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STATUS OF SMALLPOX ERADICATION IN THE AMERICAS AND
ESTIMATED REQUIREMENTS FOR THE ERADICATION OF SMALLPOX
IN THE AMERICAS

Introduction

Because of its epidemiological characteristics smallpox is one of the infectious diseases which best lends itself to eradication. It is a specific human disease which is transmitted directly, without intermediate agents. The only known reservoir of smallpox virus is man.

Furthermore, a highly effective vaccine is available, giving protection against the disease. Finally, with the advent of freeze-dried vaccine, the various problems involved in the use of glycerinated vaccine have been solved.

New mechanical instruments make it possible to administer the vaccine in the uniform manner and with great efficiency. It is thus possible to shorten the period required for, and the operational costs of, smallpox vaccination programs.

Nevertheless, between 1948 and 1965 the countries and territories of the Americas reported 171,140 cases of smallpox to the Pan American Sanitary Bureau. The disease attacked all age groups indiscriminately, and without distinction as to sex or race. In some countries the disease encountered favorable conditions and became endemic. In others, national smallpox vaccination programs led to its disappearance. In a third group of countries, where the disease had disappeared, it was subsequently reintroduced.

Canada last reported an imported case of smallpox in 1962. The United States of America reported 2 cases in 1955 and one case in 1957.

Smallpox disappeared from Mexico in 1952.

Except for Guatemala, where one smallpox case was notified in 1953; Panama, where there were cases in 1947 and 1958; and British Honduras which reported cases in 1948, the countries of Middle America have been free of the disease.

In the Caribbean Area, cases occurred in Martinique in 1951; in the Netherland Antilles in 1951; and in Trinidad and Tobago in 1948.

In South America smallpox disappeared from Bolivia in 1961; however, four cases were reported in 1964, but none in 1965. In Chile smallpox disappeared in 1954, but in 1959 a secondary case was reported resulting from an imported case; since then the country has been free of the disease. No new case of smallpox has been reported in Ecuador since 1964. Uruguay reported no cases in 1965. Venezuela has not reported a case since 1957 except in 1962 when it reported 11 cases.

In 1965 smallpox was still present in Argentina, Brazil, Colombia, Paraguay and Peru (see Annex No. 1).

Present status of smallpox eradication programs in the Americas

Smallpox was eradicated in Paraguay (1961) and Peru (1955) as a result of national vaccination programs. Subsequently the disease was reintroduced into both countries.

In Colombia a national vaccination program, begun in 1955 and completed in 1961, did not succeed in eradicating smallpox, since cases of the disease have been reported continuously since 1957. In 1948, there were 7,356 cases in Colombia, whereas in 1965 there were only 149. Incidence of the disease in the country was less in 1963 when there were 4 cases, but from that year onwards it has been increasing again.

Smallpox has disappeared from Bolivia, Chile, Ecuador, Mexico, and Venezuela, thanks to intensive vaccination programs carried out in short periods of time with good quality vaccine and covering more than 80% of the population in each of the various geographical sectors of these countries.

Smallpox still persists in Argentina and Brazil owing to premature interruption of the programs, or their incomplete execution.

The Pan American Sanitary Bureau cooperated in smallpox vaccination programs in Bolivia, Colombia, Ecuador, Paraguay, and Peru. A vaccination program is under way in Bolivia at present, and an agreement has been concluded with Brazil to begin a national program for which the Organization is finishing equipment for the transportation of personnel, as well as jet injectors. Equipment for three laboratories producing freeze-dried smallpox vaccine had been previously provided.

Generally speaking, vaccination programs have not been followed by maintenance or consolidation programs. Nor have epidemiological surveillance services been organized.

The Governing Bodies of the Organization have repeatedly expressed their concern regarding smallpox in the Americas and their desire to see the disease eradicated, as is shown by successive resolutions adopted by the Executive Committee, the Directing Council and the Pan American Sanitary Conference.

Furthermore, ever since its Third Session, the World Health Assembly has been drawing attention to the smallpox problem throughout the world and inviting and urging countries to eradicate the disease.

Work done by PASB/WHO

In accordance with the instructions of the Governing Bodies, the assistance given by PASB/WHO to the countries may be summarized as follows:

a) Organization of laboratories for production of freeze-dried smallpox vaccine; training of local personnel in techniques of large-scale freeze-dried smallpox vaccine production; provision of laboratory equipment in varying amounts, according to the countries' needs. As a result, Argentina, Bolivia, Brazil, Colombia, Cuba, Chile, Ecuador, Mexico, Peru, Uruguay and Venezuela now have suitably equipped laboratories staffed by technicians trained in the production of glycerinated and dried smallpox vaccine in sufficient amounts to meet the internal needs of each country as well as to supply vaccine to non-producing countries that require it. In addition, the reference services of the Statens Seruminstitut in Copenhagen, Denmark, were made available to national laboratories for testing the purity and potency of the vaccines they produce.

b) Advisory services for the study of the smallpox problem and the organization, implementation, and evaluation of vaccination programs. The advisory services provided have been both short and long-term. Physicians and health inspectors have worked together with national experts to ensure the success of these programs.

c) Cooperation in the form of supplies and equipment has been given through the United Nations Expanded Program of Technical Assistance.

d) Advances have been made in the study of the use of jet injectors for the administration of smallpox vaccine, in both urban and rural areas. A study of this kind was made by short-term consultants in Brazil in 1965. The experience gained there will make it possible to use this method in future programs.

e) In accordance with the request of the XV Pan American Sanitary Conference, the Pan American Sanitary Bureau prepared and submitted to the XIII Meeting of the PAHO Directing Council, a set of criteria for the eradication of smallpox, which were unanimously approved.

f) With a view to determining the kind and amount of international assistance needed by the countries in order to eradicate smallpox from the Western Hemisphere, and in accordance with the request contained in Resolution XXX of the XVI Directing Council which met in Washington, D.C. in 1965, a survey was undertaken in the countries in the Americas in the first three months of 1966.

Annex 2 contains a summary of the kind of technical assistance the countries are requesting from PASB/WHO for the study, organization, conduct and evaluation of smallpox eradication programs, national smallpox vaccination programs, maintenance programs, and programs for the organization of epidemiological surveillance services.

Smallpox vaccination programs. General characteristics

Smallpox vaccination programs should be carried out in the following three stages: preparation; implementation; maintenance and epidemiological surveillance.

1. Preparatory stage. In this stage data should be collected on the smallpox problem, and a study made of working techniques (effectiveness, cost, yield, and acceptability to the public), as well as a study of available resources. Consideration of these various aspects should lead to the establishment of program objectives and the preparation of a corresponding plan of operations. Experience has shown how useful it is for the preparation of the smallpox eradication program to be carried out jointly by the authorities responsible for the program and the permanent health service authorities at the central, intermediate and local levels.

The program itself should be carried out through, or with the participation of, the regular health services, where they exist. Where they do not exist, an independent or vertical service will be responsible for the program. In any event efforts should be made to ensure that these independent or vertical services become the foundation stone of the organization of permanent health services.

Although the objective of the programs is to vaccinate the entire population of a country in the intensive phase of the program, it should be borne in mind that, no matter how efficient the program execution is, there will always be a percentage of the population that are not vaccinated. The vaccination of not less than 80% of the population of each of the various geographical sectors of the country, and of each of the various age groups, very probably prevents the transmission of the disease.

In view of the characteristics of the transmission of smallpox, from person to person, the most densely populated areas are those most exposed to the disease, and those where it is likely to be on a major scale, since the spread of the disease is easy and rapid. Hence, without depreciating the value of the homogeneous vaccination of not less than 80% of the population, it is recommended that special emphasis be put on urban communities, and that efforts be made to increase the percentage of the population protected to the highest possible figure so as to reduce the possibility of a smallpox patient infecting a susceptible person. Although it is recognized that, generally speaking, the cost per vaccinated person rises rapidly as vaccination level reaches 100% of the population, in urban areas, because of the very density of the inhabitants, and their spontaneous attendance at vaccination centers, it is possible to reach 90% of the population without an appreciable increase in the cost per person vaccinated. The same holds true of the school population, and of concentrated population centers such as military installations.

Ordinarily, three methods are used in mass vaccination programs to reach the population to be vaccinated against smallpox. One is the house-to-house method; another is the multiple small group method; and the third tackles large population groups.

The house-to-house method covers a high percentage of a population as well as certain age groups such as pre-school age children that are otherwise difficult to reach. The method is an expensive one.

The multiple small group method gives higher returns and is relatively inexpensive. The method consists in convening 30 or 40 persons, in other words, the inhabitants of six to eight houses, to attend at a given place. It is very useful in rural areas, since the inhabitants need not travel long distances to the place of vaccination, which is chosen so as to be half-way between the houses that are farthest apart.

Once they are brought together, 30 persons can be vaccinated in a very short time, for example in half an hour, by one vaccinator assisted by one volunteer from among the local residents. However, it is preferable if vaccinators travel in pairs, since this ensures that vaccination will be rapidly performed. For reasons of economy it may be advisable to utilize volunteers to assist the vaccinator in various minor tasks.

One team chief, who also drives his own vehicle, could carry three pairs of vaccinators, drop them in three different places where groups of people are attending, and later pick them up again and take them to still other places. This ensures high performance in terms of the number of persons vaccinated per vaccinator-day.

Occasionally it may be necessary in rural areas to combine the house-to-house method with the multiple small group method.

The large population group method is applicable almost exclusively to urban areas where a considerable number of persons can be readily assembled in one place without their having to travel long distances. This makes it possible to vaccinate large numbers of persons per vaccinator-day at low cost. Experience has shown that in cities there always remain some persons who are not vaccinated because they fail to present themselves at the appointed place. It is therefore necessary to use the house-to-house method as a supplementary measure. In addition, this method makes it possible to vaccinate many children who have failed to attend at the place of vaccination because of fear or for some other reason.

In administering smallpox vaccine, the scarification and the multiple pressure methods have been used without distinction. Both give good results when carried out correctly.

