



REPORT ON A VISIT TO ETHIOPIA BY MEMBERS OF
THE GLOBAL COMMISSION FOR SMALLPOX ERADICATION

31 May - 15 June 1978

by

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INTRODUCTION

The Commission members visited Ethiopia from 31 May to 15 June 1978. They were briefed about the smallpox eradication programme (SEP) in Ethiopia by the SEP headquarters staff from 1 to 3 June. This was followed by the field visits from 4 to 12 June, during which they were accompanied by the national and WHO staff. Their findings and recommendations were presented and discussed at a meeting which was inaugurated by H.E. the Health Minister on 14 June. This meeting was attended by the national headquarters staff, regional coordinators (COs) and surveillance officers (SOs).

During their stay in Ethiopia, the Commission members paid courtesy calls on H.E. the Health Minister, Permanent Secretary of Health, WHO National Coordinator and regional administrators.

One of the members (Dr Shrestha) also observed the training for urban search held on 16 and 17 June.

ACKNOWLEDGEMENT

We wish to express our sincere thanks and gratitude to the Director of SEP and his staff at various levels for making our visit pleasant and successful. We are also thankful to the Ministry of Health for their warm hospitality. We appreciate highly the excellent cooperation and help received from the WHO staff of Ethiopia and headquarters, Geneva.

RECOMMENDATIONS

Recommendations are made concerning the following aspects of the programme:

1. Urban search
2. Rural search
3. School search
4. Market search
5. Publicity
6. Documentation
7. Consideration of earlier international assessment of highland areas
8. General matters
9. Future of programme staff

The specific details of these recommendations follow.

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1. Urban search

1.1 There should be a single urban search during the rainy season, commencing in July 1978.

1.2 This should start with the larger towns, awraja capitals and move progressively outward to cover all towns with 1000 people or more. Remoter ones which are inaccessible during the rainy season should be completed after the rains cease.

1.3 Urban search should consist of:

1.3.1 House to house search.

1.3.2 Assessment of house to house search.

1.3.3 Diagnosis of all cases of fever with rash.

1.3.4 Assessment of case investigation and diagnosis.

1.3.5 Collection of specimens from chickenpox cases.

2. Rural search

2.1 There should be a single complete round of search activity in the rural areas after the rainy season, in which every farmers' association (FA) should be visited.

2.2 Search should consist of:

2.2.1 A visit to the FA chairman, if he is present.

2.2.2 Search of 10 households in each locality of that FA.

2.2.3 Concurrent assessment of search activities.

2.2.4 Diagnosis of all cases of fever with rash.

2.2.5 Assessment of this diagnosis.

2.2.6 Collection of specimens.

2.3 The rural search may occupy more than three months.

2.4 At the end of search operations in each woreda, the administration should be asked to call a meeting of FA chairmen at the woreda capital to deal with matters related to smallpox and its surveillance.

2.4.1 At this meeting each chairman will be asked to certify that smallpox has not occurred in his area during the past 12 months and before; if he can, the date of the last case known to him.

2.4.2 Those who are unable to attend this meeting should be contacted by other means.

3. Schools search

3.1 When schools reopen after the rains, every school should be visited once by a searcher.

3.2 School search should consist of:

3.2.1 Visits for publicity.

3.2.2 Visits by supervisors for assessment.

4. Market search

4.1 Headquarters should study the usefulness of market search by visiting teams equipped with publicity material.

4.2 Market search by teams from SEP headquarters should be used as part of their assessment activity.

4.3 If market search is found to be effective, this may be conducted on a wider scale by regional teams.

5. Publicity

5.1 There should be a listing, with times, of all likely gatherings of people, for example, woreda meetings of FA chairmen, church services, festivals, social meetings, etc.

5.2 Planned publicity visits to such gatherings should be made.

5.3 All means should be used to inform the people about the reward.

6. Documentation

6.1 Documentation should be prepared for each awraja, about the final stages of the attack phase, giving as much as is known about the last outbreaks, number of cases, source, personnel deployed, vaccinations performed and any subsequent special search operations, etc.

6.2 A report of all information available about the smallpox status of the presently closed areas should be prepared.

7. Consideration of earlier international assessment of highland areas

7.1 The maintenance phase has reached a peak in the highland areas and the sooner it can be concluded the better.

7.2 National staff should prepare a detailed report on whether the Ogaden area can be considered a separate epidemiological unit from the highland areas. This report should detail the extent and routes of population movement between these two areas and the possibility of vaccination control of these routes.

