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SMALLPOX ERADICATION IN THE YEMEN ARAB REPUBLIC
STATUS REPORT[a] - NOVEMBER 1978

1. Basic Demographic Data (see figure 1)

Population	6 471 893 (1975 census, including 1.2 million Yemenis abroad)
Area	approximately 200 000 km^2
Population density	approximately 34 per km^2
Urban population	10% of total
Rural population	90% of total
Nomadic population	included in rural population, estimated 5% of total
Total number of villages	17 851 (official estimate)

Inaccessible population and areas:

Few areas in the country are easily accessible given the rugged terrain. Nevertheless, the smallpox programme intends to actively search and survey all 162 nahiya (sub-districts) present in Yemen Arab Republic.

From the extreme south-west corner of the country near Bab Al Mandab and along the southern border and much of the undefined eastern border, surveillance activities and movements are occasionally restricted by security considerations and by resistance of the local tribesemen.

With the exception of the border areas of Taiz and Ibb Governorates which are well-settled and have already been searched without difficulty, Yemen's borders are very sparsely settled. No more than 5% of the total population lives in the entire rural area of Marib, Al Beidha, and eastern Sa'ada Governorates - an area comprising roughly one-third of the country.

2. Administrative Units (see figures 1 and 2)

Type of Division	Total Number in Country
Mouhafaza (Governorate)	10
Qada (District)	40
Nahiya (Sub-district)	162

[a] Prepared for:

Department of Preventive Health Services, Ministry of Health, Sana'a and World Health Organization by WHO Operations Officer, Smallpox Eradication Programme

FIG.1: DEMOGRAPHIC AND ADMINISTRATIVE COMPARISON BY GOVERNORATES

Governorate	Population[a]	% of total population	Area[b] (km^2)	Persons per km^2	% Urban	No. of Nahiya	No. of Villages	Sex Ratio	Capital's Population[c]
Sana'a	807 269	17.8	20 310	41.0	15.0	33	3 707	0.95	134 588
Taiz	873 876	19.3	10 420	84.7	9.0	18	1 666	0.84	78 642
Hodeidah	676 693	15.0	13 580	51.2	11.8	18	1 952	1.02	80 314
Ibb	789 518	17.4	6 430	126.5	2.4	20	2 559	0.88	19 066
Dhamar	455 132	10.0	8 870	52.9	4.2	9	1 995	0.87	19 467
Hajjah	396 578	8.7	9 590	43.1	1.5	31	1 929	0.96	5 814
Sa'ada	154 361	3.4	12 810	13.8	2.7	12	1 546	0.91	4 252
Al Mahweet	174 639	3.9	2 160	83.8	1.4	7	1 415	0.86	2 421
Al Beidha	157 764	3.5	11 170	15.5	55.0	10	729	0.82	5 975
Marib	40 896	1.0	39 890	1.8	0.7	4	353	0.95	292
Total	4 526 326	100.0	135 230	34.8	10.0	162	17 851	0.91	350 831

[a] Population figures are based on the population actually recorded by the 1975 census and do not reflect subsequent aggregate corrections made for under-counting.

[b] Due to the various undefined boundaries, the total of governorate areas shown here is considerably less than the estimated 200 000 km^2 total area of the country.

[c] The name of each governorate and its capital is identical.

Sources: Statistical Year Book (1976-77), Central Planning Organization, Yemen A. R.

Population Distribution, Administrative Division, and Land Use in the Yemen Arab Republic, produced for the Swiss Technical Co-operation Service, Berne and the Central Planning Organization, Sana'a by Urs Geiser and Hans Steffen, Department of Geography, University of Zurich (May 1977).

3. Health System (see figure 3)

Number of urban hospitals: 14 urban clinics: 13
Number of rural hospitals: 10 rural clinics: 102

The rapid construction of facilities has outstripped the training of health personnel. This list of facilities, therefore, overestimates the availability of health services, since some facilities are not yet staffed and functioning - particularly rural health units - and others are only operating a few days per week when visited by mobile staff or staff from nearby larger establishments.