Jet injectors have now been in use for some time for the inoculation of reconstituted freeze-dried smallpox vaccine. By means of a special adapter the vaccine is injected intradermally in 1/10 ml. amounts. Trials of this method have given a high proportion of "takes" in primo-vaccination. Use of this instrument ensures a standard vaccination procedure, and makes post-vaccinal supervision of vaccinees unnecessary.

Jet injectors are high performance instruments but their costs are also high. The number of vaccinations that can be given in a day, under normal working conditions, varies according to the type of instrument used. With a jet injector worked by a foot pump, a figure of between 2,500 and 3,000 vaccinations can be obtained. A jet injector worked by a hand pump will give between 200 and 250 vaccinations per working day.

Because of their high cost, jet injectors must be used at their full capacity, without falling below a given limit under which the cost per person vaccinated will cease to be economical.

Clear, precise, and timely public information, combined with community organization, should make it possible for the methods of work selected to yield maximum results at minimum cost without sacrificing quality. This is especially true when jet injectors are used since, as mentioned above, they require a steady flow of persons to be vaccinated.

The preparation of a work program is a project by itself. This fact must be borne in mind in smallpox vaccination projects if it is desired that the use of jet injectors is to bring with it the savings they do when their use is well-planned and the periods of program execution are to be shortened.

The plan of operations or timetable is nothing more than the arrangement of program activities up to their completion in chronological order, indicating the methods and techniques to be used for the work.

2. Implementation. This is the stage in which the established plan of operations is carried out.

Since the plan of operations gives the number of activities to be performed per unit per time, a continuous evaluation of program performance is necessary so that appropriate changes may be introduced when the conditions call for it in order that the objectives may be attained within the time-limit laid down.

Evaluation of a vaccination program is therefore a continuous process performed at the different stages of the program, but no evaluation can be made without the prior organization of a data-recording system.

Finally, it should be remembered that evaluation is both quantitative and qualitative.

3. Maintenance and epidemiological surveillance. The purpose of the maintenance stage is to maintain the population protected against smallpox in the years to come.

Important as it is to protect a high percentage of the population against smallpox, it is just as important to subsequently maintain that percentage. The maintenance phase is frequently an aspect to which insufficient attention is given. Because of this, the disease has been reintroduced and subsequently spread in areas from which it has been eliminated after great efforts. This stage should commence immediately the vaccination program is completed in each geographical area of a given country or territory. The maintenance program should continue until smallpox has been eradicated in all countries where it exists, and at least three years have elapsed since the last smallpox case was notified in the Hemisphere.

In the maintenance program the following should be vaccinated annually: all new-born infants, and immigrants not previously vaccinated; and approximately 20% of the population of each of the various age-groups and of each of the various sectors of the country should be revaccinated, in addition to those immigrants who cannot produce evidence of effective vaccination within the past three years.

Special attention should be paid to the maintenance program in areas bordering on countries where smallpox still exists, and in particular the frontier zone should be given preferential treatment. Equal care should be given to densely populated urban areas and to concentrations such as school children and soldiers among whom the disease can spread rapidly if they are not adequately protected.

There are some groups of persons who will require special attention because they are more exposed to the risk of contracting the disease than the remainder of the population. Such groups include physicians, nurses, auxiliary medical personnel, personnel working in the laundries of hospitals and medical services, and those working in pathological departments, laboratories, etc. The same holds true of immigration and customs officers in ports of entry and to the crews of ships, aircraft, trains, buses, etc. engaged in international travel. It also applies to persons travelling to areas infected, or suspected of being infected with smallpox. All such groups should be periodically vaccinated at intervals not exceeding five years.

Systematic application of the provisions of the International Sanitary Regulations is also recommended.

An epidemiological surveillance service has the following functions, among others: a) detection and prompt notification of every suspect case of smallpox; b) definitive diagnosis by means of clinical, epidemiological, and laboratory tests; c) adoption and implementation of all measures necessary to prevent the spread of the disease; and d) investigation of the reasons why smallpox cases are occurring, particularly in areas whose population is protected by vaccination.

The epidemiological surveillance service should begin to function in each geographical area of the country as and when the smallpox vaccination programs are completed there.

The organization of an epidemiological surveillance service calls for the existence of a suitable system for recording data relating to smallpox.

As smallpox incidence decreases, the clinical experience of physicians in diagnosing the disease will also diminish. The problem becomes further aggravated when attenuated forms of smallpox occur, which may be confused with other diseases. In future, therefore, any diagnosis of a smallpox or suspect smallpox case should be made on the basis of a combination of clinical examination, laboratory tests, and epidemiological investigation. In 1966, PAHO/WHO will organize a course on the laboratory diagnosis of smallpox, and two courses in both 1967 and 1968.

Responsibility for the maintenance program and the epidemiological surveillance service rests with the permanent health services. Where no such services have been established, it will be necessary to adopt the necessary measures to ensure that the activities of the maintenance and epidemiological surveillance program will be regularly carried out.

Continental Smallpox Eradication Program

Natural conditions, although they are adverse in some countries, should not be allowed to prevent the carrying out of a smallpox eradication program. A combination of the various means of transport available will ensure access to most of the places where the vaccine should be employed. The information and communications media existing in the countries will make it possible to give health education and orientation to the population. The network of health and medical care establishments, if properly utilized, should assist considerably in implementing the program, shortening the period required, and reducing operating costs. Moreover, the countries are in a position to produce all the vaccine necessary for a continent-wide smallpox eradication program.

Everything seems to show, therefore, that it is possible to eradicate smallpox in the Americas by immunizing the population at risk, within a relatively short time, once the Governments provide all the resources necessary and solve the administrative problems that might hamper the program. Once this is done, administrative assistance will become more valuable, and can take the form of technical advice, basic working equipment which is not produced in the country, or which it would be more economical to import.

Apparently, although good coordination of all health services can be achieved for the smallpox eradication program or national smallpox vaccination programs, the same cannot be said of maintenance programs. This underlines the need to carry out smallpox vaccination programs simultaneously in as short a time as possible. If this is done and smallpox disappears, and good epidemiological surveillance services are established, then the intervals between revaccinations may be gradually increased, and it would be easier to observe them. Costs would also be substantially reduced and the money thus saved can be spent on other health activities. The work of epidemiological surveillance services will also be facilitated.

Technical and financial considerations lead PASB/WHO to propose the following plan of action for eradicating smallpox from the American Continent:

1. In countries where smallpox exists, the population should be vaccinated against smallpox. Argentina, Brazil, Colombia, Paraguay, and Peru fall into this group. Bolivia has a vaccination program under way. Uruguay is also included in this group on the grounds that it had smallpox cases in 1964 and lies between two countries where smallpox is endemic.

2. In countries where smallpox has been eradicated as the result of well-conducted vaccination programs, but which border on others where the disease exists, maintenance programs and epidemiological surveillance programs should be established or continued as the case may be. Chile, Ecuador and Venezuela constitute this group.

3. In countries where smallpox does not exist, but which do not fall into the preceding group, the necessary safety measures should be adopted to prevent the introduction and spread of the disease, should the population become exposed to the risk of infection. This group of countries should make an effort to raise the level of immunity of the population against smallpox, preferably through the national health services, and as part of wider immunization programs.

In order of priorities, international assistance should first be concentrated on countries where smallpox still exists (the group indicated in paragraph 1 above), and next on countries which at present are, or should be, conducting maintenance and epidemiological surveillance programs, and which have the characteristics indicated in paragraph 2 above.

Smallpox eradication programs should be carried out simultaneously over periods not exceeding four years, at the end of which the disease should have been eliminated, while the maintenance and epidemiological surveillance programs should be fully developed and should cover the entire territory of the countries concerned. It is of great importance that the execution of programs in the different countries be synchronized, and also that they should all terminate simultaneously.

In accordance with priorities indicated in paragraphs 1 and 2 above, an estimate has been made of the cost of international assistance and this is shown in Annexes, 3, 4, 5, and 6. In these annexes, the countries where smallpox exists and where eradication programs should be carried out, have been separated from the countries where the disease has been eradicated, and maintenance and epidemiological surveillance programs are called for. The total amount of international contributions to programs in these two groups of countries, plus the cost of inter-country programs, comes to a total of US\$2,470,284 spread over a four-year period as follows: first year, US\$1,556,280; second year, US\$446,940; third year, US\$310,940; and fourth year, US\$156,124.

Annex 7 shows the amount each country proposes to spend on smallpox eradication and on subsequent maintenance and epidemiological surveillance programs. The same annex also indicates the international contribution to country programs and inter-country projects. The total cost of these programs comes to US\$16,081,121, of which 84.65% (US\$13,610,841) would be contributed by the countries, while the international contribution would amount to 15.35% (US\$2,470,284).

Annexes

ANNEX 1

SMALLPOX CASES REPORTED IN THE AMERICAS, 1955 - 1965

COUNTRY	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	(a) 1965
Argentina	55	86	335	27	36	65	6	b) 2	-	c) 13	b) 15
Bolivia	372	499	1310	183	7	1	-	-	-	5	-
Brazil	a) 2580	d) 2385	d) 1411	d) 1544	d) 2958	a) 3010	8473	9450	6211	e) 2673	f) 1333
Canada	-	-	-	-	-	-	-	b) 1	-	-	-
Chile	-	-	-	-	1	-	-	-	-	-	-
Colombia	3404	2572	2145	2009	950	209	16	41	g) 4	g) 21	149
Ecuador	1831	669	913	863	1140	2185	496	204	45	h) 42	-
United States	i) 2	-	i) 1	-	-	-	-	-	-	-	-
Panama	-	-	-	j) 8	-	-	-	-	-	-	-
Paraguay	57	132	103	21	-	35	-	-	-	7	32
Peru	-	-	-	-	-	-	-	-	865	454	18
Uruguay	45	42	2	-	-	k) 19	g) 1	k) 10	b) 1	b) 3	-
Venezuela	2	l) 4	-	-	-	-	-	11	-	-	-
TOTAL	8348	6389	6220	4655	5092	5524	8992	9719	7126	3218	1547

- a) Information based on data received up to 20 June 1966.
b) Includes 1 imported case
c) Includes 10 imported cases
d) Incomplete data: Guanabara State and capitals of others States, 1954-1960
 (and Rio Grande do Sul State, 1958-1960)
e) Data for all States
f) Data for 12 States and Capitals of 2 other States
g) Confirmed cases only
h) Hospital data, cases not confirmed
i) Cases did not present all symptoms required for smallpox diagnosis
j) Includes 4 imported cases
k) Includes 2 imported cases
l) Clinical diagnosis not supported by epidemiological evidence.

