EPI Newsletter

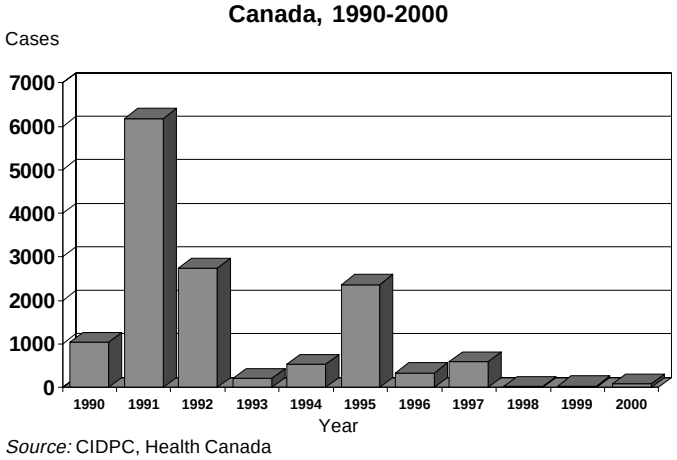
Expanded Program on Immunization in the Americas

Volume XXII, Number 4 **IMMUNIZE AND PROTECT YOUR CHILDREN** *August 2000*

Progress Towards Measles Eradication: Canada

In 1995 Canada introduced an enhanced surveillance system for measles. Subsequently a National Working Group on Measles Eradication was established to oversee measles eradication activities, review cases, and to recommend modification in the prevention and control strategies. Since late 1997, measles is no longer indigenous in Canada, and all confirmed cases reported are either imported or import-related (Figure 1).

Figure 1
Measles Confirmed Cases
Canada, 1990-2000



Source: CIDPC, Health Canada

In 1998, 12 confirmed cases were reported, which is the lowest annual number ever recorded in Canada. In 1999, 29 confirmed cases were reported, 8 of which had exposure outside Canada. There were two outbreaks both linked to virus importation from the Netherlands.

As of August 10, 2000, a total of 84 confirmed cases were reported in Canada from four provinces: Quebec (28), British Columbia (28) Alberta (25), and Ontario (3). With the exception of one case (source unknown) all cases were either imported or import-related. Imported measles cases included two foreign students and six Canadian residents exposed to measles while traveling abroad. There have been four outbreaks associated with travel to or exposure in Mexico and Bolivia, and possibly Belgium, with 6 to 28 cases each, and having up to 4 generations of community-linked spread. All cases were either laboratory-confirmed or epi-linked to a lab-confirmed case. The importation from Bolivia accounted for a total of 44 (52%) of the 84 cases, distributed in two provinces, all among individuals unimmunized for philosophical/religious reasons. Transmission occurred in household and social gatherings, and virologic evidence of importation was found in all outbreaks. In each chain, the viral genotype identified was consistent with the genotype of virus known to be circulating in the source country of the imported case, except for the cases linked to Mexican travel.

Figure 2 shows the distribution of all cases by week of onset from January 1999-August 2000.

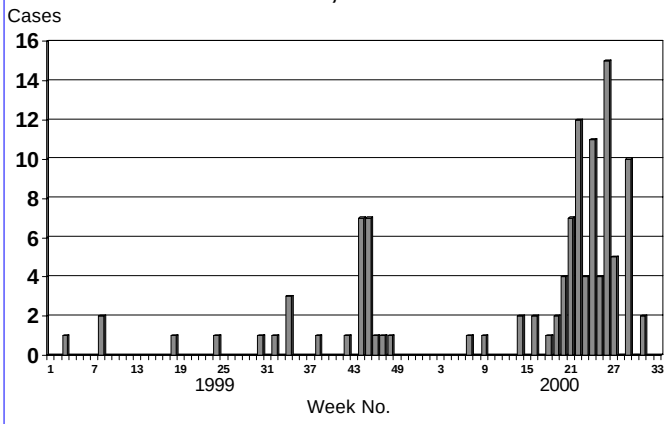
Outbreak 1: Alberta (linked to travel to Mexico) : a cluster of 6 cases linked to Mexican travel occurred in Alberta between April 8 and May 15, 2000 (w 14-20), spanning approximately 6 weeks. The index case was a 14-year-old who visited Mazatlan, a tourist area in Mexico, from March 10 to 24, 2000. The onset of rash was on April 8 (15 days after return to Canada). Cases linked in this cluster included two siblings and a contact of the index case, and two close contacts of the siblings in generation-one. Cases ranged in age from 11 to 21 years; median 16. All cases were unimmunized for philosophic/religious reasons. Despite extensive investigation by the Mexican health authorities with the assistance of PAHO, no measles activity potentially linked to the index case was identified in Mexico. PCR testing on nasopharyngeal and urine specimens at