Number of infectious diseases hospitals: 0 wards: 5
Health system structure relevant to communicable disease control: (figure 4)

Established in 1967, the Preventive Health Service is responsible for all communicable disease activities. A Division of Epidemiology was established centrally in 1974 to collect, analyze, and interpret data concerning diseases of public health importance and to apply appropriate control measures. Technical staff consists solely of the Director of Preventive Health Services - himself an epidemiologist, the WHO Epidemiologist, and a sanitarian. In order to respond more effectively to disease outbreaks in peripheral areas, preventive health services have been decentralized with the creation of epidemiological units in Taiz and Hodeidah - each staffed with a single medical officer and a sanitarian. With Sana'a Governorate being the responsibility of the central unit, the Directors-General of Health Services in the remaining seven governorates - with access to a variable number of sanitarians - are expected to fulfil these epidemiological duties within the limits of their already crowded schedules.

FIG. 2: YEMEN ARAB REPUBLIC ADMINISTRATIVE DIVISIONS

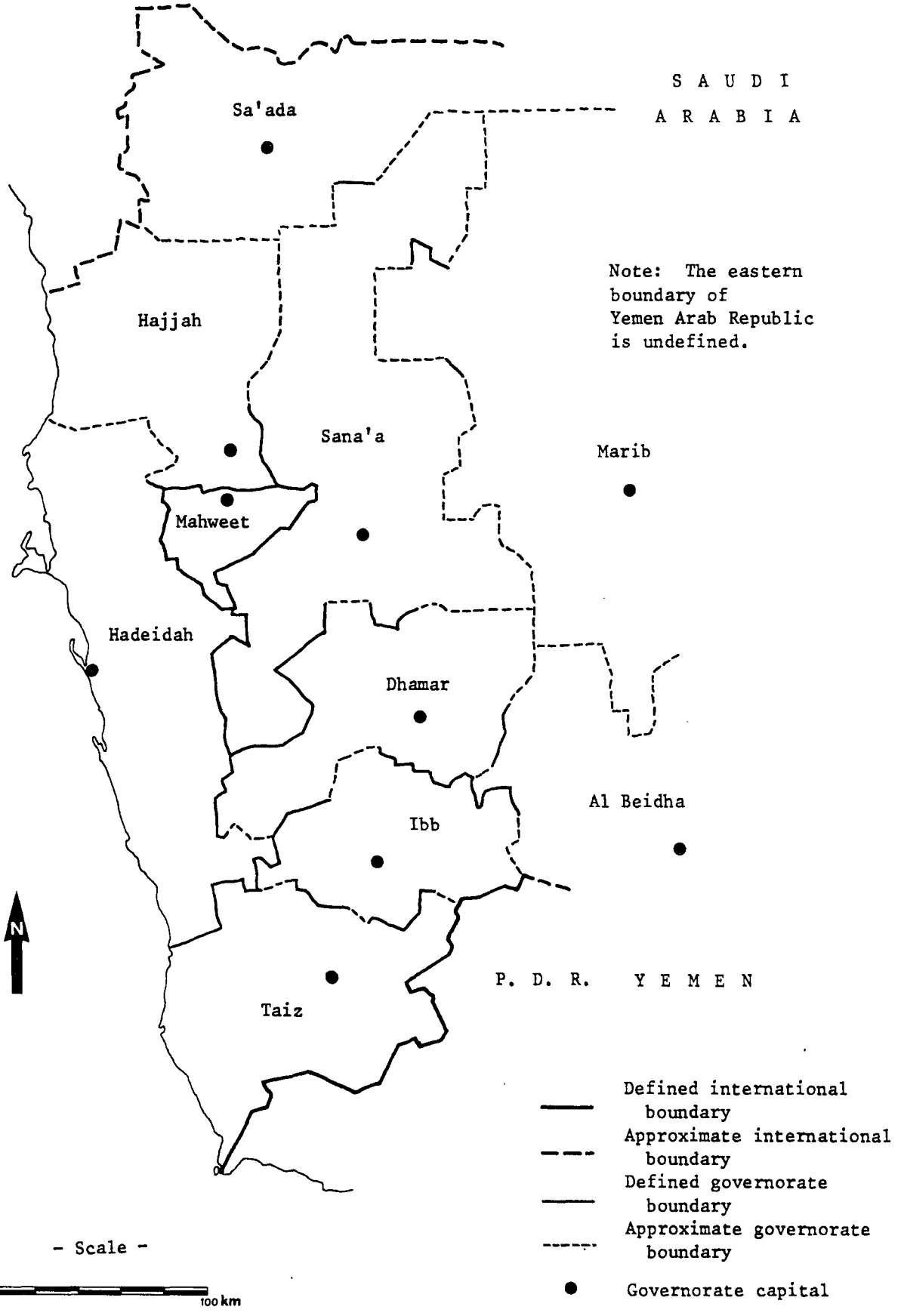


FIG. 3: HEALTH FACILITIES AND SELECTED HEALTH PERSONNEL BY GOVERNORATES (1976)[a]

