

WORLD HEALTH
ORGANIZATION

EXECUTIVE BOARD

Thirty-first Session

Supplementary item

ORGANISATION MONDIALE
DE LA SANTE

EB31/46 ✓
14 January 1963

ORIGINAL: ENGLISH



SMALLPOX ERADICATION

Introduction

In the Director-General's Report on Smallpox Eradication to the Fifteenth World Health Assembly, it was pointed out that progress in the global effort was slow. This was due, in great part, to the lack of financial resources on the part of national health administrations. A copy of this report (A15/P&B/18) is attached for easy reference.

The Assembly's resolution, WHA15.53, a copy of which is also attached, recognized that countries in endemic areas are meeting difficulties in organizing country-wide campaigns. The resolution called for further national efforts and additional international assistance to the global eradication programme. In a circular letter dated 31 July 1962 (a copy of which is attached) the Director-General invited the attention of the Member States to the resolution and called for voluntary contributions in cash or kind towards the provision of freeze-dried vaccines, transport vehicles and laboratory and cold-storage equipment for distribution by the Organization to countries which have set up sound eradication programmes and which have requested assistance.

In endemic areas and particularly in densely populated countries, epidemics are known to occur at regular intervals due to large accumulation of susceptibles. The cycle is usually between five and seven years. The epidemics of 1951 (489 922 cases) and of 1957-1958 (154 446 and 245 978 cases respectively) are a warning of what could be expected in 1963 and 1964 if eradication campaigns, or at least the extension and intensification of vaccination control measures, are delayed. This possibility calls for an immediate additional effort at both national and international levels.

It is intended, in this report, to give a summary of recent developments in the programme since the last session of the Assembly. Information from all countries in the endemic areas is incomplete for the year 1962 and only available reports on the incidence of smallpox and the progress achieved in eradication activities will form the subject of this paper.

The problem

Effective eradication schemes are based on two fundamental elements, namely the existence of a public health service able to organize, both technically and administratively, a mass vaccination programme to cover at least 80 per cent. of a country's population, and the availability of a vaccine fully potent at the time of administration. It has been argued that some countries with supposedly well-organized health services have been unable to eliminate endemic foci and control smallpox after years of intensive vaccination and revaccination. This is true, but if a detailed analysis is made of all the factors involved in a country-wide scheme of control measures, such as the vaccination coverage of the various age-groups, the potency of the vaccine used, particularly the vaccine administered in remote rural areas, the vaccination technique, the observation and recording of vaccination results, it will be found that one or more of these factors, when incorrectly applied, could be blamed for the ineffective herd immunization. Not enough emphasis has ever been placed in endemic areas on the importance of evaluating vaccination campaigns. Vaccination and revaccination results have hardly ever been observed and recorded. From many parts of the endemic areas, again and again came reports that smallpox had attacked recently-vaccinated individuals.

Ever since the resolution to eradicate smallpox, adopted by the Eleventh World Health Assembly, the Organization has continued to offer its assistance to national eradication campaigns in endemic areas. Advising on the planning and organization of eradication campaigns and strongly recommending the use of a thermo-stable freeze-dried vaccine suitable for use in tropical and sub-tropical areas, the Organization has followed closely the progress of the global effort.

Some countries in the endemic areas have organized effective eradication campaigns, while many others, desiring to participate in the global effort, are now encountering difficulties due to insufficient health personnel and to the inadequacy of transport and refrigeration equipment which needs to be purchased from abroad with hard currency, not always easy to obtain.

TABLE I

Donation	Quantity donated	Programme	Already delivered	Called forward for delivery in 1962 or first months of 1963	Requirements foreseen for 1963	Doses remaining
USSR (packed in 20 dose vials)	25 000 000 doses	Afghanistan (SEARO 30)	1 000 000			
		Yemen 8	30 000			
		Yemen 16	750 000			250 000
		Pakistan 41	5 000 000			
		Sudan 28	3 000 000	3 000 000		1 500 000
		Ivory Coast 14	70 000	30 000		
		Mali 7	500 000	1 000 000		
		Burundi 1	400 000			
		Nepal (SEARO 30)		100 000		
		Congo 2		500 000		
		Saudi Arabia 30				1 500 000
		Ghana				1 500 000
		Upper Volta				2 000 000
		Dahomey				1 000 000
Guinea				300 000		
Seychelles				35 000		
			10 750 000	4 630 000	8 085 000	1 535 000

TABLE I (continued)

Donation	Quantity donated	Programme	Already delivered	Called forward for delivery in 1962 or first months of 1963	Requirements foreseen for 1963	Doses remaining
NETHERLANDS (packed in 100 dose vials)	2 000 000 doses	India (SEARO 30)	1 000 000			
		Nepal 9	100 000			
		Ivory Coast 14	530 000			
		Somalia 14	370 000			
			2 000 000			Nil
JORDAN (liquid vaccine)	3 000 000	Lebanon (EMRO 16)	2 350 000			
		Yemen	5 000			
		Sudan	100 000			
		Cyprus	200 000			
			2 655 000			345 000
RED CROSS IN GERMAN DEMOCRATIC REPUBLIC (100 dose vials)	1 000 000	Ivory Coast 14	400 800	599 200		Nil
MEXICO (liquid)	3 000 000	Total gift transferred to AMRO for disposal by them				

The vaccine generously donated by a number of Member States to the Smallpox Eradication Special Account is being distributed by the Organization to those countries which have planned eradication programmes.

