

# EPI Newsletter

## Expanded Program on Immunization in the Americas

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IMMUNIZE AND PROTECT YOUR CHILDREN

October 2000

### Update: Measles Outbreak in Haiti

In 1994, Haiti completed a nationwide *catch-up* vaccination campaign against measles resulting in an estimated level of vaccine coverage of over 95% of children age 9 months to 14 years. Following this campaign, Haiti remained free of measles for 6 years, but during these years the level of routine immunization remained low. Consequently, there was an accumulation of over 1 million susceptible children below age 5, and Haiti was therefore at risk for a new measles epidemic. A *follow-up* campaign was conducted in 1999, but the campaign did not reach the majority of children in the target population.

#### The Outbreak

On March 8, 2000 an epidemic began in the provincial city of Gonaïves, in the department of Artibonite. From there the epidemic spread to 22 of the 133 communes in Haiti, including the five communes that comprise the metropolitan area of the capital, Port-au-Prince. By October 28, 2000, passive surveillance had reported 596 suspected cases; 467 of these have been confirmed as measles (454 laboratory confirmed, and 13 clinically confirmed). A total of 10 communes (8%) have reported cases in the last 4 weeks, while 14 (11%) have reported cases in the last 12 weeks.

The outbreak is now focused in Port-au-Prince, where 82 (92%) of the 89 confirmed cases that have been reported

nationally in the past four weeks are located. The age-specific attack rates have been highest for children age 1 to 4 years (31 per 100,000), and for infants age 6 to 12 months (29). Rates for these age groups are more than twice as high as that for children age 5 to 9 years (13), an age group that was covered in the previous *catch-up* campaign. The attack rate for children age 10-14 was 3 per 100,000. Of the 196 confirmed measles cases in Port-au-Prince, vaccine status

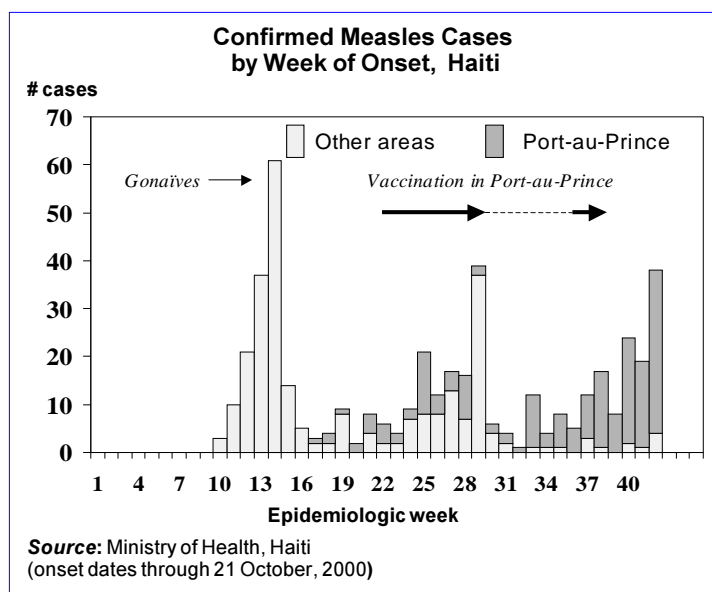
was reported for 81 (31%), of which 21 (25%) reported having previously received measles vaccine.

#### Early response to the outbreak

A door-to-door campaign of measles vaccination for all children age 6 months to 14 years was initiated in Gonaïves on April 2 and completed by April 24 with coverage reported to be greater than 95%. Other cities in the Artibonite department also carried out similar vaccination campaigns using the same house-to-house strategy.

Within 2 weeks of these campaigns, the epidemic there ended. In spite of active case searches in the larger cities in Artibonite, no further cases have been reported since August 18, 2000.

In the metropolitan area of Port-au-Prince, however, the measles vaccine campaign has taken place over a longer time period. The campaign began in late May, with the



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vaccination of children in schools, and continued through July with door-to-door vaccination. After an interruption in vaccination activities due to administrative barriers, vaccination began again in all four communes in late August, and by early September the campaign had moved through all areas of the city but had reached only approximately 82% of the target population of 1.2 million children. Cases have continued to be reported from all 5 communes of the city in September and October, especially from localities with low vaccine coverage.