7.3 If this principle be accepted by the Global Commission then, following the next round of urban and rural search as detailed above, an international commission could be asked to assess the highland areas and prepare a report.

7.4 If this report is favourable search operation in the highland areas could then be discontinued.

8. General recommendations

8.1 The programme so far has put insufficient emphasis on assessment activities. This needs to become a priority concern from now onwards.

8.2 Reports from health facilities have, on the whole, been unsatisfactory.

8.2.1 Communication between SEP and the Department of Health might be improved so that health facility staff do not have the feeling that all smallpox activity is completely independent of them.

8.2.2 Health facilities submit monthly morbidity reports and hospitals submit weekly epidemiological reports. Access to the smallpox, vaccination, chickenpox and measles information on these reports would be useful to SEP.

8.2.3 Health facility staff might be asked to devote one or two weeks to a special inquiry of all persons attending for rumours of smallpox or rash with fever.

8.3 If extra manpower be temporarily needed for special search activities, malaria surveillance personnel might be deputed to SEP for a limited period.

8.4 The surveillance officer's job is a focal point in the information network, and at present has difficulty in dividing his activity between administration and assessment. Consideration should be given to providing the surveillance officer with an assistant to help with administration and to permit continual manning of the office while the surveillance officer is doing assessment.

8.5 Pre-search training should be given to all grades of staff engaged in the forthcoming rural search.

8.6 Specimen collection (from remote rural areas) has presented serious difficulties. Specimens from all areas should be taken according to the operational manual (isolated chickenpox, unvaccinated chickenpox, severe chickenpox, undiagnosed rash with fever, death from chickenpox, smallpox case). Every effort should be made to give priority to the transit of these specimens, so that they may be sent as quickly as possible.

8.7 Results of the survey of pockmark persistence in recent cases in Somalia should be obtained through WHO. The results will determine whether pockmark surveys would be useful for assessment in Ethiopia, particularly in the Ogaden area.

8.8 The headquarters assessment team should plan:

8.8.1 To revisit areas of the last outbreak in every awraja.

8.8.2 To assess the search activities.

8.8.3 To cross-check the diagnoses.

8.8.4 To do pockmark surveys if necessary.

8.8.5 To assess 1% of the FAs that have been searched, choosing them on a random basis.

8.9 The headquarters assessment team may be enlarged for the above activities.

8.10 Independent assessment at the end of the month is recommended.

9. Future of the programme staff

9.1 The knowledge and experience gained by SEP staff is very considerable and is a very valuable asset for the country. Every effort should be made to utilize them in EPI or other disease control activities.

9.2 Morale is tending to decline as the end of the programme is in sight and staff have uncertainty as to their own future. Any assurance that can be given them for their future would boost their morale at this crucial stage of the programme.

BRIEF REVIEW OF THE SMALLPOX ERADICATION PROGRAMME (SEP)

1. Background information

Ethiopia is situated in the north-east of the African continent, often referred to as the Horn of Africa. The total population of Ethiopia is estimated to be 30 000 000 and the area is 1 225 000 km², or approximately 472 000 mi². Ninety per cent. of the population lives in rural areas and about 95% of those are engaged in agriculture and animal husbandry. About half of the population lives at least one day's walk from any accessible road.

The geography of the country is characterized by a variety of features with elevation ranging from 90 m below sea level in the North Depression, near the Red Sea coast, to 4575 m above sea level on the Semien Mountains in the western plateau. The rugged, central and north-central plateau which constitutes one-third of the country and where a half of the population lives is criss-crossed with gorges and surmounted by mountains rising to more than 4000 m above sea level.

The country is divided into 14 regions (Fig. 1) which are further subdivided into awrajas, woredas, farmers' associations and localities. Details are given in Table 1 which also shows the number of the existing health facilities, markets, schools and SEP staff by region. The organogram of SEP is shown in Fig. 2.

