WORLD HEALTH ORGANIZATION

ORGANISATION MONDIALE DE LA SANTE

FIFTEENTH WORLD HEALTH ASSEMBLY

Agenda item 2.4

A15/P&B/18 Corr.1
12 May 1962

ORIGINAL: ENGLISH

SMALLPOX ERADICATION

Report by the Director-General

1. At the end of paragraph 6 "Cost and requirements of the Eradication Programme" on page 20, add the following:

> "Increased assistance by the Organization for the programme of smallpox eradication, as outlined in this document, can be given to the extent that voluntary contributions become available in the Special Account for Smallpox Eradication, a sub-account of the Voluntary Fund for Health Promotion. Contributions to the Special Account may be in the form of vaccines, supplies, equipment or cash. It will be recalled that the Special Account was established in 1958, following the acceptance by the Executive Board at its twenty-second session of gifts of smallpox vaccine to the Organization (resolution EB22.R12);[1] the Special Account for Smallpox Eradication is included as a sub-account in the Voluntary Fund for Health Promotion in accordance with the decision of the Thirteenth World Health Assembly in resolution WHA13.24."[2]

2. Insert as title to Annex I: "Data furnished to the Twelfth World Health Assembly in 1959" (see paragraph 6, bottom of page 18 and top of page 19).

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[1] Handbook of Resolutions and Decisions, 6th ed., p. 46

[2] Handbook of Resolutions and Decisions, 6th ed., p. 318

WORLD HEALTH ORGANIZATION

ORGANISATION MONDIALE DE LA SANTE

FIFTEENTH WORLD HEALTH ASSEMBLY

Agenda item 2.4

A15/P&B/18 Corr.2
14 May 1962

ORIGINAL: ENGLISH

SMALLPOX ERADICATION

Report by the Director-General

Under paragraph 4 "Progress towards eradication" on page 8:

1. Paragraph Ivory Coast should read:

Ivory Coast (1961 - 4656 cases reported). A mass vaccination campaign is now in progress and WHO has provided assistance with supplies of dried vaccine from the Smallpox Special Account in 1961.

2. Please add the following after the above paragraph:

Mali (1961 - 1706 cases reported). A plan of operation for a mass vaccination campaign has been prepared with WHO assistance. WHO will provide dried vaccine and, in addition, it has been arranged that the WHO public health administrator will act as adviser to the national officer assigned to the project.

WORLD HEALTH ORGANIZATION

ORGANISATION MONDIALE DE LA SANTE

FIFTEENTH WORLD HEALTH ASSEMBLY

A15/P&B/18
9 May 1962

Agenda item 2.4

ORIGINAL: ENGLISH

SMALLPOX ERADICATION

Report by the Director-General

1. Introduction

In 1958, noting that "smallpox still remained a very widespread and dangerous, infectious disease, and that in many regions of the world there existed endemic foci constituting a permanent threat of its propagation and menacing life and health", the Eleventh World Health Assembly (Resolution WHA11.54) requested the Director-General to carry out an investigation of the means of ensuring world-wide eradication of the disease. In 1959, the Twelfth World Health Assembly (Resolution WHA12.54) requested the Director-General to "collect from the countries concerned information on the organization and progress of their respective eradication programmes and to report to the Thirteenth World Health Assembly. A similar request was made by the Thirteenth and Fourteenth World Health Assemblies. The Fourteenth World Health Assembly (paragraph 2 of WHA14.40) urged those countries more economically advanced to make voluntary contributions in cash or in kind to the funds of the WHO Smallpox Eradication Special Account.

In this fourth year since the decision of the Eleventh World Health Assembly in June 1958 to eradicate smallpox, events show that more than ever before concerted action at both national and international levels is needed in order to achieve eradication of the disease.

After a wide exchange of information and experience at the African Smallpox Conference in 1959 and the Inter-Regional Smallpox Conference held in New Delhi in 1960 a definition for smallpox eradication has been prepared which may be considered generally acceptable as a criterion for smallpox eradication as follows:

"From a practical viewpoint, countries in which smallpox has recently been persistently present may consider the disease to be eradicated when no cases of smallpox occur during the three years following the end of a satisfactory vaccination programme. Although special conditions in individual countries may result in changes in the manner of conducting vaccination programmes, smallpox is generally held to disappear if the successful vaccination of at least 80 per cent. of each population group in a country is achieved within five years from the commencement of the campaign.