In this issue:

Health Canada Laboratory indicated no genetic similarities with the previously circulating measles strains in South America (D6). The strain appears to be new and characterized as D8 (WHO measles Reference Strain Bank, CDC). Therefore, it can be assumed that the index case may be linked to either undetected measles cases in Mexico or cases involving foreign visitors to the area or transit passengers.

Outbreak 2: Alberta (linked to travel to Bolivia): This cluster of 19 cases occurred between May 21 and June 26 (w-21 to 26), and spanned five weeks. Ages of these cases ranged from 1 to 23 years; median 3 years. The index cases were unimmunized siblings, aged 2 and 3 years, with rash onsets May 21 and May 25. Both were unrelated to cluster one, but with travel history to Bolivia (returned from Bolivia, May 11th) with their parents. Spread of measles occurred for three generations. It was reported that families of the Alberta community in Canada frequently travel to Bolivia to visit sister Mennonite communities that live in very remote areas of Bolivia.

Figure 2
Measles Confirmed Cases by Week of Onset
Canada,1999-2000*



Source: CIDPC, Health Canada
*as of August 14, 2000

Outbreak 3: British Columbia (linked to outbreak 2, Alberta). This outbreak involving 25 cases occurred between June 24 and August 2, 2000 (w- 25 to 31), centered around a community in Northern British Columbia. Ages of these cases ranged from 1 to 23 years; median 5.5 years. Cases involved family clusters, and almost all were children unimmunized for philosophic reasons. This outbreak started following social contact of unimmunized families from this area with other unimmunized families from a nearby community in North West Alberta (Outbreak 2). Investigation by the Bolivian Ministry, assisted by PAHO, lead to the tracing of source of exposure and identified as 'Alberta Mennonite' communities in the Santa Cruz area. Laboratory investigation of Canadian cases revealed that the virus is genetically similar to the circulating D6 strain in South America.

Outbreak 4: Quebec (possibly linked to Belgium): This outbreak involving 28 cases and spreading for four generations occurred between May 8 and June 30 (w- 19 to 26). It involved several families of Hasidic Jews living in a semi-closed community (population 2500). Ages of cases ranged from 7 months to 33 years; median 5.5 years. The majority (70%) of cases were between 7 months and 12 years of age. Immunization coverage in this community, in general, is very low and there were large families with no immunization at all. The source of the outbreak in Quebec has not been conclusively identified but appears to be linked to cases in Belgium. The initial cases were reported to have contact with cases in Belgium, and students from Belgium used to stay with the members of that community. Genotyping results indicate that it is D6, a strain which is commonly found in Europe and in South America.

Conclusions

1. Measles is no longer indigenous in Canada; almost all cases reported since 1998 were associated with importation, and chains of transmissions, up to four generations have occurred in the current year.
2. Almost all cases reported in the past two years have been among unimmunized individuals belonging to specific closely linked communities who object to immunization for philosophic reasons and/or religious reasons. It is reassuring that measles transmission did not occur outside of these communities where vaccine coverage is high. This is an excellent example of how imported measles virus can result in sustained transmission among close-knit or socially linked communities with low immunization coverage rates.
3. A two-dose strategy has been in place in all jurisdictions across Canada for some time; however, these localized outbreaks remind us of the need for public health and health care providers to identify and share innovative methods of reaching susceptible populations to improve vaccine acceptance.

Source: Dr. Paul Varughese, Dr. Arlene King, Division of Immunization, Centre for Infectious Disease Prevention and Control (CIDPC), and Dr. Graham Tipples, Bureau of Microbiology, Health Canada

Acknowlegement: Assistance of the Working Group on Measles Elimination, all provincial and territorial public health laboratories and health officials, and Lillian Ross is appreciated.

Immunization in the 21st Century
Progress Through Education

4th Canadian National Immunization Conference
December 3-6, 2000
World Trade Convention Center
Halifax, Nova Scotia, Canada

The Conference is organized by the Laboratory Center for Disease Control, Health Canada and the Canadian Pediatric Society with support from the private sector.

