EPI Newsletter

Expanded Program on Immunization in the Americas

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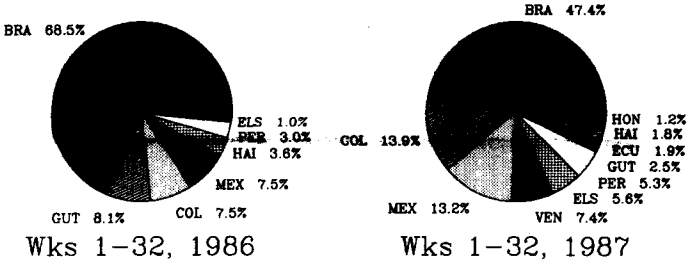
Polio in the Americas: Weeks 1-32 1986 and 1987

In 1987, 571 cases of polio were reported in weeks 1-32, as compared to 694 cases for the same period in 1986. Brazil accounted for 68.5% of all cases reported in 1986 while it only accounts for 47.4% in 1987. Countries that had small, or insignificant, numbers of polio cases are reporting substantial increases in 1987 (see Figure 1). Colombia has had an increase from 7.5% in 1986 to 13.9% in 1987 and Venezuela, reporting 7.4% of all cases in 1987 only reported one case in 1986.

Table 1 compares the polio vaccination coverage rates from 1980, 1985 and 1986. Most countries have increased their coverage rates between 1980 and 1986. Four countries show declines in vaccination coverage from 1980 to 1985 with all four increasing coverage from 1985 to 1986.

FIGURE 1. Proportion of Polio Cases Reported by Country, Weeks 1-32, 1986 and 1987



Dominican Republic and Venezuela not included 1986, 1 case.
Bolivia not included 1987, 1 case.
Source: PAHO

TABLE 1. Polio Vaccination Coverage (%) for 1980, 1985 and 1986 Region of the Americas (Provisional)

Country	1980	1985	1986
Argentina	91	69	79
Bolivia	14	30	31
Brazil	99	86	89
Chile	77	89	86
Colombia	16	62	62
Costa Rica	86	75	94
Cuba	99	88	100
Dominican Republic	46	11	...
Ecuador	19	39	43
El Salvador	42	54	70
Guatemala	42	21	36
Haiti	8	19	...
Honduras	31	58	63
Mexico	91	67	96
Nicaragua	21	70	89
Panama	45	71	70
Paraguay	14	97	100
Peru	16	47	50
Uruguay	59	58	83
Venezuela	95	59	62

Source: PAHO

In this issue:

First Meeting of Southern Cone Nations on Polio Eradication

In Asunción, Paraguay, on the 13 and 14 of July, 1987, the heads of the Expanded Program of Immunization (EPI) of the Southern Cone nations (Argentina, Chile, Paraguay and Uruguay), Bolivia and Brazil met. The objective of the meeting was to discuss a methodology for strengthening epidemiological surveillance of poliomyelitis in the Southern Cone and neighboring countries. The specific objectives of the meeting were the development of strategies for the active search for poliomyelitis cases and the preparation of a timechart of the activities to be developed in the next four months.

Summary of Country Reports

Argentina — The coverage in the permanent program is 80% in children under one year of age. Since 1984 there have been no confirmed polio cases among the suspected cases reported.

Bolivia — In 1979, 433 cases of polio were reported. In 1984 and 1985 no cases were reported. Four cases were confirmed in 1986. One confirmed case of polio has been reported in 1987.

Brazil — In 1987, 80% of the 256 reported cases (58 confirmed, 144 probables and 56 discarded) were in the northeast region. Since 1986, an active search for polio cases has been carried out in all states.

Chile — During 1987 there have been neither suspected nor probable cases of poliomyelitis. The last confirmed case was in 1975.

Paraguay — With the campaign carried out in the last three years, vaccination coverage for polio has reached over 90%. In the past 28 months there have been no registered cases of polio. Active search for cases is not being carried out.