Countries which have eradicated smallpox should adopt measures to maintain such eradication, either by means of establishing in their Health Services a permanent immunization programme, or by the combined application of isolation and immunization measures in the event of the disease being reintroduced. It is essential that countries exposed to a high risk of the introduction of smallpox - for example when the disease is regularly present in contiguous countries - should maintain an adequate degree of immunity in the population by means of vaccination of new members of the population (newborn infants, and immigrants), and by the periodic revaccination of (a) the school-age groups (up to 15 years of age), and (b) adults, especially those in areas where reintroductions are most likely to occur, and those persons who by their occupation are in frequent contact with international travellers. In view of the increasing volume of international traffic, and until such time as global eradication is achieved, the strict application of the International Sanitary Regulations is called for as the safeguard against the reintroduction of smallpox to countries where hitherto it was absent."

In the succeeding pages of this report it is shown that though the incidence of smallpox fell steeply between 1958 and 1959 no further regular fall has been observed, and that the number of cases in 1961 was greater than in 1960 (Table 1). In 1960 and 1961 cases were reported from 59 countries. The majority were from India and Pakistan (Tables 1 and 2). The international importance of the eradication programme is indicated by the fact that in 1961 and 1962, 13 importations of smallpox from endemic countries occurred in Europe. A number of these importations led to serious outbreaks.

Of the countries of high incidence 11 have planned or initiated eradication campaigns and most of the others have intensified their established control and vaccination programme.

The facilities which countries in the endemic areas can afford, to carry out mass vaccination programmes vary according to the degree of development of the health services concerned. However, given a potent vaccine and sufficient funds to implement widespread campaigns it is within the capacity of all those countries to rid themselves of the disease.

Progress is slow due in great part to the lack of financial resources. Most of the endemic countries require additional equipment and supplies which can only be obtained by importation. Only a rough estimate of the probable cost of intensification of the campaign is possible but on the basis of the information available it is postulated that the sum required from international sources is in the region of five to ten million dollars. This is required for transport, equipment and training and probably represents about 10 to 15 per cent. of the expenditure to be undertaken from the national resources of the countries concerned.

By means of conferences and training courses, visits by consultants and staff members, the provision of essential equipment and the distribution of vaccine, the Organization has laid a good foundation for the eradication of the disease. The provision of further financial aid is necessary to accelerate the programme and to ensure that eradication is accomplished within the shortest possible time, and the risk of international dissemination of infection is removed.

2. Incidence of Smallpox

The information available on the incidence of smallpox is summarized below.

World Incidence

In 1958, 245 978 cases were reported and in 1961, 78 430 cases: a reduction of 68 per cent. As shown in Table 1 the fall occurred between 1958 and 1959. Since then there has been little change and the number of cases in 1961 was greater than in 1960.

It is clear from the table that Asia, and particularly India and Pakistan contributed most of the cases.

TABLE 1. WORLD INCIDENCE OF SMALLPOX 1958-61

By Continents

Continent	1958	1959	1960	1961
Africa	14 403	14 155	15 851	24 140
America	4 334	4 899	3 090	1 923
Asia				
India	170 829	45 450	31 052	45 195
Pakistan	49 884	7 803	1 905	2 741
All other countries	6 516	5 234	6 284	4 406
Total	227 229	58 487	39 241	52 342
Europe	12	14	47	25
Oceania	0	0	1	0
TOTAL	245 978	77 555	58 230	78 430

Incidence by Countries and Territories

The number of cases in the countries and territories which reported smallpox in 1960 and 1961 are shown in Table 2.

TABLE 2. SMALLPOX - 1960 AND 1961

Countries and Territories Reporting Cases

Country	Cases		Country	Cases	
	1960	1961		1960	1961
AFRICA					
Algeria	7	8	Nigeria	4 140	3 538
Basutoland	-	83	Portuguese Guinea	1	7
Bechuanaland	21	16	Rhodesia & Nyasaland,		
Cameroun	-	1 345	Federation of:		
Central African			Nyasaland	795	1 465
Republic	1	-	N. Rhodesia	350	233
Chad	4	273	S. Rhodesia	12	3
Congo (Brazzaville)	-	22	Ruandi Urundi	19	-
Congo (Leopoldville)	605	2 251	Senegal	6	201
Dahomey	768	119	Sierra Leone	12	6
Ethiopia	293	761	Spanish Equatorial		
Gambia	7	12	Region	1	-
Ghana	139	70	South Africa	65	7
Guinea	176	96	Sudan	135	104
Ivory Coast	1 634	4 656	Tanganyika	1 584	908
Kenya	151	289	Togo	347	281
Liberia	-	1 119	Upper Volta	126	2 360
Mali	1 212	1 706	Uganda	707	398
Mauritania	44	12			
Mozambique	81	51	Total	15 851	24 140
Niger	2 408	1 740			
AMERICA					
Argentina	65	4	Uruguay	19	1
Brazil: Rio de Janeiro	650	1 411			
Colombia	171	16	Total	3 090	1 923
Ecuador	2 185	491			
ASIA					
Aden - Colony	8	1	Malaya	15	-
Protectorate	5	-	Nepal	-	5
Afghanistan	111	174	Pakistan - East	1 086	420
Burma	392	88	West	780	1 396
Cambodia	-	1	Karachi	139	925
Ceylon	-	34	Saudi Arabia	32	-
India	31 052	45 195	Thailand	32	33
Indonesia	5 196	3 777	Portuguese India	13	124
Iran	378	168			
Korea	2	1	Total	39 241	52 342