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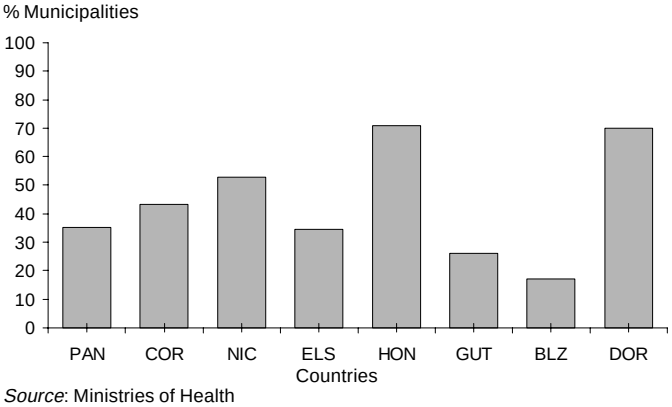
Measles in Central America: Tasks Ahead

Despite two brief reintroductions of measles in Costa Rica in 1997 and 1999, Central America remains free of measles cases. Measles virus circulation in Costa Rica was short-lived, producing small outbreaks that were quickly controlled because of intensive vaccination and surveillance activities.

The absence of measles cases in Central America is the product of major and sustained efforts by health authorities in that region. Central American nations average vaccination coverage against measles 5 - 6% higher than the rest of the Americas. However, the region should be cautious and watchful for certain conditions that could lead to measles virus circulation. These include:

- There still are countries in the region that have not achieved useful vaccination coverage against measles, that is coverage of at least 95% in children under 1 year of age. This problem is compounded by the fact that the region has high tourist and migration flows, which constitute great risk factors for potential virus reintroduction, particularly in Guatemala.
- Countries achieving useful vaccination coverage still have a high percentage of municipalities with vaccination coverage under 95%. Approximately 40% of all municipalities in the subregion have useful vaccination coverage (Figure 1). This means that there still are around 700 municipalities of the total of 1,200 that are inadequately vaccinated. Most of these municipalities are found in areas with high tourist flows and steady migration. These circumstances constitute risk factors for potential measles virus reintroduction.

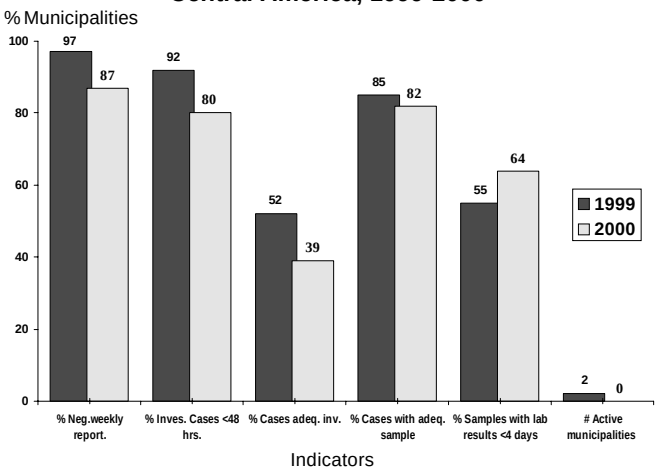
Figure 1
Percentage of Municipalities with Measles Vaccination Coverage > 95%, by Country, 1999



Source: Ministries of Health

- Approximately 192 municipalities (16%) of the total 1,200 municipalities in Central American countries are located in border areas. Around 5 million people live (15% of the total regional population estimate of 33 million) in these areas. This results in large numbers of potentially mobile and migratory population groups that are difficult to access.
- Some countries that had reached an adequate vaccination coverage are suffering a decline in coverage.
- Some epidemiological surveillance indicators are not being fulfilled appropriately (Figure 2). This carries the potential threat of not being able to detect measles virus circulation in a timely way to contain the spread of measles virus transmission. For example, the percentage of cases investigated in less than 48 hours barely reaches the recommended 80%.

