



EPI Newsletter

Expanded Program on Immunization in the Americas

Volume XXVI, Number 5

IMMUNIZE AND PROTECT YOUR CHILDREN

October 2004

Vaccination of Adults to Sustain the Interruption of Measles Transmission and to Eliminate Rubella and Congenital Rubella Syndrome in Ecuador

Background

Like the other countries of the Hemisphere, Ecuador is a signatory to the resolution of the 44th Directing Council of the Pan American Health Organization/World Health Organization (PAHO/WHO), a resolution which established the goal of eliminating rubella and congenital rubella syndrome (CRS) by the year 2010.

As a first step toward to rubella and CRS elimination, Ecuador conducted a successful campaign with the measles and rubella (MR) vaccine in November 2002. During this campaign, nearly 100% of the country's 4,151,839 children aged 5-14 years were vaccinated.

In 2004, Ecuador continued its efforts to achieve rubella and CRS elimination by conducting a nationwide mass vaccination campaign with the MR vaccine targeting the population aged 16-39 years.

The objectives of the campaign were as follows:

1. Achieving 95% coverage or more in every municipality during the campaign.
2. Interrupting rubella transmission in order to eliminate rubella and CRS.
3. Reducing the risk of measles outbreaks secondary to the importation of cases, thus consolidating the interruption of indigenous measles transmission.

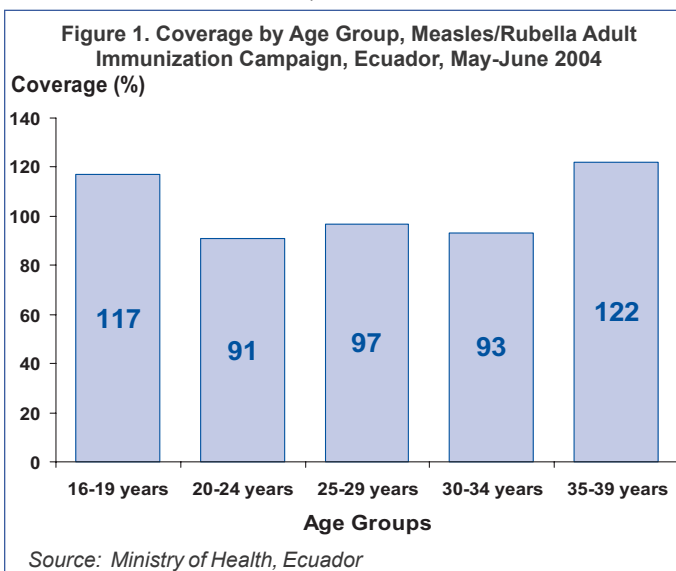
Methodology

The campaign was conducted between 3 May and 5 June 2004, with the goal of vaccinating 2,469,877 men and 2,347,727 women aged 16-39 years (excluding 315,829 pregnant women).

The vaccine was procured through the PAHO Revolving Fund for Vaccine Procurement. The vaccine lots reached Ecuador between October 2003 and March 2004 and were distributed to the provinces one month before campaign start-up.

National committees were created to promote inter-sectorial cooperation in both the public and private sectors, as well as to garner support from political institutions and technical agencies. They were also asked to provide logistical support. Similar committees involving local authorities and non-governmental organizations were set up in the provinces, cantons, and health areas.

To raise campaign awareness, visits were made to senior executives of workplaces employing people within the campaign's target group. Partnerships for social mobilization were built with organizations that could collaborate with or participate in the campaign. A month before the campaign, the President of the Republic issued a decree urging governmental and non-governmental institutions and the civil society at large to actively participate in the campaign.



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The campaign guidelines of the information and social mobilization strategy enabled provinces and health areas to develop complementary activities. Television and radio spots were broadcast in Spanish, Quechua, and Shuar. The print media, especially the national press, devoted extensive coverage to the campaign.

The first phase of the campaign was aimed at vaccinating the captive population, which weeks earlier had been tallied in order to define vaccination targets and to better program vaccination activities. Meanwhile, all health units served as fixed vaccination posts. Mobile teams were sent to places where the public congregates. In a second phase, the campaign focused on conducting “mop-up” activities in urban areas, densely populated rural areas, and marginalized urban neighborhoods.

The doses administered were tabulated weekly, with a breakdown by location (province and canton), sex, and five age-groups: 16-19, 20-24, 26-29, 30-34, 35-39 years. To facilitate data consolidation at the national level, the doses administered within a province were classified according to the canton of origin of each person vaccinated. When the person vaccinated resided in a different province, doses were assigned to the province of origin.

