IMMUNIZE AND PROTECT YOUR FAMILY

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Measles Virus Importations: A Constant Threat to Measles Elimination in the Americas

In 1994, countries of WHO Region of the Americas were the first to commit to measles elimination. Transmission of the D6 measles virus genotype–which began in 1995 and caused large outbreaks in Argentina, Bolivia, Brazil, the Dominican Republic, and Haiti–was interrupted in September 2001. The subsequent transmission of the D9 measles virus genotype in Venezuela was interrupted in November 2002, 14 months after it had started. The Venezuelan outbreak can be viewed as the last instance of widespread endemic transmission of the measles virus in the Americas.

Between 2003 and 2005, only a hundred measles cases have been reported each year in the Region (2003, 119 cases; 2004, 108; 2005, 84), which represent a cumulative annual incidence of approximately 0.1 case per million population. Epidemiological investigation can positively trace the majority of the cases now occurring in the Americas to importations from other continents.

While a few countries outside the Americas have also interrupted measles virus circulation, measles remains endemic in all other continents. An estimated 20–30 million measles cases still occur each year worldwide. With an estimated 454,000 deaths in children aged <5 years in 2004, measles is still the leading vaccine-preventable cause of childhood mortality (1). Sub-Sahara Africa and South Asia account for 92% of these deaths. While Africa and South Asia pursue mortality control goals, the three remaining WHO Regions–Eastern Mediterranean, Europe, and Western Pacific–now have elimination goals similar to that of the Americas.

In recent months, an increase in reports of measles outbreaks has occurred in Europe (Table 1). This increase is likely due to both improved surveillance and increased measles activity in that Region. Since, in 2000, two thirds of the 33.7 million tourists visiting the Americas from other Regions were from Europe (2), this year's occurrence of large outbreaks in Europe might indicate an increased risk of measles virus importation to

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Dr. Ciro de Quadros, President and CEO, a.i., Sabin Vaccine Institute, and Dr. Mirta Roses, Director, PAHO signed an agreement for a second year of partnership to eliminate rubella and congenital rubella syndrome. Behind them, from left to right, Dr. Jon Andrus, Lead Advisor, Immunization Unit, PAHO, Dr. Peter Hotez, Chair, Scientific Advisory Council, SVI, and Dr. Gina Tambini, Manager, Family and Community Health Area, PAHO. See **PAHO AND SABIN VACCINE INSTITUTE: SECOND YEAR OF PARTNERSHIP** page 8

Launching of VWA 2006 at the Mexico-US Border

The fourth annual Vaccination Week in the Americas (VWA), the hemisphere-wide initiative of the Pan American Health Organization (PAHO), was launched this year in the state of Arizona, United States, during the week of 22-29 April. In the city of Phoenix, health authorities from Canada, Mexico, and the United States, and PAHO conducted a press briefing to mark the event. The objective was to highlight the importance of immunization in border areas where high-risk populations reside and the relevance of VWA in maintaining the Americas free of diseases such as polio and measles.

Dr. Joxel Garcia, Deputy Director of the Pan American Health Organization, stated how the VWA has brought together over 35 countries and territories, reaching almost 40 million people every year with an assortment of vaccines.

Dr. Frank Plummer, Senior Advisor of the Public Health Agency of Canada, Dr. Romeo Rodriguez, Director of the Child and Youth Health National Center, Ministry of Health, Mexico, and Dr. Anne Schuchat, Director of the National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention, USA, spoke to the media, showing how immunization joins their countries in the fight against diseases which are highly transmissible and have no respect for borders.

See **VACCINATION WEEK** page 8

the Americas. Measles virus importations from Asia are also detected regularly in the United States and sporadically in Latin America. The flux of passengers from Asian countries to Latin America and the Caribbean is much smaller than to the United States.

In this article, we review three measles outbreaks that have been detected in the Americas since December 2005. These outbreaks might ultimately have originated from three different continents: Africa, Europe, and Asia. However, all three outbreaks highlight the importance of vaccinating risk groups, especially workers in the health care, transportation, and tourism sectors; including private health care facilities in the integrated measles/rubella surveillance network; carefully managing nosocomial outbreaks; and obtaining proof of measles immunity from residents of the Americas traveling to other continents.

