EPI Newsletter

Expanded Program on Immunization in the Americas

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Polio Eradication to be Reviewed in August

At the time this issue of the *EPI Newsletter* was going to press, every country in the Western hemisphere had formed a national commission to review the surveillance data that its EPI program has collected since embarking on the eradication of poliomyelitis. By the end June, all the national commissions will have met and reviewed the national data that will be presented to the International Commission for the Certification of Polio Eradication. The ICCPE will meet at Washington, D.C. on 22 August of this year. Several national commissions requested further clinical, laboratory, or surveillance updates and scheduled second meetings to for final reviews before the ICCPE meets.

The ICCPE is made up of prestigious scientists from around the world and is chaired by Dr. Frederick Robbins, a Nobel laureate. They will study reports prepared by the national commissions to reach a verdict as to whether they can certify that the indigenous transmission of wild poliovirus has indeed been interrupted in the Americas. Such an historic decision is particularly difficult for several reasons:

• Unlike smallpox, which was clinically apparent, there can be several hundred subclinical cases for every paralytic case of polio. Surveillance for all cases of acute flaccid paralysis and differential diagnoses based on laboratory and clinical findings are therefore especially important. The longer the time that elapses without detecting a confirmed case, the more likely it is that circulation has been interrupted. It has been observed empirically that wild poliovirus generally does not circulate among susceptibles for more than 6 months without manifesting as an outbreak with some paralytic cases. Theoretically, mathematical models estimate that the likelihood of "invisible" circulation is practically nil after three to four years.

• The Americas will be the first region of the world to subject itself to international scientific scrutiny. As a result, the criteria that are being used to assess its accomplishments are particularly stringent and may be modified for other parts of the world as experience is gained.

Maintaining the full impetus of the eradication campaign and the requisite financial and political commitment becomes more difficult the longer there is no disease detected in a region. Nonetheless, as can be seen below, the countries of the Americas are making commendable efforts to sustain the momentum.

No case of poliomyelitis due to indigenous wild poliovirus has been detected in the Americas since August 1991. The total number of cases of AFP reported through the surveillance systems has remained roughly constant from 1991 to 1993 (around 2000 cases of AFP reported annually for the region as a whole, excluding the US and Canada). A small number of these cases continue to be classified as compatible with poliomyelitis and thus represent failures of the surveillance system (see April 1994 issue of *EPI Newsletter*). National commissions are paying particular attention to the analysis of these cases to ascertain that they were not due to wild poliovirus. They will be reviewed further by the ICCPE. Investigations are still pending on some cases--379 or 8.8% of the 4310 AFP cases reported during the 1992-1993 period--which remain classified as probable.

Table 1. Classification of Reported AFP Cases Latin America and the Caribbean, 1991-1994*

	1991	1992	1993	1994*
Confirmed	9	0	0	0
Compatible	48	41	34	0
Probable	8	46	333	415
VAPP	10	9	2	0
Discarded	1997	2037	1808	136
TOTAL	2072	2133	2177	551*

* Data to 14 May 1994 only. *Source: PESS/PAHO*

Discarded Cases

The vast majority of the reported cases of AFP have been discarded, after investigation, as not being due to wild poliovirus. The accumulation of properly discarded cases reflects the success of the entire range of the eradication effort, from cold chain and vaccination to detection, reporting, epidemiologic investigation and laboratory analysis.

In this issue:

Alternative diagnoses to discard cases can be made on clinical grounds or when another etiology is clearly identifiable by other diagnostic means. The distribution of the final diagnoses of discarded cases appears below. As can be seen, they were quite consistent over the three and one-half years in question. Between 50 and 60% of AFP cases have been found to be due to Guillain Barré syndrome. Tumors and transverse myelitis accounted for roughly 2% each, and around one-third of the cases were diagnosed as having any one of a number of alternative illnesses.

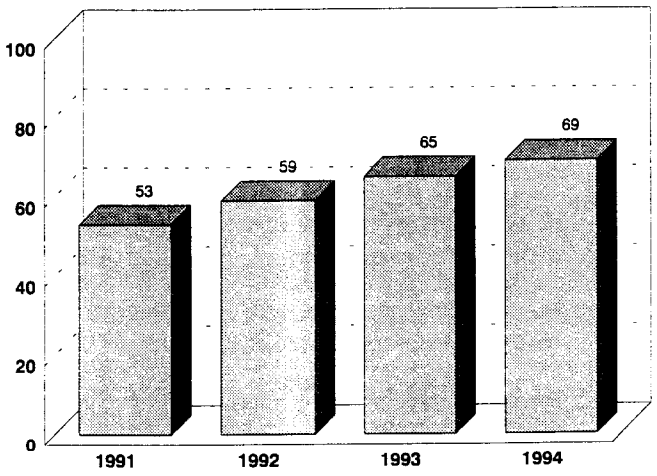
Table 2. Final Diagnoses of Discarded Cases, Latin America and the Caribbean, 1991-1994*

	1991		1992		1993		1994*	
GBS	1114	(56%)	1165	(57%)	1080	(60%)	74	(54%)
Tumor	45	(2%)	42	(2%)	39	(2%)	2	(1%)
Trauma	18	(1%)	11	(1%)	5	(0%)	2	(1%)
Trans.M.	44	(2%)	68	(3%)	44	(2%)	3	(2%)
Other	662	(33%)	691	(34%)	558	(31%)	52	(38%)
No FD	114	(6%)	60	(3%)	83	(5%)	3	(2%)
TOTAL	1997		2037		1808		136*	

* Data to 14 May 1994 only. *Source: PESS/PAHO*

The reliability of these classifications is monitored by the ICCPE requirement that two stool samples that are adequate for laboratory testing be taken within 14 days of the onset of paralysis for 80% of the reported cases of AFP.

