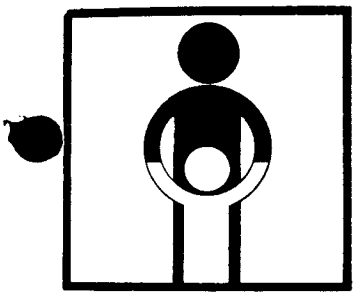

EPI Newsletter

Expanded Program on Immunization in the Americas

Volume II, Number 2 IMMUNIZE AND PROTECT YOUR CHILD April 1980

Country Operations

The Expanded Program on Inmunization in Bolivia

In accordance with agreements contracted with the Member Governments, the Directing Council of the Pan American Health Organization (PAHO/WHO) officially inaugurated the Expanded Program on Immunization (EPI) in the Americas in October 1977. The Government of Bolivia, through its representatives at various international health meetings, has expressed its interest in the EPI and has committed itself to promoting this Program. In fact, the National Health Plan and the annual plans of operations have in recent years assigned highest priority to the control of communicable diseases. This program is made possible by funds from an agreement between the Governments of Bolivia and the United States of America, under Project P.L. 480, Title III.

Diseases preventable by vaccination are still a serious problem in Bolivia. Outbreaks of measles in unvaccinated children, with their ensuing bronchopulmonary and other complications, account for a high mortality rate.

There have been major outbreaks of poliomyelitis over the past five years. In 1979 there were three outbreaks of the disease.

Pertussis is another major cause of morbidity in children under 5 years of age. In 1973, 4,000 cases were notified, and the incidence in succeeding years has not declined to any significant extent. Eight outbreaks of the disease were recorded in 1978.

Diphtheria and tetanus in the newborn are also major causes of morbidity and mortality.

Tuberculosis is among the five leading causes of death and is one of the main health problems in the country, despite stepped up control efforts. In recent years there has been a slight decline in the morbidity rate, between 4 and 5 per cent a year. It is estimated that this disease takes from 3,000 to 4,000 lives annually and that at present there are approximately 50,000 cases.

The situation described above stems primarily from the failure of the vaccination programs to cover the child population adequately. Among the main obstacles to proper coverage are the following:

- The health facilities cover only 58 per cent of the country's population and do not reach extensive areas of country, known as "areas of scattered population."

- The sociocultural characteristics of the population, especially in rural areas.

- In geographical areas where health facilities and permanent prevention programs do not exist, coverage with a complete series of doses is unsatisfactory. Moreover, there is a tendency to vaccinate children over 3 years of age and to neglect the more susceptible group of the under 3-year olds.

- The present cold chain is insufficient.

Prevention activities are compromised by these factors, which contribute to increases in the numbers of susceptible persons and to outbreaks of epidemics.

The general objective of the EPI is to reduce the rates of morbidity and mortality from measles, pertussis, tetanus, diphtheria, poliomyelitis and tuberculosis. The specific objectives of the Program are as follows:

- To give simultaneous vaccination against the six EPI diseases.

- To make vaccination a continuous, ongoing and high-quality operation that will achieve in a reasonable period of time appropriate levels of immunization in the child population, with greatest emphasis on children under 3 years of age.

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- To enlist the conscious, organized participation of the community.

- To set up throughout the country a cold chain that will adequately preserve and guarantee the potency of biologicals.

The EPI in Bolivia has two main goals: (1) to achieve 100 per cent coverage of children under 3 years of age in five years, following a plan of gradual implementation, and (2) to reduce morbidity rates as follows:

- measles: from 564/100,000 inhabitants to 100/100,000 inhabitants.
- pertussis: from 363/100,000 inhabitants to 100/100,000 inhabitants.
- diphtheria: from 5.4/100,000 inhabitants to 1/100,000 inhabitants.
- tetanus: from 2.1/100,000 inhabitants to 1/100,000 inhabitants.
- poliomyelitis: from 2.6/100,000 inhabitants to 1/100,000 inhabitants.
- tuberculosis: from 222/100,000 inhabitants to 100/100,000 inhabitants.

The agency responsible for executing the EPI is the Ministry of Social Welfare and Public Health, through its various technical departments and divisions.