Uruguay — The polio vaccination coverage in the country is greater than 80%. The last reported case of polio was in 1977.

Strategies

The following strategies were developed for the intensification of the polio surveillance systems of the countries participating in the meeting:

1. The determination of high risk areas by the presence or absence of cases in the last three years and the levels of vaccination coverage by district or municipality.
2. An evaluation of the coverage of the reporting system by determining the percentage of health centers that submit weekly reports.
3. The introduction of negative weekly reporting of polio cases; (whether or not there have been positive cases).

Participants in the Southern Cone Meeting with the Minister of Health of Paraguay, Dr. Adán Godoy Jiménez.

4. Training health personnel to carry out epidemiological surveillance and use the Polio Eradication Field Guide.
5. Standardization in all countries of the polio case definition according to the field guide published by PAHO/WHO and approved by the Technical Advisory Group for the EPI. (See Polio Eradication Field Guide, Technical Paper No. 6, PAHO, 1987).
6. A study of all cases of Guillain-Barré that have occurred in the past year.
7. Exchange of information and coordination among the directors of epidemiological surveillance in the border areas.
8. Active search for cases in the high-risk areas.

It is expected that the above strategies will help with the problem of under-reporting of polio cases which may result from the fact that:

1. a polio case seeks professional care, is diagnosed but not reported;
2. a polio case seeks care but is not diagnosed; or
3. a polio case that does not seek care.

Planned Activities

The participants agreed that a series of activities should be implemented not only at the country level, but also between countries, in the next four months. These activities will ensure the implementation of the strategies. A follow-up meeting will take place during the second week of December, 1987, in Foz de Iguaçú. Laboratory support will be provided by FIOCRUZ in Brazil for Bolivia, and by the Malbrán Institute of Argentina for Uruguay, Paraguay and Chile.

In the December meeting, countries will present a progress report that will summarize the activities that have been carried out, evaluate the epidemiological surveillance system in the high-risk areas, and all cases of Guillain-Barré in children under 15 years of age that have occurred in the past year. Brazil and Paraguay will give a joint presentation on the epidemiological investigations of the last two cases of polio from the area of Iguaçú.

Source: Final Report of the First Meeting of the Southern Cone Nations on Polio Eradication. Asunción, Paraguay, July 13-14, 1987.

Sterilization Alert

Highlights

- Unsterile injections can transmit infectious diseases such as hepatitis B and AIDS.
- Immunization programs must ensure that a sterile needle and a sterile syringe are used for each injection.
- Changing needles but using the same syringe does not prevent disease transmission.
- Reusable needles and syringes are recommended for the Expanded Program on Immunization in developing countries. They must be cleaned and sterilized after use.
- Disposable syringes and needles should only be used if it can be assured that they will be destroyed after a single use.
- Newly developed steam sterilizers effectively sterilize at 121°C after 20 minutes. If steam sterilization is not available, boiling for 20 minutes in a container with the lid in place will kill nearly all organisms.
- Abscesses after injections generally mean that dirty equipment has been used. Abscesses warrant immediate investigation and remedial action.
- The public should be warned to avoid any skin piercing procedure in which sterility is not assured. These procedures include injections, piercing, tattooing and scarification.

The Risk of Transmitting Disease through Injections

Injections given with unsterile syringes or needles entail several risks, including abscesses, hepatitis B and AIDS (caused by the human immunodeficiency virus - HIV).

In developing countries, the sterilization of needles and syringes by health workers is not always satisfactory. This is of special concern because, unless the safety of injections given for immunization can be assured, immunization programs cannot expect to achieve universal acceptance.

Immunization programs should continue their efforts to reach all children and women of childbearing age as quickly as possible while at the same time assuring that all injections are given with a sterile needle and a sterile syringe.