Rapid coverage monitoring (RCM) activities were programmed and conducted in conjunction with an active search for unvaccinated persons. Under the campaign’s RCM guidelines, at least 40 individuals were to be interviewed per RCM. People were encouraged to carry their vaccination card during the campaign to document their vaccination status. Results were divided into three categories: <90% vaccinated, 90%-94% vaccinated, and ≥95% vaccinated. To evaluate the campaign’s social communication component, a survey protocol was also developed.

In addition, with support from the National Institute of Hygiene, a protocol was designed to ascertain the immunological status of pregnant women who were inadvertently vaccinated. These women and their infants are being followed up.

Results

Based on the estimated target population, national coverage reached 103.2%: 101% for men and 105% for women. Figure 1 shows coverage rates by age group. Coverage levels were above 100% in the 16-19 and 35-39-year age groups, in part because both age-groups are more likely to be affected by vaccination of persons outside the target age. Of the 22 provinces, 21 exceeded 95% coverage. Among the 217 cantons, 61.3% (133) had ≥95% coverage, 11.5% (25) had coverage of 90%-94%, and 27.2% (59) had <90% coverage (Figure 2). The last two groups are cantons where 10% and 12.5%, respectively, of the population resides.

In all, 6,661 RCMs were carried out (range: 23 to 2,194 per province), and 315,927 people were surveyed, i.e., an average of 47 people per RCM (range: 29 to 102). Of the people surveyed, a 92.6% (293,169) had been vaccinated (range: 69.5% to 100% in the individual health areas). Most (75.8%) of the RCMs showed that ≥95% of the respondents had been vaccinated, 13.8% showed that 90%-94% of the respondents had been vaccinated, and 10.4% showed that <90% of the respondents had been vaccinated.

Broadcasting of radio and television spots began the second week of the campaign because of delays in the disbursement of funds. A total of 3,447 surveys to assess campaign awareness were conducted in 8 provinces, 88.6% of the surveys in urban areas and 11.4% in rural zones. Among respondents, 96.5% had heard a message about a special vaccination event,

88.2% related it to the campaign, and 6.1% related it to the vaccination week. The media most frequently cited as a source of information were TV (78.1%), radio (47.9%), health unit (44.5%), mobile megaphone (32.3%), newspaper (22.8%), note from school (18.4%), and other (0.6%). In addition, 80.7% of the respondents recognized that pregnant women should not be vaccinated, and 75.3% correctly answered questions about the target group. Some mass media articles created controversy regarding the safety of the vaccine for pregnant women and the adequate conduct for follow-up of pregnant women inadvertently vaccinated. Clarification

statements from independent key persons from the medical community, as well as EPI staff and PAHO collaborators, were needed to manage these incidents.

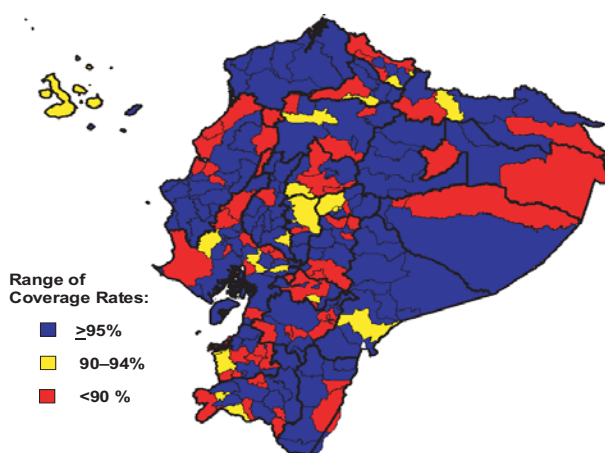
A total of 1,316 pregnant women inadvertently vaccinated were reported. Among them, 13.6% (179) were susceptible and should be followed until they give birth so clinical and serological assessment of their newborns can be performed.

Discussion

Planning started nine months before the campaign. It was instrumental for timely procurement of supplies, training tools, and information material, and development of the social mobilization and training components. It also helped during budget negotiation, especially for brigade mobilization and social communication.

The campaign components to be supervised in priority were assessed weekly in light of preliminary findings and problems encountered. Plan adjustment was emphasized in major cities mainly. RCMs, which can be used as a tool to quickly assess campaign progress, were unevenly conducted from province to province. This indicates the need to make RCM a regular part of supervision and promote its usefulness.