*Source:* Fernando Laender, James Dobbins, Jean André, Salvador García, Arthur Marx, Linda Venczel.

**Editorial Note:** In order to stop the outbreak, indiscriminate vaccination of all children regardless of prior vaccination status in high risk areas (areas with recently confirmed cases, or low coverage demonstrated in house to house monitoring) has been planned for the Port au Prince area. Increasing the quality of the vaccine campaign within these target areas through careful training of supervisors, vaccinators and coordinators is essential to guarantee > 95% coverage.

PAHO recommends that the following steps be taken to assure high quality vaccination:

- Training of all vaccinators, primary and secondary supervisors and area coordinators that includes half a day

reviewing forms, marking of houses, biosecurity, and technique, followed by two full days in the field vaccinating, monitoring coverage, and correcting mistakes

- Maintaining a ratio of one primary supervisor for every five vaccinators, one secondary supervisor for every three to four primary supervisors, and one coordinator for every municipality.
- The main purpose of each supervisory level is to validate coverage through daily monitoring, only shifting vaccinators to other areas when  $\geq 95\%$  coverage has been achieved, and ensuring a continuous supply of biologicals and other necessary materials.

Improved *social mobilization* at both the national and local levels, increased active surveillance for new cases, and timely and complete investigation of suspected cases will also be essential components in controlling this outbreak. In addition to increased participation by PAHO and other international agencies, more national personnel are to be *assigned exclusively* to the campaign.

The highest national priority is to complete vaccination of at least 95% of the children in Port au Prince, where almost one-third of the target population resides and where almost all new cases of measles have been located. Full implementation of these strategies should result in the elimination of measles transmission in Haiti.

## Measles Outbreak in Venezuela

Four measles outbreaks have been identified in the south eastern part of Venezuela, bordering the region of La Guajira in Colombia. As of November 2, the total number of confirmed cases is 17. Of these, 16 have been laboratory confirmed and one through epidemiological link. So far, ongoing active search of cases, both in Venezuela and in nearby cities in Colombia have been unsuccessful to identify the sources of infection. The following are preliminary summary reports on these outbreaks. No epidemiological links between the four outbreaks have been identified so far.

### City of Maracaibo

**Outbreak 1:** Six cases were reported in the same family of the Cacique Mara parish, with ages ranging from 10 months and 2 years. All except one were unvaccinated. These children spent most of the day in their grandmother's house. One case, however, lives in the parish of Raul Leoni, but has frequent contact with the others. The last case had rash onset October 9, and the first three cases had rash onset September 14 and 15, suggesting a common

source of infection for the three. An index case has not been identified yet.

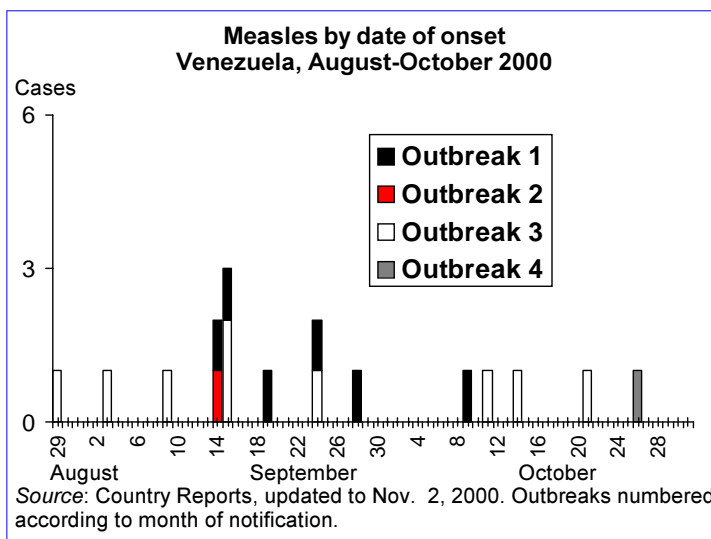
**Outbreak 2:** Only one case has been reported in a 10-month old, unvaccinated child who lives in the parish of Manuel Dagnino. The patient had rash onset on September 13. An index case has not been identified either.