Figure 2
Measles Surveillance Indicators
Central America, 1999-2000*



*Source:*HVP/MESS *As of epi week 28

Recommendations

1. Achieve and maintain vaccination coverage of at least 95% in all municipalities. Priority should be given to municipalities considered to be at highest risk, such as those located in border areas, densely-populated, with high migration, as well as with high tourist traffic.
2. Reduce missed opportunities for vaccination to a minimum, guaranteeing the availability of vaccines at all levels of the health system on an ongoing basis.
3. Carry out scheduled *follow-up* measles vaccination campaigns, utilizing the door-to-door vaccination strategy and indiscriminate vaccination of all children under 5 years of age.
4. Encourage health authorities to maintain an ongoing dialogue with Mennonite communities in the central region to raise their level of awareness on the benefits of vaccination and the importance of timely reporting of any suspected measles case (or of any other disease under surveillance). This will allow for the prompt implementation of needed control measures. Efforts should also be made in identifying other groups at risk or groups difficult to vaccinate.
5. Strengthen epidemiological surveillance for measles, especially in those municipalities considered at risk.
6. Carry out social mobilization activities at the community level to foster sustained vaccination efforts against measles and call upon all social sectors to support the regional goal of measles eradication.

Source: Salvador Garcia, HVP/PAHO Epidemiologist for Central America.

Evaluation of the National Immunization Program: Costa Rica

From 5 to 16 June of the year 2000, an evaluation of the National Immunization Program in Costa Rica was carried out by a group of 37 national and 12 international health professionals. The qualitative evaluation follows the methodology that was developed by the Pan American Health Organization (PAHO) in 1980, and which is continously being updated to respond to the changes in the Region. These evaluations take a comprehensive look into an immunization program's strength and weaknesses, its efficiency and effectiveness, its impact on disease, as well as its capacity to adapt to new demands. In close coordination with the Ministry of Health, the Division of Vaccines and Immunizations at PAHO in Washington, D.C. assembles a multidisciplinary team. This group consists of all the key health staff working in immunization and surveillance programs in the country in addition to a group of international experts. Following each evaluation, the team presents a report to the health authorities, outlining recommendations in each of the technical and managerial areas reviewed, as well as develops a five-year Plan of Action for the National Immunization Program. The following are excerpts of the findings of the evaluation.

Background

Over the years, Costa Rica has had a remarkable record in the control of vaccine-preventable diseases. In 1949, Costa Rica eliminated smallpox, three decades before the rest of the world. In 1950, routine vaccination programs were launched for children with the administration of DPT vaccine. In 1953, the last case of yellow fever was reported. The success in controlling this disease rested in the vaccination of affected rural areas and in the control of *Aedes aegypti* in urban areas. In 1955, the first mass vaccination campaign was carried out against poliomyelitis.

In the 1960s, BCG vaccine was introduced for newborns, and in the 1970s vaccination began against diphtheria in schoolchildren, and against tetanus toxoid for pregnant women. In 1972, rubella vaccine was incorporated combined with measles vaccine. That same decade, the Ministry of Health prioritized the expansion of vaccination coverage through the Rural and Community Health Program and the Universalization of Social Security. In 1973, the last case of polio was reported and in 1976 the last case of diphtheria. The country's National Commission of Epidemiology was formed in 1977 and issued the norms guiding immunization programs until the present day.

In the early eighties, the Ministry of Public Health issued a decree that established the compulsory notification of vaccine preventable diseases. In 1985, the first evaluation of the national immunization program was carried out with the participation of national experts and PAHO. That same year, a national survey of the cold chain was conducted. In 1986, meningoccocal vaccine was administered for the first time in refugee camps and to under seven year olds in poor urban areas. In 1987, the measles, mumps and rubella vaccine was incorporated and in 1992 an additional dose of MMR was incorporated, for children seven years of age and hepatitis B vaccine was applied for health workers and other risk groups.

In the nineties Costa Rica established the National Commission of Immunization, and vaccination against hepatitis B became universal for all newborns. In 1998, the vaccine against *Haemophilus influenzae* type b was introduced in the routine immunization schedule. Recently, the country has updated its facilities for storing biologicals at the central level, and it now houses one of the most modern installations in the Americas.

Health Reform

Health Sector Reform in Costa Rica has its beginnings in the 1970s with an emphasis on the Universalization of Social Security and programs that aim to expand health coverage through the strategy of Primary Health Care. During the eighties the country went through a program of structural adjustment, which brought about the reduction of public expenditures and investments. During this period a process of modernization and a review of the policies financing the public sector was initiated, which included the health sector. As part of these reforms, signed into law in 1994, the Ministry of Health assumed the stewardship of the health sector and the Costa Rica Social Security Fund (CCSS) became responsible of the care of the population. A gradual transfer of the delivery of immunization functions took place in 1995 from the Ministry to the CCSS, and the last transfer occured in October 1999, with the consolidation of vaccine storage and the distribution of biologicals.