PERCENT OF AFP CASES WITH TWO STOOL SAMPLES TAKEN WITHIN 15 DAYS OF ONSET OF PARALYSIS LATIN AMERICA & THE CARIBBEAN, 1991 - 1994*



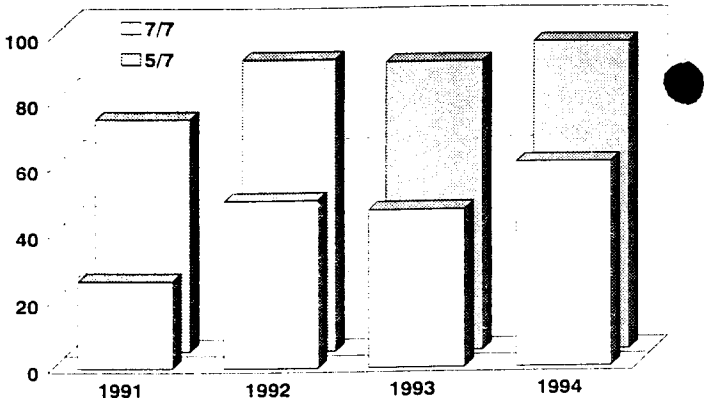
* DATA AS OF 14 MAY - *SOURCE:* EPI/PAHO

This requirement is often exceedingly difficult to carry out in practice, yet the national EPIs of the region have increased their compliance by 36% in a two year period (from 53% in 1991 to 72% in 1993). However, to sustain this progress permanent attention is required.

PAHO's Polio Eradication Surveillance System (PESS) includes a built-in check on the completeness of the clinical data provided by AFP reporting units. Seven critical data fields on the clinical investigation forms are tracked: fever at onset of paralysis, type of paralysis progression, proximal and/or distal paralysis, days of paralysis installation, atrophy, presence of sequelae 60 days after onset, and final diagnosis.

At the end of the first 24 weeks of 1994, 95% of the clinical reports submitted in the region provided data for at least 4 of the seven fields, 93% provided data for 5, 76% were complete for 6 categories, and 61% were complete for all seven, an excellent performance, especially when progress in this area is compared to 1991.

PERCENT CLINICAL DATA COMPLETENESS LATIN AMERICA & THE CARIBBEAN, 1991-1994*



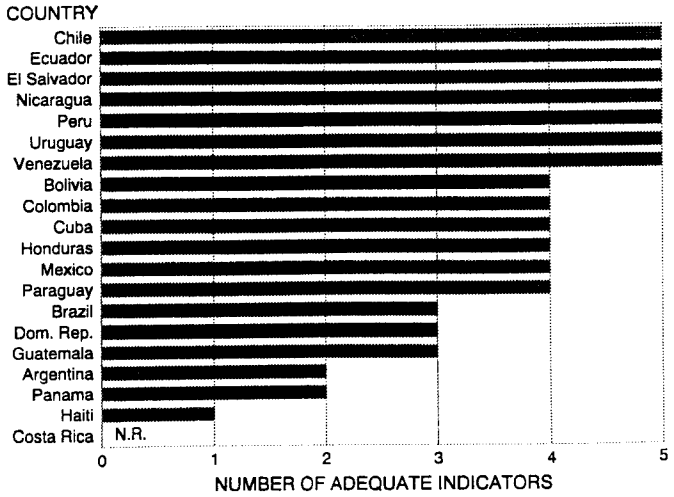
* DATA AS OF 14 MAY - *SOURCE:* EPI/PAHO

Nonetheless, it is critical that strict surveillance standards be maintained. Endemic foci and periodic outbreaks continue to exist in other regions of the world that have yet to make significant headway in OPV coverage and surveillance of acute flaccid paralysis. In the event that the ICCPE deems the Americas to be free of wild poliovirus, the region's demanding vigilance still cannot be relaxed until the threat of importations is interrupted as well.

Meeting the Certification Criteria

For surveillance to be considered adequate, the following five criteria must be met: weekly negative notification from at least 80% of all weekly reporting units; detection of a rate of at least 1.0 cases of AFP per 100,000 children under the age of 15; investigation, by a trained epidemiologist, of at least 80% of cases of AFP, within 48 hours of notification; collection of two stool specimens within two weeks of paralysis onset and, from at least 80% of AFP cases; for at least 80% of AFP cases, collection of stool samples from at least five contacts.