- *Mara locality* (La Sierrita parish, approximately 40 km to the west of Maracaibo, in the proximity of region of La Guajira in Colombia)

**Outbreak 3:** Nine cases between 11 months and 21 years have been reported in a family and their contacts. Six of them had never been vaccinated, two were vaccinated, and the vaccination status of another is unknown. The last

case had rash onset October 14, and the first two had rash onset August 29 and September 3 respectively. An index case has not been identified.

**Outbreak 4:** Only 1 case has been reported in a two-year old, vaccinated child whose mother owns a shop. Rash onset was October 26. An index case has not been identified.



# XIV Technical Advisory Group Meeting

*The fourteenth Technical Advisory Group Meeting on Vaccine-Preventable Diseases (TAG) was held in Foz do Iguaçu, Brazil, October 2-5, 2000. TAG meets every year and functions as the principal forum to promote regional initiatives aimed at controlling and eradicating vaccine-preventable diseases. The following are the TAG's conclusions and recommendations as presented in the Final Report.*

## • Measles Eradication

PAHO's Technical Advisory Group on Vaccine Preventable Diseases commended the efforts of countries in the Americas to significantly reduce the burden of measles in the Region. Most countries have already interrupted measles virus transmission as a result of the full utilization of the vaccination strategy recommended by PAHO. The number of confirmed measles cases are at an all-time low and measles is currently affecting only 53 out of approximately 12,000 municipalities. TAG also noted the progress being made at the global level towards accelerated measles control. These efforts will complement and facilitate the work being carried out by all countries in the Americas.

Haiti and the Dominican Republic deserve special attention. Despite repeated vaccination efforts, both countries have been unable to stop measles transmission. Problems have included: failure to implement the full measles eradication strategy, deficient supervision of vaccination campaigns, inadequate and delayed monitoring of vaccination coverage and severe logistical obstacles. As a result many municipalities have failed to reach  $\geq 95\%$  coverage with measles vaccine, thereby leaving pockets of susceptible

populations. Attack rates are highest among children  $< 5$  years of age. Most cases have occurred among unvaccinated children living in areas already covered by vaccination with a reported  $\geq 95\%$  coverage. House-to-house monitoring of vaccinated areas that lacked adequate supervision revealed insufficient coverage.

## Recommendations

### Vaccination Strategies

1. Following the successful implementation of a one-time nationwide vaccination campaign of all children ages 1-14 years (*catch-up*), TAG reaffirmed the other components of the strategy to achieve, maintain and monitor the interruption of endemic measles transmission in the Region: (a) routine immunization of children 1 year of age (*keep-up*), and (b) a complementary vaccination campaign targeting all children ages 1-4 years, irrespective of prior vaccination history at least every four years (*follow-up*).
2. It is necessary to achieve and verify a  $\geq 95$  percent coverage with measles-containing vaccines in all municipalities:
  - Routine vaccination coverage should be validated periodically either by house-to-house monitoring or by the comparison with the number of doses of DTP1 or BCG administered. The regularity of this monitoring activity is critical in densely populated areas.
  - Supplemental vaccination (*mop-up*) activities should be conducted in municipalities failing to reach 95% vaccination coverage. These activities should include door-to-door vaccination.

## Major Issues

*National coverage levels and/or inflated coverage estimates have lead to a false sense of security in many countries*

Measles vaccination coverage rates in many municipalities, estimated through house-to-house monitoring or other measurement methods, are often substantially lower than those officially reported rates. In addition, some countries rely only on national coverage levels, thus failing to identify local problem areas with low coverage.

Densely populated urban centers pose special problems because they are ideal for prolonged measles transmission due to the rapid accumulation of susceptible children and migrant workers (particularly those of rural origin). Special attention is needed to address these population groups.