At the central or national level, the National Health Administration (Dirección Nacional de Salud) and the Department of Ecology perform functions of coordination with the Executive Secretariat of P.L. 480. The technical operating standards of the Program are set by the National Divisions of Epidemiology and Maternal and Child Health with their Immunization and Child Care Services.

At the regional level, executive responsibility rests with the Health Unit Administration through the Regional Epidemiology Bureaus in coordination with the Regional Maternal and Child Health Bureaus.

At the local level, the health establishments conduct the vaccination operations. Each health establishment is responsible for the population living within a five kilometer radius (its "area of influence"). Mobile vaccination brigades are responsible for the scattered areas outside the jurisdiction of the health facilities.

At the national and regional levels, there are technical support committees which have participation from the following areas: Education for Health, Social Service, Nutrition, Nursing, the Tuberculosis Service and the Malaria Service.

The strategies to be used will be determined by the specific features and conditions of each community. Depending on the attitudes of the population, the demand for vaccinations will be met by vaccinating house-to-house, in assembled groups, or in health establishments.

The Program will cover the entire country, that is to say, the nine Departments(1) served by 11 Health Units, and will be especially directed at the population of under 3-year olds. The technical details on programming, preservation, transportation and the administration of biologicals, and the supervision and evaluation work, are set forth in the EPI Technical Operating Manual.

The institutions in the health sector which form the National Vaccine Bank will continue to contribute the annual funds for the purchase of biologicals in amounts proportional to the populations in their charge. Each member institution may implement its immunization program, subject to the standards established at the national level, to the extent that its infrastructure permits.

Under the terms of the agreement between the Governments of Bolivia and the United States of America, the sum of US$2,263,646 has been allocated to the EPI for a five-year period, subject to annual operating programs and disbursement plans. The overall amount is to be used essentially to improve the infrastructure through the purchase of cold chain equipment, biologicals and other supplies, and for training of personnel.

The Ministry of Social Welfare and Public Health will appropriate an equivalent amount for the same period from the Nation's General Treasury, to be used especially for the payment of personnel services and operating costs.

There will be continuous control and evaluation of all phases, goals and objectives of the Program in relation to coverage, output, maintenance and appropriate consumption of biologicals, operation of the cold chain, effectiveness of the educational work, effectiveness of the vaccine, community participation, and cost/benefit.

Source: Boletín Epidemiológico, No. 50, 1979, Ministry of Social Welfare and Public Health, Bolivia.

Editorial Note

From 18 to 23 June 1979 Bolivia held its first National Workshop on the Planning, Management and Evaluation of EPI. The workshop was attended by a total of 81 health professionals who are responsible for public health activities at the national and departmental(1) levels. These participants intend to reproduce the course, as well as the national EPI Manual of Operations, at the local level in their various departments.

It will be noted that the Bolivian EPI strategy calls for an effort to increase coverage among the high risk group of children under 3 years of age. In 1978 the coverage of the highest risk age group--children under 1 year of age--with two doses of DPT and two doses of polio vaccine, was around 10 per cent. (See EPI Newsletter Vol. II, No. 1, page 5.) The Bolivian strategy will certainly lead to higher coverage of the under 1-year olds, who are the priority age group for the EPI vaccines, and will have a greater impact on the morbidity of the EPI diseases. Continuous evaluation mechanisms will be very important in order to measure the success of this well-structured program in the years to come.

(1)The geographic subdivisions of Bolivia are called "departments."

Epidemiology

Measles in the Region of the Americas, 1978-1979

A total of 261,451 cases of measles were reported to PAHO for 1979 by 28 Member Governments in the Region of the Americas. This figure is 26.5 per cent higher than the 192,132 cases reported by those countries for 1978. Table 1 itemizes by subregions of the Americas the cases reported for 1978 and 1979.

