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Evaluating the Effectiveness of the Seasonal Influenza Vaccine in Latin America and the Caribbean: The Technical Declaration of the City of Antigua

From 25 February to 1 March 2013, a meeting was held in Antigua, Guatemala with the following main objectives: 1) to exchange experiences and lessons learned to date in the implementation of the pilot studies in selected Central American countries; 2) to learn about the experiences of the European Network I-MOVE for the study of influenza vaccine effectiveness; and 3) to gauge country interest in establishing a similar network in Latin America and the Caribbean. Meeting participants included technical staff representing the influenza surveillance and immunization programs of the four pilot countries (Costa Rica, El Salvador, Honduras, and Panama), as well as representatives from Argentina, Brazil, Colombia, Guatemala, Nicaragua, Paraguay and Uruguay. In addition, there were three I-MOVE technical experts on influenza vaccine effectiveness from Spain and technical staff members from the United States Centers for Disease Control and Prevention's (CDC) Division of Influenza, Central American Regional Office (CDC-CAR), the Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET), and from the Pan American Health Organization (PAHO) headquarters and selected country offices.

During the first day of the meeting, CDC presented several topics including the experience the United States has had with using influenza vaccine effectiveness as evidence for decision-making; the principles, concepts and methods for evaluating influenza vaccine effectiveness; the importance of good sentinel surveillance data for estimating influenza vaccine effectiveness and impact; and the current CDC program for international influenza vaccine donation. PAHO gave an overview of the current regional situation concerning seasonal influenza vaccine use. Finally, representatives from Costa Rica, El Salvador, Honduras, and Panama that are conducting pilot vaccine effectiveness studies on the prevention of severe acute respiratory

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Participants of the Meeting to Evaluate the Effectiveness of the Seasonal Influenza Vaccine in Latin America and the Caribbean, Antigua, Guatemala, 25 February – 1 March, 2013.

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The Golden Anniversary: 50 Years of the Measles Vaccine

And 10 years of measles elimination in the Americas

Licensed in the United States in March 1963, the attenuated Edmonston measles virus vaccine is celebrating its 50th anniversary. The attenuated Edmonston measles virus vaccine has been used in every country throughout the world, except in China, Japan and Russia which have developed their own vaccines. Derivatives of Edmonston have retained their immunogenicity, safety and efficacy through these five decades. The vaccine protects against the 23 recognized genotypes of the measles virus throughout the world despite shifts in the structure and content of prevailing and circulating strains of the virus.

The development of the measles vaccine came after the measles virus was first cultured in 1954; the strain came from a boy named David Edmonston. By the 1960's, researchers Katz, Enders and Holloway had attenuated their Edmonston strain and had shown it stimulated antibody production in susceptible children. The approval for the use of the vaccine came after some 25,000 children had received the vaccine and 95% of them presented an effective antibody response after a single dose. In 1967, after the success of using measles vaccine in reducing the disease, the United States launched a campaign to eliminate the disease from the country. The same year, the United Kingdom recommended measles vaccination with the live attenuated vaccine for children who had not had the disease. The use of a killed measles vaccine, also licensed in the United States in 1963, was short-lived due to the low protective value of the antibodies it induced and the short duration of the protection it induced.¹ Infants and children are recommended to receive two doses of vaccine, ensuring

¹ Hendriks J and Blume S. Measles Vaccination before the Measles-Mumps-Rubella Vaccine. *Am J Public Health* 2013; 103(8):1393-1401.

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illness (SARI) shared their experiences and lessons learned. This multinational and multi-center undertaking utilizes a case-control study design and is conducted in sentinel hospitals as a collaborative effort between the countries' Influenza Disease Surveillance program and the Expanded Program on Immunization (EPI).

During the second day of the meeting, Argentina shared their national experiences with the influenza A (H1N1) pandemic and Brazil shared information regarding influenza vaccine effectiveness studies that had been conducted at the sub-national level. Dr. Marta Valenciano, from EpiConcept, Madrid, shared the experience of establishing the European Network I-MOVE and some of the results obtained as part of this multicenter collaboration. Dr. Amparo Larrauri, from the National Epidemiology Center of the Carlos III Institute of Health in Spain, described how case-con-

trol studies have been carried out in Spain and how these data have been used for decision-making. Dr. Jesús Castilla, of the Institute of Public Health in Spain, detailed the experience using a cohort methodology to evaluate vaccine effectiveness.