Figure 2. Coverage by Cantons, Measles/Rubella Adult Immunization Campaign, Ecuador, May-June 2004



Source: Ministry of Health, Ecuador

Lessons Learned from the Campaign

The following are lessons learned from the measles-rubella vaccination campaign conducted in Ecuador in 2004:

- Express political will and commitment through an official act, such as the presidential decree directed to the public at large;
- Ensure timely execution of each program component to achieve 95% or greater coverage in adults, especially components related to the procurement of supplies, local programming of vaccination activities, supervision and rapid coverage monitoring, social mobilization, information systems, and communication. Under the communication component, information must be made available to community leaders, journalists, and columnists;
- Adopt a health promotion approach to ensure inter-institutional and inter-sectorial partnerships with NGOs and cooperation agencies;
- Ensure financing of the social mobilization component and the timely kick-off of the mass media campaign;
- Prioritize television, radio, and mobile megaphone messages; create radio spots in the country's main languages; improve mechanisms for coordination between the EPI and the people in charge of publicity and health education at all levels; and encourage local authorities to promote the display of the *vacunometro*, a graph displaying the progress of the campaign in terms of increasing coverage;
- Ensure that the agreements and declarations signed with the heads of federations of health professionals are distributed to their members or partners. Also, ensure that members receive technical information about vaccine safety and management of pregnant women inadvertently vaccinated;
- Ensure that the information system shows coverage by cantons and that ages of people vaccinated are recorded. If possible, use a software that facilitates data processing; and
- Improve the implementation of rapid coverage monitoring as a supervision tool.

The only province that failed to meet the $\geq 95\%$ target coverage borders with Colombia and achieved 94.2% coverage. Of the 59 cantons with $< 90\%$ coverage, 48% are in the Sierra, 37% are on the coast, and 15% are in the Amazon Region. In 76% of these cantons with low coverage, over 70% of the population live in rural areas where access is difficult, which may explain the lower coverage achieved. Additionally, a lower administrative coverage was reached in cantons in the vicinity of major cities. This may be the result of reporting problems regarding the origin of the vaccinated person.

The confusion over the reason not to vaccinate pregnant women and the safety of the MR vaccine in pregnant women

lies partly in the inadequate dissemination of information to health professionals and lack of continuing education on vaccines.

Several valuable lessons were learned from the immunization campaign. They are listed in the box above.

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Active Search of Acute Flaccid Paralysis Cases in Guatemala

Background

In 1988, the World Health Assembly established the goal of eradicating polio. At the time, polio was endemic in over 125 countries in 5 continents, paralyzing 1,000 children every day. By the end of 2003, only six countries remain endemic and a total of 784 cases were reported, representing a reduction of more than 99%¹. The Region of the Americas was declared polio-free in 1994 after reporting the last case of wild poliovirus in Peru in 1991².

In 1996, Guatemala signed the "Peace Agreements" (*Acuerdos de Paz*), by which the country committed itself to maintaining polio eradication. In Guatemala, the last cases of wild polio were reported in 1990 and coverage with the third dose of oral polio vaccine (OPV3) has been increasing in the last 10 years, reaching 94% in 2003 (Figure 1). However, the risk of reintroduction is real, as tourism and other exchanges between countries are thriving and polio still occurs in some countries

in Africa and Southeast Asia. Maintaining high and uniform polio immunization coverage and having a surveillance system for acute flaccid paralysis (AFP) that follows international standards are crucial to sustain polio eradication.

One key indicator of the quality of the surveillance system is the rate of AFP cases reported per 100,000 persons aged < 15 years. International guidelines recommend using an AFP rate of 1 per 100,000 children aged < 15 years detected per year as an indicator of surveillance sensitivity. In Guatemala, however, an AFP rate ≥ 1.5 is considered acceptable. In 1999, the AFP rate in Guatemala fell to 1.1 cases per 100,000 persons aged < 15 years, yet underreporting was not investigated. When the AFP rate fell below 1.5 again in 2002 (to 1.2 cases per 100,000 persons aged < 15 years), the Ministry of Public Health and Social Assistance conducted an active search of AFP cases as a strategy to improve AFP reporting. The objectives of this active search were to assess the efficiency and sensitivity of

the existing surveillance system and to maintain motivation among health care workers regarding AFP surveillance and sustaining polio eradication.

Methodology

An active search of AFP cases was conducted in hospitals in health areas that were either epidemiologically silent, i.e., did not notify any AFP case, or had AFP rates below 1.5 cases per 100,000 persons aged <15 years during 2002.

The three aspects studied were (1) AFP cases defined as any case of paralysis of acute onset in persons aged <15 years in which there was no evidence of trauma²; (2) Reported AFP rates from each health area³; and (3) Sensitivity of the surveillance system (proportion of cases detected by the surveillance system compared to the actual number of cases occurring in the area). Given the low AFP incidence, this retrospective review was conducted for all of 2002, as it was thought that enough cases would be found over a one-year period.