Evaluation of the National Immunization Program

The evaluation of the national immunization program of Costa Rica was conducted in four of the seven regions, following the regional delineation of the CCSS. Participating were the Ministry of Health, the CCSS, the National Reference Laboratory for Rash and Fever Illnesses (INCIENSA) and PAHO. The selection of sites to visit followed the PAHO methodology that incorporates the concepts of risk, dispersion, population representativeness, geographical location, migratory movements, compliance with program indicators, and level of development of the health services infrastructure. Interviews were conducted with staff at the Ministry of Health and the CCSS at the central and regional levels, national and regional hospitals, Health Areas (geographical areas with a base health unit and various mobile health units), and with the Basic Comprehensive Health Care Teams (EBAIS) in charge of providing complete basic care for the population. A total of 193 interviews were carried out at these different levels and 181 user surveys.

The technical components evaluated include the areas of: policy and legislation, organization and coordination, planning and programming, financing, human and physical resources, training and supervision, epidemiological surveillance, information systems, social communication and community participation, research and evaluation, cold chain and

biosafety. A five-year Plan of Action (2000-2004) for the National Immunization Program was prepared by the team of evaluators, outlining areas to be strengthened. The effective implementation of the Plan will require the support and commitment at the political and technical levels.

Main conclusions of the evaluation:

- Health authorities at the Ministry of Health and the Costa Rica Social Security Fund (CCSS) acknowledge the impact of the National Program of Immunization on the morbidity and mortality of vaccine-preventable diseases.
- The new model of health care in the country requires a high degree of coordination between the Ministry of Health, responsible for the stewardship of the sector, and the CCSS now responsible for the provision of health services.
- Health expenditures of the National Program of Immunization are considered an investment, and the CCSS ensures its financing and 100% of the costs of biologicals and other essential inputs.
- Health workers show a high degree of commitment in carrying out the functions of the Program.
- The use of *Performance Agreements* as an instrument of planning and programming has enabled a greater flow of resources for the Program, and the law of *Hospital Deconcentration* includes an addendum to support activities of epidemiological surveillance.
- The national epidemiological surveillance system requires a clearer definition of functions by level of care.
- CCSS has developed a software which allows for ongoing monitoring of vaccinated children. This program should be utilized throughout the entire country.
- Costa Rica has updated its facilities for the storage of biologicals, which is now one of the most modern in the Americas.
- Ongoing short (3-5 days) training courses should be designed and implemented on key technical aspects of the Program.
- The role of regional and local commissions of epidemiological surveillance should be strengthened in technical, managerial and operational aspects.

Epidemiological Surveillance

The establishment and regular meeting of the Committees of Epidemiological Surveillance and Immunization at the level of Health Areas and regions has had a positive impact on the day-to-day implementation of immunization programs. In some of the Health Areas, the level of coordination between staff of the Ministry of Health and the CCSS is high. The existence of a Master's degree program in epidemiology that provides fellowships has allowed the country to have a pool of trained professionals. Also in some of the Health Areas, health workers are well-trained in how to respond to the event of a suspected rash and fever case.

Areas to be strengthened:

- Implement an existing proposal to restructure the National Epidemiological Surveillance System.
- Establish within a short timeframe a National Commission of Epidemiological Surveillance which should include a representative of each institution with technical capability and decision-making power. This Commission should be directed by the Ministry of Health.
- Update and disseminate the norms on epidemiological surveillance, and provide training on their use to all health staff on an ongoing basis.
- Design and carry out short training programs on epidemiological surveillance of vaccine-preventable diseases, initially at the central level followed by their implementation at the Health Area level. The training should be targeted to epidemiologists of the CCSS and the Ministry, members of the Regional Commissions of Epidemiological Surveillance, as well as staff at national hospitals, and private and mayor clinics.
- Provide flexibility for disease reporting to the private sector.
- Identify units providing negative reporting of acute flaccid paralysis and rash and fever illnesses, including national hospitals, large clinics and private hospitals. Consolidate the information on a weekly basis and determine the quality of reporting.
- Develop technical capability and a culture of analysis of information among staff working on immunization, through a program of training directed at the various levels of health care.
- Program a *follow-up* vaccination campaign against measles in 2001 for children under 5 years of age.
- Set up a feedback system at the central, regional and local levels through: a) periodic reports (quarterly and annual), b) weekly Epidemiological Bulletin at the national level, c) updating of technical guidelines through circular letters, and d) updating of the Web page.
- Implement an integrated surveillance system for measles and rubella.
- Carry out a national evaluation of silent areas and an active search for suspected measles cases.
- Given the autonomy of hospitals and large clinics, coordination on surveillance and immunization activities should be carried out directly with the regions. Every hospital should appoint an epidemiologist to carry out these functions.
- Roles of the CCSS and the Ministry in operational research should be defined: CCSS is responsible for conducting field investigation and the Ministry for providing the necessary and timely advice on surveillance at the different levels, as well as for the education and communication to the community.
- All regions and Health Areas should have registries or an up-to-date database to monitor activities of operational research and to carry out the pertinent analysis.