TABLE 2. SMALLPOX - 1960 AND 1961 (continued)

Countries and Territories Reporting Cases

Country	Cases		Country	Cases	
	1960	1961		1960	1961
EUROPE			USSR		
Belgium	-	1	Moscow	46	-
Germany, Fed. Rep.	-	5	Tadzhik SSR	-	1
Spain	-	17			
United Kingdom:			Total	47	25
England and Wales	1	1			
OCEANIA					
Niue	1	-			

As shown in the Table altogether 59 countries reported one or more cases in one or both years.

Thirty-three of the countries were in Africa, 15 in Asia, five in America, five in Europe and one in Oceania.

In Africa the largest numbers of cases were in:

Cameroun	Mali
Congo (Leopoldville)	Niger
Dahomey	Nigeria
Ethiopia	Nyasaland
Ivory Coast	Tanganyika
Liberia	Upper Vola
	Uganda

In America the largest numbers were in:

Brazil and Ecuador

In Asia the largestnumbers were in:

India Indonesia Pakistan

In Oceania only one case was reported.

In Europe altogether 72 cases from five countries were reported in the two years and in every instance the infection was imported from other continents.

In 1962 in Europe more outbreaks due to imported cases have occurred. Details of the sources of these outbreaks for 1961 and 1962 (to mid-April) are given below.

3. Sources of Infection of European Outbreaks in 1961 and 1962 (Mid-April)

In 1961 six episodes were reported. The sources of infection were:

Locality	Infection Imported From
Moscow	Delhi
Brussels	Congo (Leopoldville)
Madrid	Bombay
Ausbach	India
London	Karachi
West Bromwich, England	Karachi

In 1962 (to mid-April) the following episodes were reported:

Locality	Infection Imported From
Dusseldorf	Liberia
Kreis de Monschau	India
United Kingdom:	
West Bromwich	Karachi
London	Karachi
Birmingham	Karachi
Bradford	Karachi
Cardiff	Karachi

Within the United Kingdom spread occurred to seven localities from the episodes listed above. In Germany a secondary case occurred in Aachen from the episode in Kreis de Monschau. In Switzerland one case was reported which was secondary to the Dusseldorf episode.

Outside Europe an outbreak occurred in Dubai (Trucial States) due to an importation from Pakistan and this led to a secondary outbreak in Masna.

Cases which had occurred on ships at sea were reported from the following ports but they did not lead to outbreaks in the ports of arrival:

Port	Ship Arriving From
Danzig, Poland	Calcutta
Suez	Bombay
Aden	Bombay
Doha (Qatar)	Kalat, W. Pakistan
Kochin	Calcutta
Chittagong	Karachi
Port Said	Munael Ahmadi

The information presented demonstrates the risks to which countries free from the disease are exposed by the persistence of smallpox in the endemic areas. It stresses the international importance of the Eradication Programme.

4. Progress Towards Eradication

The progress so far made in the implementation of the Programme based on the information available from the countries concerned is as follows:

African Region

In the African Region three countries, Liberia, Ivory Coast and Mali have planned eradication schemes and have requested assistance from WHO. Details are given below:

Liberia (1961 - 1119 cases reported). A plan of operation for an eradication project is ready for implementation and WHO will provide a medical officer and supplies including dried smallpox vaccine.

Ivory Coast (1961 - 4656 cases reported). A mass vaccination campaign has been prepared with WHO assistance. The Organization's commitment for this project consists of the supply of dried vaccine, and in addition it was arranged that the WHO Public Health Administrator will act as adviser to the national officer assigned to the project.

Although they have not yet adopted formal eradication programmes, it is known that the other countries in the Region with a high incidence of smallpox - Cameroun, Congo (Brazzaville), Ghana, Kenya, Niger, Nigeria, Nyasaland, Uganda, Upper Volta - have intensified their control measures and vaccination schemes.

The Americas

In the Americas, Brazil and Ecuador still harbour smallpox endemic foci.