Considerations concerning the risk of HIV transmission include the following:

— The major risk of HIV infection in children is transmission from an infected mother before, during or shortly after birth.
— The risk of AIDS transmission through immunization appears to be low, even in the presence of suboptimal sterilization practices. The AIDS virus is not found in high concentrations in subcutaneous or muscle tissue. It is readily inactivated at 60°C.
— Injections for immunization represent less than 25% of all injections that a child receives in the first year of life in many developing countries. The remaining 75% are often given outside of the formal health system by persons with little or no knowledge of proper sterilization practices.
— Immunization programs now prevent a million deaths a year from measles, neonatal tetanus and whooping cough, but still some 3.5 million deaths from vaccine preventable diseases occur each year in the unimmunized. To stop immunization because of the fear of AIDS would increase deaths among children, while doing little to halt the spread of AIDS.

Dangerous Practices

Some health workers believe they are giving safe injections when in fact they are not. Their mistakes include:

— Using the same needle and syringe for more than one injection.
— Changing the needle for each injection but using the same syringe.
— Not destroying disposable syringes and needles after a single use.
— Boiling syringes or needles for too short a time.
— Boiling syringes and needles continuously during the immunization clinic, taking them from the boiling water as needed and putting them back after use.
— Not heating water to the boiling point.
— Cleaning needles and syringes with alcohol or other disinfectants.

There is no risk of an injection transmitting any type of infection if a sterile syringe and a sterile needle are used.

Injection Equipment and Sterilization

A choice can be made between three types of injection equipment:

— reusable syringes and needles
— disposable syringes and needles
— jet injectors

For a comparison of the three types see Table 1.

WHO recommends *reusable syringes and needles as the best option* for EPI in most developing countries. WHO and UNICEF have helped to develop unbreakable, reusable plastic syringes and reusable steel needles with either metal or plastic hubs which are especially suited for immunization (Figure 1).

TABLE 1. Advantages and Disadvantages of Three Types of Injection Equipment

	ADVANTAGES	DISADVANTAGES
Reusable Syringe and Needle	• Can be resterilized many times • Unbreakable • Low cost per injection	• Risk of disease transmission if not sterilized properly • Need for an energy source to carry out sterilization • Needles can become 'barbed'
Disposable Syringe and Needle	• Eliminates transmission risk IF properly disposed of after use • No need for sterilization	• Increases transmission risk if not properly disposed of after a single use • Requires a well supervised destruction system • Increases per capita injection cost
Jet Gun	• Suitable for large numers of immunizations given at each session • Sterilization required only at the end of each working day	• Risk of disease transmission has not been clarified • Maintenance problems • Initial high cost of instrument

The use of reusable syringes and needles calls for good sterilization practices, which involve the following:

- Syringes and needles must be throughly rinsed with water immediately after use.
- Syringes and needles must be taken apart so that all surfaces will be exposed to the steam or boiling water.
- Steam sterilization should be carried out in pressure-cooker type sterilizers specially designed for the sterilization of injection equipment (Figure 2). These sterilizers are available through UNICEF and enable steam sterilization at 121°C. This steaming for 20 minutes will kill all pathogenic micro-organisms including tetanus spores.
- Boiling in water for 20 minutes kills all non-spore forms of organisms known to cause disease in humans, including bacteria, viruses and fungi. If steam sterilization is not available, boiling is an acceptable alternative, but it should be done in a container with the lid closed so that heat and steam stay inside.

Disposable syringes and needles are usually not disposed of and are frequently reused without proper sterilization. Proper sterilization, in fact, can destroy them. They often fall into the hands of people who are not trained health workers, but who nevertheless give injections. Disposable syringes and needles are recommended only in circumstances where their destruction after a single use can be assured and where a continuous supply can be guaranteed.

One make of *jet injector* has been implicated in the transmission of hepatitis. It is proving difficult to show that other makes of injector are free from the risk of transmitting disease, although no other make has been directly implicated in such transmission. WHO and UNICEF recommend that jet injectors be restricted to use in special circumstances where the use of needles and syringes is not feasible because of the large numbers of persons to be immunized within a short period of time.