Meeting participants were assigned to four discussion groups to brainstorm on the methodological aspects of influenza vaccine effectiveness evaluation, including considerations such as study design and potential biases; issues surrounding studies based on sentinel surveillance systems; lessons learned and challenges in obtaining data on seasonal influenza vaccination; and the obstacles and opportunities around the implementation of effectiveness studies in the field. The main conclusions from each group were shared in a plenary session.

The meeting turned to a proposal to formally establish a network for the evaluation of

influenza vaccine effectiveness in Latin America and the Caribbean or "REVELAC-i" (*Red para la Evaluación de la Efectividad de la Vacuna en Latinoamérica y el Caribe-influenza*). All countries and collaborating partners in attendance signed a declaration of interest, the Technical Declaration of the City of Antigua, and agreed to contribute to creating mechanisms to "share experiences, lessons learned and standardized methods between countries and research centers on influenza vaccine effectiveness and the impact of vaccination programs." In the mid-term, the network will support its members in generating annual vaccine effectiveness estimates in a systematic and sustainable manner. Members also agreed to continue integrating epidemiological and laboratory surveillance and vaccine data, in order to provide evidence for decision-making in the prevention and control of seasonal influenza. ■

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that $\geq 95\%$ will successfully develop immunity. In most countries of the Americas, the vaccine is combined with those for mumps and rubella, MMR. However, in many countries of other regions of the World Health Organization, measles is still used as a monovalent vaccine although a gradual shift is underway to measles-rubella (MR) as an increasing awareness of the morbidity of rubella and congenital rubella syndrome has become appreciated. A continually favorable feature of the measles vaccine has been evidence to date that its protection persists for at least forty years with expectation that this may indeed prove to be lifelong in duration, without the need for additional doses or of exposure to wild measles to maintain or boost immunity.

One result of the widespread administration of measles vaccine has been the increasing frequency of vaccine-induced immunity, rather than that of wild measles, among women of child-bearing age. With the resultant lower antibody titers present in these young women, the trans-placental antibodies conferred to their infants in utero persist for a shorter period post-natally resulting in susceptibility to infection at a younger age. The implications of these findings will be further debated over the next few years.

In the Americas, endemic measles has been completely eliminated from the Western Hemisphere since the year 2002, thirty-nine years following licensure. Incorporation of measles vaccine into routine infant immunization schedules for those fortunate to benefit from these, as well as nation-wide

campaigns every four or so years to capture those unvaccinated youngsters born since the previous such campaign, have been responsible for this achievement. For the most highly transmissible of infections this is indeed remarkable. Despite its disappearance from our hemisphere, the necessity for continued vaccination of infants and children persists because of the continued presence of measles in most other parts of the world and the ease of transmission by travelers from those places. With the rapidity of air travel throughout the globe, an individual incubating measles can reach the Americas within less than 24 hours, far shorter than the 10-day incubation period of measles infection acquired abroad. In contrast to the tens of millions of measles cases that occurred annually in the Americas prior to its elimination, in the subsequent decade importations have resulted in only 100-250 cases annually, aside from one year (2011), when major outbreaks in Ecuador and Canada resulted in 1369 cases. Current genomic analyses enable the determination in a measles-infected Western Hemisphere patient of the source country from which his/her infecting virus originated. Recently, these have been from England, France, Spain, Italy, Germany, and other "wealthy" nations in addition to those from lower income level countries. The continuing problems of measles morbidity and mortality are not due to vaccine failures. They are attributable to the remaining large numbers of unvaccinated people. Many of these persons live in developing countries, but other live in countries where the very