Source: *Evaluation of the National Immunization Program*, Costa Rica. For a copy of the complete evaluation, please contact the Ministry of Health in Costa Rica or the Division of Vaccines and Immunization in Washington, D.C.

Immunization Safety: Infant Deaths Caused by Methanol

This note seeks to draw the attention on the use of red alcohol (methanol) compresses and rubs following vaccination in some communities of the Middle East. Managers of national immunization programs in the Americas should alert health centers in the Region about this practice and its dangers. The article that follows is part of a series on issues surrounding immunization safety to be published in the coming issues of the ***EPI Newsletter*** *(please refer to pages 4-5 of the June 2000 issue of the* ***EPI Newsletter).***

Following a site visit in December of 1999, to investigate three infant deaths following vaccination in a country of the Middle East, a multidisciplinary team unexpectedly discovered that in some areas of the country parents customarily place compresses on the injection site following infant immunization. In the past, these compresses were soaked in vinegar, but recently parents in this country have switched to using red alcohol (methanol). The compresses or rubs are intended to minimize the pain and inflammation around the injection site.

While suspicion had initially rested on vaccination as the cause of death, the team rapidly ruled this out. The children had all died following symptoms of severe acidosis brought on by the absorption of methanol. These symptoms were incompatible with any known side effects of DPT, oral polio or hepatitis B vaccines. The team was able to reassure the Ministry of Health that the vaccines themselves were not the cause of the infants deaths.

During their visit, the team was also alerted about problems in the vision of children due to the use of methanol compresses following vaccination. The team expressed their concern to the country's health authorities and urged them to take the appropriate steps to stop such practices before others were hurt.

Source: V&B, WHO,Geneva.

Editorial Note: Methanol (methyl alcohol or wood alcohol) is a commonly used industrial solvent. It is utilized as a solvent for lacquers, some paints and varnish. Methanol may be absorbed through the skin, much like ethanol. Methanol is metabolized in human beings by the same enzymes that metabolize ethanol, but it forms toxic intermediate product called formaldehyde and formic acid. They are a highly toxic substances, in even small doses.

Major signs and symptoms of methanol poisoning include headache, vertigo, vomitting, intense pain in the upper abdomen, backache, motor problems, cold and sweaty limbs and blurred vision. The most notable symptom is major metabolic acidosis. In seriously ill patients breathing is slow, shallow and panting ("fish mouth" or "pink panters"). Death occurs due to respiratory insufficiency and can be sudden or after many hours of being in a coma.

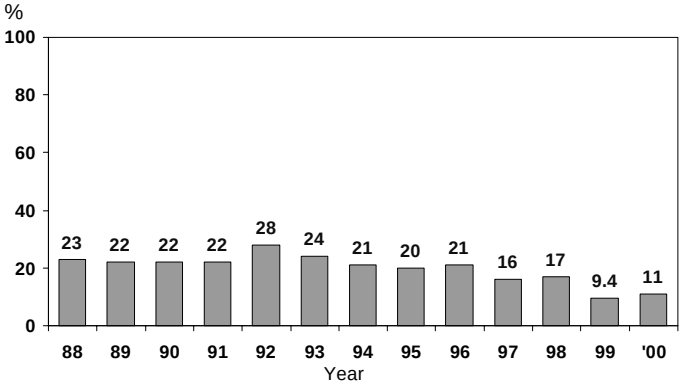
The severity of almost all methanol poisoning symptoms is proportional to acidosis, and the correction of this constitutes the basis for an appropriate therapy. Personnel of every immunization program in the Americas should be aware if methanol is being used in the Region. Immunization managers need to be informed and prepared to resolve any public concern related to vaccination. Any incident allegedly related to vaccination should be immediately investigated and corrective measures implemented after a careful investigation.