Table 1

Reported Cases of Measles and Percentage Distribution among Subregions in the Americas, 1978-1979

SUBREGION *	Reported cases (percentage distribution)			
	1978		1979	
North America	32,616	(17.0%)	35,975	(13.8%)
Middle America (Caribbean)	30,920	(16.1%)	17,816	(6.8%)
Middle America (Continental)	14,710	(7.7%)	64,947	(24.8%)
South America (Tropical)	89,565	(46.6%)	97,470	(37.3%)
South America (Temperate)	24,321	(12.6%)	45,253	(17.3%)
Total (Region of the Americas)	192,132	(100%)	261,451	(100%)

* North America = Canada and the United States of America.

Middle America (Caribbean) = Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, and Trinidad and Tobago.

Middle America (Continental) = Mexico, Nicaragua, Guatemala, El Salvador, Costa Rica, Honduras, and Panama.

South America (Tropical) = Brazil, Colombia, Ecuador, Guyana, Paraguay, Peru, and Venezuela. (No 1978-1979 data are available for Suriname, nor are comparable 1978 data available for Bolivia.)

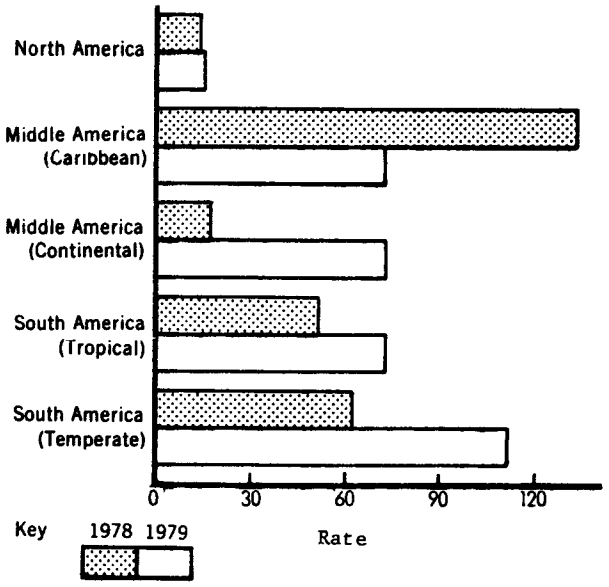
South America (Temperate) = Argentina, Chile, and Uruguay.

Graph 1 illustrates the subregional rates for 1978 and 1979.

The interpretation and comparison of country or subregional data poses certain difficulties due to the different stages of development of the vaccination activities and reporting systems in each country. Despite this limitation, several trends are still discernible in the occurrence and distribution of measles in the Region of the Americas over the last two years.

Graph 1

Morbidity rates for measles (per 100,000 inhabitants), by subregion of the Americas. 1978-1979



The greatest increase took place in Continental Middle America, and the most notable decrease in the Caribbean.

In North America, while the figures for the subregion as a whole underwent no significant change, a marked difference did emerge in the number of cases reported by each country from one year to the other. In the United States of America there was a 50 per cent drop in the number of cases reported from 1978 to 1979 (26,795 and 13,448, respectively), whereas in Canada the number of cases reported for those years increased 287 per cent (5,821 and 22,527, respectively).

In six Caribbean countries the number of cases reported for 1979 decreased from the 1978 level. This reduction was most pronounced in the cases of Cuba, Jamaica and Grenada. In the Bahamas, Dominica and the Dominican Republic, on the other hand, the number of cases reported increased in 1979, especially in the first two countries.

In Continental Middle America the number of cases increased significantly in 1979 in six of the seven countries. Honduras was the only country which showed a reduction from the 1978 level. The greatest increases in numbers of reported cases were in Costa Rica (361 cases in 1978 and 6,883 in 1979) and Mexico (2,933 cases in 1978 and 33,847 in 1979).

In Tropical South America there was an overall increase in the number of cases reported from 1978 to 1979. The largest increase was in Guyana, followed by Ecuador, Peru and Paraguay. The figures for the other countries remained unchanged or increased only slightly in 1979.

The rise in the number of cases reported in Temperate South America was caused chiefly by the increase in Chile (14,269 cases in 1978 and 34,247 in 1979) and Uruguay (501 and 1,196 cases, respectively). Argentina, however, reported virtually the same number of cases for the two years (9,551 and 9,800, respectively).