Training and Equipment

Health workers cannot use proper techniques unless they are trained in those techniques. Because proper sterilization requires extra effort, training must be reinforced with supervision and motivation to assure that the extra effort is taken.

For a long time, syringes and needles have been in short supply in health services in developing countries. Storekeepers have learned to hoard them. It is not unusual to find health workers working with only a few syringes and needles while the store is filled with them.

The development of inexpensive and unbreakable syringes and needles means that these longstanding shortages should no longer occur. The supply of syringes, needles and sterilizers must be adequate to use a sterile needle and a sterile syringe for each injection. The work of a health center should not be interrupted by the need to sterilize.

FIGURE 1. Reusable Plastic Syringes and Reusable Steel Needles as Recommended by EPI/WHO and UNICEF

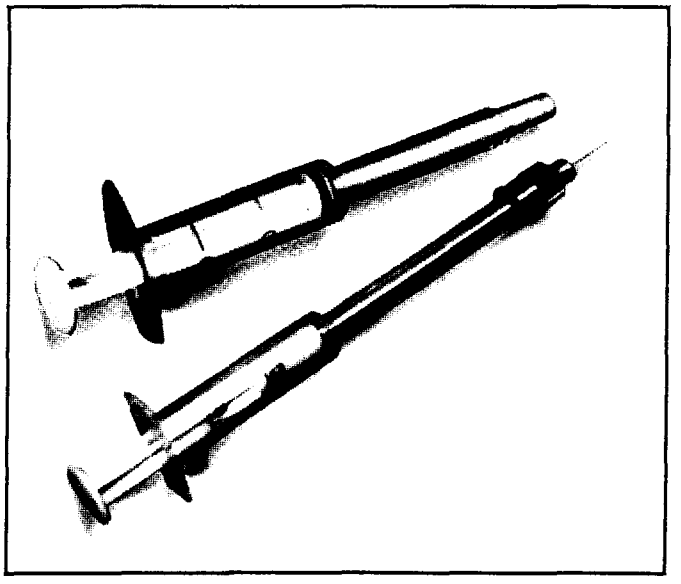
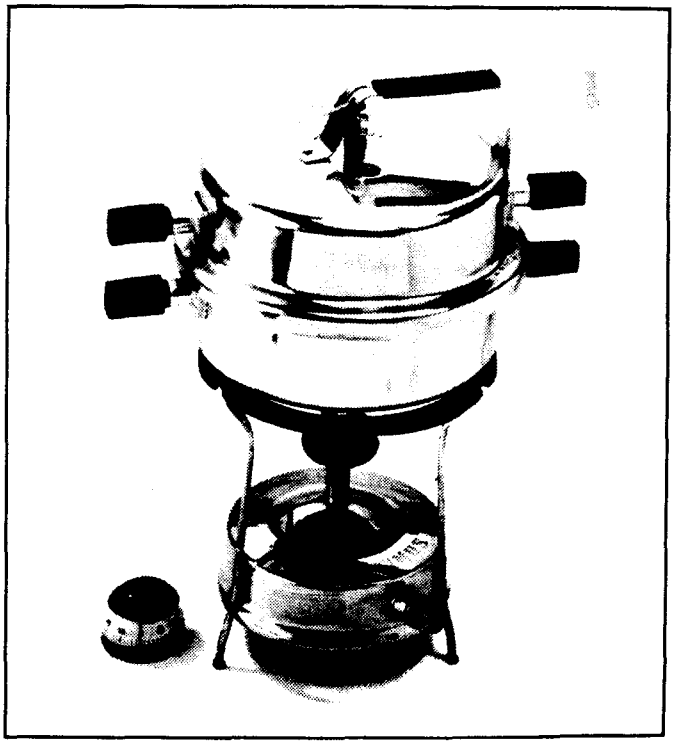


FIGURE 2. Pressure Cooker Type Steam Sterilizer for Syringes and Needles



Cost of Sterilization

Failure to eliminate the risks of injections cannot be excused on financial grounds. The cost of proper sterilization is only 2% of the total cost to immunize a child. Table 2 gives the current cost of needles and syringes.