Brazil (1961 - 1411 cases were reported). Equipment has been provided by the Organization for two strategically located laboratories for the production of dried vaccine to serve widely separated regions of the extreme north and south of Brazil. During 1960 equipment was provided for a third laboratory and in the Oswaldo Cruz Institute which will be a central production laboratory, and which will serve as a training centre for the personnel of other laboratories in the country, provision is made for fellowships to enable those in charge of vaccination campaigns in different areas to observe the development of campaigns in other countries.

Ecuador (1961 - 491 cases were reported). A two-year project has been set up to resume the smallpox vaccination campaign previously carried out. To co-operate with the Government in the eradication of smallpox the Organization provided in 1951 a lyophilized smallpox vaccine production unit. For the purpose of accelerating the activities of the vaccination programme a new agreement was signed in 1957 with the aim of eradicating smallpox within five years through the immunization of not less than 80 per cent. of the population of the country. In 1958, 301 112 vaccinations were administered. In the first four months of 1959, 102 852 persons were vaccinated. In May 1959 on the arrival of the permanent consultant the activities took on a faster pace and 516 667 persons were vaccinated in the course of that year. From the resumption of the campaign in 1958 to December 1960 a total of 132 398 have been vaccinated. Provision is made for one medical officer.

Eastern Mediterranean Region

In the Eastern Mediterranean Region four countries - Pakistan, Saudi Arabia, Sudan and Yemen - have either planned or initiated eradication programmes and have requested WHO assistance. Details are as follows:

Pakistan (1961 - 2741 cases reported). Starting in January 1961, a pilot phase was carried out in the districts of Comilla and Faridpur, Dacca Divison (East Pakistan) and by November 1961, 85 per cent. of the population of these two districts numbering 7.5 million had been vaccinated. No fresh cases of smallpox have been reported in these two districts since the campaign started. Five million doses of lyophilized vaccine drawn from the Smallpox Eradication Special Account were used in this campaign. The Government has requested WHO assistance in establishing a pilot project in the district of Kushtia (Rajshahi province, East Pakistan) in the form of provision of supplies (mainly vehicles) to an amount of $ 10 000. This is to be carried out over a period of two years and will be further extended to the entire province of East Pakistan. Supplies and equipment to an amount of $ 5000 are provided for in 1963 budget. WHO provided assistance in the production of freeze-dried vaccine, and two consultants visited the Institute of Public Health in Dacca. No supplies of vaccine from outside sources would be needed for the campaign.

Saudi Arabia (1961 - no cases reported). Smallpox is endemic in Saudi Arabia. A general vaccination campaign started in 1960 and 458 265 persons were vaccinated between September 1960 and September 1961. Plans are being made to include the production of lymph vaccine within the Central Public Health Laboratory at Riad, which is being established with the assistance of WHO. The Government has requested WHO assistance in the supply of 3 million doses of dried vaccine and three motor vehicles for transport in remote areas.

Sudan (1961 - 104 cases reported). A plan for the eradication of smallpox over a period of four years has been prepared by the Ministry of Health. According to this plan the country is to be divided into four zones and each year a complete zone will be vaccinated. The first phase of the campaign started in January 1962 in the Provinces of Kardofan and Darfour, of a population estimated at 3.5 million persons. The total number of persons that were vaccinated up to the end of February 1962 is 1 118 078 persons.

According to the plan of operation WHO will supply one short-term consultant-epidemiologist for one month, plus the following equipment and supplies:

3 million doses lyophilized vaccine to be provided in instalments of 1 million each (2 million already provided to end of February 1962)

4 land rover cars (3 already provided)

50 bicyles

90 portable sterilizers

50 thermo flasks

9 kerosene refrigerators.

Yemen. In February 1961 a WHO consultant visited the Yemen to study the situation in Yemen regarding the problem of endemicity of smallpox in general, and discuss with the Government officials the possibility of launching a campaign for the control and eventual eradication of the disease, and suggest a workable plan for the eradication with the possible assistance of WHO.

Following his recommendations, a plan of operation was signed by the Government on 25 December 1961 for the vaccination of the entire population within three years. WHO will assign a short-term consultant for three months in 1962 and three months in 1963. Equipment and supplies for a value of $ 3500 in 1962 and $ 4000 in 1963 will be provided. These include 3 million doses of vaccine to be provided in instalments. Two land rover station wagons with accessories and supplies are needed for the campaign. The short-term consultant is to start his work shortly.

Somalia. Somalia is not an endemic area for smallpox. The institute of serovaccine at Merca produces some calf lymph but not to cover the entire country's requirements. The Government would intensify control measures but not really plan a smallpox eradication campaign. It was to prepare a plan of operation for the project indicating the assistance to be provided by WHO, consisting of a short-term consultant in 1962 for one month, plus equipment and supplies to an amount of $ 5000. A request for 5 000 000 doses of dried smallpox vaccine has been received, 370 000 doses were supplied in December 1961.