Table 1. Selected Outbreaks Reported in WHO European Region, 2006

Country	Month and Year Outbreak Began	Number of Reported Cases During First Semester 2006 *	Measles Virus Genotype Detected
Ukraine	February 2005	>17,000	D6
Germany	January 2006	>1,400	D4, D6
Romania	October 2004	>700	D4
Spain	February 2006	>300	B3, D6
England and Wales	March 2005	181	B3
Greece	November 2005	171	B3
Poland	January 2006	60	…

* Number of reported cases is as per last published update. … not available

Source: References (5) through (11)

Mexico, December 2005–February 2006

Between 12 December 2005 and 17 February 2006, 27 measles cases were confirmed in Mexico (Figure 1). Case-patients were either children aged <2 years or young adults. All cases but one (a 19-year-old man who had received one dose of measles vaccine when aged 1 year) were not vaccinated (Figure 2). All case-patients lived in the metropolitan area of Mexico City. Investigation detected five transmission chains, all starting in workers of the international airport of Mexico City. The index case of the outbreak was a 28-year-old man employed as baggage handler (in the international baggage claim area) who had rash onset on 12 December 2005. A second transmission chain originated in a 33-year-old woman, employed as a ticketing agent and who had rash onset on 20 December 2005. The three remaining transmission chains relate to construction workers temporarily employed at the airport, where extensive construction work occurred in 2005.

None of the 27 confirmed cases had a history of travel outside of Mexico during the 7–21 days prior to rash onset. However, measles virus of genotype B3 was isolated in several case-patients, including the index patient. Molecular analyses have shown that the isolated virus has a common source with viruses isolated from six other measles patients reported in North America, or with travel history to the area in November–December 2005. The case with the earliest known illness was a 17-year-old refugee who arrived from Kenya to New Jersey, USA, on 9 November 2005 having symptoms consistent with measles. The sequence of the virus isolated in this patient was identical to the sequences from viruses collected from measles cases in Nairobi, Kenya, earlier in 2005. The epidemiological link among the different clusters of cases could not be established.

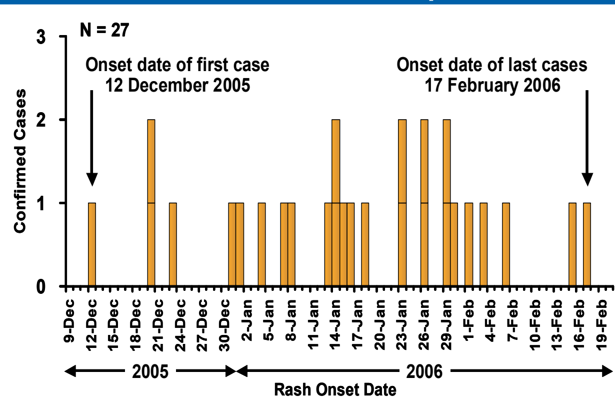
Vaccination of risk groups, including airport personnel, was an important lesson from the 2003–2004 outbreak in Mexico. However, the extensive personnel turnover and the presence of construction workers made it difficult to assure full compliance with this requirement. The index case-patient, for instance, had only started working at the airport in July 2005.

Venezuela, February 2006–ongoing

Preliminary information on this outbreak was presented in the last issue of the *Immunization Newsletter* (3). Following the occurrence of an imported case (a 33-year-old unvaccinated man who had traveled to Spain and France for leisure), 44 other cases were reported in the metropolitan area of Caracas. Including the imported case, rash onset dates extended from 23 February to 3 May 2006. The majority of the cases were exposed in the emergency room of a private clinic. Triage and isolation of febrile patients with a risk profile (visit to an emergency rooms or contact with persons with rash during previous four weeks), as well as vaccination of all patients and visitors without contraindication, were the two main measures implemented to prevent measles virus transmission in Caracas' private clinics.

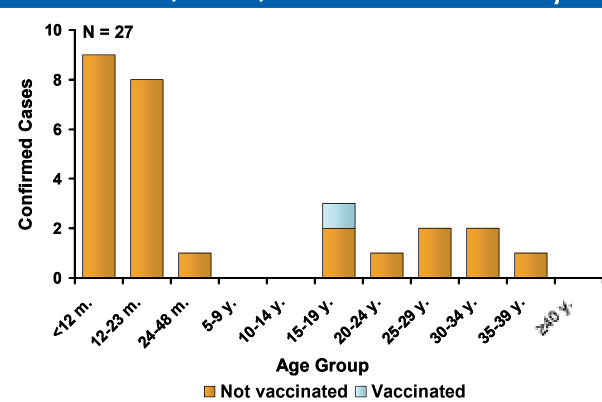
Two additional outbreaks were identified. The

Figure 1. Epidemic Curve of Confirmed Measles Cases, Mexico, December 2005 to February 2006



Source: Ministry of Health, Mexico.