FIG. 1. REGIONS OF ETHIOPIA



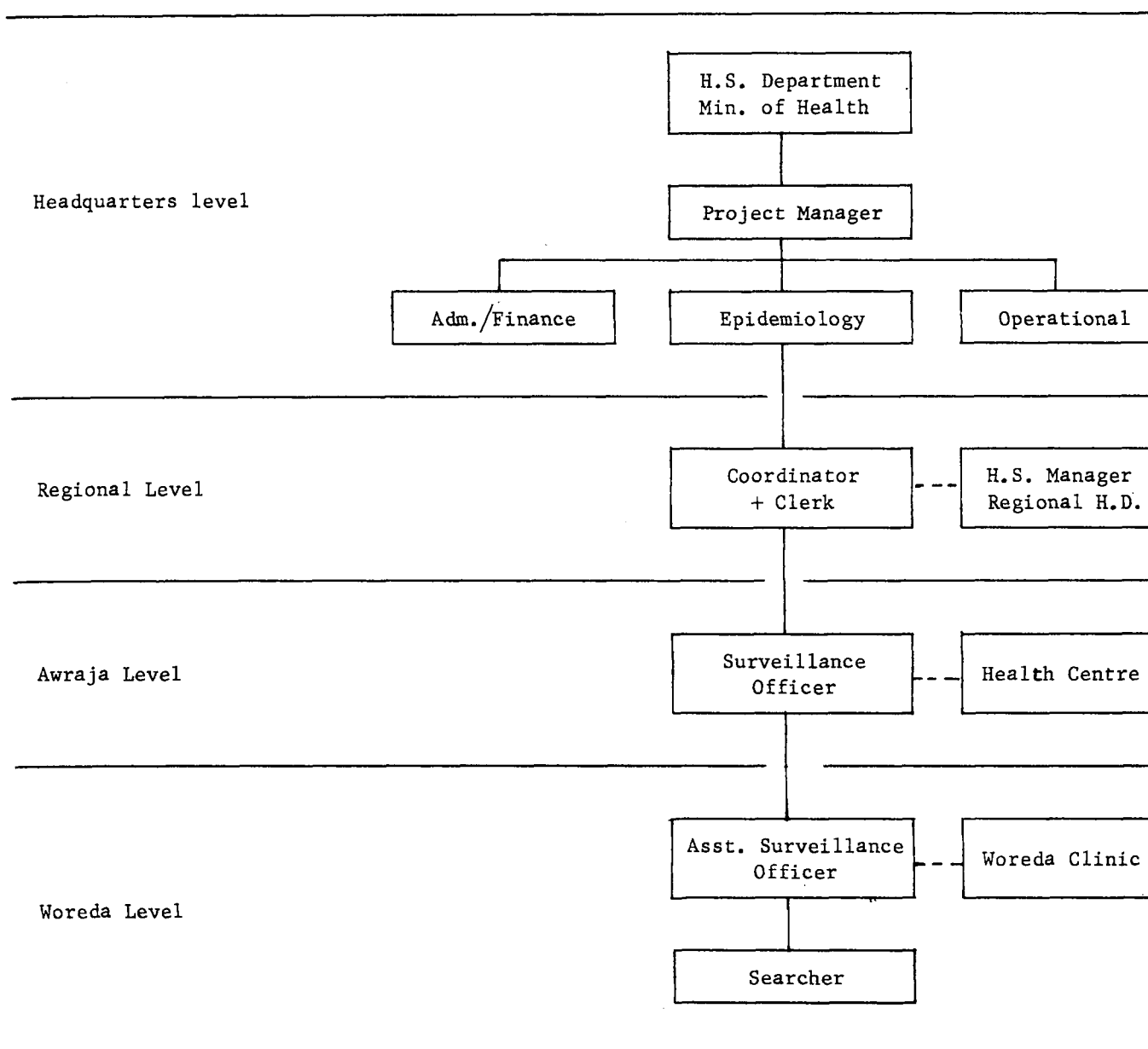
TABLE 1. DETAILS OF EXISTING FACILITIES BY REGION