Governorate	Hospitals No.	Hospitals Beds	Hosp. Beds per 10 000 pop.[b]	Dispensaries No.	Dispensaries Beds	Health Centres	Sub-Centres	Rural Health Units	Physicians Y[c]	Physicians E[c]	Population per Physician[b]	Qualified Nurses and Midwives Y[c]	Qualified Nurses and Midwives E[c]	Auxiliary Staff[d]
Sana'a	5(4)	900	10.9	1	20	6(3)	0	11	54	58	7 400	118	68	125
Taiz	7(5)	970	10.8	3	60	3(2)	3	16	36	22	15 500	53	16	159
Hodeidah	3(2)	340	4.9	4	160	2(1)	8(6)	16	17	17	20 400	18	17	69
Dhamar	1(1)	55	1.1	0	0	0	0	6	3	4	69 400	0	1	6
Ibb	4(2)	232	2.9	1	30	1(1)	0	6	5	6	73 700	11	9	47
Hajjah	1	68	1.6	3	60	2	0	6	2	0	208 300	0	1	24
Sa'ada	1	14	0.9	0	0	0	0	3	1	2	54 600	0	6	11
Al Mahweet	0	0	0	1	25	1	0	4	0	0	—	0	0	0
Al Beidha	2	58	3.6	0	0	0	0	3	6	1	23 100	0	5	12
Marib	0	0	0	0	0	1	0	4	0	0	—	0	0	0
Total	24(14)	2 637	5.0	13(0)	355	16(7)	11(6)	75	124	110	23 000	200	123	453

[a] Although breakdowns by governorate are not available, there have been substantial increases in some categories of manpower - 505 qualified nurses and midwives and 399 physicians as of 1978.

[b] Using 1976 mid-year population estimates of Yemenis resident in the country.