ANNEX 2

TYPE OF ASSISTANCE REQUESTED BY COUNTRIES FOR SMALLPOX ERADICATION PROGRAMS, NATIONAL
VACCINATION PROGRAMS, OR MAINTENANCE PROGRAMS

	Technical Assistance						Health Education Material	Dried Smallpox Vaccine	Jet Injectors	Jeeps	Boats	Field Equipment	Smallpox Vaccine Freeze Drying Equipment	Salaries and Per Diem National Personnel
	Organization Execution and Evaluation	Training of Vaccination Personnel	Vaccine Production and/or Control	Laboratory Diagnosis of Smallpox	Clinical Diagnosis, Treatment, Isolation	Statistics								
Argentina	yes	yes	-	-	-	yes	yes	-	yes	yes	yes	yes	-	-
British Honduras	-	-	-	yes	yes	yes	yes	yes	-	yes	-	yes	-	-
Bolivia	yes	yes	yes	yes	yes	yes	yes	-	-	-	-	yes	-	-
Brazil	yes	yes	-	yes	-	yes	-	-	yes	yes	yes	yes	-	yes
Colombia	-	-	-	-	-	-	-	-	-	-	-	-	-	yes
Costa Rica	-	-	yes	yes	yes	-	yes	yes	yes	yes	-	yes	-	-
Cuba	-	-	-	yes	yes	-	-	yes	yes	-	-	-	-	-
Chile	-	-	yes	-	-	-	yes	-	yes	yes	-	yes	yes	-
Ecuador	yes	-	-	-	-	yes	yes	-	yes	yes	yes	yes	-	-
El Salvador	-	-	yes	yes	-	-	-	yes	-	yes	yes	-	-	-
Guatemala	yes	yes	-	yes	yes	yes	yes	yes	yes	yes	-	yes	-	-
Haiti	yes	yes	-	yes	yes	yes	yes	yes	-	yes	-	yes	-	-
Honduras	yes	yes	-	-	yes	yes	yes	yes	yes	yes	-	yes	-	-
Mexico	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nicaragua	yes	-	-	yes	yes	yes	yes	yes	yes	yes	-	yes	-	-
Panama	yes	-	-	-	-	-	yes	yes	yes	yes	-	yes	-	-
Paraguay	yes	-	-	-	-	-	yes	yes	-	yes	-	yes	-	-
Peru	-	-	-	yes	yes	-	yes	-	yes	yes	-	yes	-	-
Dominican Republic	-	-	-	-	-	-	-	yes	yes	yes	-	-	-	-
Uruguay	yes	yes	-	yes	-	yes	yes	-	-	yes	-	-	-	-
Venezuela	-	-	-	-	-	-	yes	-	yes	yes	-	-	-	-

DISTRIBUTION AND COST OF INTERNATIONAL STAFF, BY YEAR, SMALLPOX ERADICATION PROGRAMS AND FOR MAINTENANCE
AND EPIDEMIOLOGICAL SURVEILLANCE PROGRAMS

PROGRAMS	Number of consultant months								Cost of International Staff (salaries, travel and per diem)								TOTAL COST
	1st. year		2nd. year		3rd. year		4th. year		1st. year		2nd. year		3rd. year		4th. year		
	Epid.	Est.	Epid.	Est.	Epid.	Est.	Epid.	Est.	Epid.	Est.	Epid.	Est.	Epid.	Est.	Epid.	Est.	
Argentina	12	12	12	12	12	12			27.554	24.854	27.554	24.854	27.554	24.854			157.224
Paraguay																	
Uruguay																	
Brazil	36	12	36	12	36	12	36	12	76.662	24.854	76.662	24.854	76.662	24.854	76.662	24.854	406.064
Bolivia																	
Peru	12	12	12	12	12	12			27.554	24.854	27.554	24.854	27.554	24.854			157.224
Ecuador																	
Intercountry	12	12	12	12	12	12	12	12	27.304	27.304	27.304	27.304	27.304	27.304	27.304	27.304	213.432
Subtotal:	72	48	72	48	72	48	48	24	159.074	101.866	159.074	101.866	159.074	101.866	103.966	52.158	
Total:	120		120		120		72		260.940		260.940		260.940		156.124		938.944

Epid. = Epidemiologists
Est. = Statisticians

ESTIMATED COST OF INTERNATIONAL ASSISTANCE TO SMALLPOX ERADICATION PROGRAMS AND TO MAINTENANCE AND EPIDEMIOLOGICAL SURVEILLANCE PROGRAMS, BROKEN DOWN BY COUNTRY AND ITEM

PROGRAMS	JET INJECTORS				TRANSPORTATION							Field Equipment	Health Education	Freeze Drying Equipment	Vaccine	Lab. Diagnostics (4 courses)	Statistics (Team)	Training of Administrative Personnel (2 courses)	Continuing Agencies	International Staff	Total Cost	OVERALL TOTAL
	Foot Type	Hand Type	Foot Type	Hand Type	Total Cost	Jeeps	Launches	Motors	Jeeps	Launches	Motors	Total Cost										
Argentina	20	45	14,600	7,200	21,800	40	-	-	152,000	-	-	152,000	10,000							52,408	246,208	EPIDEMIOLOGICAL SURVEILLANCE PROGRAMS
Bolivia	3	15	2,190	2,400	4,590	-	-	-	-	-	-	-	3,000		2,000					52,408	64,998	
Brazil	40	154	29,200	24,640	53,840	25	13	20	95,000	130,000	40,000	265,000	30,000							406,064	774,904	
Colombia	18	45	13,140	7,200	20,340	17	4	-	64,600	40,000	-	104,600	-							-	124,940	
Paraguay	3	9	2,190	1,440	3,630	5	-	-	19,000	-	-	19,000	5,000		2,000					52,408	85,038	
Peru	15	39	10,950	6,240	17,190	20	4	4	76,000	32,000	-	108,000	10,000							52,408	192,598	
Uruguay	5	8	3,650	1,280	4,930	9	-	-	24,200			24,200	5,000							52,408	100,538	
Subtotal:	104	315	75,920	50,400	126,320	116	21	20	440,800	202,000	40,000	682,800	63,000	45,000	4,000					668,104	1,589,224	MAINTENANCE AND EPIDEMIOLOGICAL SURVEILLANCE PROGRAMS
Chile	12	24	8,760	3,840	12,600	5	2	-	19,000	20,000	-	39,000	5,000	3,000						-	74,600	
Peru	3	24	2,190	3,840	6,030	10	3	-	38,000	24,000	-	62,000	5,000	3,000						52,408	128,438	
Venezuela	15	24	10,950	3,840	14,790	16	-	-	60,800	-	-	60,800	10,000	5,000	15,000					-	105,590	
Subtotal:	30	72	21,900	11,520	33,420	31	5	-	117,800	44,000	-	161,800	20,000	11,000	30,000					52,408	308,628	
Inter-country																64,000	60,000	80,000	150,000	218,432	572,432	
TOTAL	134	387	97,820	61,920	159,740	147	26	20	558,600	246,000	40,000	844,600	83,000	56,000	30,000	4,000	60,000	80,000	150,000	938,944	2,470,284	

ANNEX 6
ESTIMATED COST OF INTERNATIONAL ASSISTANCE TO SMALLPOX ERADICATION PROGRAMS AND TO MAINTENANCE AND EPIDEMIOLOGICAL SURVEILLANCE PROGRAMS, BROKEN DOWN BY COUNTRY, ITEM AND YEAR OF WORK

PROGRAMS	1st Year										2nd Year										3rd Year		4th Year	OVERALL TOTAL	ERADICATION PROGRAMS															
	Jet Injectors	Transport Vehicles	Field Equip-ment	Health Education	Freeze Drying Equipment	Vaccine	Lab. Diagnosis (2 courses)	Training (1 course)	Statistics	Contin-gencies	Inter-national Staff	Health Education	Freeze Drying Equipment	Vaccine	Lab. Diagnosis (2 courses)	Training of Directors (1 course)	Statistics	Contin-gencies	Inter-national Staff	Contin-gencies	Inter-national Staff																			
Argentina	21.800	152.000	10.000	10.000		1.000								1.000																										
Bolivia	4.590		3.000	3.000																																				
Brazil	53.840	265.000	30.000	10.000																																				
Colombia	20.340	104.600																																						
Paraguay	3.630	19.000	5.000	3.000		1.000								1.000																										
Peru	17.190	108.000	10.000	2.500								2.500																												
Uruguay	4.930	34.200	5.000	2.000								2.000																												
Subtotal	126.320	632.800	63.000	30.500		2.000						14.500		2.000		16.500						921.120																		
Chile	12.600	39.000	5.000	3.000	15.000																																			
Ecuador	6.030	62.000	5.000	3.000																																				
Venezuela	14.790	60.800	10.000	2.500								2.500	15.000																											
	33.420	161.800	20.000	8.500	15.000							2.500	15.000																											
Total	238.720										17.500													256.220																
Inter-country															32.000	40.000	30.000	50.000	260.940	50.000	260.940	156.124																		
															32.000	40.000	30.000	50.000	260.940	50.000	260.940	156.124																		
Subtotal	412.940										412.940										310.940		156.124	1.292.944																
TOTAL	1.556.280										446.940										310.940		156.124	2.470.284																