Between February and May 2003, about 80 health workers (staff of the Expanded Program on Immunization, epidemiologists, and nurses) visited regional and district public hospitals to review clinical charts and other documents where different AFP diagnosis could be recorded. The services examined included emergency, outpatient, internal medicine, and pediatrics departments. The surveillance workers looked for the following eight diagnoses: poliomyelitis, Guillain-Barré syndrome, transverse myelitis, polyneuropathy, viral neuropathy, intoxication with organophosphates (insecticide poisoning), toxic neuropathies due to other agents such as plants (e.g., *Karwinskia Calderoni*, known locally as "Huilihuiste"), botulism, metabolic paralysis and AFP.*

Two instruments were used to record the information collected: a form to register the diagnosis found in the chart review, and a form to consolidate the information found. Data were entered into a Microsoft Excel 4.0 database and analyzed using EpiInfo 2002. The Poliomyelitis Eradication Surveillance System (PESS) was used for examining the data of the AFP cases reported in 2002.

Results

Active search of AFP cases was conducted in 16 of the 26 health areas of the country: 4 "silent areas" and 12 with insufficient reporting rate. Sixteen regional hospitals and nine district hospitals were visited. Of the 456,366 diagnoses reviewed, 85 presented one of the AFP differential diagnoses, and 60 met the AFP definition. Only 10 (17%) of the 60 AFP cases found

had been investigated and notified through the AFP surveillance system. The neighboring areas of *Quetzaltenango*, *San Marcos* and *Huehuetenango* in the west of the country concentrated 58% of cases. No AFP case was found in hospitals of four health areas.

Table 1 shows the reported AFP rate for 2002, the AFP rate including cases found through active search, and the sensitivity of the system in the 16 health areas studied. Overall, the AFP rate among children aged <15 years was 2.0 per 100,000.

When looking at the cases by epidemiological week, no clear pattern was evident. Forty percent of cases occurred during the first semester of 2002 and, even though more cases occurred during weeks 48 to 50, they originated in different geographical areas.

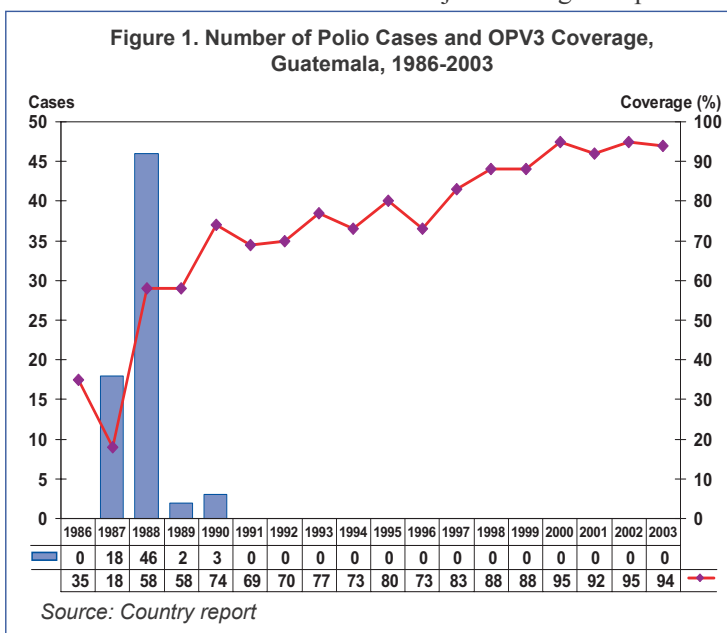
Discussion

The current status of global eradication efforts presents major challenges for polio-free countries. The main challenge

is to minimize the risk of wild poliovirus reintroduction, either from importations, laboratory accidents, long-term carriers (rare cases related to congenital immunodeficiency), as well as to prevent the circulation of vaccine-derived polioviruses and occurrence of outbreaks derived from them⁴. Several examples document that the risks of reintroduction and outbreaks of vaccine-derived polio are real. In 2003, polio cases occurred in nine previously polio-free countries¹ and circulation of vaccine-derived poliovirus has been reported in Haiti, the Dominican Republic, and

the Philippines in 2000-2001, probably due to low levels of routine OPV3 coverage^{5,6}.

Among the cases found, 58% were concentrated in three of the 16 health areas studied. The hospital of *Quetzaltenango*, located in the western part of the country, is of particular interest since it serves as the reference center for a large geographical area. Cases from five other health areas were identified in the records of the hospital, raising concerns about problems in this region's surveillance system. The western part of Guatemala is poorer and more rural than the east and the relation of cases between west and east is 5:1. Factors such as differences in the epidemiology of infectious diseases associated with Guillain-Barré syndrome or other etiologies causing AFP, and/or a higher access to private care in the more affluent east may help explain the geographic disparity in AFP cases. Although surveillance in Guatemala focuses on a syndrome rather than a particular disease, analyzing temporal patterns is worthwhile. It was noticed that 40% of cases had occurred during the first semester of 2002, yet only 25% had been entered into the surveillance system, suggesting that reporting may follow an "administrative" pattern, with some silent periods and periods



* Even though AFP is not a diagnosis, it appeared as such in several medical charts.