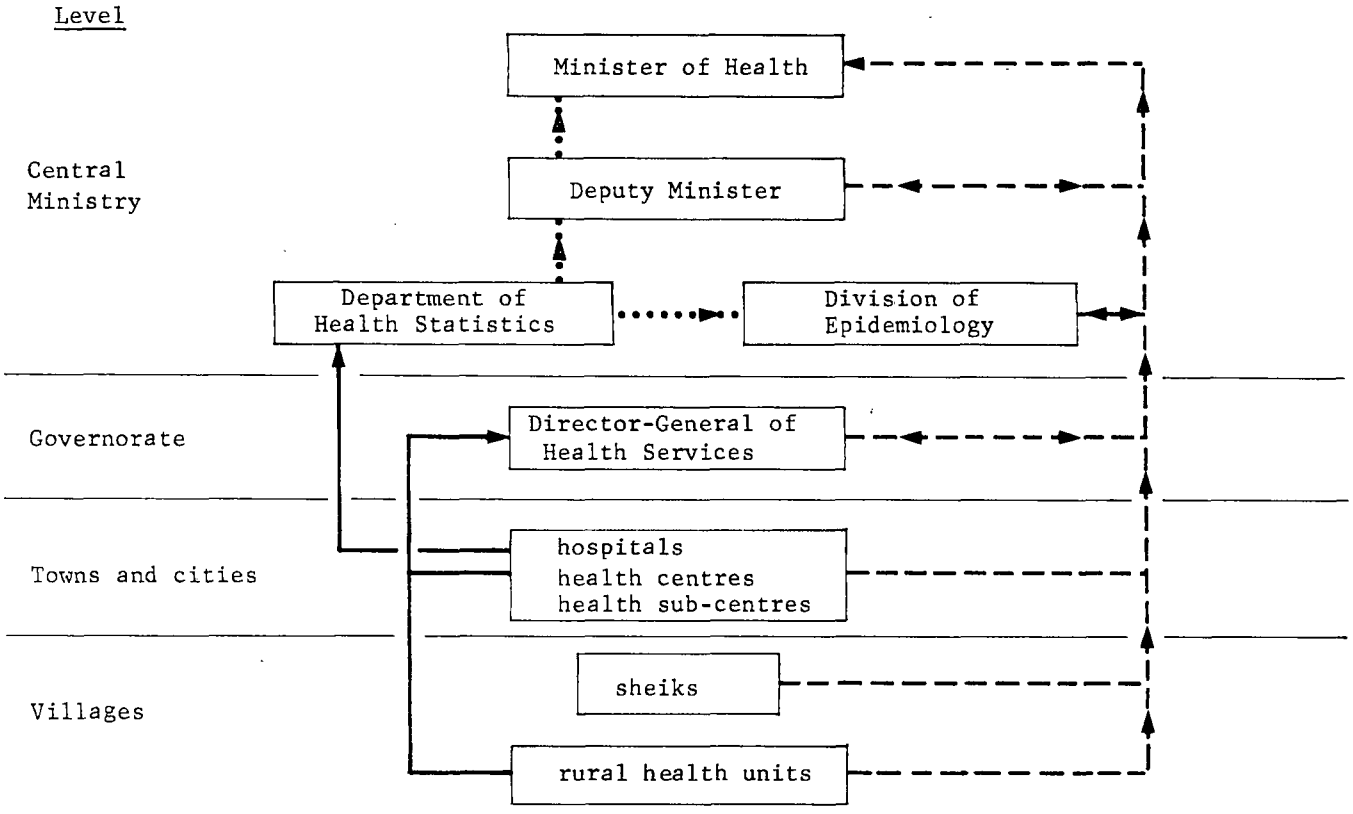
[c] Y = Yemeni E = Expatriate

[d] Including X-ray technicians, laboratory technicians, assistant pharmacists, assistant nurses, X-ray aides, laboratory aides, medical assistants, anaesthesiology technicians and aides.

( ) Facilities located in urban areas (as defined by population greater than 20.000).

Source: Statistical Year Book (1976-77), Central Planning Organization, Yemen Arab Republic.

FIG. 4: REPORTING SYSTEM FOR NOTIFIABLE COMMUNICABLE DISEASES



——— routine reporting

– – – – – immediate reporting if indicated, otherwise routine

..... emergency reporting (by cable, telephone, or in person) such as for suspect case of smallpox

4. Reporting System for Notifiable Communicable Diseases (see figure 4)

Communicable disease reporting systems were introduced for the first time in 1975 by the Department of Health Statistics in cooperation with the Division of Epidemiology. The number of notifications received annually has steadily increased, but the completeness, regularity and frequency of reporting is still inadequate.

Prompt notifications are to be posted or carried immediately by hospitals, health centres, and the provincial health offices directly to the Department of Health Statistics. The compliance of rural health units has not yet been secured - e.g. 90% of all reported chickenpox cases in 1977 occurred in Sana'a and Taiz Governorates. Medical staff is in short supply and generally not aware of the importance of precise data. "Nil" reports are not sent in the event of a disease's absence.

There are two systems for communicable disease reporting: the monthly routine reports, forwarded through the office of the Director-General of Health Services in each governorate, for communicable and endemic diseases, and the "prompt notification of notifiable diseases" system. Chickenpox and smallpox are both to be promptly notified. When urgent action may be required, direct reporting by telephone or cable is expected.

As there is no vital registration system, deaths due to chickenpox would only be notified if they occurred within a hospital which sends discharge sheets to the Department of Health Statistics in the Ministry of Health. Of the 477 cases of chickenpox notified since 1974, no deaths were reported. Patient registers and registers of communicable diseases are not kept in most health facilities.

The assumption cannot be made that, because no reports of a particular disease are received centrally, the disease must necessarily be absent. Therefore, it has been necessary for the current project staff to visit personally all health facilities in organized nation-wide campaigns.

Any reported case of suspect smallpox is treated as a public health emergency to be investigated by the central staff of the smallpox project and the Division of Epidemiology. Measures to be taken include urgent notification, isolation, specimen collection, ring vaccination, contact tracing, house-to-house search, and line listing of cases.