Table I shows the amounts donated and the quantities of vaccine issued to the various countries on request.

It should be noted that the balance of vaccine available for distribution in the months to come has reached a point which calls for an immediate appeal for more donations in order to meet requests for 1963 and 1964.

With the availability of freeze-dried vaccine, countries with adequate personnel, transport and equipment have been able to plan and initiate pilot eradication schemes and/or mass vaccination campaigns. In fact, as will be shown later, quite a number of countries are implementing eradication campaigns at the moment. If countries needing additional transport and refrigeration facilities could be helped to obtain such equipment, the problem would be easier to solve and the global effort towards eradication would show more rapid progress.

World incidence

The number of cases of smallpox reported throughout the world has shown a decline during the last decade:

TABLE II

Year	Cases
1951	489 922
1952	148 357
1953	84 740
1954	95 508
1955	83 627
1956	86 886
1957	154 446
1958	245 978
1959	77 555
1960	58 230
1961	78 430
Reported cases for 1962 were 62 094 up to 28 November 1962	

The increase in the number of cases in the years 1957 and 1958 was mainly due to the epidemic which occurred in India and Pakistan. Both countries contributed most of the cases in 1958: India reported 170 829 cases and Pakistan 49 844 cases.

The following table gives the world incidence 1958 to 1962 (up to 28 November 1962) by continents:

TABLE III

Continent	1958	1959	1960	1961	1962 (up to 28 November)
Africa	14 403	14 155	15 851	24 146	23 274
America	4 334	4 899	3 090	1 923	1 822
Asia	227 229	58 487	39 241	52 342	36 858
Europe	12	14	47	25	140
Oceania	-	-	1	-	-
TOTAL	245 978	77 555	58 230	78 430	62 094

TABLE IV. SMALLPOX 1960, 1961 AND 1962 (UP TO 28 NOVEMBER)
COUNTRIES AND TERRITORIES REPORTING CASES

Country	Cases		
	1960	1961	1962
AFRICA			
Algeria	7	8	1
Angola	-	-	3
Basutoland	-	83	52
Bechuanaland	21	16	4
Cameroun	-	1 345	719
Central African Republic	1	-	43
Chad	4	273	1 141
Congo (Brazzaville)	-	22	1 086
Congo (Leopoldville)	605	2 251	3 528
Dahomey	768	119	106
Ethiopia	293	761	328
Gabon	-	-	1
Gambia	7	12	4
Ghana	139	70	143
Guinea	176	96	2 933
Ivory Coast	1 634	4 656	2 017
Kenya	151	289	76
Liberia	-	1 119	302
Mali	1 212	1 706	1 558
Mauritania	44	12	64
Mozambique	81	51	63
Niger	2 408	1 740	1 026
Nigeria	4 140	3 538	3 600
Portuguese Guinea	1	7	2
Rhodesia and Nyasaland			
Nyasaland	795	1 465)	
Northern Rhodesia	350	233)	781
Southern Rhodesia	12	3)	
Ruanda Urundi	19	-	Burundi 26
			Rwanda 28
Senegal	6	201	215
Sierra Leone	12	6	77
Spanish Equatorial Region	1	-	-
South Africa	65	7	112
Sudan	135	104	68
Tanganyika	1 584	908	859

TABLE IV (continued)

Country	Cases		
	1960	1961	1962
AFRICA (continued)			
Togo	347	281	485
Upper Volta	126	2 360	1 283
Uganda	707	398	540
TOTAL	15 851	24 140	23 274
AMERICA			
Argentina	65	4	2
Brazil			
Rio de Janeiro	650	1 411	1 053
Other			562
Canada	-	-	1
Colombia	171	16	23
Ecuador	2 185	491	169
Uruguay	19	1	1
Venezuela	-	-	11
TOTAL	3 090	1 923	1 822
ASIA			
Aden			
Colony	8	1	-
Protectorate	5	-	-
Afghanistan	111	174	163
Burma	392	88	21
Cambodia	-	1	-
Ceylon	-	34	12
India	31 052	45 195	30 206
			Ports & airports
			2 433
Indonesia	5 196	3 777	761
Iran	378	168	28
Korea	2	1	-
Malaya	15	-	-
Muscat and Oman	-	-	8
Nepal	-	5	-

TABLE IV (continued)

Country	Cases		
	1960	1961	1962
ASIA (continued)			
Pakistan			
East	1 086	420	453
West	780	1 396	1 554
Karachi	139	925	Ports & airports 1 200
Saudi Arabia	32	-	-
Thailand	32	33	2
Treaty States	-	-	17
Portuguese India	13	124	-
TOTAL	39 241	52 342	36 858
EUROPE			
Belgium	-	1	-
Germany, Federal Republic	-	5	38
Poland	-	-	32
Spain	-	17	-
Switzerland	-	-	1
United Kingdom, England and Wales	1	1	69
USSR			
Moscow	46	-	-
Tadzhik SSR	-	1	-
TOTAL	47	25	140
OCEANIA			
Niue	1	-	-

As shown above, altogether 30 countries reported over 100 cases in one or more of the three years under review.

In Africa, the largest number of cases were in:

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

In the Americas, the largest numbers were in Brazil and Ecuador.