South-East Asia Region

In the South-East Asia Region four countries - Afghanistan, India, Nepal and Thailand - have either planned or initiated eradication programmes and have requested WHO assistance. Details are as follows:

Afghanistan (1961 - 174 cases reported). Smallpox is endemic and occasionally epidemic. The Government is aware of the need to eradicate smallpox, and in 1959 it adopted a country-wide pre-eradication control programme, making vaccination compulsory. Up to March 1962, 4 million people have been vaccinated in Kabul and the provinces. A detailed plan of action to vaccinate about another 9.5 million people in 1962-65 is being considered - approximately 2.4 million people per year. As the present staff is insufficient to effect coverage in the provinces, the Government plans to have, by 1965, a minimum of one vaccinator per 50 000 population, and ten doctors on smallpox control duties for the country. WHO has given help since 1952 to the Vaccine Institute in Kabul, and a maximum yearly production of 1.5 million doses of glycerinated lymph can be achieved. Afghanistan, being a mountainous country with many remote villages, faces the problem of transport and storage of vaccine. WHO helped in recent years in providing a quantity of freeze-dried vaccine. It is estimated that 1 million doses of freeze-dried vaccine will be required yearly for the next four to five years.

India (1961 - 45 195 cases reported). The Government planned a national smallpox eradication programme as part of its Third Five-Year Plan. One of the preparatory steps taken was the establishment in 1960-61 of 16 pilot projects in all States and in the Union territories of Delhi and Himachal Pradesh. These pilot projects were concluded by 31 March 1961, and much useful experience has been gained which will be of assistance in the planning of an economical, practical and effective eradication programme.

Present proposals envisage vaccination of the country's entire population within three years. As regards implementation, Mysore and Madras have been the first States, along with the Union territory of Himachal Pradesh, to get started in February/March 1961, and it is anticipated that the other States will be in a position to embark on major programmes by the end of 1962. The supplies of vaccine required are being provided on the basis of 75 million doses of glycerinated lymph vaccine from the 13 local manufacturing laboratories and 250 million doses of freeze-dried vaccine gifted by the USSR Government in eight quarterly instalments, the first two of which are already received.

WHO and UNICEF have assisted in the establishment of two freeze-dried smallpox vaccine production units - one in Patwadangar, Uttar Pradesh and the other in Guindy, Madras; preliminary production trials will be started in mid-1962.

A successful research programme on the epidemiological, clinical and preventive aspects of smallpox has been in operation since 1961 in Madras. This is being assisted by WHO, with the co-operation of the Infectious Diseases Hospital and the Corporation of Madras.

Nepal (1961 - five cases reported). Smallpox is endemic, and outbreaks of varying intensity keep occurring yearly in various parts of the country. During 1961, there was an epidemic in Pokhra, mostly among Tibetan refugees. A vaccination campaign in the area and quarantine restrictions on travellers to and from the affected area soon brought the situation under control. A WHO assisted smallpox control pilot project was started in February 1962 with the objective of covering the total population of approximately 450 000 in the Kathmandu Valley in the period 1962/63. WHO assistance consists of a public health nurse and the supply of freeze-dried smallpox vaccine.

In view of the difficulties of terrain, poor communications and shortage of medical and auxiliary health personnel, the Government does not anticipate to be in a position to embark on a country-wide eradication campaign before 1965. An estimate of international assistance which may be required for this campaign will only be possible sometime in 1964, after the pilot project's experience over a period of two years will have been assessed.

Thailand (1961 - 33 cases reported). Smallpox has not been a major public health problem in Thailand for some years, but in view of isolated outbreaks, particularly in the southern provinces, the vaccination programme has been intensified. In addition, the Government has now launched a three-year smallpox eradication programme. The objective of this programme is to vaccinate yearly one-third, or about 8 million people, of the estimated total population of 25 million. A total of 7 261 141 vaccinations were performed in 1961. One million bahts yearly have been allocated for the country-wide vaccination. International assistance requested consists of six vehicles for supervision of field work and 160 000 vials and 200 000 vials of freeze-dried smallpox vaccine in 1962 and 1963 respectively.

WHO assistance to smallpox control activities has been given through WHO medical officers associated with the treponematoses control project, and the annual smallpox vaccinations carried out by these mobile teams as an additional activity have been considerable. A WHO/UNICEF assisted freeze-dried vaccine production unit in Bangkok started production in 1960 and has an output of up to 30 000 ampoules annually. Further WHO/UNICEF assistance with additional equipment in 1962 will help increase the output in 1963.