5. Smallpox Data

5.1 Cases and deaths reported by year, 1950-1978

Year	Cases	Deaths	Year	Cases	Deaths
1950-57	a	a	1966	1	0
1958	20	a	1967	3	0
1959-62	a	a	1968	0	0
1963	5	1	1969	29	?
1964	5	0	1970-78	0	0
1965	0	0			
			Total	63	1

a No reports available.

Despite the obvious under-reporting implicit in the chart, it is well-known that Yemen Arab Republic was endemic for variola major with yearly outbreaks.

5.2 Last major outbreak

According to first-hand WHO observers, official and unofficial sources in 1959 claimed a major epidemic of variola major in 1957-59 swept unspecified areas of Yemen with at least 30 000 cases, including an alleged 18 000 fatalities. The source of the epidemic was allegedly a pilgrim returning from Mecca. Facial pock mark surveys performed so far in Taiz and Ibb Governorates by the current Smallpox Eradication Programme confirm widespread transmission at this time.

5.3 Last known outbreak

Details of the last known smallpox outbreak are regrettably also shrouded in mystery. It appears to have been limited first to Taiz and then to Sana'a with 29 total cases occurring from 24 March to June of 1969. Verification by WHO never took place due to delays in notification. All nine or ten cases in Taiz occurred in an army camp amongst males aged 20-30 and were allegedly due to an importation from Democratic Yemen. All were isolated in a Taiz hospital while camp personnel and inhabitants of a nearby village were vaccinated. No deaths were reported and no cases occurred after June. (One source discusses the occurrence of a total of 47 cases until June 1969 with 28 in Sana'a, 16 in Taiz, and 3 also in Hodeidah.) Current Smallpox Eradication Programme searches throughout the southern half of Yemen have not found any facial pock mark as evidence of smallpox with onset after 1968.

5.4 Suspected smallpox cases since 1969

A file is kept in the central smallpox office giving details of all suspected cases and "major rumours" occurring from 1970 to the present. All of the 47 "major rumour" episodes were investigated - usually by a WHO expert and a trained national. Over 70% involved rural areas and all governorates except Harib have been visited for investigations. One half of the resultant cases were clinically diagnosed as chickenpox and confirmed upon laboratory investigation to be negative for smallpox. Of the nine suspected smallpox cases since 1970, laboratory analysis revealed all to be negative for smallpox. The single suspected smallpox case since 1975 was notified in late 1977 by a national vaccinator who had not been trained in differential diagnosis. Laboratory results were negative for smallpox. Two deaths were associated with the 1971 and 1973 episodes but laboratory results were likewise negative for smallpox. (Further details are in Section 8).

6. Smallpox Vaccination Data

6.1 Vaccination system since last reported smallpox

The Smallpox Eradication Programme has always enjoyed close organizational ties within the Ministry of Health central office. It was organized as a "vertical" programme with a specialized central unit because of the undeveloped provincial health infrastructure.

The Ministry of Health established a Smallpox Eradication Programme in 1969 with the advice of WHO and some logistic support. The aim was to vaccinate 100% of the population in an attack phase to last three years. This was then to be followed by a maintenance phase integrated within the basic health services emphasizing the routine vaccination of new-born and immigrants and the regular vaccination of the entire population at 3-4 year intervals as long as necessary.

With as many as fifty full-time vaccinators, supplemented by temporary recruits, tiered supervision was an essential element of control. Organized independent assessment teams were to follow the vaccination units a week later to assess both the population coverage and the vaccination success rate. Staff were primarily sanitarians or trained hospital workers. Multiple puncture using WHO-donated freeze-dried vaccine and bifurcated needles was the technique practised.

Progress was slowed by the difficult terrain and the paucity of collection points such as schools and health facilities. Home visits were necessary to reach the infants and females. By late 1972, the population in administratively accessible areas had been vaccinated.

After a lull of two years with reduced activity, the Smallpox Eradication Programme was reactivated with the intention of covering those areas not previously accessible. The extension of central government administration and improved roads permitted Sa'ada and Marib Governorates and districts of Sana'a, Ibb, Hajjah and Al Mahweet Governorates to be included for the first time. Al Beidha Governorate appears never to have been fully vaccinated. Progress was intermittent since the project met with financial and staff difficulties.