TOTAL COST OF SMALLPOX ERADICATION AND PROGRAM OF MAINTENANCE AND EPIDEMIOLOGICAL SURVEILLANCE PROGRAMS

PROJECTS	Length of Program (years) (1)	COST OF PROGRAM (Country Investments)		International Contribution US \$ (4)	Total Cost of Program US \$ (5)	OVERALL TOTAL US \$ (6)
		National Currency (2)	US \$ (3)			
Argentina	3	\$ 119.844.000	599.200	246.208	845.408	
Bolivia	2	\$ 2.201.194	184.975	64.998	249.973	
Brazil	3	Cr. 16.902.950.000	7.767.899	774.904	8.542.803	
Colombia	3	\$ 9.187.660	510.426	124.940	635.366	
Paraguay	3	G\$ 6.912.440	164.580	85.038	249.618	
Perú	3	\$S 79.794.825	2.978.000	192.598	3.170.598	
Uruguay	2	\$ 4.087.200	58.390	100.538	158.928	
Subtotal			12.263.470	1.589.224	13.852.694	13.852.694
Chile				74.600	74.600	
Ecuador	3	Suc. 13.050.000	686.840	128.438	815.278	
Venezuela	5	Bs. 2.972.390	660.531	105.590	766.121	
Subtotal			1.347.371	308.628	1.655.999	1.655.999
Intercountries				572.432	572.432	
Subtotal				572.432	572.432	572.432
TOTAL:			13.610.841	2.470.284	16.081.121	16.081.121
%			84.65%	15.35%	100%	100%

(3) Conversion into US\$ according to UN Exchange Table

(5) Sum of columns (3) and (4)

XVII Pan American Sanitary Conference

XVIII Regional Committee Meeting



Washington, D. C., U.S.A.
September-October 1966

Agenda Items 24 and 25

CSP17/20, Rev. 1 (Eng.)
ADDENDUM I
26 September 1966
ORIGINAL: SPANISH

STATUS OF SMALLPOX ERADICATION IN THE AMERICAS AND ESTIMATED REQUIREMENTS FOR THE ERADICATION OF SMALLPOX IN THE AMERICAS

Survey of local conditions, characteristics, and resources for conducting national smallpox vaccination campaigns, eradicating smallpox, or protecting the population against the risk of the disease

It has been stated on more than one occasion that if the countries are to eradicate smallpox they will have to receive increased foreign aid. In compliance with the request contained in Resolution XXX of the XVI Meeting of the Directing Council, held in Washington, D.C., in 1965 and in order to determine the kind and amount of international assistance the countries would require to eradicate smallpox in the Western Hemisphere, the Pan American Sanitary Bureau conducted a survey in the countries of the Region.

A preliminary report, containing the findings of the survey, was submitted to the 54th Meeting of the Executive Committee.

Demographic Characteristics

Annex 1 contains a summary of some of the demographic characteristics of the countries surveyed. In this Annex, areas with a population of 2,000 or over are called urban.

The definition of an urban area is not uniform throughout the Hemisphere. In some countries it consists of areas with a population of 1,000 or over; in other, areas with a population of 2,000 or over; while in still others it consists of areas termed urban regardless of the number of inhabitants and only because they are the seat of the corresponding political and administrative authorities. In such cases, an area defined as urban includes the zones of influence of the authorities in question. But regardless of its definition, an urban area represents

a concentration of population. According to the data collected, in 12 out of the 22 countries appearing in Annex 4 the urban population fluctuates between 40 per cent and 80.2 per cent of the countries' total population and the ratio should be borne in mind in arranging national smallpox vaccination programs.

The population density per square kilometers ranges between the extremes of 2 inhabitants per square kilometers in Canada, and 190 in Trinidad and Tobago.

Means of communication

Taking means of communication as a whole, it would appear that they make it possible to reach most of the population in the various regions into which the countries are divided.

Cultural characteristics

Annex 2 shows that illiteracy in the over 15 age group varies within very wide limits. An information program using the newspapers, as well as the radio and television stations existing in the different countries, should reach a high percentage of the population. The use of battery powered transistor sets enables persons living in the most remote areas to keep up to date with the news.

The languages spoken in North, Middle, and South America, and the Caribbean Area are Spanish, French, Portuguese, and English. In some countries dialects are also spoken, which are mixed with the official language. In three countries a large proportion of the population speaks only the local dialect. Language differences within a country should be no obstacle to a good understanding of health programs, since the health departments include personnel who can serve or who act as interpreters during every-day work. Furthermore, in the great majority of countries, the population gladly accepts health services. It is a known fact that a population which has been properly informed will not reject the health services offered, and the anti-smallpox campaign is no exception to this rule.

Systems of Government

The systems of Government in the countries in the area covered by the survey are unitary and federal. The health services come under the Ministries of Health, the National Health Services, States or Departments, municipalities, and private organizations.

Compulsory smallpox vaccination

Smallpox vaccination is compulsory in 20 of the countries listed in Annex 3. It is not compulsory in 4 of these countries, while one gave no information on this point. Revaccination against smallpox is also compulsory in 17 countries and not compulsory in 5, while 3 countries

gave no information on the subject. The practice of issuing a certificate after vaccination is observed in 19 countries, as seen in Annex 3. Two of the countries issue certificates only to persons travelling abroad; 3 countries do not issue a certificate; and one provided no information on the subject.

Health services

Details of the number of hospitals and the number of beds, per category of hospital, appear in Annexes 4 and 5, while Annex 6 gives figures for health centers and outpatient clinics. The influence which these services exert in the areas they serve can be utilized to ensure the smooth running of national smallpox vaccination programs. They can also be used as vaccinating centers.

The number of physicians, nurses, and auxiliary personnel, by country, is indicated in Annexes 7 and 8.

There is no uniform coordination between the official, semiofficial, private, etc., health services in all the countries, but coordination to conduct smallpox eradication programs or merely smallpox vaccination programs, can be achieved, for these would be well received everywhere. It would be advisable to have representatives of the various health institutions participate when the programs are being planned at the national and local levels, or at least to keep them informed of what it is intended to do and how it will be done.

Data recording system

All countries in the Americas have a statistical service, but these services are in varying stages of development and they do not always cover the entire country. Nor is it possible to make any general statement regarding the reporting or notification of smallpox cases. Whereas in some countries, they seem to be notified within a reasonable delay, and in others there is considerable delay and sometimes no report is even made at all.

Before notification can take place, a diagnosis of confirmed or suspected smallpox must first be reached. The case can then be notified and recorded. However, since in many countries the disease has long disappeared, physicians have lost their skill in diagnosing it; indeed, in some countries there are physicians who have never had an opportunity of seeing a smallpox case. Added to this is the fact that the pre-dominating clinical form of smallpox is the benign variety which can be confused with other clinical entities having similar characteristics, so that a diagnosis of smallpox is not always immediately reached. This is one of the many reasons for the delay in reporting cases. As smallpox disappears from the American Continent, the ability of physicians to

diagnose the disease clinically is also decreasing. Therefore, in future, every suspect case of smallpox should be confirmed in the laboratory. Many countries are not yet prepared to assume this responsibility. The survey indicates a lack of sufficient establishments with suitable facilities and trained personnel to perform smallpox diagnosis tests.

Although smallpox data are being collected, it is clear that only a few countries are operating complete data recording systems. A data recording system includes notification, registration, tabulation, processing, interpretation, and finally publication of the data collected. All this is of the utmost importance when the objective is eradication of the disease. This fact explains in part the different values given to the same phenomenon, in the same period of time, when the information is collected at different dates or by different persons. Smallpox is an example of this.

Population vaccinated against smallpox, by age groups

It was not possible to obtain the necessary information to give a complete picture of the percentage of population, by age group, vaccinated against smallpox in the Americas.

Epidemiological surveillance services

As a result of effective national vaccination programs, carried out in short periods of time, a group of countries where smallpox formerly existed, succeeded in eliminating it. In others, smallpox continues to exist because such programs were suspended or prematurely terminated. In a third group of countries the disease was reintroduced after years of absence, owing to the lack of maintenance programs.

In another group, the combination of partial vaccination programs, plus the efficient operation of an epidemiological surveillance service, has prevented the occurrence of smallpox or has made it possible to promptly identify suspect cases of smallpox whenever they appeared and to adopt the necessary measures to prevent the disease from spreading.

There are no epidemiological surveillance services, properly speaking, in the countries of Middle America, the Caribbean Area, and South America. This is a need that calls for urgent attention.

Smallpox vaccines

The smallpox vaccination programs which were carried out by the countries of North, Middle, and South America, and the Caribbean Area used smallpox vaccines, both dried and glycerinated, which had been prepared in various countries of the Region. PASE/WHO has assisted in the formation and operation of 11 laboratories producing freeze-dried

smallpox vaccine. It has also helped to train personnel in the large-scale preparation of freeze-dried smallpox vaccine. Annex 9 gives details of smallpox vaccine production in 1965, and the number of vaccinations performed that year.

Each type of smallpox vaccine has its own indications. Glycerinated vaccine has been used in areas where it is possible to keep it refrigerated. Freeze-dried vaccines in areas where these facilities are lacking or environmental conditions are unfavorable. Both the scarification and multipressure methods were used, but the latter was given preference. When the health authorities of the countries covered by the survey were consulted, they replied that smallpox vaccination produced no other effects than those to be expected from the vaccine. Some countries, however, reported complications such as post-vaccinal encephalitis, generalized vaccinia and gas gangrene. Post-vaccinal encephalitis is described as such, but the case histories do not always permit the confirmation or rejection of this diagnosis. This is a fact which must be taken into account in the future and to which appropriate attention must be paid.

Glycerinated and dried vaccines produced in national laboratories have undergone the tests of these laboratories as well as those laid down in the legal provisions of each country; in addition, there are occasional field tests. A stricter criterion regarding vaccine control, tests, whether purity or potency tests, will have to be adopted in the future. Also, the services of the Statens Seruminstitut in Copenhagen, Denmark, should be used more widely. By agreement with PAHO/WHO, the Institute can be sent samples of the different vaccine lots prepared in national laboratories for purity and potency tests.