*Problems in epidemiological investigation of measles cases*

In some countries case investigations are poorly performed, thus failing to provide critical information regarding outbreak source and delaying outbreak response ef-

forts. Follow-up investigations, which include the identification of additional related cases is often lacking. Prompt cross-notification between local jurisdictions, as well as between countries is not carried out on a regular basis.

*Special groups at risk of acquiring and transmitting measles*

Experience shows that certain groups may be at high risk of acquiring and/or transmitting the disease during outbreaks. These may include: health care workers, military personnel, persons with philosophical objections to vaccination, teachers, university students, workers in the tourist industry, persons living/working within institutions such as prisons, large factories, as well as other young adults of rural origin. Whenever these groups are identified as at risk they should be targeted for special vaccination programs.

*Quality of Surveillance*

Measles surveillance needs to be strengthened in many countries to ensure that measles transmission is interrupted. Countries must take specific corrective actions whenever indicators are not at adequate levels.

- Countries should ensure that all campaigns are properly planned and have adequate supervision.
  - Vaccination coverage during all outreach efforts should be monitored through house-to-house visits.
3. Ensure the collaboration, implementation and regular monitoring of school-entry laws requiring mandatory vaccination of children entering preschools and schools.
  4. In all countries, measles and rubella-containing vaccines (MMR or MR) should be used for routine infant vaccination. In countries with rubella/CRS control programs, measles and rubella-containing vaccines should be used for *follow-up* campaigns and outbreak response activities.
  5. Countries should carry out periodic evaluations of the national immunization and surveillance programs using the PAHO recommended methodology.

### **Vaccine Availability**

PAHO should assure that an adequate quantity of measles containing vaccine (MMR/MR) is readily available to deal with emergency situations, particularly at this time of increasing demands for vaccines in the world market.

### **Surveillance and Outbreak Investigation**

1. A reliable routine surveillance system and its regular validation through active search for cases should be in place, particularly in high-risk areas. Every opportunity should be taken to find cases, including during house-to-house vaccination, routine visits by health center staff, schools, and by special epidemiological reviews.
2. Countries should integrate measles and rubella surveillance.
3. Adequate investigation of all outbreaks should be performed. This includes the rapid investigation of all cases and contacts, identification of the source of cases including epidemiological links, risk factors, and the timely collection and analysis of specimens.
4. Greater collaboration is required between laboratory and epidemiology units in all countries to assure that:
  - Serum samples are obtained at the first contact with the patient. In an outbreak, once measles has been confirmed, it is not necessary to routinely collect additional blood specimens.
  - Appropriate clinical specimens (urine or nasopharyngeal) for viral isolation should be obtained from every chain of measles transmission, and forwarded to a reference laboratory capable of performing measles virus isolation, and if necessary to determine the viral genotypes.
5. Countries must ensure that all pending measles cases have a final classification within 30 days.
6. All countries should provide data on a weekly basis to the region-wide measles eradication surveillance system, to monitor progress toward the achievement of measles eradication.

### **Criteria for Interruption of Indigenous Measles Transmission**

The principal method for assuring that indigenous trans-

mission of measles has been interrupted is to demonstrate that the virus no longer circulates within a country that has a sensitive surveillance system and a documented high immunization coverage. Virologic surveillance with genotype determination should be in place. Also, if measles is introduced transmission should be limited by rapid and appropriate control activities.

### **• Rubella and Congenital Rubella Syndrome (CRS)**

Although congenital rubella syndrome (CRS) is a readily preventable public health problem, rubella virus continues to circulate in most countries in the Region. In the absence of accelerated efforts to control rubella, outbreaks of the disease are likely to continue, with the resulting CRS cases adding heavily to the disease burden in all countries.

Considerable progress has been achieved with the introduction of rubella vaccine in national immunization programs. Of the 47 countries in the Americas, 42 have already introduced rubella vaccine, while the remaining five countries will include it in 2001. During 2000, the surveillance system for measles was expanded to include rubella.