Figure 2. Distribution of Confirmed Measles Cases by Age and Vaccination Status, Mexico, December 2005 to February 2006



Source: Ministry of Health, Mexico.

first occurred in the Isla Margarita, Nueva Esparta, a popular tourist destination 350 km north-east of Caracas. The four cases had rash onset between 19 and 27 March 2006. The patients lived in different municipalities of the island, but all visited a recently opened public hospital on 9 March. A source case could not be identified. A second outbreak occurred in the State of Carabobo, 120 km south-west of Caracas. As of the end of June, 16 cases were reported. They had rash onset on 16–28 May 2006 and are all part of a local church with over 5,000 members. No epidemiological link between these two outbreaks and cases in the metropolitan area of Caracas could be established to date. Case-patients in Venezuela were of all age groups.

While viral isolation from specimens collected from several patients (including the imported case) was successful, the determination of viral genotypes is still pending. Once the molecular sequencing of the isolates is available, it will provide important clues not only on the origin of the Caracas' outbreak, but also on potential ties with the two further outbreaks.

United States, May–June 2006

Fifteen measles cases have been reported in Boston, Massachusetts, as of 22 June. The primary case in this outbreak is a 32-year-old unvaccinated person, who arrived in Boston from India at the end of April, nine days before developing a rash. The 15 cases are distributed over three generations of transmission; rash onset occurred between 5 May and 14 June. All case-patients were adults (age range = 23–45 years). Eight of the 15 affected persons have an unknown immunization history, two affected persons have one dose of measles vaccine given prior to 1968, three affected persons have had two doses of measles vaccine, and two were unvaccinated due to religious belief. Eleven of the cases were born in the United States.

Eight case-patients worked either at the same company or in the same building as the imported case. The epidemiological link of the remaining 6 cases is under investigation. One of these cases is a person who works a few blocks from the imported case's company at a religious organization which does not routinely accept vaccinations. This circumstance raised concerns about a potentially large pool of susceptible individuals. However, only one household contact was confirmed with measles as of mid-June.

Conclusions

As long as measles is endemic in other regions of the world, achieving a uniform >95% vaccine coverage among all birth cohorts and maintaining quality surveillance remain important strategies towards sustaining measles elimination in the Americas. Nonetheless, the three outbreaks described reemphasize previous lessons and provide new insight that might prevent the occurrence of contained, yet costly, outbreaks.

Ensuring the immunity of at-risk groups, reliable and timely notification of suspect cases from all public and private institutions, and measles immunity of residents traveling overseas could prevent many measles virus importations and significantly limit the consequences of those importations. Every country should conduct those activities consistently. ■

Lessons Learned from Recent Measles Outbreaks

- **Groups of workers at risk should be defined and their measles immunity verified at regular intervals.** These groups include:
  - Health care workers (medical, administrative, and security personnel). These workers have the responsibility to avoid transmitting measles, as they are not only likely to be exposed, but also to expose other people to measles. Proof of measles immunity should be recommended for employment in any health care facility. Given the potential high turnover in personnel, public health officials should conduct a formal process of verification of this requirement at regular intervals. For instance, when active case-searches are done, immunity of all employees could be checked against personnel lists reporting dates of measles vaccination of each staff member. Proof of immunity to other vaccine-preventable diseases, such as rubella and hepatitis B virus, should also be recommended for health care workers.
  - Personnel from the tourism and transportation industries.
  - Groups not routinely accepting vaccination. Because these groups can hardly be convinced to accept measles or any other vaccination, they constitute a potentially large pool of susceptibles. Public health authorities should closely monitor occurrences of rash illness in these groups as soon as an importation occurs.
- **Quality surveillance should be able to detect importations early on.** The early detection of an imported case offers a unique chance to undercut an outbreak at its inception, when the branching out of the transmission chain is relatively simple. To be able to detect imported cases, a surveillance system must include facilities providing health care to tourists and private health care facilities, since, in many countries, people who can afford intercontinental travel are more likely to seek care in those institutions.
- **Any resident of the Americas traveling outside the Western Hemisphere should be immune to measles before departure**. Written proof of receipt of a measles-containing vaccine—preferably two doses, the first received after the first birthday and the second dose at least four weeks later—is the most practical assurance of measles immunity. Laboratory evidence, specifically the detection of measles-specific IgG antibodies in a serum specimen, could also be used as evidence of measles immunity, but this method is not practical for most people.