Since 1974, the World Health Organization (WHO) has included measles vaccine in its EPI (Expanded Program of Immunization). The Measles Initiative (MI), begun in 2001 by the American Red Cross, WHO, U.S. Centers for Disease Control (CDC), United Nations Children's Fund (UNICEF), and the United Nations Foundation, has organized and supported measles vaccination programs and campaigns throughout the sub-Saharan Africa and in South East Asia, distributing over one billion doses of vaccine, resulting in a 71% reduction in measles deaths in the decade, from 2001 to 2011. In efforts to combine measles elimination with other child health benefits, many of their campaigns have included polio vaccination, Vitamin A administration, tetanus toxoid vaccination for child-bearing age women, oral rehydration kits for infants with diarrhea, anti-helminth medications to eliminate intestinal worms, and insecticide-impregnated bed nets to reduce malaria. In 2012, aiming to eliminate rubella and its resultant congenital rubella syndrome (CRS), the MI expanded to become MRI (Measles-Rubella Initiative).

success of measles vaccination has led to complacency and vaccine hesitancy among parents and health care workers no longer familiar with the disease. ■

Contributed by: Dr. Samuel L. Katz, Duke University.

Evaluation Study of “Vaccination Week in the Americas” in a Border Area: Bolívar Municipality, Táchira State, Bolivarian Republic of Venezuela, 2011

1. Background

Vaccination coverage has been low (under 85%) since the 1960s in the Bolivarian Republic of Venezuela. For this reason, the Ministry of Popular Power for Health (MPPS) has had to seek out definitive strategies for achieving universal vaccination of the population. Vaccination Week in the Americas was proposed as a strategy for strengthening the vaccination program and, since 2009, its focus has been on completing the unfinished vaccination agenda in target populations eligible for any vaccine.

The goal of the Vaccination Week (VW) 2011, conducted in Venezuela from 25 April to 31 May, was to vaccinate eligible or unvaccinated populations and to improve access to vaccination in border populations in 25 municipalities, 23 of which had a total population of 12,547 children from 1 to 2 years of age and less than 80% vaccination coverage in 2010.

One of the target groups to be vaccinated during this period consisted of children aged <6 years with incomplete vaccination schedules. The goal was to vaccinate, by the 31st of May, 100% of children aged from 1 day to 5 years 11 months 29 days, who were missing one or more doses of vaccine in Venezuela's official schedule (Table 1).

The specific objectives of VW 2011 were to begin or to complete vaccination with all vaccines in the schedule for the population aged <1 year and from 1 to 5 years living in all municipalities in the country, with emphasis on border areas; and to vaccinate, according to the official schedule, the population aged 60 and over with 23-valent pneumococcal, diphtheria tetanus toxoid (Td), and influenza vaccines.

The proposed evaluation indicators for this plan were:

- Number and percentage of children aged <1 year and from 1 to 5 years that received a first, second, and third dose of DPT/pentavalent during VW.
- Number of doses of Td, 23-valent pneumococcal, and influenza vaccine administered by municipality during VW.
- Percentage of municipalities with plans for a second and third round of vaccination to complete schedules after VW.
- Percentage of health committees and/or community councils that participated in the strategy to channel the population to health facilities during VW 2011.

Table 1: Venezuela Vaccination Schedule, 2011.

Vaccine	Recommended age
BCG	Newborn
Hep B	Newborn
Yellow fever	1 year
Oral poliovirus	2m-4m-6m-18m-5 years
Pentavalent	2m-4m-6m-18m
Rotavirus	2m-4m
DPT	5 years
MMR	1 year-5 years
Td	Women of childbearing age, adults
Influenza	6-23 months, >60 years, at-risk groups
23-valent pneumococcal	>60 years

M=months

In order to measure the achievement of these objectives in the target child population, a cluster survey of the vaccination activities carried out during VW 2011 was conducted in the Bolívar municipality, Táchira state, bordering on the Republic of Colombia. The purpose of this evaluation was to measure the impact of VW 2011 on the vaccination of children aged <6 years, by evaluating their vaccination status and operational aspects of the program, including social communication and the availability of health services.

This document describes the steps and activities involved in conducting this survey, so that this experience can be used by other countries that wish to conduct a similar evaluation.