Poliomyelitis in Argentina

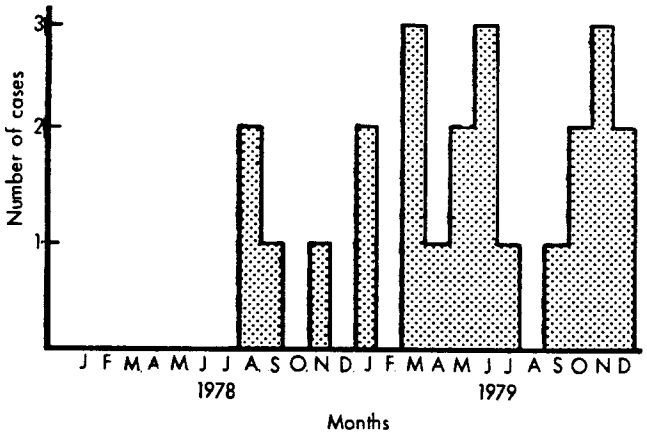
Between August 1978 and January 1980, 51 suspected cases of poliomyelitis were reported in Argentina. This outbreak occurred after two years without any reported cases, while only 18 confirmed cases were reported from 1973 to 1975.

Forty-eight blood samples were sent in for laboratory analysis. Twenty-four cases have been confirmed to date, 16 were not confirmed and 11 are still under study (one in Formosa, two in Entre Ríos, five in Salta, two in Tucumán and one in Buenos Aires). Eight of these cases under study are from 1980.

Of the 24 confirmed cases (Figure 1), 20 were of poliovirus type 1, one of poliovirus type 2, and three were confirmed by clinical diagnosis.

Figure 1

Monthly distribution of confirmed poliomyelitis cases, Argentina, 1978-1979



The four cases in 1978 occurred in the province of Tucumán. In 1979 there were ten cases in Santa Fe, four in Tucumán, three in Salta, two in Buenos Aires, and one in Jujuy (Figure 2).

Figure 2

Geographical distribution of confirmed poliomyelitis cases, Argentina, 1978-1979

The age group chiefly affected was the under 3 year olds, with only one case recorded among 4 and 5 year olds.

Of the confirmed cases for which information was available, 39.1 percent of the children had not been vaccinated; 26.1 percent had received only one or two doses; and 34.8 percent had received three or more doses. In one case there was no information on vaccination history. (Table 1)

Table 1

Vaccination history of confirmed cases of poliomyelitis, by province. Argentina, 1978-1979

Vaccination history	B. Aires 1979	Salta 1979	Jujuy 1979	Tucumán 1978	Tucumán 1979	Santa Fe 1979	Argentina 1978	Argentina 1979
No vaccination	2	1	1	-	-	5	-	9
One or two doses	-	1	-	2	1	2	2	4
Three or more doses	-	1	-	2	3	2	2	6
No information	-	-	-	-	-	1	-	1
TOTAL	2	3	1	4	4	10	4	20

Source: "Poliomyelitis in the Argentine Republic." Report of the Ministry of Social Welfare, Secretariat of Public Health, February 1980.

Training Activities

1980 EPI Courses

The training strategy for implementing the EPI in the Americas calls for strengthening managerial skills at all levels of the health sector. Continuing this strategy, national workshops on EPI Planning, Administration and Evaluation have been held in the following countries so far this year:

- Nicaragua: 7-11 April
- Chile: 21-25 April
- Honduras: 19-23 May

Each course was attended by some 35-40 participants, many of whom will subsequently organize local workshops tailored to the needs of their particular areas of work.

In addition, PAHO has sponsored an EPI workshop for representatives from 11 Schools of Public Health in the Region, which was held from 21 to 25 April 1980 in Washington, D.C. The purpose of this workshop was to review and discuss the training modules used in the national EPI workshops sponsored by PAHO, in order to consider the incorporation of these materials as part of the regular school curricula. At the end of the week-long meeting, the group agreed on the following comments and recommendations:

1. The EPI training methodology, combining self-instruction and group discussion, is an effective means of instruction which sparks both the interest and active participation of group members.

2. The general content of the EPI text is well structured and complete, and should be maintained in its present form. However, some minor semantic modifications to the text are recommended in order to assure that the terminology used is acceptable in all Latin American countries.