Number of Satisfactory AFP Surveillance Indicators, by Country, Latin America, May 1994



Efforts to raise AFP surveillance to adequate levels throughout the Americas will be important in reaching the goal of certification. The accompanying chart shows where things stood on 21 May, 1994 in Latin America.

Global Measles Strategy Picks Up Pace

Although the Region of the Americas has made major strides in the control of measles, the same is not yet true in other parts of the world. The need to improve the pace of measles control measles was discussed by at the Informal Consultation on Strategies to Accelerate Global Measles Control, held on 27-28 April, 1994, at PAHO headquarters in Washington, D.C., by the Global Program for Vaccines (GPV) of the World Health Organization. The following summary paraphrases the main conclusions.

Forty-five million cases of measles cases occur each year; 1 to 2 million of them die. The situation in early 1994 suggests that current measles control strategies will not suffice to attain the global case reduction goals set by the World Summit for Children and the World Health Assembly.

Several important operational, managerial, structural and financial constraints have limited measles vaccination coverage. Many programs have had remarkable success in overcoming these constraints and achieving modest or high levels of coverage; in 1993 global measles vaccination coverage was 78%. However, it has become progressively clear that no matter how high coverage is, programs that rely upon measles vaccine delivered in the first year of life from fixed sites cannot expect to achieve the measles case reduction goals.

Even a vaccine coverage of 100% with an 80% effective vaccine leaves 20% of vaccine recipients susceptible to measles, permitting continued transmission in the community, and falling short of the 90% reduction goal. Further improvements in vaccine efficacy in young infants are unlikely in the near future. Existing vaccine delivery strategies should be improved and additional ones introduced, such as identifying and vaccinating high-risk groups and conducting periodic mass campaigns that target all children in a particular age group, whether or not they have been vaccinated in the past.

To improve measles control in developing countries, implementation of existing vaccine delivery strategies needs to be improved. These include delivery by fixed clinic-based services; outreach services, which offer immunization for populations away from health centers who are unable to reach fixed services easily; or by mobile teams, which operate in areas too remote to be served by fixed or outreach services.

Missed opportunities for immunization are a major impediment to improving measles vaccine coverage. Health staff may miss opportunities to immunize by accepting false contra-indications. Eligible children should be immunized despite a history of having had measles. Managers should be alerted if measles vaccine coverage rates are found to be significantly lower than coverage for BCG or DPT-1. Recent program reviews indicate that some countries experience a 25% drop-out rate between DPT-3 and measles vaccine. Managers must investigate the reasons for high drop-out rates and take appropriate action.

In addition to improving what already exists, additional strategies must be introduced to increase measles vaccination coverage, particularly by identifying and vaccinating high-risk groups. These include areas with high population density, those in the lowest 25% in the national ranking of measles immunization coverage, areas with a history of high numbers of measles cases and/or measles deaths, urban areas with poor socio-economic and educational status, and areas with vitamin A deficiency. High-risk groups may include children who are admitted to hospital, malnourished, in displaced populations such as refugees living in camps, in zones of armed conflict or border areas, migrants, and members of certain ethnic and religious sub-groups.

Mass campaigns will be targeted to those age groups identified through analysis of epidemiologic data, will include children regardless of prior vaccination status, and will focus particularly on urban centers, where disease transmission is highest.

Mass vaccination campaigns provide the opportunity to reach children who may not have been vaccinated because of lack of access to services at fixed sites; to increase vaccine efficacy by providing an additional dose to some children, and vaccinate children outside the target age group; and to rapidly reduce the pool of susceptibles and potentially interrupt transmission.

The report states that mass campaigns should be used in (a) urban areas and districts with a high incidence of measles; (b) countries and districts with measles vaccine coverage less than 80%; (c) countries conducting polio mass campaigns; and (d) countries with measles elimination goals, among other settings.

The epidemiology of measles suggests that urban strategies are especially important because high birth and migration rates in cities ensure a continuous supply of susceptibles; measles is transmitted rapidly in densely crowded conditions; seeding occurs from city to rural areas, and up to a third of all cases in urban Africa occur among infants younger than 9 months old.

Measles surveillance will be critical until the desired levels of reduction are reached and can be maintained by existing health infrastructures. Experience has demonstrated that the effectiveness of mass campaigns is improved by post-campaign identification of low coverage areas and intensive house-to-house vaccination.

Local analysis of measles surveillance data will guide the choice of age groups to be immunized during mass campaigns. In some situations the upper age limit may be reduced to three years of age, and the lower age limit lowered to six months. The choice will depend on the local epidemiology of measles and the resources available. Likewise, the frequency of campaigns should be determined by analysis of epidemiologic data.

The most cost-effective means of conducting a measles campaign is in conjunction with a polio vaccination campaign, according to local situations. Failure to administer measles vaccine simultaneously with OPV constitutes a missed immunization opportunity.