Considering the vulnerable position of Yemen Arab Republic to an importation from East Africa, the Ministry of Health in 1977 ordered emergency vaccination measures along the entire coast. Executed by mobile national teams, these efforts were assessed by WHO to have been effective. Consequently, vaccination in mid-1978 ceased to be a part of the project. It continues to be offered in health centres, primarily by the Expanded Programme of Immunization.

Yemen has adopted the resolution of the Twenty-Ninth World Health Assembly, recommending that governments restrict their requests for smallpox vaccination certificates to travellers who, within the preceding fourteen days, have visited a smallpox-infected country.

6.2 Vaccinations performed, 1950-1978

Year	Reported vaccinations[a]	Year	Type of vaccination: Primary	Re-vaccination	Unknown	Total
1957-58	30 000	1970	234 000	550 000	21 000	805 000
1958	19 000	1971	107 000	153 000	30 000	290 000
1959	No data available	1972	103 000	95 000	33 000	231 000
1960	10 000	1973	59 000	75 000	36 000	170 000
1961	15 000	1974			21 000	21 000
1962-66	No data available	1975	137 000	173 000	115 000	425 000
1967	1 000	1976	48 000	44 000	186 000	278 000
1968	15 000	1977			155 000	155 000
1969	200 000	1978			29 000	29 000
		TOTAL	688 000	1 090 000	916 000	2 694 000

[a] Whether primary or re-vaccination not known.

The above figures must be regarded with extreme caution since records are incomplete for some years, and for other years they may overlap with vaccination numbers, thus being tallied more than once.

6.3 Vaccination coverage assessment

Assessments conducted jointly in 1977 by the Division of Epidemiology and the Department of Health Statistics in the Ministry of Health revealed that 36%, 44% and 53% of the 1-5 year olds in, respectively, Taiz City, Ibb City and selected villages around Ibb City, bore vaccination scars.

Assessments throughout the coastal areas of Hodeidah Governorate in 1978, in the wake of the emergency vaccination campaign there, showed a median immunity level of 81%, 88% and 91% in the 0-4, 5-9 and 10+ age groups, respectively.

Upon examination of 12 000 persons in Taiz Governorate in mid-1978, the age-adjusted vaccination coverage by nahiya was seen to vary from 37% to 74% with an overall rate of 56% for the Governorate as a whole.

7. Chickenpox Data

Reported Chickenpox Cases by Month

Year	Total	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
1976	88	14	15	13	18	8	8	6	2	-	1	3	-
1977	112	16	21	14	18	9	7	5	-	1	2	8	11
1978	Data not yet available.												

Chickenpox has been a notifiable disease since 1974 only.

No chickenpox deaths have ever been reported in Yemen Arab Republic.

Reported Chickenpox Cases and Deaths, 1974-1978

Governorate	1974[a]	1975	1976	1977
Sana'a		24	17	90
Taiz		31	59	11
Hodeidah		6	1	5
Ibb		12	3	1
Dhamar		-	4	2
Sa'ada		-	-	1
Hajjah		5	4	1
Al Beidha		1	-	1
Al Mahweet		-	-	-
Marib		-	-	-
TOTAL	198	79	88	112
Deaths:	0	0	0	0

[a] Not available by governorate.

8. Laboratory Data

Since the last reported smallpox in 1969 through September 1978, 44 specimens from rash with fever cases - including 27 since 1976 - have been examined in WHO Reference Laboratories. All were found to be negative for smallpox. These specimens were collected in forty distinct episodes from thirty rural areas and two urban centres. The collection of specimens from selected chickenpox cases continues.

The distribution of specimens according to year of collection, governorate, age group, sex and laboratory findings appears in another report.

9. Current Survey Strategy, Results and Problems

9.1 Strategy and Methods

The Smallpox Eradication Programme has the following objectives:

a. to find any hidden foci of smallpox which may exist by intensifying the present surveillance system and by conducting active searches and special surveys;

b. to be prepared to contain outbreaks that might be detected; and

c. to document thoroughly the absence of smallpox transmission at the present time and since the last reported outbreak in 1969.