### **Recommendations**

#### **Vaccination Strategies**

- All countries should incorporate rubella-containing vaccine (MMR/MR) into childhood vaccination programs, both as part of routine childhood immunization at 12 months, and as part of *follow-up* campaigns. Moreover, targeted efforts are needed to reduce the number of rubella susceptible women of childbearing age. Immunization strategies, targeting post-partum women, those attending family planning clinics, as well as those in schools and the workplace can be used to protect them.
- Countries wishing to prevent and control both rubella and CRS promptly should conduct a one-time mass campaign to vaccinate both males and females 5-39 years of age with measles and rubella containing vaccine.
- There are substantial data available documenting the absence of any risk of rubella vaccination during pregnancy. For women who are vaccinated and then subsequently found to be pregnant, abortions are not recommended. It is not necessary to counsel women to avoid pregnancy following rubella vaccination because there is no known risk of adverse fetal outcomes.

#### **Surveillance and Laboratory**

- Rubella surveillance should be completely integrated with measles surveillance. All sera from suspected measles cases which test negative for measles IgM antibodies should be tested for rubella IgM antibodies and vice versa.
- CRS surveillance should be initiated throughout the Americas in order to detect CRS cases in children under one year of age. Countries should follow the case definitions for CRS surveillance, which were recommended at the 1999 TAG meeting. It is not necessary to routinely confirm CRS in older children.
- A single serum specimen is generally considered adequate to either confirm or discard CRS.



- Countries should improve the collection of samples for virus isolation in outbreak situations. Nasopharyngeal aspirates or swabs are the preferred specimens for rubella virus isolation and should be collected within four days of rash onset. This will provide important information concerning the virus sub-types that are currently circulating in the Region.
- National programs should actively promote the collaboration with the medical sector (especially obstetricians, neonatologists and pediatricians) to enhance rubella/CRS surveillance and vaccination efforts.

### **Poliomyelitis**

Despite nine years of freedom from polio, the Region of the Americas remains at constant risk for polio importations from countries where the wild virus still circulates widely. It is critical that vaccination coverage with OPV remains at high levels and that surveillance for acute flaccid paralysis (AFP) is fully functional to rapidly detect wild poliovirus should it be re-introduced.

TAG appreciated the need to assure the containment of wild poliovirus strains now housed in laboratories throughout the world. Nevertheless, it notes that the scope and method of implementation of the Global Action Plan for Laboratory Containment (GAPLC) initiative will require clear guidelines, especially in industrialized countries that have a large number of laboratories and researchers.

### **Recommendations**

- Countries need to maintain 95% vaccination coverage with OPV, the vaccine of choice, in all districts or equivalent geopolitical areas.
- All countries should strengthen their compliance with the key surveillance indicators, including at least one AFP case per 100,000 population <15 years of age per year, and at least 80% of the AFP cases with an adequate stool sample collected **within 15 days** of paralysis onset.
- Given the complexities that may surround the implementation of the GAPLC initiative for laboratory stocks of wild poliovirus, TAG recommends that the Americas initiate pilot studies building upon the experience of other regions that have already undertaken their own studies, to determine the feasibility and methodology of the Plan. PAHO should invite these regions to attend the next TAG meeting for exchange of experiences and findings.

### **• Neonatal Tetanus**

Tremendous progress has been made in eliminating neonatal tetanus (NNT) as a public health problem throughout the Americas. In 1987, there were 1,495 cases reported, in 1999 there were 160 reported cases, and during the first six months of 2000, 75 cases have been reported. The

disease is now confined to less than 1% of all districts in the Americas.

### **Recommendations**

1. The occurrence of each neonatal tetanus case should be considered as a failure of the health services, and as an indicator of inequity in the provision of health services.
2. Areas with poverty indicators like those where NNT cases are often found, should be targeted for special vaccination and surveillance efforts.
3. Intensive prevention activities should be conducted in all districts where NNT incidence is greater than 1 per 1,000 live births. Within such districts careful analysis should be carried out to identify populations at highest risk.
4. Missed opportunities to vaccinate can be markedly reduced by administering Td to all mothers who visit a health center for any reason.

### **• Yellow Fever**

The widespread dissemination of the *Aedes aegypti* mosquito throughout the Americas makes the re-urbanization of yellow fever an increasing concern. A single dose of yellow fever vaccine will confer immunity to at least 95% of persons vaccinated and probably provides lifelong protection.