CFCs were first developed in 1930 for refrigeration, aerosol propellants, and solvents for the electronics industry. The ban of their use in aerosols was the first step toward the total phase-out of CFCs; developed countries will discontinue production of these substances by 1 January, 1996 (Europe by 1 January, 1995). Developing countries have a ten-year grace period and need not phase out these two substances until 1 January, 1999.

The refrigerator industry is expected to undergo vast changes since CFC12, also known as R12, is currently used as the refrigerant for compressors in commercial refrigerators. Once the gas is no longer produced and reserves run out, the problem of obsolete technologies will be acute since retrofitting old refrigerators with new compressors may not be an option. WHO/UNICEF hence are studying the designation of a proper substitute. Presently, it is commonly agreed that R12 will be replaced with R134a. Some doubts exist, however, that R134a is the solution since its production is environmentally hazardous. Germany is proposing the use of propane or butane as a refrigeration gas, but these alternatives are under investigation by several manufacturers due to the gases' high flammability.

In addition, manufacturers are still not sure of the costs involved. R134a used to be very rare and expensive but its price is dropping rapidly due to increased production capacity. It is believed that within 2 to 3 years, R134a will be available everywhere at a cost comparable to the current price of R12. On the other hand, the transition process from R12 to a new gas will undoubtedly make R12 difficult to purchase and thus more expensive. Nonetheless, countries will continue getting supplies of R12 until the cut-off date. Manufacturers and consumers in developing countries will get assistance to switch from CFC use.

The change to CFC-free products may alter the performance of refrigerators, cold boxes and vaccine carriers. Retesting cold chain appliances will be a major undertaking. Manufacturers indicate that the new CFC-free appliances will perform about as well as the current ones. Both manufacturers and WHO-qualified laboratories will perform tests to set standards. WHO/EPI will also prepare a list of tools that need to be changed to service the new gas compression units. WHO and UNICEF will identify suppliers of R134a and invite countries receiving R134a compression refrigerators to either find a local supplier or to order from the UNICEF Supply Division.

EPI program managers should delay procurement of new cold chain equipment until WHO/PAHO and the manufacturing industry have agreed upon the new technologies. Purchases should be limited to emergency EPI equipment critical to cold chain maintenance in order to keep field problems to a minimum. It is hoped that the new appliances will be widely available in 1995.

EPI managers should discuss the change-over of refrigerants and its possible implications for servicing existing CFC-12-powered equipment with the unit responsible for providing maintenance to the cold chain equipment in their country. In addition, if a local manufacturer of domestic refrigerators exists, the EPI manager should contact it and discuss plans for converting and servicing cold-chain refrigerators. Under the Monteral Protocol and its amendment, the UNDP has established a special program to assist countries during the transition. Health ministries are encouraged to contact their respective UNDP representatives for further details.

Facts About Pertussis and DTP Vaccine

Q What is pertussis and why should I be concerned for my child?

A Pertussis, also known as whooping cough, is a highly contagious and sometimes deadly disease. Pertussis is most dangerous to babies less than one year old. About half of the babies reported nationally to CDC as having the disease are hospitalized. As many as 16 out of each 100 babies reported with pertussis get pneumonia, and about 2 out of each 100 have convulsions (seizures, fits, spasms, twitching, jerking, etc.) For those babies reported to have pertussis, about one in 500 has brain problems, some of which can become permanent, and about one in 250 will die due to complications from the disease. Serious illness is less likely in older children and adults.

Q How effective is the vaccine?

A Pertussis vaccine is generally administered in combination with diphtheria and tetanus vaccines; the resulting combination is know as DTP vaccine. A primary series of DTP keeps 70 to 90 children out of 100 from getting pertussis if exposed to it, usually through the elementary school years at least.

Q What are the side effects of vaccine?

A About half of the children who receive DTP vaccine will not experience any discomfort at all. Some will have minor problems such as soreness, swelling and redness where the shot was given; fever; fussiness; drowsiness; and loss of appetite. Usually these problems last from one to two days.

Less often, once per 100 to 1,000 shots, moderate problems can occur. These can include:

- Crying non-stop for three hours or more
- Fever of 105 degrees (F) or higher

Even less often, for one shot in 1,750, a child may experience:

- A seizure (convulsions, fits, spasms, twitching, jerking, or staring spells), usually caused by fever
- Collapse or fainting (becoming blue, pale, limp, and non-responsibe)

Very rarely, DTP causes long seizures, decreased conciousness, or coma that usually does not last. Permanent brain damage can very infrequently follow such acute brain problems.

There are no tests that can tell in advance if a child will be adversely affected by the DTP vaccine.

Q Do the benefits from the DTP vaccine far outweigh the risks?

A Definitely for almost all children. Children, especially young infants, who catch pertussis are often gravely ill. Most individuals who have had three or more shot of DTP vaccine are protected from pertussis, diphtheria, and tetanus for many years. In addition, children vaccinated with DTP who do become ill with pertussis have a milder illness.