In Asia, the largest numbers were in India, Indonesia and Pakistan.

As a result of importation of infection into Europe, cases were reported in 1962 (up to 28 November) from the following countries:

Federal Republic of Germany	38
Poland	32
United Kingdom	69
Switzerland	1
	—
TOTAL	140
	—

PROGRESS TOWARDS ERADICATION

AFRICAN REGION

In the African Region where endemic smallpox is still persisting in many countries, no appreciable progress in national eradication activities is noted at present. Vaccination control measures have been intensified in a number of countries, but no eradication campaigns have yet been successfully completed.

Angola

Population 4 642 000 (estimated mid 1961), no cases 1960 or 1961, three cases 1962 (up to 28 November). A systematic vaccination programme is carried out annually.

Basutoland

Population 697 000 (estimated mid 1961), 81 cases 1961, 52 cases 1962 (up to 28 November). Over 80 per cent. of the population has been successfully vaccinated during the past year (1961) and every effort will be made to increase the standard of vaccination.

Cameroon

Population 4 100 000, epidemic in North Cameroun in 1961, 719 cases in 1962 (up to 28 November). A vaccination campaign has been planned to cover about 1.5 million inhabitants each year over three consecutive years. The total expenditure necessary for the implementation of a smallpox eradication campaign is estimated at US\$ 163 000. If this were combined with other health activities in the field, the cost would be about US\$ 57 000.

Central African Republic

Population 1 227 000, 43 cases in 1962, no cases in 1961. Smallpox vaccination is being carried out by the "Service de lutte contre les grandes endémies" and will cover the total population in three years. The Government has requested WHO assistance in supplying 1 200 000 doses of vaccine, supplies and equipment, the total cost of which would be approximately US\$ 10 000.

Chad

Population 2 639 000, four cases in 1960, 273 in 1961 and 1141 in 1962 (up to 28 November). The Government's cost estimate for an eradication programme is US\$ 163 265. In addition, one medical officer, 30 dressers and 60 auxiliaries, 15 vehicles, equipment and supplies, and three million doses of dried vaccine are needed. No formal eradication programme has been presented to WHO.

Republic of the Congo (Brazzaville)

Population 900 000, 22 cases in 1961 and 1086 in 1962 (up to 28 November). Smallpox vaccination campaigns are carried out regularly each year by the "Service des Grandes Endémies". In Brazzaville and Pointe-Noire the Pasteur Institute and the "Service d'Hygiène générale" help in the development of the annual vaccination programme. In 1962 the epidemic which broke out in Brazzaville was brought under control and vaccine was available. For 1963, the Government has requested WHO to provide the 150 000 doses of vaccine it would need for its campaign.

Republic of the Congo (Leopoldville)

Population 14 150 000, 605 cases in 1960, 2251 in 1961 and 3528 in 1962 (up to 28 November). An epidemic occurred in the early months of 1962 in Leopoldville and was brought under control through a mass vaccination campaign. Sporadic cases of

smallpox and local outbreaks of varying severity are frequently reported from provincial areas. A WHO medical officer was sent to Leopoldville from headquarters in February 1962 to advise on the mass vaccination campaign which was implemented in the city and, in November 1962, he paid a second visit to advise on future activities in the control of smallpox and its ultimate eradication from the entire territory. A plan for a pilot eradication scheme in one province was prepared and presented to the Government. The Organization will provide the Congo with the vaccine needed for mass eradication campaigns. Transport, equipment and supplies will also be needed for the pilot scheme and the mass vaccination campaign which follows.

Dahomey

Population 2 050 000, 768 cases in 1960, 119 in 1961 and 106 in 1962 (up to 28 November). No formal smallpox eradication programme has as yet been received from the Government. At the last Regional Committee Session in Geneva, the delegate of Dahomey expressed the Government's desire to participate in the regional eradication effort and accordingly an eradication campaign will soon be planned and WHO's assistance requested. Assistance would mainly consist of supplies of vaccines - two million doses - and equipment and other supplies.

Gambia

Population 284 000, seven cases in 1960, 12 in 1961 and four in 1962 (up to 28 November). It is estimated that a smallpox eradication programme in Gambia would last for three years. The principal needs in this connexion would be a suitable vehicle and a supply of vaccine. The annual cost, estimated by the Government would be US\$ 4200 and the total cost of a three-year programme US\$ 12 600.

Ghana

Population 6 943 000, 139 cases in 1960, 70 in 1961 and 143 in 1962 (up to 28 November). In view of the fact that the incidence of smallpox in Ghana is low compared with that in some of its neighbouring countries, the Government has decided to intensify its existing smallpox control measures rather than initiate a country-wide mass vaccination campaign. This new programme will be supported by legislative and administrative measures to enforce vaccination and to give the vaccinators the

necessary authority for the effective vaccination of the population, since co-operation from the public may not always be forthcoming. The inhabitants of the rural areas will be vaccinated by the medical field units whose sphere of activity has been enlarged in recent years. They will also be responsible for vaccination at frontier posts on the main highways near the borders. Hospitals, maternal and child health clinics, health centres and dispensaries will all take part in the intensified vaccination programme which, it is hoped, will cover infants, their mothers and the general public. The school population will be vaccinated by school-teachers (600) who have already been trained in vaccination techniques. These volunteers, it is hoped, will maintain an adequate herd immunity in this age-group.