### **Recommendations**

1. Yellow fever endemic countries must achieve 100% vaccination coverage in enzootic yellow fever zones. Yellow fever vaccination is necessary for all travelers entering enzootic areas.
2. Yellow fever surveillance must be strengthened. Timely yellow fever surveillance will allow the rapid implementation of control activities when an outbreak is detected.
3. Countries should prepare emergency rapid response guidelines to be used in the event of a yellow fever outbreak.
4. Adequate planning of vaccine supply for routine vaccination and outbreak control is critical. Vaccine should be available at all times to deal with emergencies.
5. The implementation of a comprehensive vector control and surveillance program will keep the density of *A. aegypti* low in urban environments. This approach will also help to prevent dengue outbreaks.

### **• *Haemophilus influenzae* type b**

Considerable progress has been achieved in the introduction of *Haemophilus influenzae* type b (Hib) vaccine, with over 80% of countries including the vaccine in routine immunization programs. Countries that have introduced Hib vaccine have obtained high coverage levels and a significant reduction on disease incidence.

### **Recommendations**

1. Countries not yet using Hib vaccine should make an effort to introduce it into their routine immunization program.
2. Countries already using Hib vaccine should monitor and report vaccine coverage and Hib cases to measure the impact of the vaccine.

3. TAG recommended that sustainable financing mechanisms be in place to maintain Hib vaccination. Purchase of this vaccine either as a single antigen or in combination with DPT or DPT/HepB (thus reducing the number of needed visits and increasing compliance) through the PAHO Revolving Fund can result in significant cost savings.
4. The availability and use of DTP combination vaccines will simplify the administration of vaccine antigens against major childhood diseases.

#### • Hepatitis B

In the Americas hepatitis B continues to be a major public health problem with as many as 400,000 new hepatitis B infections occurring annually. Transmission of infection can occur throughout life but primarily perinatally or in early childhood.

The hepatitis B vaccine is highly effective in preventing acute hepatitis infections including perinatal transmission and hepatocellular cancer in adults. The majority of countries in the Region have now introduced Hepatitis B vaccine into their routine immunization programs.

#### Recommendations

1. Routine universal infant immunization should be the primary strategy to prevent HBV transmission.
2. Healthcare workers who are at risk of being exposed to blood or other body fluids should be routinely vaccinated.
3. Vaccination coverage should be monitored on a regular basis and the impact of hepatitis B vaccination measured through surveillance. Coverage levels for HepB3 should equal that of DPT3 by the year 2003.
4. Countries that have introduced hepatitis B (HepB) vaccine should consider using combined tetravalent (DTP+HepB) or pentavalent (DTP/HepB+Hib) vaccines. These vaccines have a similar cost to the monovalent vaccines purchased separately and are easier to administer.

#### • New and Future Vaccines

Progress in the development of vaccines for the prevention of an increasingly longer list of infectious diseases is proceeding rapidly. Several new vaccines are currently available and they may be of use in the Region of the Americas. Moreover, rapid progress is expected on several other vaccines with great potential in this Region.

#### Recommendations

1. All countries of the Region need to establish disease surveillance capabilities that will provide information on the epidemiology of these infections, help assess the burden of these infections and provide data on approaches to public health interventions. The TAG identified influenza, pneumococcal disease, meningococcal disease, rotavirus infection, hepatitis A and varicella-zoster virus as potential candidates for future consideration.

2. All programs in the Region need to establish scientific advisory committees to assist them in reaching decisions regarding priority in the introduction of vaccines, taking into account the benefits and costs. Moreover these committees should also consider issues related to the implementation of these recommendations. For example, influenza vaccines are used in the elderly and other high-risk groups that are not the current targets of the infrastructure already in place to deliver childhood vaccines.
3. Once a new vaccine is introduced, the TAG strongly emphasizes the continued need to maintain supplies of vaccines and disease surveillance efforts, to monitor the impact of the immunization program.

#### • Vaccine Quality

Using vaccines of proven quality is essential for immunization programs. Although the manufacturer is primarily responsible for assuring vaccine quality, there should be a national authority in each country that performs the six basic regulatory functions: licensing, clinical evaluation, Good Manufacturing Practices (GMP) inspections, lot release, laboratory testing and post-marketing surveillance.