In the smallpox vaccination programs carried out, the percentage of "takes" among primovaccinees was high, ranging from 95 per cent to 100 per cent.

International cooperation

Of the 25 countries included in the survey, 3 are in a position to provide both technical assistance and vaccine to the other countries of the Americas, and 9 are able to furnish vaccine only.

Of the same 25 countries, 22 are prepared to extend the international agreements entered into with other countries so as to include smallpox eradication or to conclude new agreements with other countries for the same purpose.

General considerations

Natural conditions, although they are adverse in some countries, should not be allowed to prevent the carrying out of a smallpox eradication program. A combination of the various means of transport available will ensure access to most of the places where the vaccine should be employed.

The information and communications media existing in the countries will make possible the health education and orientation of the population for smallpox eradication purposes or national smallpox vaccination programs; also for maintenance programs. The network of health and medical care establishments, if properly utilized, should assist considerably in implementing the program, shortening the period required, and reducing operating costs. Moreover, the countries are in a position to produce all the glycerinated or dried vaccine necessary for a continent-wide smallpox eradication program. In addition to this, there is the possibility of using the services of part of health personnel indicated in Annex 10.

Everything seems to show, therefore, that it is possible to eradicate smallpox in the Americas by immunizing the population at risk, within a relatively short time, once the Governments provide all the resources necessary and solve the administrative problems that might hamper the program. Once this is done, international assistance will become more valuable, and can take the form of technical advice, and the provision of basic requirements which are not produced in the countries, or which it would be more economical to import.

Apparently, although good coordination of all health services can be achieved for a smallpox eradication program or national vaccination programs, the same cannot be said as concerns maintenance programs. This fact underlines the need to carry out smallpox vaccination programs simultaneously, in as short time as possible. If this is done and smallpox disappears, and good epidemiological surveillance services are established, then the intervals between revaccination may be gradually increased and it will be easier to observe them. Costs will also be substantially reduced and the funds thus saved can be spent on other health activities. Finally, the work of epidemiological surveillance services will also be facilitated.

Cooperation requested by countries

Annex 11 shows the type of technical assistance which countries request from PASB/WHO for the study, organization, execution and evaluation of smallpox eradication programs, for national smallpox vaccination programs, consolidation programs, and for organizing epidemiological surveillance services.

In addition, 2 countries requested financial assistance for the salaries and per diem of national personnel working in smallpox eradication programs. The contributions requested amount to a total of \$3,449,200.

Courses for the training of personnel in techniques of preparing freeze-dried smallpox vaccine, methods and techniques of vaccine testing, and the laboratory diagnosis of smallpox, which is another type of technical assistance requested by the countries, should be attended by the professional staff indicated by the interested countries.

ANNEX 1

POPULATION DENSITY PER Km² AND URBAN AND RURAL DISTRIBUTION OF THE
POPULATION IN THE AMERICAS, 1965

COUNTRY	Area in Km ²	Population (in thousands) 1965	Density in 1965	Distribution	
				Rural %	Urbana %
Argentina	2.776.656	22.352	8	a) 33.6	66.4
Bolivia	1.098.581	3.697	3	b) 65.0	35.0
Brasil	8.511.965	81.301	10		
Canada	9.976.177	19.604	2	54.9	45.1
Colombia	1.138.338	17.787	16	b) 63.7	36.3
Costa Rica	50.700	1.433	28	65.5	34.5
Cuba	114.524	7.631	67		
Chile	741.767	8.567	12	33.5	66.5
Ecuador	270.670	5.084	19	64.7	35.3
El Salvador	21.393	2.928	137	61.5	38.5
United States	9.363.389	193.818	21	30.5	69.5
Guatemala	108.889	4.435	41	66.4	33.4
Haiti	27.750	4.660	168	b) 87.7	12.2
Honduras	112.088	2.163	19	69.5	30.5
Jamaica	10.962	1.773	162	68.0	32.0
Mexico	1.972.546	40.913	21	49.3	50.7
Nicaragua	148.000	1.655	11	58.9	41.1
Panama	75.650	1.246	16	58.5	41.5
Paraguay	406.752	2.030	5	64.6	35.4
Peru	1.285.215	11.650	9	52.6	47.4
Dominican Republic	48.734	3.619	74	69.5	30.5
Trinidad and Tobago	5.128	976	190	...	...
Uruguay	186.926	2.715	15	17.8	82.2
Venezuela	912.050	8.722	10	37.5	62.5
Antigua	442	61	138		
Netherlands Antilles	961	209	217		
Barbados	431	245	568		
British Honduras	22.966	106	5		
Bermudas	53	48	906		
Dominica	789	65	82		
Grenada	344	94	273		
Guadaloupe	1.779	316	178		
Guyana	214.970	647	3		
British Guiana	91.000	37	0		
Bahamas Islands	11.396	148	13		
Caymans Islands	259	9	35		
Falkland Islands	11.961	2	0		
Caicos-Turks Islands	430	6	14		
Virgin Islands (US)	344	43	125		
Virgin Islands (UK)	153	9	59		
Martinique	1.102	318	289		
Montserrat	83	14	169		
Puerto Rico	8.897	2.633	296		
St. Kitts, Nevis and Anguilla	396	59*	149*		
St. Lucia	616	92*	149*		
St. Pierre-Miquelon	240	5	21		
St. Vincent	389	87	224		
Surinam	142.822	342	2		

* Data for 1964

a) Estimate

b) 1950 or 1951 Census

ANNEX 2

COUNTRY	% Illiterates over 15 years of ages	LANGUAGE SPOKEN %		
		Official	Other	Dialect
Argentina	13,6	100,0	-	-
British Honduras	10,4	82,0	8,0	10,0
Bolivia	63,6	36,0	0,4	63,6
Brazil	55,0	100,0	-	-
Canada	3,0 (a)	-	-	-
Colombia	37,3	97,5	-	2,5
Costa Rica	14,6	100,0	-	-
Cuba	3,9	100,0	-	-
Chile	16,4	100,0	-	-
Ecuador	29,8	99,0	1,0	-
El Salvador	52,0	100,0	-	-
United States	2,8	-	-	-
Guatemala	71,9	66,0	-	34,0
Haiti	80,0	20,0	-	80,0
Honduras	52,7	98,0	-	2,0
Jamaica	17,1	100,0	-	-
* Mexico	34,6	95,7	0,5	3,8
Nicaragua	49,2	100,0	-	-
Panama	21,7	-	-	-
** Paraguay	31,8	53,8	40,1	1,4
Peru	38,9	60,0	37,4	2,6
Dominican Rep.	55,0	99,0	1,0	-
Trinidad-Tobago	6,2	100,0	-	-
Uruguay	9,5	100,0	-	-
Venezuela	36,3	100,0	-	-

(a) 1950

* Over 14 years of age

** Over 10 years of age

APPLICATION OF SMALLPOX VACCINATION

COUNTRY	S M A L L P O X V A C C I N A T I O N			
	Whether Compulsory	Whether Carried out	Periodicity of Revaccination	Whether certificate issued
Argentina	yes	yes	3 years	yes
British Honduras	yes	yes	7 years	yes
Bolivia	yes	yes	yes	yes
Brasil	yes	no	3 years	yes
Canada	yes			yes
Colombia	yes	no	3 years	yes
Costa Rica	yes	no	3 years	yes
Cuba	no	no		yes
Chile	yes	yes	5 years	yes
Ecuador	yes	yes		yes
El Salvador	yes		5 years	no
United States	yes		yes	yes
Guatemala	yes	yes	5 years	yes
Haiti	no		no	no
Honduras	yes	yes	5 years	yes
Jamaica	yes	yes		yes
México	yes	yes	5 years	yes
Nicaragua	no	no	no	yes
Panama	no	no	yes	yes
Paraguay	yes	no	no	no
Peru	yes	no	yes	yes
Dominican Rep.	yes	no		yes
Trinidad-Tobago			yes	yes
Uruguay	yes	no	no	yes
Venezuela	yes		7 years	yes

(1) Only for international travel

(2) Smallpox vaccination is compulsory in some States and Cities and not in others, depending on the local legislation

