in the Region of the Americas.

Congratulations to the *Immunization Newsletter* for 40 years of service to the population of the Americas. Congratulations too, to Chairman Dr. Peter Figueroa and TAG members for their enormous contribution to vaccines and vaccination in the Americas. ■