2. Methods

A cluster survey was conducted in Bolívar municipality (Táchira state) in the Bolivarian Republic of Venezuela, targeting children aged from 1 day to 5 years 11 months 29 days by 31 May 2011. It was estimated that 720 children aged <6 years needed to be enrolled to capture 267 children who had been eligible to be vaccinated during VW 2011 (using parameters $\alpha = 0.05$; anticipated proportion, $p = 0.5$; design effect = 1; desired precision = +/-6%). The sample was divided into 30 clusters, each with 24 eligible households (households with at least one child eligible to be vaccinated in VW 2011). Overall, the municipality was divided into three large areas (strata), based on demographic features: San Antonio (urban), Palotal (urban fringe), and a predominantly rural area.

The study utilized a questionnaire which included information on household characteristics, health system use, and awareness of VW 2011. Each child's vaccination card was also transcribed.

2.1 Planning

The following steps were taken from the beginning to the end of the study:

2.1.1 Proposal by the Pan American Health Organization (PAHO) to the MPPS to conduct a study on the contribution made by VW 2011 to Venezuela's regular vaccination program.

2.1.2 Meeting of the central team to determine which area of the country to evaluate. Criteria: border area, low coverage, and easy access for the study team.

2.1.3 Visit to Bolívar municipality (Táchira state).

2.1.4 Meeting with regional and district epidemiology staff.

2.1.5 Segregation of areas of influence delimited according to health facilities.

2.1.6 Identification and location of target population on the map.

2.1.7 Collection and preparation of preliminary information and draft research protocol.

2.1.8 Meeting to present and discuss the proposal.

2.1.9 Planning sessions with immunization study directors and coordinators, immunization consultants in Venezuela and Paraguay, the PAHO regional advisor on immunization, and investigators from the Centers for Disease Control and Prevention (CDC Atlanta).

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2.1.10 Drafting of the protocol, submission to the ethical committee (considered exempt), planning and implementation of the study.

2.2 Implementation

2.2.1 Presentation of the research protocol to the Táchira state regional epidemiology team.

2.2.2 Training of 44 interviewers from Bolívar municipality, consisting of nurses, “simplified medicine” assistants, and social workers.

2.2.3 Creation of teams of two interviewers, assigned to areas outside their facility’s area of influence.

2.2.4 One supervisor assigned to every two or three teams. The supervisors accompanied the team throughout the process, allowing verification in the field of the accuracy and quality of a high percentage of the data collected (>50%).

Since the rural population is scattered, one vehicle was assigned exclusively to the selected clusters in these sectors, and the other vehicles were distributed among the more difficult-to-reach urban sectors.

2.2.5 Meeting of all staff at a single location (district headquarters at 7:30 a.m.). The starting point in the clusters was selected using the grid methodology; instructions for the activity were given and teams were deployed an hour later, with supervisors present.

2.2.6 Data were collected over two days with the participation of 70 persons, including 37 nursing staff, 12 “simplified medicine” assistants, “simplified medicine” assistants, six epidemiologists, two district chiefs, five drivers, five community primary health care agents, and a Ministry of Health representative.

2.3 Data processing, organization, and analysis

An EpiInfo database was prepared for data transcription. Four transcribers were trained (one at the municipal level and three at the regional level), each of whom input an average of 40 surveys per day. The participation of an information technology (IT) specialist made it possible to consolidate the separately transcribed databases, review the data, and correct any problems with the data collected. During the process, the quality of data entered by each transcriber was randomly evaluated. A sample of the database was sent to the CDC to check its functionality. Data cleaning was completed in one month by telephone and internet in collaboration with CDC and with PAHO support. One critical point in the process was establishing specific “eligibility

Table 2: Awareness of VW 2011, Táchira, Venezuela (n=698) *

Variable	Number of Households	%	(95% CI)
Aware of a vaccination activity in the community	219	31	(25-38)
Type of health facility used to vaccinate the child			
Public outpatient clinic	185	25	(22-27)
Public hospital	442	65	(62-69)
Public health clinic (<i>Consultorio Popular</i>)	2	<1	(<1-1)
Public Comprehensive Diagnosis Center	2	<1	(<1-1)
Private	32	5	(3-7)
Venezuelan Social Insurance Institute	0	0	0
Other	32	5	(3-7)
Among those aware of a vaccination activity (n=219)			
Type of vaccination activity heard, seen, or read about (n=216)			
Vaccination Week	20	9	(5-18)
A campaign	152	70	(59-81)
Other	44	20	(13-28)
How they found out about the vaccination activity (n=211)			
Radio	58	28	(17-39)
Television	2	1	(<1-3)
Newspaper	4	2	(1-5)
Health center	43	20	(13-29)
School	13	6	(3-14)
Posters	9	4	(2-8)
Other	82	39	(28-50)
What they did when they found out about the vaccination activity (n=201)			
Took the child to be vaccinated without his/her vaccination card	14	7	(2-19)
Took the child to be vaccinated with a vaccination card	127	63	(54-73)
Did not take the child to be vaccinated	51	25	(17-34)
Other	9	4	(2-10)