Source: Immunization Action News, Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), March 7, 1994

Sample Strategies for Improving Measles Control Based on Immunization Coverage and Population Density

Coverage	Rural districts/regions	Urban districts/regions
80%-100%	Routine*	Routine*
50%-79%	Routine + Campaign every 2 years	Routine + Campaign yearly
<50%	Routine + Campaign yearly	Routine + Campaign yearly

* In areas of high coverage, where measles remains a problem, or where elimination is a target, campaigns should be carried out.

A major impediment to achieving the goals in many countries is the continuing lack of political commitment, often linked to turbulent political events. Strong advocacy should be brought to bear to overcome this inertia. Days of tranquility or "corridors of peace" are phrases coined to denote a cease-fire declared in areas or countries experiencing civil unrest or war, for the specific purpose of immunizing all children in the conflict area, regardless of allegiance (this was done successfully a number of times in Latin America).

Additional limiting factors include a lack of funds to purchase measles vaccine and syringes and the limited health infrastructure in some key countries which reduces their potential to implement these strategies.

The cost of a measles mass campaign ranges from US$0.50 - $0.75 per child, and, if administered during a polio mass campaign, is approximately $0.30 additional per child. To improve measles surveillance the cost increases by $0.05 per newborn. In general, vaccines account for about 50% of the per capita costs. Currently, measles vaccine and disposable syringes and needles (which are strongly advocated for campaigns) cost US$0.19-0.22. Additional costs include planning, training, transport, personnel, advocacy, and evaluation. Precise estimates of cost will be difficult to make and will vary between countries and over time. Data are available from campaigns conducted in the Americas and the Philippines.

There currently is adequate manufacturing capacity for measles vaccine to meet present and foreseeable global needs. Should a significant increase in demand occur, however, industry will require a lead time of approximately one year to equipment could be operational and produce up to five times the present output (up to 1000 million doses annually).

An enhanced measles surveillance system is critical for planning and evaluating measles control strategies. In order to monitor the success or failure of control activities, data should be collected that help answer specific epidemiologic and programmatic questions. This should include age- and geographic-specific incidence and secular trends.

Priority surveillance activities include strengthening the routine notifiable disease reporting system; using sentinel surveillance; periodic outbreak investigations (to verify information related to age distribution and vaccine efficacy); and linking measles surveillance with the polio/AFP active surveillance system.

Proper case management and aggressive treatment of complications can substantially reduce measles mortality. In vitamin A deficient areas and in areas with high measles case-fatality rates, administering vitamin A immediately upon diagnosis is an integral part of measles case management and should be done whenever a patient has a severe case of the disease. Hospitalized children or children admitted to clinics for severe measles with complications should also receive a second dose of vitamin A on the day following admission.

Timely and realistic planning is essential to effective measles control. Such planning needs to be based on area-specific information on disease epidemiology, coverage, and resource availability. Campaign planning requires the identification and allocation of tasks to the multiple partners involved in implementation: political, health, private sector, religious organizations, and private voluntary groups. Success is greater if this planning is decentralized to the level of implementation.

At the national level, elements that have been identified as essential include political commitment to measles control; a national plan with goals, targets, policy, and strategy; a financial plan with a budget, authorization, and monitoring system; a vaccine procurement inventory system ensuring procurement, storage, and distribution of adequate quantities of vaccines; a quality assurance system to assess program implementation; vaccination coverage and disease occurrence monitoring and the use of the data to assess and adjust immunization strategies and delivery; coordination of international, bilateral, and PVO inputs; an operational, data-driven, problem-solving strategy aimed at goal and target achievement.

Success in measles control will occur as countries and partners work together to understand disease epidemiology; develop realistic, technically feasible, logistically practical, affordable strategies; and recognize and fulfill their unique implementation responsibilities.

Source: Final Report of the Informal Consultation on Strategies to Accelerate Global Measles Control, Global Program for Vaccines (GPV), World Health Organization, Washington, D.C., 28 April 1994.

Ozone Laws Entail Cold Chain Changes

Electric refrigerators that have compressors use a refrigerant or gas to produce a cooling effect. These gases will be changed over the coming years due to environmental concerns, and will have an impact on equipment used for the EPI cold chain throughout the Americas. The refrigerant most commonly used in refrigerators and cold chain equipment is CFC-12, commonly known as R-12.

Increased awareness of ozone depletion and the greenhouse effect led the international community to adopt the Montreal Protocol in 1987 and its Amendment in Copenhagen in November 1992, agreeing to phase out ozone-depleting substances. Continued thinning of the earth's ozone barrier against the sun's ultraviolet rays would increase rates of skin cancers, eye cataracts, and crop yield losses and possibly cause the marine food chain to collapse.

Chlorofluorocarbons (CFCs), in particular CFC11 and CFC12, are the primary gases responsible for ozone depletion.