PAHO-USAID Partnership: A Tool for Promoting Health in the Americas

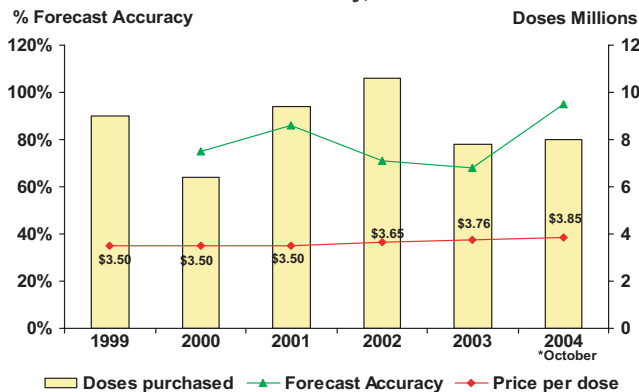
On 13-14 September 2004, PAHO hosted the PAHO-USAID Symposium: Partnership for Public Health in the Americas. The event highlighted the accomplishments of the long standing cooperative agreement between the organizations, as well as challenges faced along the way. Six panels presented program strategies and results in the areas of antimicrobial resistance and tuberculosis, malaria, vaccines, maternal mortality, integrated management of childhood illness (IMCI), and health sector reform.

PAHO's Immunization Unit presented a retrospective of the impact of USAID investment of US \$52 million in PAHO's regional programs over the past fifteen years. Since 1986, USAID has made significant contributions toward milestones such as polio eradication in 1991, indigenous measles elimination in 2002, and adoption in 2003 of the goal to eliminate rubella and congenital rubella syndrome (CRS) by the year 2010. USAID funds and technical assistance also provided crucial support for strengthening of routine EPI programs and introduction of new vaccines.

The presentations underscored the cooperative agreement's three intermediate goals: (1) Improve policy environment; (2) Expand and improve immunization delivery; and (3) Strengthen and support vaccination surveillance systems.

A presentation on sustainability of vaccine supply introduced the fundamentals of PAHO's Revolving Fund for Vaccine Procurement. Based on the principles of equity and Pan Americanism, the Revolving Fund enables member countries to purchase vaccines and other immunization supplies of consistently high quality at affordable, bulk-rate prices. In addition to the economic benefits, participating countries gain early access to new vaccines such as pentavalent (DPT+Hib+HepB) and the forthcoming vaccines against rotavirus, pneumococcal disease, and human papillomavirus. Effective supply management at regional level requires accurate forecasting at national level, achieved through the development of 5-year national Plans of Action and securing guaranteed financing by way of a national budget line item for vaccines (see Figure 1).

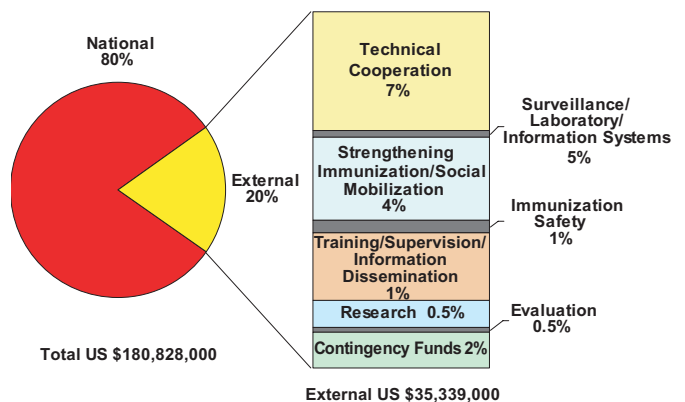
Figure 1. Pentavalent 1: Doses Purchased, Price, and Forecast Accuracy, 1999-2004*



Source: Revolving Fund, Immunization Unit, PAHO

Two presentations addressed the issues of new vaccine introduction, one from the perspective of recent rubella campaigns, and the other analyzing the process of bringing the new rotavirus vaccine to market in the Americas. Rubella/CRS vaccination campaigns provide immunization programs with valuable experience in reaching adult populations. While most immunizations are administered during childhood, several upcoming vaccines, such as those against HIV/AIDS and human papillomavirus, will be targeting adult populations. Rubella/CRS strategies for record-keeping, rural versus urban campaign tactics, and post-vaccination monitoring can be easily adapted to the introduction of new vaccines for adults.