  Prospective travelers aged >6 months who are not immune should be advised to receive measles-containing vaccines, preferably as measles-mumps-rubella (MMR) or measles-rubella (MR), ideally at least two weeks before departure. Infants aged 6–12 months who receive MMR before their first birthday must be re-vaccinated following the country's schedule. Exceptions include travelers with medical contraindications to measles-containing vaccines, such as severe immunosuppression and pregnancy.

  A requirement that all incoming passengers be vaccinated against measles would have little efficacy, as most incoming susceptible passengers who might have been exposed to measles would likely be arriving after having been exposed. Vaccination upon arrival would not prevent these passengers from developing measles in most cases. Both the current and the 2005 revised International Health Regulations (4) do not consider measles vaccination. The general rule in the Regulations is that no vaccination certificate, other than those provided for under the Regulations (currently only for yellow fever) or in recommendations issued by WHO, shall be required for international travel.

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Rubella and Congenital Rubella Syndrome Elimination: Fast Becoming a Reality

Rubella elimination in the Americas has been defined as the interruption of endemic rubella virus transmission in all countries and the lack of indigenously acquired cases of congenital rubella syndrome (CRS). This goal is achievable since humans are the only host of the rubella virus, and a very effective vaccine (>95% efficacy) conferring lifelong immunity is available.

The high population density and migratory movements that characterize many cities in the Americas, combined with the real possibility of rubella virus importations resulting from international travel mean that coverage levels >95% need to be achieved to avoid cases secondary to importations.

To reach the goal of rubella and CRS elimination by 2010 in the Americas, rapid interruption of endemic rubella transmission is necessary. Using the slogan, *"Once and for all!"*, countries have been implementing mass vaccination campaigns targeting men and women. However, if coverage rates close to 100% are not reached by campaign end, pockets of susceptibles will remain. These pockets of susceptibles coupled with continued rubella transmission in other Regions of the world will pose the constant threat of rubella cases occurring secondary to importations.

Among countries that have conducted rubella mass vaccination campaigns, only Brazil continues to have transmission and Chile had an outbreak among men in 2005. Both countries did not include the male population in their campaigns.

Even though the cost-benefit of a rubella campaign has been estimated at approximately 1:13, campaigns require significant attention to microplanning and effective implementation. Countries are using innovative tactics to vaccinate all adults and developing new best practices. With so much at stake, it is critical to reach 100% coverage in all municipalities, and among all age groups in both men and women. Coverage levels below this goal will likely result in the continued occurrence of cases, resulting in less commitment, a sense of failure, and distrust in the strategies recommended for rubella elimination. It should also be highlighted that, in the context of disease elimination, the large resources needed to investigate and respond to an outbreak compete with the needs of other health interventions, including other immunization activities.

Table 1. Rubella Elimination in the Americas: Last Countries to Conduct Vaccination Campaigns

Country	Target Population	Age Group	Scheduled	Comments
Guatemala	7.8 millions Women and men	8-39 years	September 2006	An alliance of partners is currently mobilizing resources to purchase all vaccines.
Dominican Republic	5 millions Women and men	7-39 years	October 2006	An international evaluation of the immunization program was conducted prior to the vaccination campaign.
Peru	19.8 millions Women and men	2–39 years	October 2006	Activities are planned and organized to ensure that the campaign is conducted as scheduled.
Argentina	7.4 millions women Captive male population High-risk male population to be determined [a]	15-39 years	October 2006	Target population will be 100% of the female population, the captive male population (students, members of armed and police forces, medical and nursing students, staff in health, education, and tourism sectors), and the male population considered at high risk.
Mexico	20.3 millions Women and men	17-29 years	February 2007	During the first 2006 semester, the Distrito Federal and the state of Mexico have completed MR [b] vaccination in the 13-39-year age group to control a measles outbreak stemming from an imported case. The remaining 34 states are expected to follow in 2007.
Venezuela	9.6 millions Women and men	18-39 years	April-May 2007	Response measures to the measles outbreak during the first 2006 quarter have generated lessons on vaccination strategies in crisis situation and contributed to rubella elimination.
Haiti	3.7 millions Women and men	1-15 years [a]	April-May 2007	During the campaign, the MMR [c] will be introduced in the regular program for children aged 1 year.