It is known that other countries in the Region have intensified or are intensifying their vaccination programmes. The measures taken in Burma, Ceylon and Indonesia are shown below:

Burma (1961 - 88 cases). Smallpox is endemic, and in recent years some progress in reducing the incidence has been achieved by carrying out a vaccination programme through the network of rural health centres (cf. 1959, 1533 cases; 1960, 392 cases; 1961, 88 cases). In 1960 a total of 2 954 352 vaccinations were performed, and in the first nine months of 1961 1 623 278. In December 1961 a plan for a smallpox eradication programme was prepared by the Department of Health and is being considered by the Government. In this plan it is recommended that areas representing the prevailing conditions in the country should be selected in order to study the most practical approach and requirements for a subsequent nation-wide mass vaccination campaign. WHO assistance to the pilot projects with supply of freeze-dried vaccine has been offered. The Government expects that smallpox will be controlled and ultimately eradicated when the four-year Economic and Social Plan for Burma comes into full operation, when the public health section of the medical and health services has its full complement of doctors and when the full target of 800 rural health centres with 800 vaccinators is achieved.

Ceylon (1961 - 34 cases). Smallpox is under control. Constant vigilance through strict quarantine measures and an intensive permanent vaccination programme continue to be maintained to prevent introduction of the disease. Between October 1961 and February 1962 there occurred three localized outbreaks in Kurunegala (16 cases, five deaths), Kegalla (28 cases, three deaths) and Colombo North (11 cases, four deaths). Isolation of cases and contacts with mass vaccination stopped the spread of the disease.

Indonesia (1961 - 3777 cases). In 1961 there occurred outbreaks in Central Java, Palembang, South Sumatra, Sulawesi and Djambi Province. In April 1962, cases of smallpox arose in Djakarta City and in adjoining villages. These outbreaks have had positive repercussion in reactivating and intensifying mass vaccination, and results are encouraging. In South Sulawesi Province, for example, where smallpox has been constantly recurring and providing a source of new infection in the other islands, an intensive vaccination campaign was started at the end of 1961 and completed early in 1962, with other 80 per cent. population coverage in most of the 26 Regencies, and 50 per cent. in the few Regencies in the mountainous parts of the province. Glycerinated and dried vaccine lymph are produced, and the production of freeze-dried vaccine at the Bio-Pharma (Pasteur) Institute is expected to start in May 1962. WHO and UNICEF have assisted in the establishment of the freeze-dried vaccine unit, and it is expected that a target output of about 5 million doses per annum may be achieved by the end of 1962 or in 1963.

Western Pacific Region

Smallpox is no longer endemic in any of the countries at present in the Western Pacific Region, according to reports issued by these countries. However, smallpox vaccination campaigns are being undertaken in several of the countries, e.g., in Viet Nam and Cambodia, where an eradication campaign is under way, although there have been no cases of smallpox reported from Cambodia since 1959.

With the present-day means of rapid transport the countries of the Region are concerned about the possible introduction of smallpox from the still existing reservoirs of infection, and the Governments, particularly of those countries bordering on smallpox endemic areas, are faced with the difficulty of maintaining a high level of immunity in their populations. This is the case in Laos, Cambodia, North Borneo, Brunei, Sarawak. A basic difficulty is the lack of trained personnel and others, and the lack of refrigeration facilities in rural areas or of freeze-dried smallpox vaccine, and of course transport. Most of these countries would require assistance, particularly in the supply of freeze-dried vaccine and/or refrigeration facilities, some transport, and the technical assistance of short-term consultants.

5. Assistance Provided by WHO

(a) Vaccine: Vaccine contributions to WHO

The Organization has during the last three years received generous gifts of vaccine for the Eradication Programme. (In Table 3 below is shown the amounts donated and the quantities issued to various Member States on request for use in their eradication programmes.) Out of a total of 34 million doses put at the disposal of the Organization, the quantity now remaining available, not already earmarked, is 6.5 million doses.

The vaccine is only called forward for delivery by donating countries as and when the Organization agrees to undertake the commitments for the supply of the vaccine. The donated vaccine is only used for eradication or in pilot project programmes, and on occasions to meet sudden emergencies arising from outbreaks. When an offer of vaccine is received the vaccine is tested in one or more reference laboratories to ascertain that it conforms with the WHO requirement for anti-smallpox vaccines.

The Organization continues to recommend the use of freeze-dried vaccine on account of its relative stability under a variety of conditions, particularly in tropical and sub-tropical areas, and any further contributions of vaccine to the Smallpox Eradication Special Account should be of the freeze-dried type and should conform with the WHO recommended requirements for smallpox vaccine.