* Weighted data; CI= Confidence Interval

criteria” based on the Venezuela vaccination schedule. A total of 698 surveys were completed and 839 children were registered.

3. Results

The population for children enrolled in the study was evenly distributed across age groups with the exception of children aged 60-71 months, who represented only 13% of the study sample. 52% of the surveyed children were female.

With regard to the relationship between the interviewee and the child, 84% of the surveyed representatives were the mothers of the children, followed by 8% who were grandmothers.

As for the level of schooling reached by the child’s representative, nearly 99% reported some kind of formal education. There

was an average of five persons per home in the municipality. The average distance to the nearest vaccination post was 1.8 kilometers, which it took an average of 15 minutes to reach.

Ninety percent (90%) of respondents reported being vaccinated at public ambulatory care centers and hospitals, and 5% at private clinics. Ninety-three percent (93%) of the children in the study presented a vaccination card.

Thirty-one percent (31%) of the surveyed households were aware that vaccination activities were taking place. Of these, 9% specified that it was connected with Vaccination Week, while 70% associated it with a local vaccination campaign. The remaining 20% related it to vaccination measures aimed

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at controlling an outbreak of influenza A (H1N1) or to monitoring vaccination coverage in the area. Of the people who were aware of an activity, most had heard about it on the radio, at a health center, by word-of-mouth, and/or through a community organization. Seventy percent of the people who had heard about VW took their children (with or without a vaccination card) to the health center to receive their dose (Table 2).

The data showed that 63% of all the children surveyed were eligible to be vaccinated during VW 2011. Overall, 24% of those eligible received at least one dose of vaccine during VW, while 13% received all the corresponding doses. Among children under 1 (specifically in the newborns), administration of the BCG and hepatitis B vaccines was above 80% during VW. The least-administered vaccines were for yellow fever and the second booster dose of the oral poliovirus (OPV) and measles-mumps-rubella (MMR) vaccines, due to shortages in 2011. A document with the detailed results of this study is being prepared.

4. Lessons learned

- Assessing the impact of VW 2011 in border areas made it possible to study some of the factors that affect implementation of the immunization program: communication, public awareness of vaccination activities in the communities, community participation, and the effectiveness of vaccination campaign strategies, among others.
- To plan and conduct this type of study in the future, the most precise and localized information possible is required (geographic, demographic, and on health

services).

- To reduce the likelihood of bias in implementing the study, data should be collected in the field as close as possible to vaccination week, since it depends on people's recall at the time of the interview.
- The health workers conducting the interviews should be rotated or exchanged among the areas in order to avoid any influence (bias) by the interviewer on the result obtained.
- The methodology for selecting clusters should include a replacement procedure, in case the scheduled interviews cannot be held for some local reason (e.g. lack of security; difficult access).
- Supervisors' work should be optimized for daily quality control of the data collected. Supervisors should also closely monitor cases of consecutive households where no child vaccination data were obtained.
- Processed surveys should be returned to the corresponding health facilities in order to implement any necessary measures to correct program management at the local level (e.g. beginning or completing vaccination schedules; conducting public health education activities).



Health workers interview a family in Municipality of Bolívar, Venezuela, 2011.

- The data cleaning process should be as quick as possible, to rapidly proceed to data analysis.
- The study enabled the immunization program to identify different situations that can only be measured at the local level, such as: operational errors in management, estimation of the percentage of the population that does not have a vaccination card, and errors in implementing the vaccination schedules.