Other groups, such as the army, police, factory and other specialized groups of workers, university students, and the large number of people usually encountered at lorry parks, markets, etc., will be vaccinated through this strengthened vaccination programme.

The estimated cost to the Government during the period of this intensified smallpox eradication campaign will be approximately US\$ 548 800 per year. Ghana is asking the Organization to supply six million doses of freeze-dried vaccine for the four-year period of the intensified programme. Transport (six to eight vehicles), bicycles (50), refrigerators (30 kerosene) form part of the request. In addition, a six-week fellowship is requested to enable the medical officer in charge of the campaign to observe various aspects of eradication programmes in neighbouring countries.

Guinea

Population 3 000 000, 176 cases in 1960, 96 cases in 1961 and 2933 in 1962 (up to 28 November). Wishing to participate in the regional smallpox eradication effort, the Government is preparing a vaccination programme to cover the estimated three million inhabitants of the country. A WHO medical officer from headquarters recently visited Guinea and advised on the possibilities of carrying out an eradication campaign. The Government would need the Organization's assistance in obtaining the necessary quantities of freeze-dried vaccine for the campaign and also transport vehicles for remote rural areas.

The Government also wishes to develop, with the assistance of WHO and UNICEF, a freeze-dried vaccine production centre at the Pasteur Institute at Kindia. Once this centre is established it could produce about 20 million doses of freeze-dried vaccine to cover the needs of neighbouring countries, in addition to the national requirements for smallpox control measures.

Ivory Coast

Population 3 300 000, 1634 cases in 1960, 4656 in 1961 and 2017 in 1962 (up to 28 November). A national smallpox eradication campaign was started in July 1961 and is still in progress. Up to October 1962, a total of 2 906 552 vaccinations were performed. Included in this figure are 800 000 primary vaccinations giving a take-rate of 97 per cent. The campaign, which started along the northern, eastern and western boundaries of the country, is now moving towards the southern areas. It is scheduled to last for another year (until 1963) in order to cover the country's estimated population of 3.5 million inhabitants.

According to reports received by the Institut d'Hygiène, the smallpox incidence for 1962 is already showing a decline as compared with the 1961 figure. The Organization is providing the freeze-dried vaccine for the campaign and a supply of 600 000 doses has been called forward for 1963.

Kenya

Population 7 287 000, 151 cases in 1960, 289 in 1961 and 76 in 1962 (up to 28 November). No eradication campaign is planned for Kenya which places reliance on a continuing programme to maintain an 80 per cent. current vaccination status.

Liberia

Population 900 000, 1119 cases in 1961 and 302 in 1962 (up to 28 November). A WHO-assisted smallpox eradication project is due to start at the end of 1962. An amendment to the project has recently been agreed upon whereby the WHO senior medical officer assigned to the campaign will conduct a study to assess the immunity status of the inhabitants in the light of the mass vaccination campaign which covered a large proportion of the population in 1961 and the first five months of 1962. This assessment campaign is scheduled to last six months.

WHO has agreed to provide one senior medical officer and the total amount of vaccine to carry out the mass vaccination programme, but not the vaccine required to maintain full vaccination. WHO may also provide fellowships for the training of a medical officer in epidemiology after consultation between the Government and the Organization.

Mali

Population 4 100 000, 1212 cases in 1960, 1706 in 1961 and 1558 in 1962 (up to 28 November). In 1961 a short-term consultant visited Mali to advise on the small-pox situation there. Following his report a WHO-assisted plan of operation for smallpox eradication was agreed upon, whereby at least 80 per cent. of the total population will be vaccinated within a three-year period. The Organization is providing the freeze-dried vaccine for the campaign. Some 300 000 inhabitants were vaccinated in early 1962 before the rainy season and the campaign is to be resumed in December. The Government has requested a WHO medical officer to assist in the implementation of the campaign and this request, together with other items of assistance such as transport vehicles, bicycles and refrigerators, is now under consideration by the Regional Office for Africa.

Mauritania

Population 640 000, 44 cases in 1960, 12 in 1961 and 64 in 1962 (up to 28 November). Mauritania's health services are still developing and already 14 health divisions have been established. A doctor is in charge of the medical centre of each division and its dispensaries in the rural areas. Forty-eight such dispensaries serve the rural areas and a qualified dresser is responsible for each dispensary. Since 1958, three regional hospitals have been established in the important centres of Atar, Aioun-el-Atrouss and Kaidi. In order to attend to the nomadic population, four nomad squads and a "special unit" have been set up. The National Hospital of Nouakchott, with its School of Nursing, will be the training centre for male and female nurses in Mauritania. This final set-up will help pilot schemes for eradication activities in Mauritania.

Mozambique

Population 6 482 000, 81 cases in 1960, 51 in 1961 and 63 in 1962 (up to 28 November). No eradication scheme is planned for Mozambique. However, a yearly vaccination programme is maintained, whereby thousands of vaccinations are performed using a locally-produced vaccine.