3. The use of the same material in all Schools of Public Health will facilitate greater cooperation within and between countries, creating a common basis for the evaluation and comparison of results achieved. Accordingly, any significant changes which arise from the practical implementation of the EPI should be evaluated by all the countries concerned.

4. The material should be incorporated as a required subject in the curricula of the Schools of Public Health. It can be included in a variety of courses, such as Epidemiology, Maternal and Child Health, introductory and masters' level courses. Each school will analyze for itself how the EPI material will relate to the various disciplines involved in public health study programs.

5. In both introductory and doctoral courses in public health, it is recommended that encouragement be given to studies and theses related to the research needed for the implementation and evaluation of the EPI, and to the establishment of demonstration areas for the Program.

6. The extent to which schools participate in the teaching and development of the EPI could serve as an indicator of their impact on manpower training for primary health care.

7. It is recommended that the professionals of schools teaching the EPI be enabled to visit areas where the Program is underway so as to exchange experiences and provide technical consultation.

8. PAHO is requested to collaborate with the schools by providing literature concerning the Program and informing them of progress made in different countries of the Region.

9. It is recommended that a follow-up meeting be held in a year's time to evaluate what the schools have done to implement EPI training, and to identify problems which have arisen and the solutions which have been found.

Vaccines

Second WHO Meeting on Pertussis Research

There is some concern among experts regarding the stability, potency and toxicity of whole cell vaccines. Partly in response to the recommendation of the Third Symposium on Pertussis(1), which called for global coordination of research, the Unit of Biological Standardization at WHO Headquarters convened a meeting in Geneva on 5 and 6 November 1979 to review the progress made in research during the last two years.

The meeting was attended by 25 international experts from Australia, Czechoslovakia, the Federal Republic of Germany, Japan, Hungary, The Netherlands, the United Kingdom, the United States of America, the Union of Soviet Socialist Republics, Yugoslavia, Sweden and Switzerland. The main topics discussed were: growth changes of pertussis, properties of fractions, potency testing, toxicity, vaccine stability, immunization reactions, and physiological effects. Each topic was covered by one or more individual papers on current research.

The following is a summary of some of the major contributions made at the meeting:

1. Inactivation of the vaccine by heat treatment results in the loss of agglutinogens and poor stability of the Mouse Protective Antigen (MPA), whereas a low concentration of formalin (0.1%) for a short period of inactivation (22 hours) has no deleterious effect on the MPA.

2. The MPA can be purified by precipitation from a sonicate of pertussis either by polyethylene glycol 600 (Nagel) or urea concentration (Halting). The conventional assays showed that MPA so purified had a good mouse potency, was less toxic and induced a good antibody response by way of agglutinins.

3. In one study, as many as 16 different strains of pertussis were tested for stability to heat of their respective MPA. As no difference was observed, it was concluded that strains of pertussis having MPA antigens that are especially resistant to heat do not exist.

4. Of the stabilizers so far tested, the polymer polyvinyl alcohol (PVA) and Dextran were the most promising. The 5% Dextran kept a freeze-dried preparation fully active for at least 6 months at 35°C and three weeks at 56°C. The potency of a liquid vaccine treated with PVA remained constant for 30 days at 40°C. As far as the WHO Expanded Program on Immunization is concerned, the addition of PVA would be preferable since it does not add to the cost of the vaccine, nor does it involve additional technological manipulation which is not always available in developing countries.

Looking to the future, the participants agreed that projected research should focus on: defining the optimum growth conditions for maximum production of MPA; the evaluation of PVA versus Dextran and other stabilizers for imparting greater stability to the vaccine at ambient temperature; the evaluation of the suckling mice necrotizing test for in-process testing of toxicity; and, finally, the preparation of a WHO reference preparation for potency assay.

The Third Symposium on Pertussis was sponsored by the Bureau of Biologics, the International Association of Biological Standardization and other agencies from 1 to 3 November 1978. The proceedings were previously reviewed and reported in EPI Newsletter Volume 1, Number 4.