Figure 2. Estimated Budget of Rubella and CRS Elimination by Components, The Americas 2004-2010

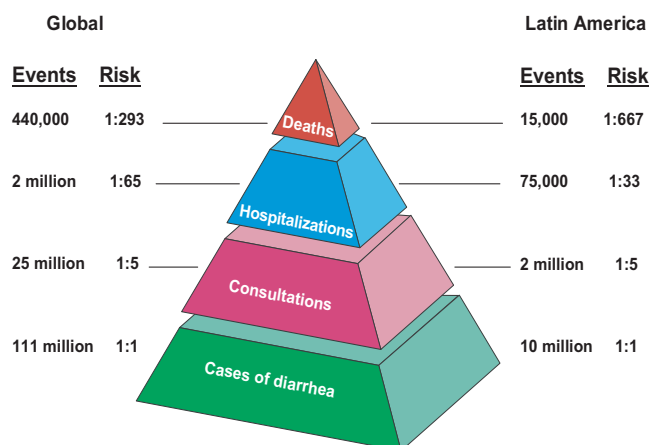


Source: Regional Plan of Action 2004-2010, PAHO

The rubella vaccine has proven to be very cost-effective, especially when given in conjunction with the measles vaccine. In a 2-dose presentation, the measles-rubella vaccine (MR) costs \$0.80 per dose. Figure 2 shows the estimated budget of PAHO's Initiative for rubella and CRS elimination between 2004-2010. Rotavirus vaccine, on the other hand, is estimated to be priced initially between US \$12 to US \$15, making the disease burden argument crucial. Rotavirus surveillance studies are thus underway in several countries to estimate the disease burden on public health systems, and early results indicate a higher incidence than initially expected (see Figure 3). In July 2004, the 6th International Rotavirus Symposium was held in Mexico. Representatives of the Ministries of Health called upon PAHO and its Revolving Fund to facilitate the introduction of the rotavirus vaccine at prices accessible to all countries of the Region as soon as it becomes available.

Childhood immunization has been recognized as one of the most cost-effective health interventions and a high-impact development tool. Average coverage of the third dose of DPT vaccine for children aged <1 year, which is indicative of routine childhood vaccination coverage overall, is 91% in the

**Figure 3. Rotavirus Disease Burden:
Global Level vs. Latin America**



Source of Data: U.S. Centers for Disease Control and Prevention

Americas, but pockets of low coverage remain. Additional resources are needed to reach the high risk areas, because failure to maintain high coverage across the region will allow diseases to continue circulating, and leave populations susceptible to imported cases. The countries of the Americas increasingly recognize that immunization is a critical investment that impact economic performance. Close to fifteen countries now have vaccine laws obligating national funds for the purchase of biologicals and immunization supplies.

USAID's technical and financial cooperation have been instrumental to the success of immunization programs in the Americas. Continued support will facilitate new vaccine introduction and enhance the sustainability of national immunization programs. Furthermore, this collaboration will play a fundamental role in ensuring that routine vaccination coverage continues to increase, and that equity remains a key feature of national and regional immunization programs.

Experts Meet in Mexico City to Discuss Rotavirus

The Sixth International Symposium on Rotavirus and Rotavirus Vaccines was held in Mexico City, Mexico, from 7-9 July 2004. The meeting was convened by the Pan American Health Organization, the Albert B. Sabin Vaccine Institute, the U.S. Centers for Disease Control and Prevention, and the U.S. National Institutes of Health.

Scientists, clinicians, public health professionals, immunization leaders, vaccine industry representatives, and partners met to discuss the latest research results, new vaccine trials, and vaccine financing and introduction. Five sessions covered issues such as epidemiology and disease burden; virology, pathogenesis, and immunity; past experiences with rotavirus vaccines; results with new rotavirus vaccines; and implementation into national immunization programs. Representatives from the Ministries of Health present at the symposium issued a declaration.

In 2003, the Global Alliance for Vaccines and Immunization designated rotavirus as one of the two vaccines prioritized for accelerated development and global introduction. This decision was based upon the enormous burden of rotavirus diarrhea worldwide, the late stage of development of new rotavirus vaccines, and the appreciation that the impact of any new vaccine introduction could be measured within two to three years as a reduction of rotavirus deaths, hospitalizations, and economic return. In the Americas, rotavirus infects all children in the first few years of life and is responsible for an estimated 15,000–20,000 diarrheal-related deaths, 30%–45% of hospitalizations due to diarrhea, and more than one million doctor or clinic visits¹.