Surveillance of poliomyelitis

The proportion of samples with successful viral isolation for acute flaccid paralysis (AFP) appears to be improving following years of decline since 1992 (Figure 1). This improvement was noted in the information received by countries as of week 31 of 2000 (August 5) for the weekly *Bulletin for Poliovirus Surveillance*, Vol. 15, No. 31, published by PAHO's Division of Vaccines and Immunization. Viral isolation reported in Bulletin No. 31 corresponds to the category of "other enterovirus" (87) and the difference (13) is attributed to vaccine poliovirus isolation, in cases of AFP that have evolved without leaving polio compatible sequelae.

This improvement in the proportion of samples with adequate viral isolation should be maintained and strengthened in each country of the Americas. A call is made to those responsible for AFP surveillance to periodically analyze this information. It is critical to guarantee the timely collection of samples and that these samples arrive in adequate conditions at the laboratory. These conditions include, adequate amount, properly labeled, well-packaged, adequate cold chain and timely dispatch. Furthermore, it is essential that all laboratories process samples as soon as possible and maintain high quality control standards.

Figure 1
Percentage of poliovirus isolation
Region of the Americas, 1988-2000*



Source: PESS, PAHO. *Week 31, 2000

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.

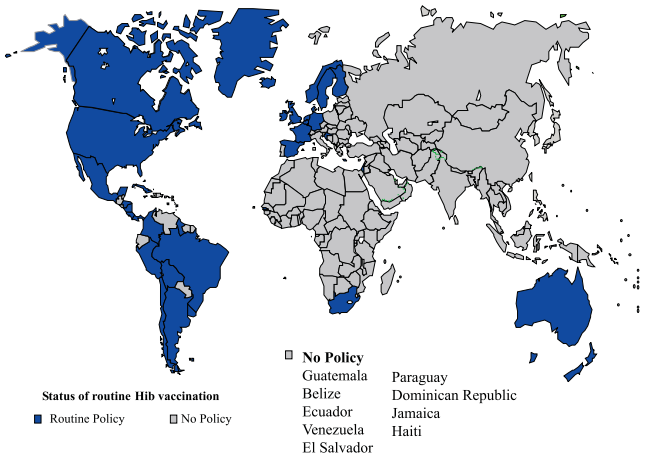
Country/Territory	Date of last report	Measles				Polio		Tetanus				Diphtheria		Whooping Cough	
		Confirmed 2000			Confir-med* 1999			Non Neonatal		Neonatal					
		Labo-ratory	Clini-cally	Total		2000	1999	2000	1999	2000	1999	2000	1999	2000	1999
Anguilla	8-July	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Antigua & Barbuda	8-July	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Argentina	8-July	7	0	7	274	0	0	7	6	0	1	0	0	0	0
Bahamas	8-July	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Barbados	8-July	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Belize	8-July	0	0	0	0	0	0	1	1	0	0	0	0	0	0
Bermuda	8-July	0	0	0	0	0	0	0	1	0	0	0	0	1	0
Bolivia	8-July	68	60	128	889	0	0	6	1	...	1	1	0	1	0
Brazil	8-July		342	36	302	0	0	78	84	17	11	17	0	254	690
British Virgin Islands	8-July	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Canada	8-July	58	—	58	5	0	0	...	...	...	...	0	0	...	...
Cayman Islands	8-July	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Chile	8-July	0	0	0	28	0	0	5	10	0	1	0	0	1,453	1,409
Colombia	8-July	0	0	0	38	0	0	11	3	5	17	0	0	276	211
Costa Rica	8-July	0	0	0	20	0	0	0	1	0	0	0	0	11	1
Cuba	8-July	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Dominica	8-July	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dominican Republic	8-July	139	9	148	130	0	0	...	17	...	1	...	12	...	15
Ecuador	8-July	0	0	0	0	0	0	6	0	4	0	0	0	273	0
El Salvador	8-July	0	0	0	0	0	0	...	2	...	0	...	0	...	3
French Guiana	8-July	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grenada	8-July	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Guadeloupe	8-July	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Guatemala	8-July	0	0	0	0	0	0	...	1	...	0	...	0	...	26
Guyana	8-July	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Haiti	8-July	135	0	135	0	0	0	...	...	...	11	...	4	...	18
Honduras	8-July	0	0	0	0	0	0	8	0	0	0	0	0	12	0
Jamaica	8-July	0	0	0	0	0	0	1	4	0	0	0	0	8	6
Martinique	8-July	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mexico	8-July	0	0	0	0	0	0	53	48	4	5	...	...	24	20
Montserrat	8-July	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Netherlands Antilles	8-July	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nicaragua	8-July	0	0	0	0	0	0	5	1	0	0	0	0	25	14
Panama	8-July	0	0	0	2	0	0	2	2	1	0	0	0	172	66
Paraguay	8-July	0	0	0	0	0	0	8	9	5	6	0	0	11	11
Peru	8-July	1	0	1	0	0	0	31	41	5	12	1	7	1,461	865
Puerto Rico	8-July	0	0	0	0	0	0	...	...	...	...	0	0	...	...
St Vincent/Grenadines	8-July	0	0	0	0	0	0	0	0	0	0	0	0	0	0
St. Kitts/Nevis	8-July	0	0	0	0	0	0	0	0	0	0	0	0	0	0
St. Lucia	8-July	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Suriname	8-July	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Trinidad & Tobago	8-July	0	0	0	0	0	0	2	6	0	0	0	0	0	0
Turks & Caicos	8-July	0	0	0	0	0	0	0	0	0	0	0	0	0	0
United States	8-July	33	—	33	57	0	0	12	11	...	...	0	0	2,379	2,901
Uruguay	8-July	0	0	0	9	0	0	0	0	0	0	0	0	0	1
Venezuela	8-July	0	0	0	0	0	0	27	20	1	1	0	0	185	278
TOTAL		**475**	**71**	**546**	**1,745**	**0**	**0**	**266**	**271**	**42**	**67**	**19**	**23**	**6,546**	**6,541**