Source: WHO Document BLG/PRT/79.32. Rev.1

Copies of this document are available on request to Dr. G. S. Tawil, DSL/DCQ
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Washington, D.C., 20037

BCG Vaccination in the Newborn and Young Infants (1)

Introduction

During the last few decades BCG vaccination has been applied on an ever increasing scale. The usual procedure has been to initiate the BCG vaccination program with an extensive mass campaign to cover the eligible population in a short time, and then to switch to a program integrated with the general health service to keep up with the birth rate and thus maintain and possibly increase the coverage obtained. The idea of keeping up with the birth rate is often applied literally by vaccinating the newborn. Advantages of this strategy are that all the children are vaccinated before they risk being infected and that protection is afforded against the serious forms of childhood tuberculosis, miliary tuberculosis and tuberculous meningitis, which are still often fatal even if chemotherapy is available.

It should be noted that scientifically the mass vaccination programs were based mainly on clinical observations of the protective efficacy of BCG vaccination in adolescents and young adults. Direct evidence of the efficacy of BCG vaccination of the newborn and young infants is therefore extremely valuable. A few controlled trials, started in the 1930's, are of interest as they appear to show that BCG can confer considerable protection. These trials are therefore briefly reviewed. No further controlled trials have been carried out, and more recently evidence has been obtained only from some retrospective studies.

Summary of Selected Controlled Trials in the Newborn

A controlled trial in Saskatchewan Indians (in Canada) in which infants were vaccinated intradermally (21 orally) within ten days of birth was undertaken in 1933. The intake lasted through 1945. Allocation to the vaccinated and the control groups was by paired families with annual rotation. This was considered to have given balanced groups of 306 vaccinated children and 303 controls: the general mortality in the first year of life was 12.7% among those vaccinated and 12.5% among the controls. During the 14 years of the study there were 53 deaths among those vaccinated and 63 among the controls; removing tuberculosis deaths, the figures were 51 and 54 respectively. Among the 306 vaccinated children there were six cases of tuberculosis, two of whom died. Among the 303 controls there were 29 cases, nine of whom died. Thus the observed protection was over 80%.

A study in the newborn of BCG vaccination by a percutaneous multiple puncture method was started in 1937. It comprised 3,381 infants of whom about half were vaccinated during the first week after birth if the household members were found free from tuberculosis. In some instances in which a household member was found to be a suspect, but the X-ray picture cleared within three months, the child was also included. The statistical analysis demonstrated certain differences between the vaccinated and the control group, mainly an excess of follow-up of the vaccinated subjects under two years of age and of the control subjects over two years of age. It was considered that these differences should not have influenced the observed morbidity and mortality data, a viewpoint they substantiated by showing that the morbidity from measles, whooping cough, and other childhood diseases was the same in both groups. As regards tuberculosis, however, the difference in morbidity was highly significant: there were 17 cases (including one death) among the 1,716 vaccinated and 65 cases (including six deaths) among the 1,665 controls, which amounts to a protective effect of 75%.

Summary of Selected Retrospective Studies

Retrospective studies are well known to be subject to observer bias, an important aspect of which is that investigators often set out to prove a certain concept and select their material accordingly. Retrospective studies, therefore, are best considered to attain validity only if they are confirmed repeatedly.

Mortality and morbidity statistics are frequently used to show the impact of a certain health measure, but such data must be interpreted with caution since a statistical association of the application of a health measure with morbidity or mortality is not necessarily causal. With respect to tuberculosis, it is extremely difficult to distinguish between the effect of BCG vaccination in reducing morbidity, and the impact of chemotherapy introduced at the same time. This is certainly the case with BCG vaccination of the newborn, since the impact of effective case-finding and treatment will also be most noticeable in this age group. Reports that merely show a decline in infant tuberculosis after the introduction of BCG vaccination are therefore hardly informative and have not been considered here.

An interesting analysis of morbidity statistics was made studying the association between the decline of tuberculosis in various age groups and the age at which vaccination was given for different countries. It was found that this association was quite pronounced and was considered as "some evidence" of the efficacy of BCG vaccination. In one of the countries included in the analysis BCG was given to the newborn, and the conclusion would appear to apply to BCG vaccination of this age group.