Immunization Schedule in PAHO Member Countries

The following tables are based on the most recent data submitted to PAHO by its Member Governments. Please advise the editors of the EPI Newsletter if there are any changes in your national immunization schedule

COUNTRY	DPT				OPV				MEASLES		
	No.	1st Dose	Interval	Booster	No.	1st Dose	Interval	Booster	No.	Age	Booster
ANGUILLA	3	2m	4-6w	(2) 18m/5y	3	2m	4-6w	(2) 18m/5y			
ANTIGUA & BARBUDA	3	3m	4w	(2) 18m/5y	3	3m	4w	(2) 18m/5y			
ARGENTINA	3	2m	2m	(2) 18m/6-7y	3	2m	2m	(2) 18m/6-7y	1	12m	
BAHAMAS	3	3m	8w	(2) 18m/5y	3	3m	8w	(1) 4-5y	1	12m	
BARBADOS	3	3m	6w	(2) 18m/4½y	3	3m	6w	(2) 18m/4½y			
BELIZE	3	3m	4-6w	(1) 4-5y	3	3m	4-6w	(1) 4-5y	1	9m	(1) 15m
BERMUDA	3	4m	2-6m	(2) 2-5y	3	4m	2-6m	(2) 2-5y			
BOLIVIA	3	2m	2m	(1)1½y	4♣	al nacer/2m	2m	(1) 1½y	1	9m	
BRAZIL	3	2m	2m		3	2m	2m		1	9m	
CANADA	3	2m	2m	(2) 18m/4-6y	3	2m	2m	(2) 18m/4-6y			
CAYMAN ISLANDS	3	2m	2m	(1) 4-5y	3	2m	2m	(2) 4-5y/14-15y			
CHILE	3	2m	2m	(2)18m/4y	3	2m	2m	(2) 18m/4y			
COLOMBIA	3	2m	4w		3	2m	4w		1	9m	
COSTA RICA	3	2m	2m	(2)18m/4y	3	2m	2m	(2)18m/4y	1	6-12m	
CUBA	3	3m	1m	♥(2) 17m/5-6y			BY CAMPAIGN				
DOMINICA	3	3m	6w		3	3m	6w				
DOMINICAN REPUBLIC	3	2m	1m		4♣	al nacer/2m	1m		1	9y	
ECUADOR	3	2m	2m	(1) 18m	4♣	al nacer/2m	2m	(1) 18m	1	9m	
EL SALVADOR	3	2m	2m	(2) 1½y/4-5y	4♣	al nacer/2m	2m	(2) 1½y/4-5y	1	9m	
GRENADA	3	3m	4-8w		3	3m	4-8w		1	1y	
GUATEMALA	3	2m	2m		4♣	al nacer/2m	2m		1	9m	
GUYANA	3	3m	4-6w	(2) 18m/5y	3	3m	4-6w	(2) 18m/5y	1	9m	
HAITI											
HONDURAS	3	2m	6-8w		4♣	al nacer/2m	6-8w		2	9m	(1) 1-14y
JAMAICA	3	6w-3m	4-8w	(2) 18m/3-6y	3	6w-3m	4-8w	(2) 18m/3-6y			
MEXICO	3	2m	2m	(2) 2y/4y	3	2m	2m	JNV	1	9m	6y
MONTSERRAT	3	3m	6-8w	(1) 19m	3	3m	6-8w	(3) 19m/4½-15y			
NICARAGUA	3	1m	4-8w	(1) 15m	3	1m	4-8w		1	9m	
PANAMA	3	2m	2m	(2) 15m/4-5y	4♣	al nacer/2m	2m	(2) 15m/4-5y	1	9m	
PARAGUAY	3	2m	2m	(2) 18m/4y	3	2m	2m	(2) 18m/4y	1	9m	(2) 15m/6-7y
PERU	3	2m	1m		4♣	al nacer/2m	1m		1	9m	
ST. KITTS & NEVIS	3	3m	1-2m	(2) 18m-4y	3	3m	1-2m	(2) 18m-4y			
ST. LUCIA	3	3m	6w	(1) 15m	3	3m	6w	(2) 15m/5y			
ST. VICENT	3	3m	6w	(1) 5y	3	3m	6w	(1) 5y			
SURINAME	4	3m	1m	(2) 18m/5y	4	3m	1m	(2) 18m/5y	1	9m	
TRINIDAD & TOBAGO	3	3m	1-2m	(2) 18m/36m	3	3m	1-2m	(2) 18m/36m			
TURKS & CAICOS ISLANDS	3	3m	12w	(1) 18m	3	3m	12w	(1) 18m			
U.S.A.	3	2m	2m	(2) 15m/4-6y	3	2m	2m	(1) 4-6y			
URUGUAY	3	2m	2m	(1) 12m	3	2m	2m	(1) 12m			
VENEZUELA	3	2m	2m	(1) 18m	4♣	al nacer/2m	2		1	9m	
BRIT. VIRGIN ISLANDS	3	3m	2m	(2) 18m-3½y	3	3m	2m	(2) 18m-3½y			