Niger

Population 2 870 000, 2408 cases in 1960, 1740 in 1961 and 1026 in 1962 (up to 28 November). In Niger there exists a programme for quadrennial vaccination against smallpox and yellow fever. Vaccination is carried out by (a) mobile teams for nomads - Niger West and Niger East mobile teams; (b) mobile units of the Sub-division CMOs; (c) school health services; and (d) maternal and child health services. In 1961, 124 000 persons were vaccinated. Coverage, however, is not more than 56 per cent. In order to obtain a high percentage of attendance and reach a minimum of 80 per cent. vaccination and revaccination coverage in a period of two years, it would be necessary to form five new mobile smallpox vaccination teams. The Government requests assistance in the form of transport (five vehicles), two million doses of vaccine and two refrigerators for the storage of the vaccine at Niamey and Zinder; also vaccination equipment and supplies are needed. The teams' sole duty would be to vaccinate the inhabitants of villages, market places, and the scattered dwellings in the rural areas. The Service des Grandes Endémies will direct the programme and it is hoped that with the new group of mobile teams the entire population of the country will have been attended to in two years. Special small-pox vaccination cards will be delivered to vaccinees.

Nigeria

Population 35 752 000, 4140 cases in 1960, 3538 in 1961 and 3600 in 1962 (up to 28 November). The estimated needs, expressed as costs, to implement a smallpox eradication programme in the Regions of Nigeria, are as follows:

- (a) Northern Nigeria - over a three-year period
Labour, transport, vaccine equipment,
stationery and permanent staff

US\$ 1 680 000

(b) Eastern Nigeria

Four boats, land transport and travelling,
temporary staff, vaccine, equipment, etc.

health education, contingencies US\$ 1 674 400

(c) Western Nigeria

Wages, salaries, drivers, drugs and equipment,
fuel and maintenance of transport, boats for
creek areas

US\$ 359 800

In addition, 16 million doses of freeze-dried vaccine

(d) Federal Territory of Lagos

Additional staff and equipment
for three years

US\$ 28 000

Rhodesia and Nyasaland

Population 8 510 000, 1157 cases in 1960, 1701 in 1961 and 781 in 1962 (up to 28 November). The Government takes seriously its responsibilities in regard to smallpox eradication and considers that, at present, it can cope with its own programme, including the purchase of vaccine lymph. The Government would welcome a visit from a WHO consultant to observe work done in the field of smallpox eradication in countries in South-Central Africa.

Ruanda Urundi

Population 4 901 000, 19 cases in 1960, none in 1961 and 26 cases in Burundi and 28 in Rwanda in 1962 (up to 28 November). In 1961 and the beginning of 1962 a mass vaccination campaign was carried out in Rwanda.

Senegal

Population 2 980 000, six cases in 1960, 201 in 1961 and 215 in 1962 (up to 28 November). A quadrennial vaccination plan is in progress. In 1963 the "Service des Grandes Endémies" will start vaccinating the whole territory by covering the seven regional areas. The Region of Cap-Vert, however, will be

attended to by the Service d'Hygiène. The Government requests the Organization's assistance in the form of freeze-dried vaccine (one million doses each year), the payment of salaries of additional personnel for the vaccination campaign (US\$ 12 898) and the cost of running and maintenance of existing transport (US\$ 8571).

Sierra Leone

Population 2 450 000, 12 cases in 1960, six in 1961 and 77 in 1962 (up to 28 November). It is estimated that four teams will be required for launching a mass vaccination campaign in Sierra Leone. These teams will work simultaneously in each of the four Provinces, the western area being regarded as a Province, in order to cover the whole country within a period of nine to 12 months, taking into consideration that very little can be done during the heavy rains. The composition of each team and estimated cost per Province are one health superintendent or senior health inspector, five vaccinators, two drivers, two landrovers (long-wheeled base), one portable refrigerator, two large flasks, five vaccination kits, one first-aid box with equipment to last nine months, travelling expenses, fuel or oil, overtime fees (drivers), stationery, 14 motor-cycles (350 cc) - US\$ 31 088 per Province. The cost of the four Provinces is therefore estimated at US\$ 124 354.

The Government is hoping to obtain assistance for this very important project.

South Africa

Population 16 122 000, 65 cases in 1960, seven in 1961 and 112 in 1962 (up to 28 November). Measures for controlling and eventually eradicating smallpox have been in continuous operation for over 40 years. These measures have recently been intensified. Sporadic outbreaks, which are frequently proved to have been caused through infected persons from other territories entering the Republic, still occur. Such outbreaks are, however, quickly brought under control and localized, thus preventing the spread of the disease to other areas. Adequately equipped to deal with the situation in its territory, the Government consequently does not require financial or other assistance for the implementation of its smallpox campaign.

Tanganyika

Population 9 404 000, 1584 cases in 1960, 908 in 1961 and 859 in 1962 (up to 28 November). The Government has prepared a smallpox eradication scheme, the basis of which is the vaccinating unit, consisting of a vaccinator and a recorder whose duties are interchangeable. Each such unit is expected to vaccinate an average of 150 persons per day for 300 days a year. These units will be organized in teams of three units, one supervisor and one driver, travelling self-contained in a landrover, with ultra light-weight motor-cycles available to enable them to reach small pockets of population inaccessible to four-wheel transport. Ten vaccinating teams will be controlled by a sanitarian, travelling in a landrover and accompanied by a clerk-interpreter. The whole scheme will be controlled by a medical officer, also able to travel self-contained in a landrover, and provided with a clerk-interpreter.

Assistance requested from WHO:

One medical officer, three sanitarians, ten million doses of freeze-dried vaccine and insulated lymph containers.