NUMBER OF HOSPITALS BY TYPE IN THE AMERICAS, BY COUNTRIES, 1964

Country	Year	Total	General hospitals					Other hospitals				
			Total	General	Mater-nity	Pedia-trics	Other	Total	Tuber-culosis	Leprosy	Mental diseases	Other
Argentina	1962	2253	2055	1852	115	85	3	198	76	9	59	54
Bolivia	1962	107	99	91	6	1	1	8	4	2	1	1
Brazil (a)	1962	2806	2428	2167	217	44	-	378	107	55	138	78
Canada (b)	1965	1381	1085	1067	15	-	3	296	45	-	103	148
Chile	1964	347	336	328	-	8	-	11	6	-	4	1
Colombia	1964	628	583	...	...	...	...	45	24	-	21	-
Costa Rica	1964	49	45	42	2	1	-	4	2	1	1	-
Cuba (c)	1965	159	113	...	...	...	...	46	...	...	...	...
Dominican Republic	1964	103	96	78	16	2	-	7	2	1	1	3
Ecuador	1964	161	143	133	5	5	-	18	11	3	3	1
El Salvador	1963	51	44	39	4	1	-	7	4	-	2	1
Guatemala	1964	46	37	27	4	4	2	9	5	1	1	2
Haiti (d)	1965	36	27	26	1	-	-	9	4	-	2	3
Honduras	1964	32	29	29	-	-	-	3	2	-	1	-
Jamaica	1964	27	24	22	1	1	-	3	1	1	1	-
Mexico	1962	1925	1862	1419	415	28	-	63e)	32	...	31	...
Nicaragua (d)	1965	39	36	36	-	-	-	3	1	1	1	-
Panama	1964	28	26	25	-	1	-	2	1	-	1	-
Paraguay	1964	143	137	124	12	1	-	6	1	2	1	2
Peru (f)	1964	256	...	...	...	...	...	...	...	...	...	...
Trinidad and Tobago	1962	27	24	24	-	-	-	3	1	1	1	-
United States (g)	1964	7127	6101	5949	57	60	35	1026	194	3	531	298
Uruguay (d)	1963	78	72	67	2	2	1	6	4	-	2	-
Venezuela	1964	314	281	262	12	7	-	33	16	2	9	6
Antigua	1964	3	1	1	-	-	-	2	-	1	1	-
Bahama Islands	1964	4	1	1	-	-	-	3	-	1	1	1
Barbados	1964	10	8	5	2	-	1	2	-	1	1	-
Bermuda	1964	3	1	1	-	-	-	2	-	-	1	1
British Guiana	1964	28	25	25	-	-	-	3	1	1	1	-
British Honduras	1963	10	7	7	-	-	-	3	1	-	1	1
Canal Zone	1963	4	2	2	-	-	-	2	-	1	1	-
Cayman Islands	1964	1	1	1	-	-	-	-	-	-	-	-
Dominica	1963	7	5	4	-	1	-	2	-	1	1	-
Falkland Islands	1962	1	1	1	-	-	-	-	-	-	-	-
French Guiana	1964	4	3	3	-	-	-	1	-	1	-	-
Grenada	1964	8	4	3	-	-	1	4	1	-	1	2
Guadeloupe	1964	19	17	16	1	-	-	2	-	1	1	-
Martinique	1962	17	15	9	6	-	-	2	1	-	1	-
Montserrat	1964	1	1	1	-	-	-	-	-	-	-	-
Netherlands Antilles	1964	10	8	8	-	-	-	2	-	1	1	-
Puerto Rico	1963	139	125	124	-	-	1	14	6	1	4	3
St. Kitts-Nevis and Anguilla	1963	4	4	4	-	-	-	-	-	-	-	-
St. Lucia	1963	5	4	4	-	-	-	1	-	-	1	-
St. Pierre and Miquelon	1962	3	2	1	1	-	-	1	1	-	-	-
St. Vincent	1957	6	2	1	1	-	-	4	1	1	1	1
Surinam	1965	15	13	13	-	-	-	2	-	1	1	-
Turks and Caicos Islands	1964	4	4	2	2	-	-	-	-	-	-	-
Virgin Islands (UK)	1962	1	1	1	-	-	-	-	-	-	-	-
Virgin Islands (US)	1963	3	3	3	-	-	-	-	-	-	-	-

(a) Anuario Estatístico do Brasil, 1965. (b) List of Canadian Hospitals, 1965. (c) Salud Pública en Cifras, Ministerio de Salud Pública, La Habana, 1965. (d) Information from smallpox survey; distribution of special hospitals maintained as in previous reports. (e) Infectious diseases including tuberculosis. (f) Plan Nacional de Salud, 1966-1970. (g) American Hospital Association.

ANNEX 5

NUMBER OF HOSPITAL BEDS BY TYPE OF HOSPITAL WITH RATES PER 1,000 POPULATION
BY COUNTRIES, 1964

Country	Year	Total		General hospitals						Other hospitals				
		Number	Rate	Total		General	Mater- nity	Pedia- trics	Other	Total	Tuber- culosis	Lep- rosy	Mental dis- eases	Other
				Number	Rate									
Total														
Argentina	1962	129 435	6.1	92 990	4.4	84 297	2 621	5 451	621	36 445	9 112	1 992	21 454	3 887
Bolivia	1962	7 371	2.1	...	...	...	...	...	...	...	...	...	...	...
Brazil (a)	1962	236 930	3.2	142 648	1.9	105 951	21 591	15 106	...	94 282	22 412	16 404	41 845	13 621
Canada (b)	1965	206 067	10.5	113 346	5.9	115 035	799	-	512	89 721	6 829	-	68 323	14 569
Chile	1964	36 290	4.3	30 882	3.7	29 135	-	1 747	-	5 408	1 487	-	3 816	105
Colombia	1964	46 507	2.7	37 008	2.1	...	...	...	...	9 499	2 852	-	6 647	-
Costa Rica	1964	6 186	4.5	4 393	3.2	3 802	130	461	-	1 793	535	177	1 081	-
Cuba (c)	1965	42 162	5.5	31 245	4.1	...	...	...	...	10 917	...	...	...	...
Dominican Republic	1964	9 283	2.7	6 736	1.9	5 468	718	550	-	2 547	936	181	700	730
Ecuador	1964	11 199	2.3	8 368	1.7	7 173	590	605	-	2 831	1 507	224	1 072	28
El Salvador	1963	6 375	2.3	4 803	1.8	4 226	322	255	-	1 572	966	-	496	110
Guatemala	1964	11 053	2.6	8 355	1.9	7 477	307	452	119	2 698	1 041	50	1 172	435
Haiti (d)	1965	3 035	0.7	2 704	0.6	2 618	86	...	...	331	312	-	19	...
Honduras	1964	4 155	2.0	3 343	1.6	3 343	-	-	-	812	622	-	190	-
Jamaica	1964	6 907	4.0	3 385	2.0	3 021	164	200	-	3 522	222	185	3 115	-
Mexico	1963	84 680	2.2	...	...	...	...	...	...	...	...	...	...	...
Nicaragua (d)	1965	3 753	2.3	3 085	1.9	3 085	-	-	-	668	300	68	300	-
Panama	1964	3 804	3.2	2 513	2.1	2 301	-	212	-	1 291	320	-	971	-
Paraguay	1964	4 297	2.2	3 289	1.7	3 289	...	...	...	1 008	366	320	294	28
Peru (e)	1964	28 113	2.5	...	...	...	...	...	...	...	...	...	...	...
Trinidad and Tobago	1962	4 712	5.3	2 692	3.0	2 692	-	-	-	2 020	473	-	1 547	-
United States (f)	1964	1 696 039	8.9	833 536	4.4	821 981	2 420	7 300	1 835	862 503	41 385	819	758 401	61 898
Uruguay (d)	1963	16 935	6.4	11 867	4.5	10 738	258	741	130	5 068	2 084	-	2 984	-
Venezuela	1964	27 873	3.3	19 606	2.3	17 801	979	826	-	8 267	2 961	900	3 823	583
Antigua	1964	420	7.0	180	3.0	180	-	-	-	240	-	40	200	-
Bahama Islands	1964	782	5.5	450	3.2	450	-	-	-	332	-	20	200	112
Barbados	1964	1 393	5.8	567	2.3	507	40	-	20	826	-	25	801	-
Bermuda	1964	428	8.9	162	3.4	162	-	-	-	266	-	-	230	36
British Guiana	1964	3 424	5.4	1 990	3.2	1 990	-	-	-	1 434	246	354	834	-
British Honduras	1963	493	4.9	261	2.6	261	-	-	-	232	52	-	122	58
Canal Zone	1963	985	19.7	565	11.3	565	-	-	-	420	-	120	300	-
Cayman Islands	1964	34	3.8	34	3.8	34	-	-	-	-	-	-	-	-
Dominica	1963	309	4.9	257	4.1	232	-	25	-	52	-	22	30	-
Falkland Islands	1962	32	16.0	32	16.0	32	-	-	-	-	-	-	-	-
French Guiana	1964	626	17.4	506	14.1	506	-	-	-	120	-	120	-	-
Grenada	1964	731	7.9	320	3.4	300	-	-	20	411	60	-	200	151
Guadeloupe	1960	2 406	8.8	1 786	6.5	1 778	8	-	-	620	-	120	500	-
Martinique	1964	4 150	13.4	3 500	11.3	...	...	...	...	650	250	-	400	-
Montserrat	1964	69	5.3	69	5.3	69	-	-	-	-	-	-	-	-
Netherlands Antilles	1964	1 821	8.9	1 391	6.8	1 391	-	-	-	430	-	30	400	-
Puerto Rico	1963	12 411	4.9	7 533	3.0	7 466	-	-	67	4 878	2 000	100	2 567	211
St. Kitts-Nevis and Anguilla	1963	205	3.4	205	3.4	205	-	-	-	-	-	-	-	-
St. Lucia	1963	445	4.7	300	3.2	300	-	-	-	145	-	-	145	-
St. Pierre and Miquelon	1962	70	14.0	46	9.2	37	9	-	-	24	-	-	24	-
St. Vincent	1957	435	5.7	150	2.0	134	16	-	-	285	40	20	100	125
Surinam	1965	1 790	5.2	1 275	3.7	1 275	-	-	-	515	-	150	365	-
Turks and Caicos Islands	1964	32	5.3	32	5.3	28	4	-	-	-	-	-	-	-
Virgin Islands (UK)	1962	34	4.2	34	4.2	34	-	-	-	-	-	-	-	-
Virgin Islands (US)	1963	189	4.7	189	4.7	189	-	-	-	-	-	-	-	-

(a) Anuario Estatístico do Brasil, 1965. (b) List of Canadian Hospitals, 1965. (c) Salud Pública en Cifras, Ministerio de Salud Pública, La Habana, 1965. (d) Information from smallpox survey; distribution of special hospitals maintained as in previous reports. (e) Plan Nacional de Salud, 1966-1970. (f) American Hospital Association.