[a] provisional [b] Measles-Rubella Vaccine [c] Measles-Mumps-Rubella Vaccine

Mass rubella campaigns in the Americas have generated many lessons. These campaigns require vaccinating groups traditionally not targeted for vaccination (i.e., male and female adolescent and adults), encompassing almost half of the total population of a country, and reaching coverage levels close to 100%. Also, the campaigns are very intensive because they are conducted over 6-8 weeks. However, experience has shown that it is possible to reach 100% coverage and achieve rubella and CRS elimination while sustaining measles elimination. The critical components for success have been political commitment, motivation of health workers, population participation, intensive social communication, local-level planning, a practical information system, and incorporation of immunization safety components into campaign planning.

From 1998 to 2005, the English-speaking Caribbean, Colombia, Costa Rica, Ecuador, El Salvador, Honduras, Nicaragua, Paraguay, and Venezuela (1st phase) have conducted mass vaccination campaigns in adult men and women. Seven more countries will be following their steps in the next months (Table 1). ■

Estimating Vaccine-preventable Child Mortality in the Americas

Introduction

Of eight Millennium Development Goals (MDGs), one is focused on reducing the mortality rate in children aged <5 years by two thirds (66%) between 1990 and 2015. WHO Global Immunization Vision and Strategies (GIVS) targets include a two-third reduction in vaccine-preventable child mortality by 2015 compared with 2000 levels. In Latin America and the Caribbean, 32 of 1,000 children died in 2003 before reaching 5 years of age, a 39% reduction from 707,000 deaths in 1990. With measles-related mortality having been virtually reduced to zero in the Americas, the further reduction in mortality that underutilized and new vaccines could potentially offer in our Region needs to be critically assessed. To that objective, a simple model for quantifying vaccine-preventable child mortality in the Americas was developed.

Methods

Mortality estimates for 2002 and the WHO Region of the Americas were extracted from the 2004 World Health Report.(1) These deaths in children aged <5 years were first disaggregated into five main categories: perinatal, infections, non-communicable, injuries, and nutritional (Figure 1). The Infections category was further differentiated into 6 subcategories of disease that may be partially vaccine-preventable: diarrheal, respiratory, meningitis, diphtheria-tetanus-pertussis (DTP), hepatitis B, and other. The percentage of deaths attributable to rotavirus, pneumococcus, meningococcus and Haemophilus influenzae type b (Hib) were eventually calculated using the related WHR reported deaths and cause-specific attributable proportions referenced in WHR and other official WHO documents.(2)

Results

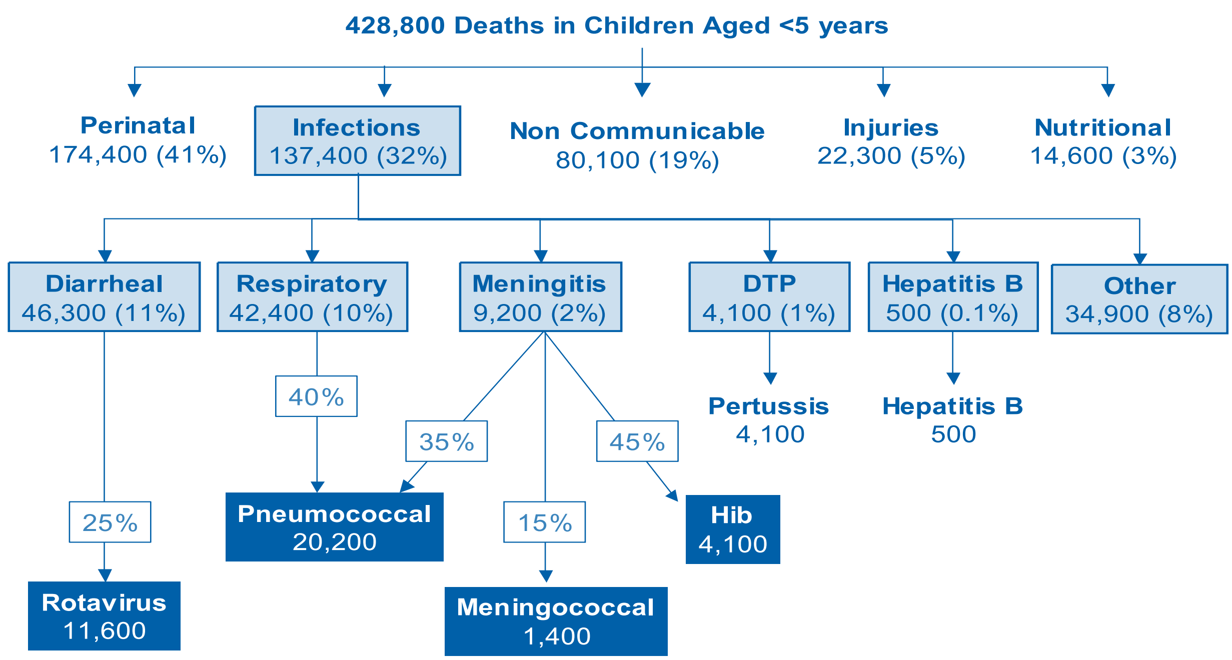
The resulting mortality profile suggests a significant proportion of vaccine-preventable mortality is due to rotavirus diarrhea, invasive pneumococcal disease, and Hib meningitis. Of an estimated 428,800 deaths in children aged <5 years occurring in 2002, 137,400 (32%) deaths were attributed to infectious causes, according to the following breakdown:

- 11% were due to diarrheal infections;
- 10% were due to respiratory causes;
- 2% were due to meningitis;
- 1% were due to pertussis;
- 0.1% were due to hepatitis B; and
- 8% were due to other infectious causes.

Overall, it was estimated that 37,300 child deaths were potentially vaccine-preventable, distributed by specific causes as follows:

- Rotavirus 11,600
- Pneumococcal disease 20,200
- Meningococcal disease 1,400
- Hib meningitis 4,100

Figure 1. Breakdown of Child Mortality, The Americas, 2002



Conclusions

The model was useful for developing practical estimates on the impact of vaccines against Hib, rotavirus and pneumococcus on child mortality in the Americas. The estimates are conservative. Other researchers have estimated the annual child mortality from rotavirus in the Region to be 15,178.3 In particular, the model showed that 9% of all child deaths and 27% of all child deaths attributable to infectious agents are potentially vaccine-preventable. In the context of the MDGs and WHO's Global Immunization Vision and Strategy, PAHO's Immunization Unit recommends the introduction of new vaccines, such as against rotavirus and pneumococcus, into national immunization schedule when the measure is cost-effective and sustainable. ■

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Disease Control Priorities Project: Overview and Summary of the Burden of Vaccine-preventable Diseases in the Americas

The previous article, *Estimating Vaccine-preventable Child Mortality in the Americas*, presents a figure of 37,000 vaccine-preventable child deaths in 2002. As the researchers employed a simple methodology, it may be appropriate to examine more refined estimates of vaccine-preventable disease mortality. The Disease Control Priorities Project recently published the 2nd edition of their comprehensive global health examination, *Disease Control Priorities in Developing Countries.*(1) This effort, led by the Fogarty International Center of the United States National Institutes of Health, the World Health Organization, and the World Bank, analyses developing country disease control priorities, public health interventions and their cost-effectiveness, and health systems capacity. The publication consists of 73 chapters, ranging from the assessment of disease-specific interventions to the exploration of cross-cutting themes such as the Millennium Development Goals (MDGs) for health.

In Chapter 20, *Vaccine-Preventable Diseases*, the authors describe the epidemiology of vaccine-preventable diseases (VPDs), provide estimates of disease burden, and explore the impact of immunization programs. The authors examine the costs and cost-effectiveness of the Expanded Program on Immunization (EPI) and the introduction of new antigens into routine vaccination schedules.

In Table 20.2 of Chapter 20, the researchers present the estimated number of deaths averted by vaccination, obtained using a model developed by WHO. For each disease, the model takes into account the susceptible fraction of the population, infectivity rates, disease sequelae, and estimates of local case fatality rates. The model is described in detail in the Global Immunization and Vision Strategy, a document developed by WHO and the United Nations Children's Fund (UNICEF).(2)

Applying this model to the current status of immunization programs in the Americas, we estimated deaths potentially avertable through immunization. The estimates are based on 2004 immunization schedules and reported coverage levels. The following are two scenarios modeling the impact of immunization programs in the Region of the Americas:

Scenario 1: If immunization activities continue at their current levels, approximately 662,000 deaths could be averted between 2000 and 2015 (Figure 1).