Assistance requested from UNICEF:

Thirty-four modified long-wheel-base landrovers, 60 ultra light-weight collapsable motor cycles, 248 light-weight camp beds, 596 blankets, 38 sets camp equipment (table, chair, bath, washbasin), 34 pressure lamps and 100 hurricane lamps.

Togo

Population 1 440 000, 347 cases in 1960, 281 in 1961 and 485 in 1962 (up to 28 November). A smallpox vaccination programme, to be integrated with a WHO-assisted yaws campaign, is being finalized. The Organization will provide the freeze-dried vaccine.

Upper Volta

Population 4 400 000, 126 cases in 1960, 2360 in 1961 and 1283 in 1962 (up to 28 November). The Government is eager to carry out a smallpox eradication programme. During the visit of a medical officer from WHO headquarters in October 1962, a scheme

was discussed with the health authorities and it was agreed that a formal eradication plan should be sent to the Regional Office for Africa. The Government will be requesting assistance in the form of supplies of vaccine necessary for the mass campaign, transport vehicles and portable refrigerators. The "Grandes Endémies" mobile units will be supported during the vaccination campaign by a large number of static vaccination centres to be established in dispensaries, health centres, etc.

Uganda

Population 6 845 000, 707 cases in 1960, 398 in 1961 and 540 in 1962 (up to 28 November). The average vaccination rate in Uganda is one million per year, and certainly over the past five years over 50 per cent. of the population (6.5 million) has been vaccinated. To carry out a mass vaccination campaign would present little difficulty from the point of view of staff. The Government's requirements would be the following:

(a) Vaccine: depending on whether or not dried vaccine is to be used, financial provision is required for the purchase of suitable insulated containers for the transport and storage of lymph in rural areas.

Estimated cost US\$ 1400.

(b) Transport: vehicles available belong to local authorities who do not have sufficient funds to cover extra running.

Estimated cost US\$ 2800.

The estimated cost of lymph is US\$ 70 000.

THE AMERICAS

The smallpox eradication programme in the Southern Hemisphere is progressing satisfactorily. Of the 1923 cases of smallpox reported in 1961, 1411 occurred in Rio de Janeiro, Brazil, 491 in Ecuador, 16 in Colombia, four in Argentina and one (imported) in Uruguay. In 1962, up to 28 November, a total of 1822 cases were reported, of which 1615 occurred in Brazil, 169 in Ecuador, 23 in Colombia, 11 in Venezuela and one in Uruguay. The highest incidence of smallpox is still in Brazil and Ecuador.

The smallpox eradication campaign in Colombia is a good example of proper planning, organization and operation which is reflected in the low incidence of smallpox cases for over one year. The Organization collaborated with the Government of Colombia in the conduct of this programme by furnishing a full-time consultant, a consultant specialized in dried-vaccine production and by providing fellowships.

Brazil

Population 70 799 000, 650 cases in 1960, 1411 in 1961 and 1615 in 1962 (up to 28 November). The Government has recognized the need to eradicate the disease and has decided to initiate a programme experimentally in some areas of Rio de Janeiro and Sergipe State, and subsequently to extend it to Alagoas State. Once the most suitable working methods have been established, the vaccination campaign will be extended to cover the entire country, until 80 per cent. of the population is covered. The Organization has provided the equipment for producing freeze-dried vaccine and in addition a fellowship has been awarded to a medical officer to allow him to visit various centres in South America, the United States and Europe producing dried vaccine on a large scale.

Colombia

Population 14 447 000. The smallpox vaccination programme initiated in October 1955 was completed in April 1962. A total of 11 273 085 persons were vaccinated, of which about 4 484 000 were primary vaccinees. According to the population census made by the smallpox eradication campaign, the country has a population of 12 117 509. The number of persons vaccinated, therefore, represents 93 per cent. of the total population.

Ecuador

Population 4 455 000, 2185 cases in 1960, 491 in 1961 and 169 in 1962 (up to 28 November). The aim of the smallpox eradication programme in Ecuador, which was resumed in 1958, was the vaccination, within a period of five years, of 80 per cent. of the population, estimated in July 1961 to be 4 455 000.

Over 1.5 million persons, who live in remote areas in the mountains and on the coast, still remain to be vaccinated. The Government requested material assistance consisting of 11 vehicles for the transport of personnel, laboratory equipment to

increase the production of dried smallpox vaccine, field equipment, as well as sanitary inspectors to co-operate with local personnel in the organization, development and supervision of field activities. The request, which amounted to approximately US\$ 57 000 was provided by the United Nations Technical Assistance Board and the Pan American Sanitary Bureau.

EASTERN MEDITERRANEAN REGION

In the Eastern Mediterranean Region almost all the remaining endemic countries and territories are now actively implementing eradication programmes. Pilot control projects, eradication campaigns and intensified vaccination control measures have shown substantial progress for 1961 and 1962.

Ethiopia

Population 20 000 000, 293 cases in 1960, 761 in 1961 and 328 in 1962 (up to 28 November). The Government indicated that separate mass campaigns against special diseases will be very expensive and liable to fail unless the basic public health services are properly developed. At present, all efforts are being concentrated towards the gradual development of these services, and the smallpox campaign will be integrated with the over-all services of the health centres and health stations. Since 1961 a department has been established in the central reference laboratory (Institut Pasteur d'Ethiopie) for the production of lyophilized vaccine, the quality of which, through the assistance of the Organization, has been found to meet the required standards. This is one main step towards the possibility of performing mass vaccination in remote areas through the utilization of the local health facilities. A combined mass vaccination campaign against smallpox and yellow fever was carried out in the South Western provinces of Ethiopia early in 1961. About 800 000 persons were vaccinated and the vaccinations are being continued and systematically expanded to cover large areas and a greater number of the population.