#### Recommendations

1. It is essential that immunization programs use vaccines of known quality according to international standards of safety, potency, efficacy and stability. Governments in the Region must, through their National Regulatory Authorities, assure that they have effective control of the quality of vaccines used in the country.
2. Vaccine producers must implement quality systems that guarantee consistent production of vaccines in compliance with GMP, national regulations, and WHO requirements on vaccine quality and production through the international certification process.
3. The fulfillment of international quality standards must be an essential factor to be considered in the economical and technical feasibility studies of vaccine production.

#### • Immunization Safety

It is critical to maintain the public trust in national immunization programs. Although vaccines are extremely safe and effective, no vaccine is without some risk. The regular monitoring of immunization safety will provide technical and scientific assurance of the safety of vaccines utilized.

#### Recommendations

1. All health care workers and program managers should be trained and well informed on the issues concerning immunization safety.
2. Adverse events possibly attributable to vaccination should be promptly reported and carefully investigated and information should be shared between immunization managers and health workers within the Region.

# Reported Cases of Selected Diseases

Number of reported cases of measles, poliomyelitis, tetanus, diphtheria, and whooping cough, from 1 January 2000 to date of last report, and the same epidemiological period in 1999, by country.

Country/Territory	Date of last report	Measles				Polio		Tetanus				Diphtheria		Whooping Cough	
		Confirmed 2000			Confirmed* 1999	2000	1999	Non Neonatal		Neonatal		2000	1999	2000	1999
		Laboratory	Clinically	Total				2000	1999	2000	1999				
Anguilla	30-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Antigua & Barbuda	30-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Argentina	30-Sep	6	0	6	308	0	0	9	8	0	1	0	0	323	433
Bahamas	30-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Barbados	30-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Belize	30-Sep	0	0	0	0	0	0	1	1	0	0	0	0	0	0
Bermuda	30-Sep	0	0	0	0	0	0	0	1	0	0	0	0	1	0
Bolivia	30-Sep	60	61	121	1,248	0	0	2	2	3	1	1	0	2	14
Brazil	30-Sep	47	2	49	661	0	0	215	450	27	53	27	38	484	923
British Virgin Islands	30-Sep	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Canada	30-Sep	128	—	128	9	0	0	...	...	...	...	0	0	...	...
Cayman Islands	30-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Chile	30-Sep	0	0	0	29	0	0	5	10	0	1	0	0	1,453	1,409
Colombia	30-Sep	0	0	0	43	0	0	21	5	10	20	8	0	372	253
Costa Rica	30-Sep	0	1	1	23	0	0	0	1	0	0	0	0	11	1
Cuba	30-Sep	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Dominica	30-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dominican Republic	30-Sep	156	6	162	214	0	0	19	28	1	2	40	19	28	16
Ecuador	30-Sep	0	0	0	0	0	0	6	0	4	0	0	0	273	0
El Salvador	30-Sep	0	0	0	0	0	0	13	3	3	2	0	0	4	4
French Guiana	30-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grenada	30-Sep	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Guadeloupe	30-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Guatemala	30-Sep	0	0	0	0	0	0	...	1	...	0	...	0	...	26
Guyana	30-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Haiti	30-Sep	353	10	363	0	0	0	...	...	...	11	...	4	...	18
Honduras	30-Sep	0	0	0	0	0	0	39	6	0	0	0	0	134	43
Jamaica	30-Sep	0	0	0	0	0	0	1	4	0	0	0	0	8	6
Martinique	30-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	30-Sep	28	0	28	0	0	0	53	48	4	5	...	...	24	20
Montserrat	30-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Netherlands Antilles	30-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nicaragua	30-Sep	0	0	0	0	0	0	8	4	0	0	0	0	26	17
Panama	30-Sep	0	0	0	13	0	0	2	4	1	0	0	0	172	66
Paraguay	30-Sep	0	0	0	0	0	0	11	12	6	7	0	0	20	22
Peru	30-Sep	1	0	1	5	0	0	56	59	8	15	0	4	1,686	1,122
Puerto Rico	30-Sep	0	0	0	0	0	0	...	...	...	...	0	0	...	...
St Vincent/Grenadines	30-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0
St. Kitts/Nevis	30-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0
St. Lucia	30-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Suriname	30-Sep	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Trinidad & Tobago	30-Sep	0	0	0	0	0	0	2	6	0	0	0	0	0	0
Turks & Caicos	30-Sep	0	0	0	0	0	0	0	0	0	0	0	0	0	0
United States	30-Sep	72	—	72	79	0	0	19	27	...	...	1	4	4,565	4,647
Uruguay	30-Sep	0	0	0	34	0	0	0	0	0	0	0	0	0	3
Venezuela	30-Sep	0	0	0	0	0	0	35	32	1	3	0	0	325	401
<b>TOTAL</b>		<b>851</b>	<b>80</b>	<b>931</b>	<b>2,666</b>	<b>0</b>	<b>0</b>	<b>520</b>	<b>714</b>	<b>68</b>	<b>121</b>	<b>77</b>	<b>69</b>	<b>9,911</b>	<b>9,450</b>