Abscesses: an alarm signal

An abscess after an injection generally means that either the injection equipment or the vaccine was contaminated.

The abscesses of primary concern ("pyogenic" abscesses) tend to be hot and painful. They are caused by bacteria which can be cultured from the abscesses. Their occurrence is frequently grouped by time and place, resulting in a cluster of children presenting with abscesses.

Abscesses can also be caused by contamination of the vaccine. Therefore:

— Discard all partly used vials at the end of the immunization session.
— Do not leave a common needle for withdrawing vaccine in the stopper of a vial. Use the same needle to load the syringe and to inject the child.

In some cases, injection of a vaccine may be associated with a so-called "sterile" abscess. These are small, are not filled with pus and occur as rare isolated events. They are thought to be provoked by chemical irritation rather than by infectious agents.

Health workers should routinely ask parents if any difficulties were experienced following previous immunization injections and investigate the cause of any abscesses reported.

Staff who see unsafe injection practices should react to them in the same way they would react to an epidemic of a dangerous infectious disease: immediate remedial action should be taken.

Warn the Public

Action to ensure safe injection should not be confined to the health services. The public needs to know of the dangers of unsafe injections. They should be able to recognize injection practices which are obviously wrong, whether these occur within or outside of the health services.

The public should also be aware of risks involved with a number of traditional practices in which the skin is pierced with unsterile instruments. These practices include tatooing, piercing of ears, circumscision, and scarification. Any injections given by untrained people also constitute major risks.

TABLE 2. Cost of Reusable Needles and Syringes for the EPI

Item	Size	Use	UNIPAC No.	UNIT PRICE (US$) (1986)
Needle (Luerlock)	10mm, 26 gauge	For BCG	07-515-02	0.04
Needle (Luerlock)	32mm, 22 gauge	For other vaccines	07-505-00	0.03
Needle (Luerlock)	76mm, 18 gauge	For reconstitution of vaccine	07-488-00	0.06
Syringe	0.1 ml	BCG, single dose	07-822-15	0.55
Syringe	1.0 ml	Other vaccines, single dose	07-822-20	0.22
Syringe	5.0 ml	For reconstitution	07-819-05	0.17

Source: WHO/EPI, Update July 1987.

Reported Cases of EPI Diseases

Number of reported cases of measles, poliomyelitis, tetanus, diphtheria and whooping cough, from 1 January 1987 to date of last report, and for same epidemiological period in 1986, by country