The lack of widespread coverage yet achieved by the basic health services, the relatively recent introduction of the communicable disease reporting system, and the previous non-existence of a national smallpox programme operating in all areas of the country have all combined to leave most of the country unsurveyed for smallpox foci. Data on past epidemiological features are incomplete due to the prolonged absence of smallpox and due also to the disease's successful eradication before the implementation of a mass vaccination effort in 1969. Therefore, the present smallpox programme strives to diminish this information gap.

The programme addresses the above objectives by deploying three mobile teams of surveillance workers and a central staff who visit the larger villages in all administrative areas such that 20-25% of the total population in each governorate is covered. Selected on the basis of demographic data, villages in each of the 162 nahiya will be searched once. Depending on the settlement patterns in each governorate, villages down to the size of from 300-500 people must be searched in order to satisfy the 20-25% requirement.

In each village, after first securing the assistance of the village headman, the teams perform multiple tasks which include:

- searching for active cases of rash with fever;
- collecting specimens from suspect cases and selected chickenpox cases for laboratory analysis;
- conducting facial pock mark surveys to ascertain the history of past smallpox infection;
- conducting vaccination scar prevalence surveys to determine past programme coverage and accomplishments;
- investigating rumours of smallpox;
- visiting any markets, schools, or health facilities present;
- investigating any reported deaths due to chickenpox;
- maintaining containment preparedness in the event active smallpox is discovered; and
- thoroughly documenting all activities.

Assessment by the central staff of a randomly selected 10% of the villages searched is a built-in component of the programme. The central staff is prepared to conduct epidemiological investigations in the event that a smallpox suspect or chickenpox death with onset after 1969 is found.

For the time being, the largest urban centres are being omitted. All will be visited later using a slighly modified approach emphasizing schools, health units, factories, markets and tea shops.

To assure quality of performance and maximum control over output, it is considered most cost-effective for the teams to cover, in turn, each governorate - and then to move on. Each team consists of a driver and two surveillance officers. There is one expatriate Peace Corps Volunteer serving as a surveillance officer.

No single area of the country is considered of greater priority than any other - with the exception of areas surrounding the last known outbreaks. The coastal area, formerly so considered, has been sufficiently covered over the past year, both by vaccination teams and by special surveys for pock marks and immunity status, as to ensure that no importations or indigenous undetected foci have occurred during the past ten years.

Routine vaccination has been discontinued by the programme as it is felt that it would otherwise interfere with the primary task at hand - surveillance - and that if smallpox should eventually surface, random vaccination before active case-finding would not have been effective for containment purposes.

Efforts to strengthen the routine surveillance system are presently being supplemented by the first of two systematic nation-wide health facility enquiries using standardized procedures and forms. Personal visits are necessary because the health system is still very new and overburdened with curative demands. Given the rugged terrain, even if a medical worker in an outlying clinic wanted to comply with "nil" reporting, for example, reliable means of communication simply do not exist. The teams therefore enquire as to the recent occurrence of any suspected smallpox or chickenpox or deaths due to chickenpox; review the staff's understanding of the procedure for prompt notification of rumours and the collection and despatch of specimens; and inform the staff about the reward being offered by WHO.

Finally, the teams attempt to extend the health system's vigilance by enlisting the support of the expatriate health workers of the numerous bilateral development agencies.

9.2 Current Survey Results

The active search in Taiz, Ibb and Dhamar Governorates, representing 47% of the total population of Yemen Arab Republic, has been completed. The first of two systematic nation-wide health facility enquiries is presently in progress.

In Hodeidah Governorate, a preliminary assessment in the coastal areas in May revealed the high vaccination coverage, particularly in the vulnerable 0-4 years age group, achieved in 1977 by the national mobile teams of the Swedish Save the Children under contract to the Ministry of Health. Pock mark surveys did not reveal any smallpox with onset after 1963.

In Taiz Governorate, searches in 141 villages (including 93% of the sample) and numerous markets, schools and health units revealed approximately 200 persons with pock marks but failed to identify any with onset of rash since 1968. The last widespread epidemic occurred around 1958 with 16 of 18 nahiya affected. Prevalence of pock marks was highest, 5.4%, amongst the 50-59 years age group.