ANNEX 6

HEALTH CENTERS AND OUTPATIENT FACILITIES IN THE AMERICAS, 1964

Country	Total	Health Centers and Posts	Outpatient Depts. and Dispensaries	Others
Argentina (a)	250	109	127	14
Bolivia	155	140	13	2
Brazil (b)	...	3 588		...
Canada	...	223	840	...
Colombia	1 473	1 002	414	57
Costa Rica	94	87	-	7
Cuba	462	--	391	71
Chile	763	478	285	-
Ecuador	266	34	232	-
El Salvador	92	70	12	10
United States	9 454	2 065	5 937	1 452
Guatemala	81	47	24	10
Haiti (c)	171	14	157	-
Honduras	85	64	11	10
Jamaica	164	79	85	-
Mexico	...	2 592	....	...
Nicaragua	174	117	50	7
Panama	52	30	22	-
Paraguay	273	265	8	-
Peru	1 126	545	564	17
Dominican Rep.(c)	186	125	60	1
Trinidad	110	5	105	-
Uruguay	...	...	...	....
Venezuela	590	486	104	-

a) Ministry of Health only

b) Data from Malaria Seminar, 1964

c) For 1962

ANNEX 7

NUMBER OF PHYSICIANS PER 10,000 INHABITANTS

AREA	Year	Population (in thousands)	Physicians	
			No	Ratio
TOTAL	1964	446,954	447,965	10.0
North America	1964	210,695	316,600	15.0
Canada	1962	18,600	21,290	11.4
United States	1964	191,371	295,256	15.4
Bermuda	1964	48	50	10.4
St. Pierre, Miquelon	1962	5	4	8.0
Central America	1964	75,658	38,117	5.0
Costa Rica	1963	1,344	634	4.7
Cuba	1965	7,631	6,815	8.9
El Salvador	1964	2,824	625	2.2
Guatemala	1964	4,305	1,066	2.5
Haiti	1965	4,660	311	0.7
Honduras	1965	2,163	341	1.6
Jamaica	1964	1,728	854	4.9
Mexico	1965	40,913	21,165	5.2
Nicaragua	1965	1,655	698	4.2
Panama	1964	1,185	534	4.5
Dominican Republic	1964	3,494	2,153	6.2
Trinidad and Tobago	1962	894	350	3.9
Antigua	1964	60	16	2.7
Netherlands Antilles	1964	205	141	6.9
Barbada	1964	242	94	3.9
British Honduras	1963	100	27	2.7
Dominica	1963	63	11	1.7
Grenada	1962	91	24	2.6
Guadaloupe	1964	306	134	4.4
Bahamas Islands	1964	141	101	7.2
Caiman Islands	1962	9	2	2.2
Caiicos-Turks Islands	1962	6	2	3.3
Virgin Islands (US)	1964	41	46	11.2
Virgin Islands (UK)	1962	8	2	2.5
Martinique	1962	294	122	4.1
Montserrat	1964	13	4	3.1
Puerto Rico	1964	2,578	1,720	6.7
St. Kitts, Anguilla	1963	61	9	1.5
St. Lucia	1963	94	14	1.5
St. Vincent	1962	82	10	1.2
South America	1963	156,210	93,248	6.0
Argentina	1962	21,351	a) 31,831	14.9
Bolivia	1963	3,597	1,032	2.9
Brasil	1962	74,096	29,840	4.0
Colombia	1963	16,941	7,453	4.4
Chile	1964	8,391	4,842	5.8
Ecuador	1965	5,084	1,698	3.3
Paraguay	1964	1,968	1,180	6.0
Peru	1964	11,298	5,262	4.7
Uruguay	1964	2,682	3,051	11.4
Venezuela	1964	8,427	6,584	7.8
Guyana	1963	612	290	4.7
French Guiana	1964	36	27	7.5
Falkland Islands	1962	2	4	20.0
Surinam	1964	327	154	4.7

* Estimate

a) May include double registrations.

NUMBER OF GRADUATE NURSES AND NURSING AUXILIARIES PER
10,000 INHABITANTS, 1965

	Year	Population (in thousands)	Graduate Nurses		Nursing Auxiliaries			
			No	Ratio	Total		No	Ratio
					No	Ratio		
TOTAL								
North America								
Canada	1961		61,699	33.8	62,553	34.2		
United States	1962		550,000	29.8	638,900	34.6		
Bermuda								
St. Pierre, Miquelon								
Central America								
Costa Rica	1965	1,433	616	4.3	2,000	14.0	1,108	7.7
Cuba	1965	7,631	3,917	5.1	4,544	6.0	4,544	6.0
El Salvador	1965	2,928	715	2.4	1,680	5.7	1,131	3.9
Guatemala	1965	4,435	491	1.1	2,289	5.2	1,289	2.9
Haiti	1965	4,660	G 315	0.7	553	1.2	119	0.3
Honduras	1965	2,163	179	0.8	1,253	5.8	1,142	5.3
Jamaica								
Mexico	1965	40,913	8,252	2.0	40,000	9.8	11,077	2.7
Nicaragua	1965	1,655	353	2.1	1,047	6.3	961	5.8
Panama	1965	1,246	808	6.5	1,113	8.9	125	1.0
Dominican Republic	1965	3,619	G 146	0.4	G 1,792	5.0	131	0.4
Trinidad and Tobago	1965	976	1,227	12.6				
Antigua								
Netherlands Antilles								
Barbada								
British Honduras								
Dominica								
Grenada								
Guadeloupe								
Bahamas Islands								
Caiman Islands								
Caicos-Turks Islands								
Virgin Islands (US)								
Virgin Islands (UK)								
Martinique								
Montserrat								
Puerto Rico								
St. Kitts, Anguilla								
St. Lucia								
St. Vincent								
South America								
Argentina	1964	22,022	22,903	10.4	7,429	3.3	b) 993	00.4
Bolivia	1962	3,549	411	1.2	a) 1,148	3.1	a) 257	0.7
Brasil	1963	76,409	6,684	0.9	55,664	7.3	9,060	1.2
Colombia	1965	17,787	1,259	0.7	10,818	6.1	3,437	1.9
Chile	1963	8,217	1,656	2.0	8,828	10.7	3,593	4.4
Ecuador	1965	5,084	364	0.7	1,849	3.6	448	0.9
Paraguay	1965	2,030	134	0.7	1,471	7.2	408	2.0
Peru	1965	11,650	3,600	3.1	5,783	5.0	2,063	1.8
Uruguay	1964	2,682	496	1.8	3,756	14.0	3,496	13.0
Venezuela	1963	8,144	3,498	4.3	12,088	14.8	5,816	6.9
Guyana								
French Guiana								
Falkland Islands								
Surinam								

G = Government only

(a)= 1964

(b)= 1965

ANNEX 9

SMALLPOX VACCINE PRODUCTION

1964 and 1965

COUNTRY	D o s e s		D o s e s	
	Glycerinated	Lyophilized	Glycerinated	Lyophilized
	1 9 6 4		1 9 6 5	
Argentina	5,190,000 ^a	-	13,310,000	-
Bolivia	-	813,700	-	566,000
Brazil	-	27,040,878	500,000	27,000,000
Chile	3,075,000 ^b	582,500	3,000,000	400,000
Colombia	-	2,882,500	-	4,633,000
Cuba	666,600	-	555,850	-
Ecuador	-	715,004	1,512,260	-
El Salvador	-	-	180,000	-
Guatemala	1,417,165	-	375,300	-
Mexico	10,754,400	-	10,447,409	-
Peru	2,864,000 ^c	3,517,100 ^c	-	-
Uruguay	2,100,000 ^c	-	2,563,200	-
Venezuela	2,634,000	750,000	1,741,200	3,443,000
Totals	28,801,165	36,301,682	34,239,439	36,462,000

^a January - July^b January - October^c January - August

ANNEX 10

THE AMERICAS

STAFF OF HEALTH SERVICES

Country	PHYSICIANS					NURSES			COMMUNITIES WITH HEALTH OFFICE		
	Total Physicians	Per 10,000 Inhabitants	No. Physicians		Physicians Responsible for Vaccination	With Public Health Training	Without Public Health Training	Per 10,000 Inhabitants	Auxiliaries	HEALTH OFFICE	
			P. H. S. Part Time	Full Time						Urban	Rural
TOTAL	94,842	-	8,537	6,508	3,973	-	13,709	-	41,113	1,441	455
Argentina	12,555	5,6	2,175	81	-	-	-	-	10,702	649	818
British Honduras	26	2,45	6	-	1	-	75	7,0	23	-	-
Bolivia	1,032	2,19	319	11	1	-	488	1,0	254	-	-
Brazil	31,003	3,8	2,557	200	12	-	-	-	-	-	-
Colombia	7,453	4,0	10	105	575	112	1,086	-	3,012	709	224
Costa Rica	637	4,7	150	-	2	76	496	3,8	310	110	-
Cuba	6,815	9,2	2,900	2,442	-	-	3,561	-	4,125	126	-
Chile	4,842	5,7	-	-	-	-	1,188	-	11,044	-	-
Ecuador	1,698	3,7	41	1	1	311	3	1,4	106	98	-
El Salvador	664	2,3	561	176	74	203	347	0,7	1,452	123	-
Guatemala	790	2,0	91	-	91	491	-	1,8	236	-	-
Haiti	400	1,0	8	-	2	44	270	1,1	-	-	-
Honduras	351	1,5	102	28	94	14	5	0,8	192	-	-
México	20,590	5,9	642	770	2,671	146	1,360	0,1	7,011	-	-
Nicaragua	698	4,1	115	10	56	62	250	0,3	109	47	91
Panamá	534	4,6	-	-	-	-	790	1,9	980	-	-
Paraguay	933	4,7	230	32	-	-	49	6,4	757	73	-
Perú	5,061	4,5	815	877	106	142	711	0,2	4,619	-	-
Dominican Rep.	1,744	4,8	-	626	65	104	-	0,7	123	-	-
Uruguay	3,051	11,8	207	-	161	15	750	0,2	993	155	-
Venezuela	7,744	8,3	-	1,230	2	2,200	-	2,9	6,766	-	-