In the Federal Republic of Germany, the decline of the mortality from tuberculous meningitis and miliary tuberculosis in Hamburg, where BCG vaccination had been given to the newborn since 1953, was compared with that in Bavaria where there is no BCG vaccination program. In Hamburg the decline was much faster, and during the period 1961-1970 there was only a single death whereas there were 65 deaths in Bavaria.

In May 1975 BCG vaccination was suspended in the Federal Republic of Germany because a newly introduced vaccine had given rise to untoward reactions. Whereas for 1973 and 1974 the official statistics showed for the 0-1 age group tuberculosis incidences of 35 and 33 respectively, 79 cases were observed between 1 September 1975 and 1 September 1976. In this case there are no apparent reasons to doubt the causality of the association, but the latest data were collected by questionnaire so that the comparability may be questioned.

(1) The full report, including references on which this abstract is based, has been published in WHO Bulletin, Vol. 58, No. 1, 1980.

Reported Cases of EPI Diseases in the Americas

NUMBER OF REPORTED CASES OF MEASLES, POLIOMYELITIS, TETANUS, DIPHTHERIA AND WHOOPING COUGH
FROM 1 JANUARY THROUGH THE LAST PERIOD REPORTED IN 1980
AND FOR THE COMPARABLE PERIOD IN 1979, BY COUNTRY

COUNTRY	DATE OF LAST REPORT	MEASLES		POLIOMYELITIS		TETANUS		DIPHTHERIA		WHOOPING COUGH	
		1980	1979	1980	1979	1980	1979	1980	1979	1980	1979
ARGENTINA	28 APR[a]	...	1,383	...	1	...	79	...	45	...	5,488
BAHAMAS	10 MAY	357	195	--	--	3	--	--	--	3	--
BARBADOS	22 MAR	12	3	--	--	3	2	3	3	--	1
BOLIVIA	21 APR[a]	...	573	...	279	...	37	...	8	...	253
BRAZIL	09 FEB	3,369	2,780[b]	178	108[b]	119	137[b]	191	266[b]	2,306	1,911[b]
CANADA	19 APR	5,234	9,690	--	--	...	...	23	33	658	838
CHILE	22 MAR	1,760	4,059	--	--	...	...	48	83	279	87
COLOMBIA	22 APR[a]	...	6,980	...	218	...	...	...	74	...	3,591
COSTA RICA	19 APR	381	98	--	--	1	8	--	--	331[c]	31
CUBA	12 APR	1,539	3,825	--	--	3	3	--	--	26	67
DOMINICA	26 APR	--	141	--	--	1	--	--	--	--	--
DOMINICAN REP.	31 JAN	832	558	--	2	10	8	29	26	23	86
ECUADOR	28 APR[a]	...	1,676	...	4	...	25	...	5	...	677
EL SALVADOR	26 APR	957	6,073	3	--	15	47	--[d]	--	153	313
GRENADA	19 APR	17	1	--	--	--	--	1	--	--	--
GUATEMALA	17 MAY	1,321	2,000	27	14	34	21	1	--	570	462
GUYANA	23 FEB	16	--	...	...	...	...	--	1	...	...
HAITI	29 MAR	26	173	3	--	45	21	3	1	35[e]	14
HONDURAS	29 MAR	1,271	1,098	2	100	6[f]	...	--	--	530	532
JAMAICA	22 MAR	8	43	--	--	1	1	3	1	6	6
MEXICO	08 MAR	4,826	3,895[g]	170	132[g]	100	106[g]	1	2[g]	740	826[g]
NICARAGUA	28 APR[a]	...	33	...	--	...	--	...	--	...	126
PANAMA	01 MAR	552	1,678	--	--	8	6	--	--	123	39
PARAGUAY	05 APR	138	57	3	4	37	29	--	1	350	209
PERU	26 APR	2,372	403	22	9	20	38	23	8	1,259	4,371
SURINAME	28 APR[a]	...	...	...	--	...	...	...	1	...	...
TRINIDAD & TOBAGO	05 APR	78	149	--	--	8	9	--	--	4	12
U.S.A.	24 MAY	8,907	8,153	4[h]	11[i]	20	18	2	47	431	496
URUGUAY	31 JAN	44	14	--	--	2	1	--	--	47	30
VENEZUELA	10 MAY	3,573	9,885	1	13	...	...	3	1	542	482

[a] Data not available for 1980. Data for 1979 through last epidemiological week in April.