As a result of this experience, Venezuela will implement this study methodology along subnational borders (between municipalities of neighboring states) in order to draw vaccination-related comparisons between domestic (internal) and international (external) borders to identify least-served populations. ■

Contributed by: Immunization Program, Ministry of Popular Power for Health, Venezuela and PAHO-Venezuela

Costing of the Expanded Program on Immunization (EPI) in Honduras

The Pan American Health Organization's (PAHO) ProVac Initiative is providing technical support to the National Immunization Program (NIP) in Honduras to develop a costing study, while piloting the ProVac Costing Tool. This study aims to generate detailed estimates of the recurrent and capital costs of the routine NIP in Honduras. Additionally, this study will provide some information on the cost of new vaccine introduction for the 13-valent pneumococcal conjugate vaccine relying primarily on central level data. Furthermore, this study will help map the financial resources used for immunization, identifying the different sources and flows of financial contributions

to immunization activities in Honduras at the central, regional and health facility levels.

Immunization related costs and resource use will be captured at the central, regional and health facility level, where 71 total vaccination centers and 8 regional offices were included in the sample. This information will be used to estimate total costs per health facility and by immunization activity, or EPI component. In addition, the study will generate information on unit cost per immunized child. This study began in September 2012, when a ProVac team made their first visit to Honduras. This week long visit had the objective of designing the sample and making plans for

data collection. The ProVac team returned in early February 2013 to train the team of data collectors and launch data collection. A final visit is planned for mid-March 2013, when the ProVac team and the EPI will clean, review and analyze the primary data collected and present preliminary results to high-level national authorities in the country (including the NIP, other officials from the Ministry of Health and members of the Interagency Coordinating Committee). This experience will also result in an improved ProVac Costing Tool that will be made available. ■

Contributed by: Ida Berenice Molina (Honduras EPI), Gabriela Felix and Cara Janusz (PAHO, ProVac Initiative)

VACUNATON: One-Day Intensive Vaccination Strategy to Reach Measles and Rubella Vaccination Targets in Bolivia

In 2011, Bolivia initiated a measles-rubella follow-up campaign as part of its strategy to maintain measles and rubella elimination in the Region of the Americas and in response to the risk of virus reintroduction due to large outbreaks in Europe and Africa. Bolivia set a goal to vaccinate: 917,546 children aged two-five years old; all women aged 22-44 years old that were not vaccinated during the “speed-up campaign” of 2006 because of pregnancy; health care workers; and personnel in contact with tourists and travelers (airports, hotels and transportation terminals).

After it was established that vaccination coverage had not reached >75% at the end of 2011, an innovative strategy called VACUNATON, was designed to achieve the vaccination goals. The VACUNATON was a mass campaign conducted on 15 April 2012 in 48 of 323 municipalities, selected due to their risk for measles and rubella. The goal was to vaccinate up to 200,000 children, aged two-five years old, who were not vaccinated during the follow-up campaign conducted between October and November 2011. The most important media strategy featured a

live television broadcast, which covered the national launches in all the main cities of the country.

The main partners involved in the VACUNATON initiative were Bolivia’s Expanded Program on Immunization (EPI) of the Ministry of Health, the Pan American Health Organization/World Health Organization, the Bolivian Network for Communication in Risk, the Catholic University, Armed Forces and National Police, health Non-Governmental Organizations, television channels and every EPI team responsible for immunization and social communication at the departmental level. The EPI mobilized personnel and funds to purchase all vaccines and supplies as well as logistics, transport and cold chain expenses. A nationwide health sector strike that lasted from 15 March to 15 May 2012 threatened



Launch of VACUNATON, La Paz, Bolivia, 15 April, 2012.

the VACUNATON. However, a compromise was reached between the conflicting parties, which allowed resumption of the organization and implementation of VACUNATON.

During the VACUNATON, Bolivia vaccinated 177,976 children aged 2–5 years old.