... Data not available.

—Clinically confirmed cases are not reported.

\* Laboratory and clinically confirmed cases.

# Global Measles Efforts

*In view of the significant disease burden of measles (30% of the estimated 3 million global deaths due to vaccine-preventable diseases every year), TAG recommended that the Global Alliance for Vaccines and Immunization (GAVI) supports accelerated global measles control through explicit commitment and financial resources. The following is a report presented by the Department of Vaccines and Biologicals of the World Health Organization.*

Measles remains the leading cause of childhood vaccine-preventable deaths worldwide. Although national immunization programs prevent over 80 million measles cases and 4.5 million deaths annually, it is estimated that over 30 million cases and 880,000 deaths still occur every year. This represents 40% of the estimated annual 2 million deaths due to childhood vaccine-preventable diseases. The disease accounts for 10% of all causes of mortality among children under five years of age.

In May 1989, the forty-second World Health Assembly established a global measles control goal. In 1990 at the World Summit for Children, world leaders endorsed a goal of a “reduction by 95% in measles deaths and reduction by 90% of measles cases compared to pre-immunization levels by 1995, as a major step to global eradication of measles in the longer run”. Regional elimination goals have been set for the American Region by 2000, the European Region by 2007, and the Eastern Mediterranean Region by 2010.

Extraordinary progress toward measles control has been made since 1989. Measles transmission has been interrupted in most countries in the Americas. Worldwide in 1998, the estimated number of cases and deaths had declined by 63% and 83%, respectively when compared with the pre-vaccine era estimate.

Between 1990 and 1998, global routine vaccination coverage among children aged one year with one dose of measles vaccine remained at between 70 and 80%. In 1998, 15 countries reported measles coverage at below 50%. Ten of those were in the African Region, and one in the South East Asia Region (Democratic People's Republic of Korea). Failure to deliver at least one dose of measles vaccine to all infants remains the primary reason for the high measles morbidity and mortality.

Five strategies are recommended for measles mortality reduction or measles elimination. These are: (1) strengthening routine immunization (2) ensuring that all children have a second opportunity for measles vaccination (3) disease surveillance with integration of epidemiological and laboratory information, (4) vitamin A supplementation through immunization services, where appropriate and (5) adequate case management for every measles case.

The Global Alliance for Vaccines and Immunization (GAVI) aim to ensure that 80% of developing countries have routine coverage of at least 80 % in all districts by 2005, is an essential first step in reducing the burden of measles. However, it is important to note that at 80% coverage the remaining measles disease burden is high. Special efforts should be made to ensure immunization safety and to identify and immunize children who have never received measles vaccine (zero dose children).

Measles surveillance should be strengthened in developed and developing countries to monitor program progress. In vitamin A deficient countries, vitamin A supplements should be provided at the time of vaccination with measles (routine and supplemental). Management of complicated cases includes Vitamin A supplementation and adequate treatment.

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## Pan American Health Organization

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