[b] Source: Boletim Epidemiológico No. 3 (1980).

[c] Source: Semana Epidemiológica, 12 April 1980.

[d] Data through 29 March 1980.

[e] Data through 2 February 1980.

[f] Data through 29 February 1980.

[g] Source: Boletín Epidemiológico, 8 March 1980.

[h] Two paralytic cases.

[i] Eight paralytic cases.

-- No cases

... Data not available

Among the children who resided in the city of Manchester (U.K.) and were born in the period 1951-1960, 25,478 were born in a hospital of a particular group. This hospital group offered BCG vaccination for the newborn, which was accepted for 10,326 infants. From clinical records it was found that of the children who had tuberculosis during this period, 40 had been born in a hospital of this group. All 40 cases appeared to have occurred in the 15,152 unvaccinated children. Self-selection cannot be reasonably invoked to explain this difference in incidence. During the observation period the vaccination coverage increased whereas the risk of tuberculosis decreased. Simple comparison of those vaccinated with those not vaccinated would produce a spurious beneficial effect of the vaccination, but obviously not to the extent observed.

In 1954, in Hamburg, 6,364 infants were vaccinated at birth and 9,524 were not. Up to 1971, nine of the vaccinated and 130 of the unvaccinated children developed tuberculosis. Of the 30,370 children born in 1963, 27,371 were vaccinated and 2,999 were not. There were 11 cases of tuberculosis among the vaccinated and 16 cases among the unvaccinated children over the eight-year follow-up period. It is interesting to note that the secular trend in tuberculosis morbidity between 1954 and 1963 in the vaccinated and the unvaccinated children was similar. This would have been expected if exposure to tuberculosis infection had been the same in the two groups.

Discussion

Overall, the evidence in the published literature (not all of which is reviewed here) suggests that BCG vaccination of the newborn confers considerable protection against tuberculosis in infants and young children, although the actual degree of protection afforded by the variety of BCG products used cannot be determined accurately, and most of these products are no longer available and cannot be reproduced.

The studies mentioned refer mainly to vaccination during the first few days after birth. The strategy introduced recently in expanded immunization programs, however, is to give BCG vaccination a few months after birth. The implications of this different timing with regard to the incidence of suppurative lymphadenitis and the degree of post-vaccination tuberculin sensitivity are currently being studied.

As regards protection, it may be reassuring to note that BCG vaccination invariably appeared effective in those studies in which tuberculosis morbidity was relatively high shortly after vaccination, a situation that applies ipso facto in vaccination against infant tuberculosis. Epidemiological factors that could impair the effect of BCG vaccination in adolescents, such as sensitization with atypical mycobacteria and repeated infection, are less likely to play a role in young infants. It nevertheless appears highly indicated that both controlled prospective studies and, where possible, epidemiological evaluation be initiated as soon as possible.

Source: Wkly Epidem Rec 1:1-3, 1980

Selected Readings

The following articles on EPI diseases and vaccines have been selected for their possible interest to Newsletter readers. Copies of these articles may be obtained, at no cost, upon written request to the editor.

1. Nathanson, Neal and John R. Martin. "The Epidemiology of Poliomyelitis: Enigmas Surrounding its Appearance, Epidemicity, and Disappearance." Am J Epidem, 110(6):672-692, 1979.

2. Burguete Osorio, J.H., F. López Pintado, et al. Diagnóstico de la poliomielitis en el Instituto Nacional de Virología de la Direccción General de Investigación en Salud Pública de la S.S.A. (1969-1972)." Rev Invest Sal Pub, 34:1-12, 1974.

3. Gordon, John E., Adriaan A.J. Jansen and Werner Ascoli. "Measles in Rural Guatemala." Trop Ped, 66 (4):779-786, 1965.

4. Hayden, R.J. "Epidemiology and Nature of Measles in Nairobi before the Impact of Measles Immunization." E Afr Med J, 51(2):199-205, 1974.

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