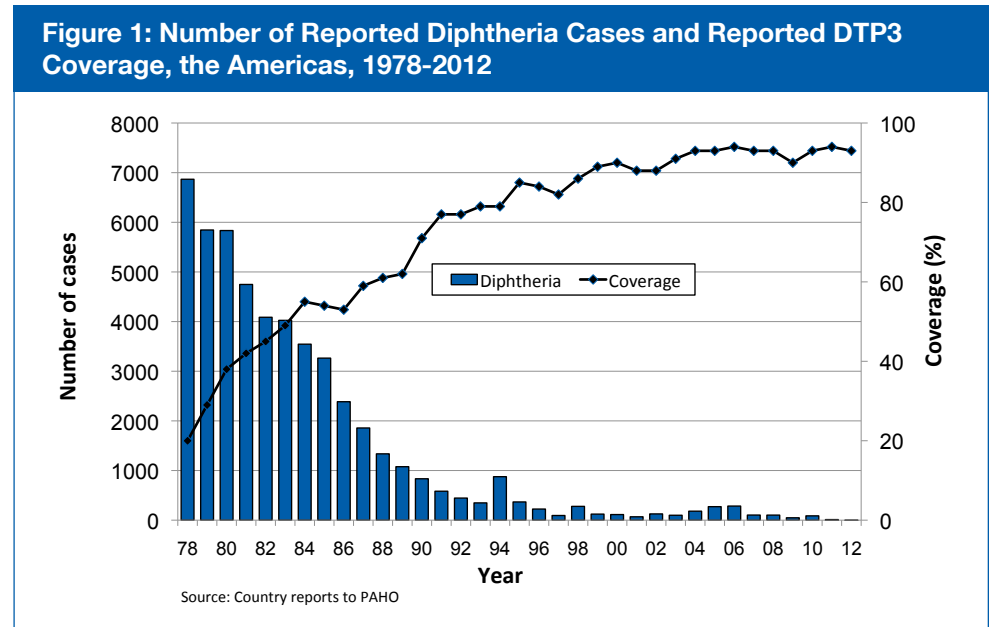
As of November 2012, Bolivia had achieved >95% coverage against measles and rubella nationwide. ■

Reported Diphtheria in the Americas Reached Historical Lowest Level in 2012

Only two diphtheria cases were reported in the Region of the Americas in 2012. This is the lowest number of the disease ever reported in the Western Hemisphere (Figure 1). Diphtheria cases have been declining over the years, particularly after the large outbreak that affected the Dominican Republic and Haiti in 2004-2005.

Despite this milestone, countries of the Americas need to be aware that diphtheria epidemics can occur whenever pockets of low vaccination coverage exist. Also, the risk is present when the cold chain cannot guarantee adequate temperatures for the conservation of DTP/Pentavalent and Td vaccines up to the time of administration; particularly when vaccine-freezing occurs.

Epidemiological surveillance must be maintained and strengthened to promptly detect diphtheria cases. Early recognition and treatment of cases are very important, as the early use of diphtheria antitoxin is associated with better outcomes. Compli-



cations are directly proportional to the number of days between the onset of illness and administration of antitoxin. Currently, there is a global shortage of diphtheria antitoxin and it has become very hard to find a manufacturer that is able to

provide a licensed product in sufficient quantities on an emergency basis.

The 2012 diphtheria milestone should serve as additional motivation to continue vaccinating and keep this vaccine-preventable disease under control. ■