On the basis of 12 000 persons investigated, the overall age-adjusted vaccination coverage of the Governorate was 56%, which compares favourably with previous studies. Immunity level was highest amongst the 5-9 years age group. Predictably, with a few exceptions, vaccination coverage levels were lower in inaccessible nahiya.

Assessment confirmed the findings of the search and revealed that all villages assessed had in fact been searched. Village leaders and the local population are sufficiently aware of the history of past local smallpox transmission that the programme is confident that the disease has long been absent from Taiz Governorate.

The analysis of results from Ibb and Dhamar Governorates has not been completed. A peak of high smallpox incidence appears to have occurred in most areas of Ibb and many areas of Taiz around 1963. How extensive was this outbreak and whether it should be considered the last major epidemic in Yemen Arab Republic will be known after the completion of the active search and survey throughout the country.

Over 300 villages were visited in Ibb and Dhamar Governorates. To date, no suspect smallpox cases have been found and all twenty specimens collected since the inception of the search in June have proved negative for smallpox. The wide geographic coverage that has been achieved in village searches, specimen collections, rumour investigations, and assessments is noteworthy and strikingly represented on a map showing these details.

9.3 Problems and Proposed Solutions

With a total of approximately 18 000 villages of a mean size of about 280 persons, and with close to 90% of its population living off main roads in largely inaccessible terrain, the Yemen Arab Republic poses difficult logistical problems.

The selection of a random sample of villages to be visited was considered disadvantageous in that this would ignore the known epidemiology of smallpox while committing substantial efforts to even the most sparsely settled hamlet. Given the presumed rather low immunity status country-wide, it is inconceivable that smallpox could escape the notice of the present active village search. On the contrary, any outbreak would be expected either to involve wide areas of the country or larger villages, in which case the searches would detect it, or it would have long ago "burned itself out" for want of susceptibles in the remote sparsely settled regions.

There are various problems encountered in trying to visit 100% of sampled villages, and so the field supervisor has authority exceptionally to replace some villages with others. The census lists may list several similar-sounding villages and so pin-pointing the sampled one can be difficult. Or the formal name listed in the census books is not well-known in everyday speech. Tribal definitions of "village" vary considerably from area to area with occasional "villages" covering an area of twenty square kilometers with fifty dispersed muhallah, or clusters of houses. (Starting with the Dhamar search, the number of muhallah in a village is another criterion to be considered in advance along with population size in selecting the sample.) Sometimes all the sample villages, selected in Sana'a without a detailed map, turn out to be located in one corner of the nahiya, and so, in the interest of geographic coverage, one or two may be left unvisited in favour of smaller villages elsewhere in the nahiya. Finally, security considerations may necessitate flexibility in the field.

The WHO-offered reward is being publicized only to health staff in order to stimulate reporting, since it was felt by Ministry of Health officials that a general publicity campaign would cause too many problems and might even compromise the teams' safety.

Cultural constraints against examining women, who in some places are veiled and in others obscured in green vegetable dyes, resulted in a 3:1 sex imbalance in the facial pock mark survey results. This problem appears irresolvable since the work constraints, especially as regards sleeping and travelling, and social constraints in general do not permit the employment of female surveillance officers.

One final problem is the discrepancy sometimes found between vaccination coverage levels on the search and on assessment. Depending on the age distribution of persons investigated within the three age groups, the results can be quite different. Ambulatory four-year-olds sought out on the search will give higher results than infants seen on assessment, for example. Another unresolved methodological problem is caused by the frequent movements of people with the result that the population present varies depending on time of day (work schedules), day of week (market days) and even month (Ramadan).

On the whole, despite the foregoing, the work steadily progresses and improves and continues to enjoy the excellent cooperation of the Ministry of Health.

10. Other Related Reports

The reader is referred to the following related reports:

Report of a Smallpox Assessment/Surveillance Field Trip to the Coastal Area of the Yemen Arab Republic (May 28 to June 1, 1978);

Draft for a Plan of Action: Smallpox Surveillance Programme, 1978-79;

Summary of Surveillance/Assessment Activities in Taiz Governorate (June and July 1978);

Operational Guidelines; National Smallpox Programme, Yemen Arab Republic (June 1978 - June 1979);

Expanded 'Minimum Information Report': Country Data, Health System, and Smallpox Data (November 1978).