Those vaccines generously donated to the Organization have so far served a very useful purpose and at the present time quite a number of eradication campaigns conducted in the endemic areas are using the donated vaccines. It is hoped that additional gifts of freeze-dried vaccine will be offered to the Organization in order to meet further requests from various Member States for assistance in their smallpox eradication programmes.

(b) Conferences

WHO organized in November 1959 a smallpox conference in Brazzaville and in November 1960 it sponsored an Inter-Regional Smallpox Conference in New Delhi. The African conference was attended by 26 participants from 20 countries in Africa south of the Sahara and from one country of the Eastern Mediterranean Region. The

TABLE 3

Donations received		Countries which requested donated vaccine		
Donor	Quantity donated	Country	Already delivered	Called forward or reserved for commitments
USSR	25 000 000 doses	Afghanistan	500 000	3 000 000
Netherlands	2 000 000 doses	India	1 000 000	
Jordan	3 000 000 doses	Ivory Coast	400 000	1 600 000
Red Cross in German Democratic Republic	1 000 000 doses	Lebanon	2 350 000	
		Mali	500 000	3 500 000
		Nepal	100 000	
Mexico	3 000 000 doses	Pakistan	5 000 000	
		Somalia	370 000	
		Sudan		
		Kordofan & Darfour	2 000 000	1 000 000
		Khartoum & Omdurman	100 000	
		Saudi Arabia		3 000 000
		Yemen	285 000	2 750 000
	34 000 000		12 605 000	14 850 000
			TOTAL 27 455 000	

Cyprus - 200 000 (not included)

Inter-Regional Smallpox Conference which was held in New Delhi was attended by 18 participants representing 14 countries from the Eastern Mediterranean, South-East Asia and Western Pacific Regions. Both conferences were attended by a large group of observers.

(c) Training courses

In November 1960 a course was held at Yaba, Nigeria, on the production of freeze-dried vaccine. Eight participants from the Eastern Mediterranean and African Regions attended the course which lasted from 14 to 26 November 1960.

In 1961 a second training course, also organized by WHO, was held in Bangkok, Thailand, on the production of freeze-dried vaccine. There were 17 participants drawn from 14 countries of the Eastern Mediterranean, European, South-East Asia and Western Pacific Regions.

In addition to these two training courses a number of fellowships were awarded to candidates from countries to study the freeze-dried vaccine production method employed at the Lister Institute of Preventive Medicine, Elstree, Hertfordshire, England.

(d) In February and March 1962 a seminar on smallpox was held in Madras and lasted two weeks covering three different aspects of clinical and laboratory diagnosis, measures to be taken to prevent export of smallpox, and the measures to be taken to prevent its importation.

(e) Visits have been made by consultants and staff members to endemic areas with the object of helping countries to plan eradication campaigns. Consultants were also provided to help install freeze-dried vaccine equipment supplied by WHO and UNICEF.

The Organization has provided equipment and supplies for the production of freeze-dried vaccine where required.

6. Cost and requirements of the Eradication Programme

In a report presented to the Twelfth World Health Assembly on Smallpox Eradication (A12/P&B/9, April 1959), the probable expenditure on eradication campaigns in most countries was worked out on a theoretical basis. Tables prepared

in 1959 which showed for each country or territory the population, the smallpox incidence for 1956, 1957 and 1958, and the cost of total vaccination in United States dollars are reproduced in Annex I.

It was estimated from these tables that the average cost throughout the world for mass vaccination would be US$ 0.10 per person vaccinated, or US$ 100 000 per million of the population. For about 1000 million inhabitants living in endemic areas and which the Organization's global programme was to cover, approximately one hundred million United States dollars was the estimated total expenditure.

From available information it is difficult to present an overall picture of the present financial provisions throughout the world for smallpox eradication, mainly because in many countries the cost of the campaign forms an integral part of the general public health budget. A number of countries, however, have made ready a preliminary estimate of their extra-budgetary requirements to meet additional expenditure, mostly for transport, storage equipment and supplies for vaccine institutes.

In India (population 430 millions) it has been estimated that the total cost of the eradication campaign will be $ 17 million spread over five years. Of this sum 70 million rupees ($ 14.5 million) may be found from national resources leaving $ 2.5 million to be sought from international assistance. This $ 2.5 million represents US$ 0.06 per head of population. It is required for vehicles, extra equipment for vaccine institutes, and extra cold storage equipment.

Pakistan (population 90 millions) estimates that $ 950 000 would be required from international assistance for the purchase of similar items. This sum represents US$ 0.01 per head of population.