Pakistan

Population 94 601 000, 2005 cases in 1960, 2741 in 1961 and 3207 in 1962 (up to 28 November).

East Pakistan

Following the visit of a WHO consultant in 1960, the East Pakistan Government has implemented a scheme aiming at the eradication of smallpox in that province. After a pilot phase, which was carried out in the districts of Camilla (population of approximately 4.4 millions) and Faridpur (population of approximately 3.2 millions) from January to November 1961, a mass vaccination campaign covering the whole province was started from November 1961. The vaccination of the total population of East Pakistan (50.8 millions in 1961 census) will be achieved in three phases from November 1961 through December 1967. The first phase will be terminating at the end of 1963 and the two subsequent follow-up phases will be conducted from 1964 through 1965, and from 1966 through 1967. This programme has been made the direct responsibility of an Assistant Director of Health Services, under the control of the Director of Health Services. In the 17 districts the chief medical officer of health or the district health officer is in charge of the implementation of the scheme. At the sub-divisional level, the health officers are responsible for the detailed planning, operation and supervision of the vaccination campaign.

Vaccine: since the middle of 1961 the Institute of Public Health in Dacca has produced a satisfactory quality of freeze-dried smallpox vaccine. The present output is of about 1.2 million doses a week which can easily be raised to two million doses and which largely covers the requirements for the planned province-wide mass campaign. The Organization supplied the Government of East Pakistan with five million doses of vaccine from the USSR donation and that vaccine was used in the pilot phases. Requirements for the campaign are transport and equipment and supplies needed for freeze-dried vaccine production at an estimated cost of US\$ 619 727.

West Pakistan

The scheme has been integrated with the BCG campaign. At present no programme is being carried out, but provision has been made for the campaign to cover a period of five years. Assistance required from WHO and UNICEF for smallpox eradication

involves 50 jeeps, 200 refrigerators and 4000 unbreakable thermos flasks. In addition, the necessary equipment will be required for the preparation and increased production of dried smallpox vaccine, including tubes for packing the vaccine, vials and neutral glass ampoules for distilled water. The estimated total cost of these requirements is US\$ 330 743.

Saudi Arabia

Population 6 036 000, 32 cases in 1960, but none in 1961 and 1962 (up to 28 November). The Government, being aware of the endemicity of smallpox, its periodic outbreaks in certain parts of the peninsula and the potential danger to the country of international traffic, has planned an eradication programme with the assistance of the Organization. A plan of operation has been signed between WHO and the Government in October 1962. The objective of the agreement is the eradication of smallpox through the vaccination of the entire population within three years. The Organization will provide assistance in the form of ad hoc short-term consultants as may be required in 1963, 1964 and 1965, 4.5 million doses of freeze-dried vaccine to be supplied by instalments and three landrovers.

Sudan

Population 12 109 000, 135 cases in 1960, 104 in 1961 and 68 in 1962 (up to 28 November). A plan of operation for a WHO-assisted control and eradication project in the Sudan was signed by the Organization in December 1961 and by the Government on 11 July 1962. The project aims at the eradication of disease through the vaccination of the entire population within four years. To this end the country would be divided into four divisions, each of which would be covered in one full year of operations. In the first year a pilot scheme will cover, in the western zone of the country, the Khoidifan and Darfour provinces with a total population of 3 417 000 inhabitants. The Organization will provide assistance for the pilot scheme in the form of one short-term consultant/epidemiologist for one month in 1961 and one month in 1962, three million doses of freeze-dried vaccine to be supplied in instalments of one million doses, transport, sterilizers, refrigerators and thermos flasks.

Yemen

Population 5 000 000, no reports available on the incidence of cases. A plan of operation for a WHO-assisted smallpox control and eradication project in the Yemen was signed by the Organization on 11 December 1961 and by the Minister of Health for the Government on 25 December 1961. The aim of the project is the eradication of smallpox through the vaccination of the entire population within three years. The Organization agreed to provide one short-term consultant for three months in 1962 and three months in 1963, three million doses of freeze-dried vaccine to be provided in instalments, transport, all medical supplies needed for the campaign, and stationery. A royal decree for compulsory and free vaccination of all the inhabitants of Yemen, including the newly-born, was issued on 2 July 1962. On 10 September 1962 the whole of the city of Sanaa, the capital, was vaccinated. The short-term consultant completed his assignment in September 1962.

SOUTH-EAST ASIA REGION

Encountering many difficulties of demographic, financial and, to some extent, technical nature, this densely populated and highly endemic region is, at the present, particularly active in the global effort. The Indian national eradication programme, when completed, will go down in history as an outstanding preventive health feat of the century.