Pertussis/Diphtheria/Tetanus/Mumps Data Final Classification, 2011-2012

Country	Pertussis		Diphtheria		Tetanus				Mumps	
	2011	2012	2011	2012	Neonatal		Non-neonatal		2011	2012
The Americas	26535	71091	12	2	22	11	575	539	31606	22801
Anguilla	0	0	0	0	0	0	0	0	0	0
Antigua and Barbuda	0	0	0	0	0	0	0	0	0	0
Argentina	3185 ^a	1239	0	0	0	0	0	10	5481	4619
Aruba	...	...	...	...	...	...	...	...	...	...
Bahamas, The	0	0	0	0	0	0	0	0	0	0
Barbados	0	0	0	0	0	0	0	0	0	0
Belize	0	44	0	0	0	0	0	0	0	2
Bermuda	1	3	0	0	0	0	0	0	2	0
Bolivia	0	0	0	0	1	0	0	0	1096	0
Brazil	2257	4744	5	0	6	2	327	291	...	...
Canada	676	4845	1	1	0	...	2	4	282	54
Cayman Islands	0	0	0	0	0	0	0	0	0	0
Chile	2582	5762	0	0	0	0	12	6	950	876
Colombia	1010	3289	0	0	2	2	35	48	15926	9377
Costa Rica	79	130	0	0	0	0	1	1	1	30
Cuba	0	0	0	0	0	0	1	3	0	0
Dominica	0	0	0	0	0	0	0	0	0	0
Dominican Republic	3	11	2	0	2	1	43	39	0	0
Ecuador	3	54	0	0	2	1	0	0	733	799
El Salvador	7	37	0	0	0	0	9	7	632	351
Grenada	0	0	0	0	0	0	0	0	0	2
Guatemala	0	273	0	0	1	0	1	0	0	143
Guyana	0	0	0	0	0	0	0	0	0	0
Haiti	...	0	2	0	...	...	...	...	...	0
Honduras	113	48	0	0	2	2	12	15	143	138
Jamaica	1	2	0	0	0	0	1	4	4	0
Mexico	252	978	0	0	1	0	22	28	2685	5683
Montserrat	0	0	0	0	0	0	0	0	0	0
Nicaragua	87	68	0	0	0	0	0	1	1	4
Panama	36	47	0	0	0	0	1	10	111	134
Paraguay	11	44	2	0	0	1	10	5	283	247
Peru	56	1173	0	0	1	0	37	17	0	...
Saint Kitts & Nevis	0	0	0	0	0	0	0	0	0	0
Saint Lucia	0	0	0	0	0	0	1	0	0	0
Saint Vincent and the Grenadines	0	0	0	0	0	0	0	0	0	0
Suriname	0	1	0	0	0	0	1	1	0	0
Trinidad and Tobago	0	0	0	0	0	0	0	0	0	0
Turks and Caicos Islands	0	0	0	0	0	0	0	0	0	0
United States of America ^b	18719	47693	0	1	1	1	36	36	404	229
Uruguay	639	598	0	0	0	0	0	0	132	113
Venezuela	3	8	0	0	3	1	23	13	2740	0
Virgin Islands (UK)	0	0	0	0	0	0	0	0	0	0

Source: PAHO-WHO/UNICEF Joint Reporting Forms (JRF) and Country reports to FCH-IM/PAHO, 2012-2013

^a Argentina 2011 data updated from TAG 2012 pertussis presentation.

^b 2011 Data source: Morbidity and Mortality Weekly Report (MMWR), Summary of Notifiable Diseases, United States, 2011.

Note: Table does not include French Department territories, Netherland Antilles, Puerto Rico, and US Virgin Islands.

... - Not available

The *Immunization Newsletter* is published every two months, in English, Spanish, and French by the Comprehensive Family Immunization Project of the Pan American Health Organization (PAHO), Regional Office for the Americas of the World Health Organization (WHO). The purpose of the *Immunization Newsletter* is to facilitate the exchange of ideas and information concerning immunization programs in the Region, in order to promote greater knowledge of the problems faced and possible solutions to those problems.

An electronic compilation of the *Newsletter*, "Thirty years of *Immunization Newsletter*: the History of the EPI in the Americas", is now available at: www.paho.org/inb.

References to commercial products and the publication of signed articles in this Newsletter do not constitute endorsement by PAHO/WHO, nor do they necessarily represent the policy of the Organization.

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The GAVI Alliance Honors Four PAHO Member States for Their Immunization Achievements

Bolivia, Haiti, Honduras and Nicaragua received awards for their immunization achievements during the **GAVI Alliance Partners' Forum**, held in Dar es Salaam, Tanzania on 5-7 December 2012.

Honduras and Nicaragua won GAVI's Best Immunization Performance Award for achieving "very high" and "high" vaccination coverage rates, respectively. Honduras also received the Introduction of New Vaccines Award. Haiti won GAVI's Resilience Award. Bolivia was awarded GAVI's Co-Financing & Sustainability Award, which recognizes countries that have exceeded GAVI's requirements for vaccine co-financing.

The GAVI Alliance awards recognize countries and individuals who have helped expand access to immunization in developing countries. All in all, 12 countries were recognized this year, along with government leaders, members of Parliament, and civil society groups. ■



Government representatives from Honduras, Bolivia, Nicaragua and Haiti.