Scenario 2: With future immunization improvements, an additional 185,000 deaths could potentially be averted between 2000 and 2015. These immunization improvements consist of each country in the Region achieving and maintaining 90% or greater national immunization coverage (37,000 avertable deaths) and introducing vaccines against diseases caused by rotavirus, *Streptococcus pneumoniae* (pneumococcus), and *Neisseria meningitidis* into their routine immunization schedule (148,000 avertable deaths).

PAHO is assisting countries to achieve this potential reduction in deaths. Specific areas of support to countries include strengthening routine immunization services and the accelerated introduction of new vaccines, particularly rotavirus and pneumococcus vaccines. ■

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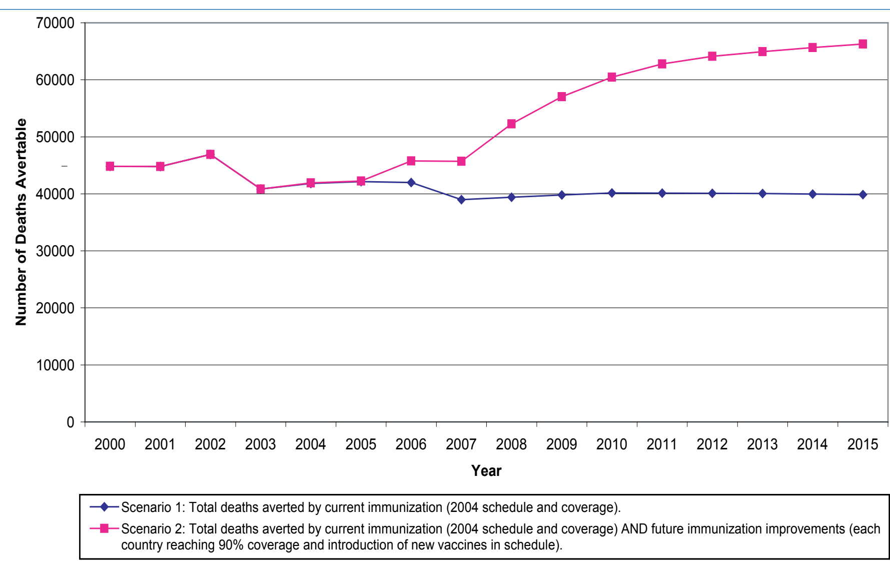
Figure 1. Estimates of Total Deaths Avertable by Current Immunization and Future Immunization Improvements, Region of the Americas, 2000-2015



Source: Immunization Unit, PAHO.

Measles/Rubella/Congenital Rubella Syndrome Surveillance Data, 2005

Country	Total Suspected Cases Notified	Confirmed Measles			Confirmed Rubella			Confirmed Congenital Rubella Syndrome (CRS)
	Measles/Rubella	Clinical	Laboratory	Total	Clinical	Laboratory	Total	Total
Anguilla	3	0	0	0	0	0	0	…
Antigua & Barbuda	1	0	0	0	0	0	0	0
Argentina	601	0	0	0	0	0	0	0
Aruba	…	…	…	…	…	…	…	…
Bahamas	4	0	0	0	0	0	0	0
Barbados	13	0	0	0	0	0	0	…
Belize	37	0	0	0	0	0	0	0
Bermuda	…	…	…	…	…	…	…	…
Bolivia	240	0	0	0	0	8	8	0
Brazil §	20936	0	6*	6	116	202	318	3
Canada	…	0	6*	6	0	320	320	1
Cayman Islands	0	0	0	0	0	0	0	…
Chile	562	0	0	0	12	35	47	0
Colombia §	2326	0	0	0	31	54	85	5
Costa Rica	94	0	1	1	0	0	0	0
Cuba	1322	0	0	0	0	0	0	0
Dominica	1	0	0	0	0	0	0	…
Dominican Republic	254	0	0	0	0	6	6	…
Ecuador	411	0	0	0	0	0	0	0
El Salvador	115	0	0	0	0	0	0	0
French Guiana	101	0	0	0	…	…	…	…
Grenada	3	0	0	0	0	0	0	0
Guadeloupe	…	…	…	…	…	…	…	…
Guatemala	372	0	0	0	0	4	4	1
Guyana	17	0	0	0	0	0	0	0
Haiti	20	0	0	0	0	0	0	0
Honduras	276	0	0	0	0	0	0	0
Jamaica	115	0	0	0	0	0	0	0
Martinique	…	…	…	…	…	…	…	…
Mexico	4258	0	6*	6	6	32	38	1
Montserrat	0	0	0	0	0	0	0	…
Netherlands Antilles	…	…	…	…	…	…	…	…
Nicaragua	280	0	0	0	47	0	47	…
Panama	325	0	0	0	0	0	0	0
Paraguay	617	0	0	0	0	2	2	0
Peru §	7147	0	0	0	60	3592	3652	7
Puerto Rico	…	0	0	0	0	0	0	…
St. Kitts & Nevis	2	0	0	0	0	0	0	0
St. Lucia	3	0	0	0	0	0	0	…
St. Vincent & Grenadines	0	0	0	0	0	0	0	0
Suriname	25	0	0	0	0	0	0	0
Trinidad & Tobago	14	0	0	0	0	0	0	0
Turks & Caicos	0	0	0	0	0	0	0	0
United States §	…	0	65*	65	0	17	17	1
Uruguay	16	0	0	0	0	0	0	0
Venezuela	2970	0	0	0	0	823	823	…
Virgin Islands (UK)	4	0	0	0	0	0	0	…
Virgin Islands (US)	…	…	…	…	…	…	…	…
TOTAL §	**43485**	**0**	**84**	**84**	**272**	**5095**	**5367**	**19**