COUNTRY	BCG			MMR			
	No.	1st Dose	Booster	No.	1st Dose	Interval	Booster
ANGUILLA	1	3m		1	12m		
ANTIGUA & BARBUDA				1	15m		
ARGENTINA	1	al nacer	(2) 6-7y/16y				
BAHAMAS							
BARBADOS	1	4½y	(1) 10y	1	15m		
BELIZE	1	al nacer					
BERMUDA				1	12m		(1)11-12y
BOLIVIA	1	al nacer					
BRAZIL	1	al nacer					
CANADA				1	12m		
CAYMAN ISLANDS	1	6s		2	15m	2-4y	(1) 4-5y
CHILE	1	al nacer	(1) 6y	1	12m		(1) 62
COLOMBIA	1	al nacer					
COSTA RICA	1	al nacer		1	15-18m		(1) 62
CUBA	1	recién nacido		1	12m		
DOMINICA	1	3m		1	12m		1**
DOMINICAN REPUBLIC	1	al nacer					
ECUADOR	1	al nacer	(1) 6y				
EL SALVADOR	1	al nacer					
GRENADA				1***	12m		
GUATEMALA	1	al nacer					
GUYANA	1	al nacer					
HAITI							
HONDURAS	3	al nacer/7y/12y					
JAMAICA	1	al nacer-3m		1	10m		1**
MEXICO	1	al nacer	(1) 6y				
MONTSERRAT	1	3m		1	15m		
NICARAGUA	1	al nacer					
PANAMA	1	al nacer	(1) 6y	1	15m		
PARAGUAY	1	al nacer					
PERU	2	al nacer/6y					
ST. KITTS & NEVIS	1	5y		1	12-15m		
ST. LUCIA	1	3m		1	12m		
ST. VICENT	1	al nacer		1	12m		
SURINAME							
TRINIDAD & TOBAGO				1	12-15m		
TURKS & CAICOS ISLANDS	1	al nacer		2	12m	3y	(1) 4y
U.S.A.				1	12-15m		(1) 4-6y
URUGUAY	1	al nacer	(1) 5y	1	12m		(1) 5y
VENEZUELA	1	al nacer	(1) 1er. grado				
BRIT. VIRGIN ISLANDS	1	1m		1	12m		

TETANOS TOXOID

All the national immunization schedules recommend vaccinating pregnant women as part of prenatal care. In endemic countries, women of childbearing age who live in high-risk areas are also vaccinated. The ideal schedule is as follows:

Dose	Minimum Interval
TT1	
TT2	4 weeks
TT3	6 weeks
TT4	1 year
TT5	1 year

♥ = second booster is DTonly

♣ = many countries administer OPV at birth, but the efficacy of this dose is not optimal and it is therefore not counted for coverage purposes.

w = weeks

m = months

y = years

NVD= National Vaccination Day

* = Measles only

** = Rubella booster for women of childbearing age

*** = Measles and rubella only

Reported Cases of Selected Diseases

Number of reported cases of measles, poliomyelitis, tetanus, diphtheria, and whooping cough, from 1 January 1994 to date of last report, and the same epidemiological period in 1993, by country.

Subregion and country	Date of last Report	Measles				Poliomyelitis		Tetanus				Diphtheria		Whooping Cough	
		Reported		Confirmed				Non Neonatal		Neonatal					
		1994	1993	1994	1993	1994	1993	1994	1993	1994	1993	1994	1993	1994	1993
LATIN AMERICA															
Bolivia	23 Apr.	...	...	40	...	0	0	...	...	...	...	...	...	...	...
Colombia	7 May	123	...	19	...	0	0	...	...	...	...	...	...	...	...
Ecuador	26 Feb.	...	...	380	...	0	0	...	...	7	...	14	...	62	..
Peru	30 Apr.	...	...	163	...	0	0	...	...	...	...	...	...	...	...
Venezuela	9 Apr.	...	...	5275	6060	0	0	...	...	1	4	0	0	185	131
Southern Cone															
Argentina	26 Mar.	...	...	88	...	0	0	1	...	1	...	2	...	173	...
Chile	14 May	63	...	0	...	0	0	1	...	0	...	0	...	20	...
Paraguay	16 Apr.	42	...	26	306	0	0	...	7	...	7	...	1	...	89
Uruguay	...	...	...	...	...	0	0	...	...	...	...	...	...	...	...
Brazil	...	...	...	272	958	0	0	360	371	28	65	47	75	431	1651
Central America															
Belize	23 Apr.	9	7	0	0	0	0	...	...	...	...	...	...	...	...
Costa Rica	23 Apr.	84	44	5	44	0	0	...	...	...	...	...	...	...	...
El Salvador	23 Apr.	3606	46	0	13	0	0	...	...	...	...	...	...	...	...
Guatemala	23 Apr.	21	76	1	8	0	0	...	...	...	4	...	...	...	9
Honduras	23 Apr.	24	22	2	9	0	0	...	...	...	...	...	...	...	...
Nicaragua	23 Apr.	854	218	8	175	0	0	...	...	...	...	...	...	...	...
Panama	23 Apr.	13	224	0	197	0	0	...	...	...	...	...	...	...	...
Mexico	30 Apr.	369	203	47	21	0	0	28	45	23	20	0	0	51	70
Latin Caribbean															
Cuba	...	...	...	...	...	0	0	...	...	...	...	...	...	...	...
Haiti	...	...	...	...	...	0	0	...	...	...	...	...	...	...	...
Dominican Republic	7 May.	72	...	72	...	0	0	...	...	...	...	...	...	...	...
CARIBBEAN															
Antigua & Barbuda	23 Apr.	1	1	0	0	0	0	...	...	...	...	...	...	...	...
Bahamas	23 Apr.	3	2	0	0	0	0	...	...	...	...	...	...	...	...
Barbados	23 Apr.	19	10	0	0	0	0	...	0	...	0	...	0	...	0
Dominica	23 Apr.	4	4	0	0	0	0	...	...	...	...	...	...	...	...
Grenada	23 Apr.	2	4	0	0	0	0	...	...	...	...	...	...	...	...
Guyana	23 Apr.	1	18	0	0	0	0	...	...	...	...	...	...	...	...
Jamaica	23 Apr.	35	34	0	0	0	0	...	...	...	...	...	...	...	...
St. Kitts/Nevis	23 Apr.	2	1	0	0	0	0	...	...	...	...	...	...	...	...
St. Vincent	23 Apr.	0	2	0	0	0	0	...	...	...	...	...	...	...	...
Saint Lucia	23 Apr.	5	2	0	0	0	0	...	...	...	...	...	...	...	...
Suriname	23 Apr.	3	4	0	0	0	0	...	...	...	...	...	...	...	...
Trinidad & Tobago	23 Apr.	10	20	0	0	0	0	...	4	...	0	...	0	...	2
NORTH AMERICA															
Canada	26 Feb.	...	...	30	38	0	0	0	1	...	...	0	1	1047	784
United States	16 Apr.	...	...	155	86	0	0	...	...	...	...	...	...	...	700