¹ Pan American Health Organization (2004), *Presentation of Rotavirus Vaccine Development and Summary of the 6th International Rotavirus Symposium in Mexico, 7-9 July, 2004*. XVI Meeting of the Technical Advisory Group on Vaccine-preventable Diseases, Abstract Book, pp. 63



DECLARATION OF MEXICO CITY ON ROTAVIRUS PREVENTION

Representatives of the Ministries of Health present at the Sixth International Rotavirus Symposium held in Mexico City July 7 to 9, 2004,

CONSIDERING

That rotavirus is one of the most frequent causes of severe gastroenteritis in the world, and a principal cause of severe diarrhea, mainly in children between 3 and 35 months of age.

That of the 600,000 deaths caused by rotavirus each year, 85% occur in developing countries.

That treatment of rotavirus incurs high costs and its economic impact is great in Latin America, where approximately 15,000 deaths and 75,000 hospitalizations occur each year.

That two promising vaccines are close to entering the market.

That rotavirus vaccines could reduce mortality from the disease by up to 60 percent if included in national immunization programs of our Region.

That this new technology should be made available to infants to prevent disease.

AGREE:

To continue to support immunization, with the highest political priority, as a public good for the region.

To demonstrate the public health successes achieved by universal vaccination.

To search for mechanisms within national budgetary processes to negotiate, at the highest policy level, in order to ensure the sustainability of the existing vaccination programs and the introduction of new vaccines.

To call upon the Pan American Health Organization, and its Revolving Fund for Vaccine Procurement, to work with bilateral and multilateral organizations, the Global Alliance for Vaccines and Immunization, and with vaccine manufacturers, to facilitate the introduction of vaccines against rotavirus at prices accessible to all countries of the region as soon as they become available.

Annual Summary of Polio and Measles Indicators – Final, 2003

Polio Surveillance Indicators (Period between epidemiological weeks 01 to 53, 2003)

Country	TOTAL 2002		Last 52 weeks (2003/01-2003/53)				
	Cases	Rate	Cases	Rate	% Inv. <48 hours	% 1 Sample +	% Sites reporting
Argentina	129	1.19	122	1.17	80	64	100
Bolivia	64	1.95	58	1.67	98	72	...
Brazil	636	1.23	654	1.24	96	73	93
Canada	NR	NR	NR	NR	NR	NR	NR
CAREC	22	1	43	1.91	93	63	100
Chile	115	2.67	86	1.96	81	85	100
Colombia	121	0.86	163	1.14	69	72	85
Costa Rica	11	0.9	18	1.45	100	89	100
Cuba	37	0.83	28	0.61	96	100	96
Dominican Republic	36	1.12	17	0.56	100	94	100
Ecuador	43	1	44	1.03	80	95	85
El Salvador	110	4.82	106	4.51	90	86	78
Guatemala	72	1.58	101	2.18	92	90	50
Haiti	10	0.31	13	0.40	69	69	40
Honduras	72	2.95	55	1.98	96	100	94
Mexico	384	1.18	452	1.36	93	82	95
Nicaragua	28	1.25	37	1.59	95	100	100
Panama	4	0.41	8	0.81	100	75	85
Paraguay	27	1.21	26	1.22	73	81	89
Peru	96	1.12	103	1.18	99	95	99
Uruguay	9	1.1	10	1.20	80	50	92
USA	NR	NR	NR	NR	NR	NR	NR
Venezuela	107	1.4	102	1.31	96	89	80
TOTAL ♦	2133	1.28	2246	1.32	91	80	94

+ Taken within 14 days of onset of paralysis

♦ Excluding Canada and USA

NR or ...: No report received

Measles Surveillance Indicators (Period between epidemiological weeks 01 to 53, 2003)

Country	% Sites Reporting Weekly	% Cases with Adequate Investigation	% Cases with Adequate Sample	% Lab. Received <=5 days	% Lab. Result <=4 days	% Cases Discarded by Lab.	Number of Active Municipalities
Argentina	91	18	90	77	93	100	0
Bolivia	...	99	99	79	74	93	0
Brazil	89	85	70	61	80	89	0
Canada	...	...	...	...	...	...	0
CAREC	100	99	95	22	100	99	0
Chile	97	61	94	75	95	99	0
Colombia	88	55	95	69	80	98	0
Costa Rica	...	0	100	100	0	100	1
Cuba	96	100	100	...	...	93	0
Dominican Republic	90	100	98	44	94	100	0
Ecuador	89	44	99	86	89	99	0
El Salvador	80	53	96	80	85	98	0
French Guiana	...	...	...	...	...	100	0
Guadeloupe	...	...	...	...	...	...	0
Guatemala	48	97	99	66	94	99	0
Haiti	...	86	95	95	75	95	0
Honduras	94	94	100	77	94	100	0
Martinique	...	...	...	...	...	...	0
Mexico	89	98	99	82	54	100	3
Nicaragua	100	86	100	84	77	100	0
Panama	86	86	98	75	99	99	0
Paraguay	89	63	100	88	100	100	0
Peru	99	90	96	65	81	93	0
Puerto Rico	...	...	...	...	...	...	0
Uruguay	27	100	100	100	0	100	0
USA	...	...	...	...	...	...	0
Venezuela	82	97	99	66	76	100	0
TOTAL AND AVERAGE	89	85	80	63	74	93	4

... : No report received

Source: PESS and MESS, PAHO

(from page 4)

of underreporting related to variations in productivity within the public health sector.