Mali (population 5 millions) estimates the total cost of a three year programme at $ 235 000 of which $ 45 000 ($ 0.09 per head of population) would be required from international sources.

These preliminary estimates would require to be carefully reconsidered before a precise figure was arrived at but they are in reasonable accord with each other. Assuming they are reasonably accurate, and making the further

assumption that the costs in other countries would be similar it would seem that the cost from international funds for the intensification of eradication schemes would be in the region of US$ 0.07 per head of population. For the countries of high incidence in Table 3 (those with 100 or more cases either in 1960 or 1961) the total cost on the above basis would be in the region of $ 6 million. If the other countries in which the disease is endemic were added the total cost might be about $ 10 million, but in these countries of lower epidemicity less intensive programmes which could be carried out at less cost would probably be effective.

The sum of $ 10 million for additional aid for the programme, representing 10 per cent. of the sum of $ 100 million estimated in 1959 as the total cost is therefore probably reasonably accurate since it is thought that most endemic countries could themselves find 85 to 90 per cent. of the cost.

ANNEX 1

Country or territory 1959	Population (1000)	Smallpox cases			Cost of total vaccination US$
		1956	1957	1958	
Africa					
French Equatorial Africa	4 900	57	57	14	490 000
French West Africa	19 200	4 855	12 873	6 612	1 920 000
Angola	4 392	106	11	135	439 200
Bechuanaland	334	-	111	96	33 400
Cameroons (French)	3 240	42	4	10	324 000
Belgian Congo	13 100	4 663	2 032	1 289	1 310 000
Gambia	290	15	33	21	29 000
Ghana	4 836	259	184	166	483 600
Portuguese Guinea	559	4	149	41	55 900
Kenya	6 351	396	806	735	635 100
Liberia	1 250	...	...	5 569	125 000
Mozambique	6 234	4	-	-	623 400
Nigeria	32 433	4 614	9 733	1 855	3 243 300
Rhodesia & Nyasaland	7 650	974	915	510	765 000
Ruanda-Urundi	4 510	58	34	29	451 000
Sierra Leone	2 120	946	4 845	512	212 000
Somaliland (British)	650	-	3		65 000
Tanganyika	8 916	605	856	1 176	891 600
Togoland (French)	1 085	6	11	29	108 500
Uganda	5 767	231	481	418	576 700
Zanzibar	285	52	1	1*	28 500
America					
Argentina	20 255	86	336	22	2 025 500
Bolivia	3 311	481	1 310	193	331 100
Brazil	59 846	2 383x	1 014x	...	5 984 600
Colombia	13 522	2 572	2 103	1 669	1 352 200
Ecuador	4 007	669	913	821	400 700
Paraguay	1 638	132	103	21	163 800
Uruguay	2 650	42	2	-	265 000
Eastern Mediterranean					
Ethiopia	20 000	555	403	573	2 000 000
Libya	1 136	-	2	-	113 600
Sudan	11 037	438	285	46	1 103 700
Tunisia	3 815	2	-	-	381 500

Annex 1

Country or territory 1959	Population (1000)	Smallpox cases			Cost of total vaccination US$
		1956	1957	1958	
Eastern Mediterranean (continued)					
Iran	19 723	1 616	1 008	311	1 972 300
Iraq	6 538	2 173	1 922	6	653 800
Lebanon	1 525	84	108	-	152 500
Pakistan	85 635	5 323	25 770	49 912	8 563 500
Saudi Arabia	6 036	-	65	142	603 600
Yemen	4 500	...	...	20	450 000
Somaliland (Italian)	1 310	84	-	-	131 000
Aden Colony	152	-	13	67	15 200
Aden Protectorate	650	-	48	97	65 000
Bahrein	124	61	7	-	12 400
Kuwait	208	8	23	-	20 800
Muscat and Oman	550	22	4	9	55 000
Qatar	40	4	2	-	4 000
Trucial Oman	80	3	-	-	8 000
South-East Asia					
Afghanistan	13 000	1 002	239	287	1 300 000
Burma	20 054	4 223	2 739	1 663	2 005 400
Ceylon	9 165	-	19	36	916 500
India	392 440	45 166	78 896	167 437	39 244 000
Portuguese India	649	1	42	98	64 900
Indonesia	85 100	2 817	1 550	3 051	8 510 000
Thailand	21 076	4	3	28	2 107 000
Western Pacific					
Cambodia	4 600	525	111	16	460 000
Korea (South)	22 655	9	7	9	2 265 500
Viet Nam (South)	12 300	256	83	30	1 230 000

\- Nil

... Data not available

* Imported

x Cases reported from F.D. and State capitals only