… No information provided * Imported/related to importation: Brazil, 6 cases; Canada, 4 cases; Mexico, 6 cases; USA, 25 cases.

Source: MESS/FCH-IM except for Brazil, Canada, Costa Rica, Cuba, Mexico, and USA.
§ Provisional data for Brazil (rubella), Colombia (rubella), Peru (rubella and CRS), and USA (measles).

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Other bi-national events, such as those held in border areas between Honduras and Nicaragua, and Costa Rica and Panama, French Guiana and Suriname, have brought countries together with one purpose: to vaccinate vulnerable groups such as indigenous people. This cooperation has also strengthened border relations.

Canada's National Immunization Awareness Week, Mexico's National Health Week, and the U.S. National Infant Immunization Week, –implemented in partnership with VWA– are campaigns that have not only focused on vaccination activities, but also on community and health professional awareness. The three countries organized training of health workers, radio and TV programs, physicians' conferences, community health fairs, and meetings with legislators. Massive social communication campaigns were implemented to reach as many people as possible. ■

PAHO and Sabin Vaccine Institute: Second Year of Partnership

On 14 April 2006, Dr. Ciro de Quadros, President and CEO, a.i., Sabin Vaccine Institute (SVI), and Dr. Mirta Roses Periago, Director, PAHO, signed an agreement for a second year of partnership to support PAHO's regional efforts in the fight against rubella and congenital rubella syndrome (CRS). "The renewal agreement signed today reinforces SVI's commitment to contributing to rubella elimination and the importance of the Institute's association with the public health programs of PAHO," said Dr. de Quadros.

Rubella virus circulation in the Americas has been documented through epidemiological surveillance, while rubella outbreak investigations have identified CRS cases. It has been estimated that before vaccine introduction into national immunization schedules, more than 20,000 children were born with CRS in the Region each year.

With support from partners such as SVI, PAHO's Immunization Unit hosted two workshops on rubella and CRS elimination to address the complexities of adult vaccination and share the lessons learned from completed campaigns. One workshop was conducted in Bogotá, Colombia, from 2-6 May 2005 and the other in Santa Cruz, Bolivia, from 12-16 May 2005. Later this year, the Immunization Unit will convene an ad-hoc meeting of experts from the Region to determine lessons learned, define good public health practices for establishing CRS surveillance, and help with refining strategies for surveillance and case detection.

The new project (March 2006-March 2007) will bolster the adult vaccination campaigns needed to complete supplemental immunization activities in the Andean Sub-region and Central America as well as implement such activities in Hispaniola and the Southern Cone Sub-region[1]. The project will serve as a pilot program for rubella and CRS elimination that might be adapted and applied in other Regions of the world. ■

[1] *See Table 1 on page 4.*

The *Immunization Newsletter* is published every two months, in English, Spanish, and French by the Immunization Unit 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.

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