Subregion and Country	Date of last report	Measles		Polio-myelitis§		Tetanus				Diphtheria		Whooping Cough	
						Non-neonatal		Neonatal					
		1987	1986	1987	1986	1987	1986	1987	1986	1987	1986	1987	1986
NORTHERN AMERICA													
Canada	04 Jul.	1 747	13 341	—	—	1**	3**	...	...	1	2	531	1 069
United States	01 Aug.	3 002	4 827	—	—	21**	20**	...	...	1	—	1 070	1 565
CARIBBEAN													
Antigua & Barbuda	28 Mar.	—	—	—	—	—	—	—	—	—	—	—	—
Bahamas	18 Jul.	25	24	—	—	—	—	—	—	—	—	—	—
Barbados	23 May.	2	...	—	—	—	1	—	—	—	—	—	—
Cuba	25 Abr.	435	1 294	—	—	3	5**	—	...	—	...	30	127
Dominica	20 Jun.	72	29	—	—	—	—	—	—	—	—	—	—
Dominican Republic	23 May.	99	241	—	1	13	18	3	5	23	20	22	74
Grenada	18 Jul.	4	3	—	—	—	—	—	—	—	—	1	7
Haiti	*	...	...	10	25	...	...	...	...	...	...	...	...
Jamaica	*	...	...	—	—	...	...	...	...	...	...	...	...
St. Christopher/Nevis	*	...	...	—	—	...	...	...	...	...	...	...	...
Saint Lucia	31 Jan.	1	—	—	—	—	—	—	—	—	—	—	—
St. Vincent and the Grenadines	*	...	...	—	—	...	...	...	...	...	...	...	...
Trinidad & Tobago	23 May.	214	1 497	—	—	3	1	—	—	—	—	5	4
CONTINENTAL MID AMERICA													
Belize	18 Jul.	194	...	—	—	—	...	—	...	1	...	—	...
Costa Rica	25 Apr.	2 202	5	—	—	—	1**	—	...	...	—	35	28
El Salvador	28 Feb.	19	36	32	7	...	5	1	2	—	—	14	71
Guatemala	28 Feb.	33	...	14	56	...	...	...	...	...	...	23	...
Honduras	23 May.	162	286	7	5	9	2	3	4	—	—	113	33
Mexico	31 Jan.	65	403	75	52	15	...	...	...	15	—	134	35
Nicaragua	28 Feb.	163	425	—	—	...	...	1	5	—	—	19	84
Panama	28 Mar.	1 037	1 509	—	—	1	2	1	—	—	—	4	14
TROPICAL SOUTH AMERICA													
Bolivia	*	...	...	1	—	...	...	...	...	...	...	...	...
Brazil	25 Apr.	23 135	15 829	270	474	470	510	118	128	390	404	6 161	5 448
Colombia	*	...	...	79	52	...	...	...	...	...	...	...	...
Ecuador	02 Jan.	839	...	11	0	88	...	74	...	11	...	907	...
Guyana	*	...	...	—	—	...	...	...	...	...	...	...	...
Paraguay	25 Abr.	89	132	—	—	17	13	13	14	7	9	52	57
Peru	25 Apr.	375	...	30	21	8	...	12	...	1	...	314	...
Suriname	28 Mar.	—	20	—	—	—	—	—	...	—	—	—	—
Venezuela	20 Jun.	11 274	6 368	42	1	1	38	8	6	1	1	454	1 496
TEMPERATE SOUTH AMERICA													
Argentina	31 Jan.	398	304	—	—	9**	5**	...	...	—	—	135	261
Chile	20 Jun.	889	4 081	—	—	7	12	2	—	78	111	13	15
Uruguay	20 Jun.	177	19	—	—	1	1	—	—	—	—	291	472

* No 1987 reports received.

** Tetanus data not reported separately for neonatal and non-neonatal cases. Total tetanus data is reported in non-neonatal column.

§ Data for polio is through week 32 (ending 15 August 1987).

— No cases

... Data not available

EPI Sterilization Policies
Region of the Americas

Country	Sterilization Policy Yes/No*	Disposable Injection Equipment	Reusable	Combination
Antigua and Barbuda	Y			C
Argentina	Y			C
Bahamas	N			
Barbados	Y	D		
Bolivia	Y			C
Brazil	Y	D		
Canada	N	D		
Chile	Y			C
Colombia	N	D		
Costa Rica	N			
Cuba	Y		R	
Dominica	N			
Dominican Republic	Y			C
Ecuador	Y	D		
El Salvador	Y			C
French Guyana				
Grenada	N			
Guatemala	N			C
Guyana	N			
Haiti	N			
Honduras	N			
Jamaica	Y			C
Mexico	Y	D		
Nicaragua	Y			C
Panama	Y	D		
Paraguay	Y			C
Peru	Y			C
St. Christopher & Nevis	Y			C
St. Lucia	N			
St. Vincent & Grenadines	N			
Suriname	Y	D		
Trinidad & Tobago	N			
Uruguay	N			C
USA	N			
Venezuela	Y	D		

* A blank indicates no information is available
Source: PAHO

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