... Data not available.
—Clinically confirmed cases are not reported.
* Laboratory and clinically confirmed cases.

Hib vaccine introduction: a model for other new vaccines

Substantial progress has been achieved in the introduction of *Haemophilus infuenzae* type b in the Americas (Figure 1). Decisive factors behind the introduction of Hib in several countries include heightened awareness on meningitis diseases among concerned parents; knowledge by the medical profession and health ministries of several clinical trials which point to the vaccine's safety, efficacy and effectiveness; and previous experience with the vaccine in the private sector. Having a well-structured surveillance system that provides the pertinent epidemiological information in advance about the disease has also been a critical factor.

Figure 1
Global Status of *Haemophilus influenzae* Type b Vaccination



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PAHO is playing a facilitator role in the establishment and adequate maintenance of these surveillance systems and in providing new vaccines at affordable prices through the PAHO Revolving Fund for Vaccine Procurement. The example with Hib vaccine in the Americas will be followed for the introduction of other vaccines, such as the pneumococcal conjugate vaccines, rotavirus and other vaccines of regional public health importance.

Since 1993, surveillance is being carried out for *S. pneumoniae* in six countries, providing information on serotype distribution and antimicrobial susceptibility. This system has been expanded to more countries and includes other pathogens. The gathering of information on *S. pneumoniae* has also facilitated the efforts of collecting Hib data, and was used effectively in assisting Hib vaccine introduction in the Region.

These successes led PAHO to propose a surveillance system for bacterial pneumonia and meningitis in the Americas. As of this date, almost all countries are participating in some way or another in the development of this system. Data are being collected on the possible impact of *S. pneumoniae*, *H. influenzae* and *N. meningitidis* in both pathologies. Preliminary data from recent clinical trials in the United States show that the conjugated vaccine has a major impact on X-ray proven pneumonias, 70% reduction. Thus, X-ray diagnosis is being used as an outcome measure for on-going clinical trials. Special efforts are being made to include in the surveillance system, X-ray proven pneumonias, as well as bacterial isolation. When the trials are finished, the results can be extrapolated to the regional results of bacterial pneumoniae surveillance. Studies to assess disease burden have commenced in Argentina, Brazil, Chile, Costa Rica, Colombia, Mexico and Uruguay. The latter countries will be the first in line to introduce pneumococcal conjugated vaccine.

Plans are also under way to carry out in close collaboration with Ministries of Health, economic studies to evaluate direct and indirect treatment costs of pneumococcal disease. The availability of precise numbers on these costs will allow decision-makers to make a commitment to support sustainable vaccine introduction.

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