Afghanistan

Population 13 800 000, 111 cases in 1960, 174 in 1961 and 163 in 1962 (up to 28 November). In 1959 the Government adopted a country-wide pre-eradication control programme, making vaccination compulsory. Up to March 1962, four million people have been vaccinated in Kabul and the provinces. A WHO medical officer is now in Afghanistan advising on the organization of an eradication programme. Assistance requested by the Government consists of transport, refrigerators, thermos flasks and 3 750 000 doses of freeze-dried vaccine to be supplied in instalments through 1962, 1963, 1964 and 1965. One million doses of vaccine have already been supplied.

Burma

Population 21 527 000, 392 cases in 1960, 88 in 1961 and 21 in 1962 (up to 28 November). In recent years progress in reducing the incidence of the disease has been achieved by carrying out a vaccination programme through the network of rural health centres. 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 would consist of supplies of freeze-dried vaccine.

India

Population 440 316 000, 31 052 cases reported in 1960, 45 195 in 1961 and 32 639 in 1962 (up to 28 November). After the conclusion on 31 March 1961 of the pilot projects which were carried out in all 16 states, and much useful experience gained in the planning of an economical, practical and effective eradication campaign, the Government reported on 25 April 1962 that the National Eradication Programme in the country had already been launched.

The Government of the USSR on bilateral assistance basis has agreed to supply 250 million doses of freeze-dried vaccine free of charge to India in eight equal quarterly instalments, commencing from January 1962 to meet the additional requirements of smallpox vaccine for the National Smallpox Eradication Programme. The Government of India requires certain equipment for the vaccine-producing institutes in the country and such equipment as deep-freeze cabinets for the storage of the vaccine. In addition they have considered the question of starting the manufacture of freeze-dried vaccine at Belgaum (Mysore) and Namkum (Bihar) to supplement the existing WHO and UNICEF assisted producing centres at Giundy (Madras) and Patwadangar (U.P.). The Government also found it necessary to plan a health education campaign as an essential part of the eradication programme. The following items of equipment and supplies form the requirements in assistance requested by the Government:

For vaccine-producing institutes:

Equipment and supplies consisting of items such as blenders, grinders, sterilizers, incubators, bottles, syringes, etc.

For storage of vaccine at centre, unit headquarters and fields:

Deep-freeze cabinets.

Transport for both vaccine and personnel is also required, and the Organization and UNICEF are at present giving consideration to India's request.

Indonesia

Population 95 189 000, 5196 cases in 1960, 3777 in 1961 and 761 in 1962 (up to 28 November). No formal smallpox eradication programme for the country has as yet been presented. The WHO epidemiologist in Indonesia is helping the health authorities in the establishment of a network of provincial epidemiological services. Epidemiological sections have now been established in Jakarta, Semarang and Surabaya, and in the near future similar sections will be established in Medan (North Sumatra), Makassar (South Sulawesi) and in Palenbang (South Sumatra). With this strengthening of the country's epidemiological activities a country-wide programme for smallpox eradication would be developed. Outbreaks have been reported in 1962 from Serang and some regencies in West Djava and the local health authorities organized vaccination campaigns. Cases of smallpox were also reported from some areas in South Sumatra Province. In September and October an outbreak occurred in Bandung and an intensified vaccination programme was immediately set up to control the epidemic. In November 1962 a smallpox epidemic occurred in Bekasi (about 50 km east of Jakarta) and a mass vaccination campaign has been started by the epidemiological unit and the local health authorities. UNICEF assisted with five jeeps. The WHO/UNICEF-assisted freeze-dried vaccine manufacture unit in Bandung is now in the experimental phase of production.

Nepal

Population 9 407 000, no cases reported in 1960, five in 1961 and no cases reported in 1962 (up to 28 November). The WHO-assisted smallpox control pilot project which started in February 1962 is in progress. Planned to cover a population group of approximately 450 000 people in Kathmandu, the pilot project

1. Short-term objectives:

(a) to train national health personnel in vaccination techniques, care of vaccine, record-keeping, and generally in the organization and conduct of the vaccination programme, including health education aspects of the scheme;

(b) to build up a nucleus of smallpox vaccination activities in a limited area in the first instance.

2. Long-term objectives:

Gradually to expand the smallpox control programme as and when the situation permits, in order to build up the herd immunity of the population to a level at which smallpox is no longer a public health problem. The Organization's assistance consists of one public health nurse and equipment and supplies which include transport (one jeep station-wagon) and freeze-dried vaccine for the campaign. An estimate of international assistance which may be required for an eradication campaign in Nepal will only be possible sometime in 1964, after the pilot project's experience over a period of two years will have been assessed.

Thailand

Population 26 258 000, 32 cases in 1960, 33 in 1961 and two in 1962 (up to 28 November). For the last few years smallpox has not been a major public health problem in Thailand. The smallpox eradication programme which was launched by the Government in 1961 is in progress. The objective of this programme is to vaccinate yearly one third, or about eight million people, of the estimated total population of 25 million. A total of 7 261 141 vaccinations were performed in 1961. International assistance requested consists of six vehicles for supervisors of field work and supplies of vaccine in 1962 and 1963 respectively. The WHO/UNICEF-assisted freeze-dried vaccine production unit in Bangkok started production in 1960 and the output is expected to increase in 1963 with additional equipment.

WESTERN PACIFIC REGION

Countries in the Western Pacific Region are at the present time free from endemic smallpox. Vaccination control measures and intensified vaccination programmes are, however, being undertaken by most countries in order to maintain a level of immunity by which serious outbreaks could be avoided when and where the disease is introduced.