... Data not available.

Chile Averts Measles Outbreak

The health ministry of Chile successfully put known measles epidemiology to the test and found it works: an imminent outbreak was averted and lasting interruption of the virus' circulation may have been achieved. The following is a brief report.

Health personnel knew that the 2- to 3-year epidemic periodicity of measles meant that an outbreak could be expected in 1992. Although coverage levels had hovered around 90% since the last epidemic, an outbreak could occur among those who had not been vaccinated in that period or those who failed to seroconvert. To prevent an outbreak, health authorities decided to organize a National Campaign that would vaccinate 95% of all children aged 9 months to 14 years of age--3,930,000 of them--in two weeks. The target was surpassed: 99.6% of the children were immunized with a standard dose, regardless of their previous vaccination history.

Post-campaign epidemiologic surveillance of rash and fever illness was carried out from April 17, 1992 with the organization of laboratory diagnostic capabilities. Compliance with the probable measles case definition nearly doubled between 1992 and 1993, and the proportion of probable measles cases for which blood samples were taken increased from 64% to 79% for the same period . The decline in compatible cases (such cases represent failures of the surveillance system) from 8% to 5% between 1992 and 1993, is a good indicator of improving surveillance. From the time the campaign was organized to the end of 1993 only 2 cases of measles were confirmed; both were imported .

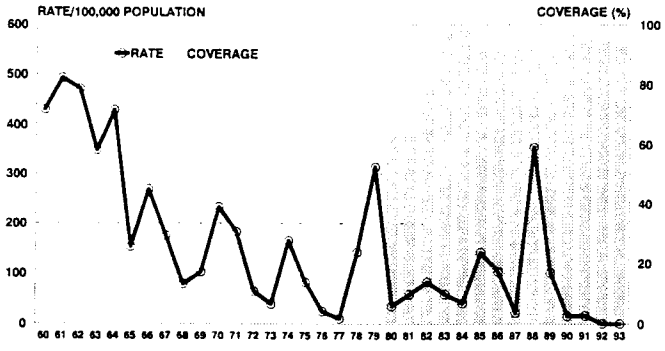
Editorial Note

Chile appears to be the first mainland country in Latin America to have arrested epidemic transmission of measles virus for more than 18 months. Their experience offers several useful pointers for other countries that have embarked on the elimination of measles, particularly regarding the challenge of setting up a system for the active surveillance of rash and fever illness.

Major efforts must be made to disseminate the measles surveillance case definition (see the February 94 issue of the *EPI Newsletter*) and obtain compliance in reporting the critical clinical information for each case.

An adjustment period is required between the time a standard case definition is adopted and the time it is applied routinely by health personnel. During 1992, when reporting units were still adjusting to the use of a standard case definition in Chile, many excess "probable" cases were reported that did not meet the case definition.

MEASLES INCIDENCE RATE (1960-1993) AND IMMUNIZATION COVERAGE (1980-1993), CHILE



SOURCE: **DATA FROM MINISTRY OF HEALTH, CHILE**

Priority should also be given to ensuring that adequate blood samples are taken before a case is discarded. The importance of laboratory backup for measles surveillance was underlined in Chile as well: the alternative final diagnosis for a large percentage of probable cases was determined by laboratory analysis.

Lastly, one of the main purposes of surveillance is to carry out active searches and vaccinate all susceptibles as soon as a probable case is reported. This is the best way to eliminate pockets of susceptibles that may have been missed during a campaign.

Source: Adapted from Ministry of Health reports, Chile.

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