The hospital-based case review only identified 10 of the 18 cases notified in the 16 areas studied. This can be explained by other cases being notified by less complex health services or notified by reference hospitals located in the capital city. Additionally, the listing of eight differential diagnoses may not be exhaustive, thus insufficient to encompass all AFP cases.

Maintaining a sensitive surveillance system is critical to sustain polio eradication in Guatemala and the Americas. The AFP rate is one of the most important indicators of AFP surveillance quality. Reaching and maintaining an AFP rate ≥ 1.5 per 100,000 persons aged <15 years in Guatemala depends on detecting health areas with underreporting and taking actions to improve case detection and reporting. Had the cases identified in the active search been reported, the AFP rate would have exceeded 1.5 cases per 100,000 children aged <15 years

Table 1. Sensitivity and Notification Rate with and without Active Search, by Health Area*, Guatemala

Health Area	Cases Notified 2002	Notification Rate** 2002	AFP Cases Active Search	AFP Rate** with Active Search	Sensitivity %
Alta Verapaz	0	0	2	0.4	0
Huehuetenango	3	0.7	6	2.1	37
Ixcán	0	0	1	2.7	0
Izabal	1	0.6	1	1.2	50
Jalapa	1	0.7	2	2.1	33
Jutiapa	3	1.7	1	2.2	75
Petén Norte	0	0	2	4.2	0
Petén Suroccidente	1	1.3	2	3.9	33
Quetzaltenango	1	0.3	11	3.6	5
Quiché	2	0.9	3	2.2	50
Retalhuleu	1	0.8	1	1.6	50
San Marcos	4	0.9	8	2.7	66
Santa Rosa	2	1.3	3	3.2	33
Totonicapán	3	0.5	6	3.5	25
Zacapa	1	1.0	1	2.0	50
Country Total	73	1.3	50	2.0	60

* Per Health Area of residence

** Rate x 100,000 children aged <15 years

in 13 of the health areas; it would have been <1.5 in one; and only two health areas would have remained epidemiologically silent. This confirms that the 1.2 AFP rate of 2002 was due to underreporting and that it could have been higher than the 1.5 standard set by Guatemala.

Since a poor performance of the surveillance system, measured by a low AFP rate and by the percentage of sites reporting weekly ("zero" reporting), poses the risk of poliovirus reintroduction, immediate actions were taken as a result of this study. Four regional workshops to discuss the results of the study and the reasons for underreporting were conducted. The six factors identified as the main reasons for underreporting were: 1) insufficient staff training on surveillance guidelines, 2) poor communication between health areas and hospitals, 3) recording problems of the information system, 4) lack of systematic data analysis, 5) problems in the patient referral system, and 6) lack of feedback in the surveillance system. Following the study and the workshops, an increase in AFP case notification has been observed in Guatemala.

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References:

1. *Global Polio Eradication Initiative Progress Report 2003*. Geneva, World Health Organization, 2004 (WHO/Polio/04.02; http://www.polioeradication.org/content/publications/2003_progress.pdf (accessed 14 December 2004)).
2. *Polio Eradication Field Guide. Second Edition*. Washington DC, Pan American Health Organization, 1994 (PAHO Technical Paper No.40).
3. Ministerio de Salud Pública y Asistencia Social, Dirección de regulación, vigilancia y control de la salud, Departamento de regulación de los programas de atención a las personas. Programa Nacional de Inmunizaciones. Lineamientos 2002. Guatemala: PNI; 2002.
4. Technical Consultative Group to the World Health Organization on Global Eradication of Poliomyelitis. "Endgame" Issues for the Global Polio Eradication Initiative. *Clin Infect Dis* 2002;34:72-77
5. World Health Organization. Progress towards global eradication of poliomyelitis. *Weekly Epidemiological Record*, 2002.
6. Landaverde M, Venczel L, de Quadros CA. Brote de poliomiélitis en Haití y la República Dominicana debido a un virus derivado de la vacuna antipoliomielítica oral. *Rev Panam Salud Pública* 2001;9(4):272-274.

The EPI Newsletter is published every two months, in Spanish, English and French by the Immunization Unit of the Pan American Health Organization (PAHO), Regional Office for the Americas of the World Health Organization (WHO). Its purpose 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 their possible solutions.

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ISSN 0251-4729

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