ANNEX 11

THE AMERICAS

KIND OF ASSISTANCE REQUESTED BY THE COUNTRIES FOR THE EXECUTION OF NATIONAL
ERADICATION PROGRAMS OR MAINTENANCE PROGRAMS

Country	Technical Assistance					Health Educ. material	Dried Small-pox vacc.	Jet in-jectors	Jeeps	Boats	Field equipment	Freeze-dried small-pox vac. equip.	Salaries and per diem allowances local personnel
	To organize, conduct and evaluate	Person. training vaccin..	Preparation and/or testing vaccine	Lab. diag. small-pox	Clin. diag. treatment and isolation								
Argentina	yes	yes	-	-	-	yes	-	yes	yes	yes	yes	-	-
Brit. Hond.	-	-	-	yes	yes	yes	yes	-	yes	-	yes	-	-
Bolivia	yes	yes	yes	yes	yes	yes	-	-	-	-	yes	-	-
Brazil	yes	yes	-	yes	-	-	-	yes	yes	yes	yes	-	yes
Colombia	-	-	-	yes	-	-	-	-	-	-	-	-	yes
Costa Rica	-	-	yes	yes	yes	yes	yes	yes	yes	-	yes	-	-
Cuba	-	-	-	yes	yes	-	yes	yes	yes	-	-	-	-
Chile	-	-	yes	-	-	yes	-	yes	yes	-	yes	-	-
Ecuador	yes	-	-	-	-	yes	-	yes	yes	yes	-	-	-
El Salvador	-	-	yes	yes	-	-	yes	-	yes	-	-	-	-
Guatemala	yes	yes	-	yes	yes	yes	yes	yes	yes	-	-	-	-
Haiti	yes	yes	yes	yes	yes	yes	yes	-	yes	-	yes	-	yes
Honduras	yes	yes	-	yes	yes	yes	yes	yes	yes	-	yes	-	-
Mexico	-	-	-	-	-	-	-	-	-	-	-	-	-
Nicaragua	yes	-	-	yes	yes	yes	yes	yes	yes	-	-	-	-
Panama	yes	-	-	-	-	yes	yes	yes	yes	-	-	-	-
Paraguay	yes	-	-	-	-	yes	yes	-	yes	-	yes	-	-
Peru	-	-	-	yes	yes	yes	-	yes	yes	-	yes	-	-
Dom. Rep.	-	-	-	-	-	yes	yes	yes	yes	-	-	-	-
Uruguay	yes	yes	-	yes	-	yes	yes	-	yes	-	-	-	-
Venezuela	-	-	-	-	-	yes	-	yes	yes	-	-	-	-



XVII Pan American Sanitary Conference

XVIII Regional Committee Meeting



Washington, D. C., U.S.A.

September-October 1966

Provisional Agenda Items 24 and 25

CSPI7/20, Rev. 1 (Eng.)

ADDENDUM II

24 September 1966

ORIGINAL: ENGLISH-SPANISH

STATUS OF SMALLPOX ERADICATION IN THE AMERICAS, AND ESTIMATED REQUIREMENTS
FOR THE ERADICATION OF SMALLPOX IN THE AMERICAS

Resolutions on the eradication of smallpox in the Americas
adopted by the Executive Committee, the Directing Council,
and the Pan American Sanitary Conference (1949-1965)

Resolutions on the Eradication of Smallpox in the Americas
adopted by the Executive Committee, the Directing Council,
and the Pan American Sanitary Conference (1949-1965)

a) May 1949, 7th Meeting of the PAHO Executive Committee, Washington, D. C.: Resolution XIII approved a proposal of the Director of the Bureau that the countries of the Hemisphere cooperate in the execution of programs aimed primarily at the eradication of smallpox in the Americas; and authorized the Director to discuss this problem with the Governments and to offer them the cooperation of PASB/WHO.

b) October 1950, XIII Pan American Sanitary Conference, Santo Domingo, Dominican Republic: Resolution XIX recommended to the countries the development of systematic programs of smallpox vaccination and revaccination with a view to eradicating the disease; and resolved to develop these programs under the auspices of the PASB, which in agreement with the interested countries would take the necessary measures to solve the problems that might arise, whether sanitary, economic, or legal.

c) September 1951, V Meeting of the PAHO Directing Council, III Meeting of the WHO Regional Committee, Washington, D. C.: Resolution XXXII called the attention of Governments to the Fourth World Health Assembly recommendation on raising the level of protection against smallpox.

d) September 1952, VI Meeting of the PAHO Directing Council, IV Meeting of the WHO Regional Committee, Havana, Cuba: Resolution IV-1-C approved the sum of \$75,000 from the Working Capital Fund for the initiation of a program to eradicate smallpox. Resolution XXIII authorized the Executive Committee to include the supplementary program against smallpox in the intercountry programs of the 1954 PAHO budget and to assign an amount sufficient to ensure its continuity.

e) October 1953, VII Meeting of the PAHO Directing Council, V Meeting of the WHO Regional Committee, Washington, D. C.: Resolution III-1-C resolved to give special importance to the eradication of communicable diseases such as smallpox. Resolution XXVII, in reply to a WHO inquiry requesting suggestions from the Regional Committee on which to base a study of measures for a world-wide campaign against smallpox, stated that since 1950 PAHO had considered the execution of smallpox eradication campaigns to be one of its basic programs; it suggested that WHO promote intergovernmental agreements with a view to preventing border epidemics, promote the production of high-quality glycerinated or dried vaccine and for this purpose provide equipment or advisory services, or both, according to the needs of the countries, and furnish advisory services to countries desiring to intensify or reorganize their vaccination programs. It further recommended to the countries that smallpox vaccination campaigns be an integral part or the starting point of permanent public health programs.

f) October 1954, XIV Pan American Sanitary Conference, VI Meeting of the WHO Regional Committee, Santiago, Chile: Resolution XIII authorized the Director to use \$144,089 of the 1953 surplus funds for intensifying the smallpox campaign in the Americas.

g) September 1958, XV Pan American Sanitary Conference, X Meeting of the WHO Regional Committee, San Juan, Puerto Rico: Resolution VI declared that the eradication of smallpox was a public health necessity urgently requiring the attention of all the countries of the Americas; urged the Governments of countries where smallpox still existed to carry out nation-wide plans for eradication; requested the cooperation of Governments in supplying smallpox vaccine and technical advice so as to eradicate smallpox throughout the Hemisphere; recommended that PASB take all necessary measures to reach this goal, including collaboration in vaccine production, advice in campaign organization, and the holding of intercountry meetings to coordinate activities; and requested PASB to prepare a definition of eradication suitable for uniform application in the countries.

h) September 1959, XI Meeting of the PAHO Directing Council, XI Meeting of the WHO Regional Committee, Washington, D. C.: Resolution XXI expressed satisfaction that smallpox had already disappeared in some countries of the Americas and that nation-wide and intensive campaigns were being conducted in others; recommended that Governments give special attention to the maintenance of high levels of immunity in their countries; called upon the Governments of countries where smallpox still existed and nation-wide vaccination programs had not yet been initiated to undertake such programs as soon as possible; and recommended that Governments study ways and means of producing and storing sufficient quantities of smallpox vaccine for national vaccination programs and the control of possible epidemics.

i) August 1960, XII Meeting of the PAHO Directing Council, XII Meeting of the WHO Regional Committee, Havana, Cuba; Resolution XVII urged Governments of countries where smallpox still existed but where no eradication programs had been undertaken to implement such programs as soon as possible; recommended that Governments provide the public health services with the necessary facilities for the laboratory diagnosis of suspect cases of smallpox; and called the attention of Governments to the importance of the correct application of the special measures concerning smallpox set forth in the International Sanitary Regulations.

j) October 1961, XIII Meeting of the PAHO Directing Council, XIII Meeting of the WHO Regional Committee, Washington, D. C.: Resolution XXXII took note of the report of the Director on the status of the smallpox eradication program in the Americas; approved the criteria for smallpox eradication proposed by the PASB/WHO; urged Governments of countries that had not yet eliminated smallpox to accelerate or initiate eradication programs; recommended that the Governments endeavor to produce smallpox vaccines in amounts sufficient not only to meet the needs of their own countries but also to maintain a reserve for meeting emergency situations and for rendering assistance to other countries that may require the vaccine; and recommended that so long as smallpox continued to represent an international

problem the countries endeavor to maintain adequate levels of immunity in the population, and that they ensure strict application of the provisions of the International Sanitary Regulations, especially Article 3 on the notification of cases.

k) August-September 1962, XVI Pan American Sanitary Conference, XIV Meeting of the WHO Regional Committee, Minneapolis, Minnesota, U.S.A.: Resolution XXX expressed satisfaction with the success achieved by various Governments in their eradication programs; urged the Governments of countries where smallpox still existed to expand and accelerate eradication programs, to give them high priority among national health plans, and recommended that they seek the necessary funds from national and international sources of credit; instructed PAHO/WHO to continue to assist the Governments with smallpox vaccination, and urged Governments to maintain the level of immunity of the population at that attained during the course of the eradication programs.

l) August-September 1964, XV Meeting of the PAHO Directing Council, XVI Meeting of the WHO Regional Committee, Mexico, D. F., Mexico: Resolution XLI, again emphasized the urgent necessity of eradicating smallpox from the Hemisphere; recommended to the Governments of the countries that have eradicated smallpox that they maintain a high level of immunity and maintain constant vigilance against the recurrence of the disease; again urged the Governments of the countries where smallpox still exists to institute eradication programs or to intensify those under way; instructed the Director to take all necessary steps to support and to provide the Governments with advisory services to enable them to eradicate smallpox; authorized the Director to request and except contributions of equipment, personnel, material and other collaboration required to achieved the objective desired; recommended to the countries producing smallpox vaccine that they adopt measures to establish a "smallpox vaccine pool" through voluntary contributions of vaccine, so that supplies may be sent without delay to countries where emergency situation arise; recommended to the Governments that they adopt special measures for the confirmation, by all available means and particularly laboratories, of any suspected case of smallpox.

m) September-October 1965, XVI Meeting of the PAHO Directing Council, XVII Meeting of the WHO Regional Committee, Washington, D. C.: Resolution XXX declared smallpox eradication in the Americas to be one of the major objectives of the Pan American Health Organization; reiterated and confirmed the previous resolutions of the Governing Bodies of the Organization to the effect that smallpox must be eradicated from the Hemisphere as soon as possible; reminded the Governments that the organization and the execution of the national smallpox eradication programs is a specific obligation incumbent upon them; recommended to the Governments that they organize and implement consolidation programs; urged the Governments of countries in

which there is no smallpox and in which the level of immunity of the general population is low to institute programs for progressively increasing the percentage of the population vaccinated against smallpox; finally urged the Governments to intensify their epidemiological surveillance services for the early detection and investigation of suspect cases of smallpox in order to prevent the spread of the disease.