	Population (x 1000)	Area km ²	No. of Awrajas	No. of Woredas	No. of FAs	No. of H.F.	Schools	Markets	Searchers	ASO ^a	SO ^a	CO ^a	Population covered by each searcher	Area covered by each searcher km ²
Arssi	1 030.9	23 500	3	22	1 130	51	150	147	30	7	2	1	34 360	783
Bale	830.9	124 600	5	25	621	39	124	86	42	5	3	1	19 760	2 967
Gamu Goffa	946.3	39 500	4	22	773	56	98	97	32	7	2	1	29 570	1 234
Gojjam	1 927.6	61 600	7	34	2 937	57	203	213	70	16	5	1	27 540	880
Gondar	1 942.4	74 000	7	28	2 324	65	199	161	51	13	4	1	38 090	1 450
Harrarghe	2 955.4	259 700	13	60	659	38	101	87	60	12	4	1	49 260	4 328
Illubabor	736.1	47 400	5	32	895	58	177	163	35	10	2	1	21 030	1 354
Käffa	1 527.5	47 400	6	38	1 648	70	190	348	51	11	3	1	29 950	929
Shoa	4 587	85 400	11	79	5 702	150	881	491	149	33	6	1	30 790	573
Sidamo	2 654.9	117 300	6	35	1 605	102	347	309	69	11	4	1	38 480	1 700
Tigräi	2 044.4	15 900	8	55	759	77	227	42	54	14	4	1	37 860	294
Wollega	1 910.4	71 200	6	48	2 203	89	321	217	54	12	3	1	35 380	1 319
Wollo	2 469.5	79 400	12	37	1 215	91	279	272	60	16	6	1	41 160	1 323
Addis Ababa	1 426	-	-	11	-	-	-	-	34	6	-	1	41 940	-
Eritrea	2 295.8	117 600	9	37	-	-	-	-	7	-	-	1	327 791	16 800
Total	29 284.9	1 164 500	102	552	...	...	...	...	798	173	53 ^b	16 ^b	36 700	1 450

^a ASO = Assistant Surveillance Officer, SO = Surveillance Officer, CO = Coordinator (regional).

^b Includes 1 CO and 5 SOs in Ogaden area.

FIG. 2. ORGANOGRAM OF SEP IN ETHIOPIA



2. Summary of programme activities

SEP was started in Ethiopia in 1971. By July 1971 activities of some sort were in progress throughout the country but the principal efforts were focused on the south-western regions which bordered smallpox-free Kenya and virtually smallpox-free Sudan, on Addis Ababa which as an urban centre could be expected to serve as a source of spread of smallpox throughout the country and on Eritrea where health services were more plentiful and the transportation network was better developed. During 1971, 26 329 smallpox cases were documented, a figure considered to be only one-tenth of all cases which actually occurred in that year. Briefly, the programme was continuously expanded and the incidence of smallpox has steadily declined throughout the years. The number of cases recorded in 1972 was 16 999, transmission being interrupted in four regions. The number of cases recorded in 1973 was 5414 with 4439 in 1974, 3935 in 1975 and 915 in 1976, with the last case in Bale region in August 1976.

After the discovery of the last case, the programme was switched into a maintenance phase, with the following objectives:

- (1) to find hidden foci of infection, if any;
- (2) to be prepared to contain any outbreaks of smallpox that might be detected anywhere; and
- (3) to document adequately all the activities carried out after the last case.

To achieve the above objectives, the following activities are being carried out:

- (1) detecting hidden foci through routine surveillance
 - (a) periodic quarterly active searches, locality by locality by surveillance teams;
 - (b) regular surveillance at major markets and schools by the surveillance teams;
 - (c) continuous surveillance through reports from all health facilities;
 - (d) regular reporting by all farmers' associations;
- (2) detecting hidden foci by special surveillance campaigns. Areas considered as being of high risk because there were cases in 1976, areas which have been inaccessible for security reasons, areas with difficult physical features such that a routine programme is impossible and areas with very poor communications are covered by special surveillance campaigns of short duration which are carefully planned to ensure 100% house to house search.

In the year 1977, 80% of the 23 670 farmers' associations registered in the country were visited. Special search campaigns were conducted in the Blue Nile Gorge, in all districts sharing a common border with the Ogaden, in areas of Gojjam, Wollega and Illubabor regions adjoining international borders, areas around the last known outbreaks in highland Sidamo.

A total of 9991 rumours were recorded in 1977, of which 3774 cases of chickenpox and 6217 other skin diseases were diagnosed. A total of 620 specimens were collected out of which 29% came from the Ogaden Desert regions of Hararghe, Bale and Sidamo and were collected in the six months before the war started; all proved to be negative for variola.

In 1977 alone, 1 895 258 primary vaccinations were given, which makes the total of vaccinations given since the beginning of the programme for the whole country 15 396 154 which is about 54% of the population.

Although the programme in the Ogaden area had to be discontinued because of the war, after the last case in August 1976 there were 10 full months of extensive surveillance which covered the whole area with the assistance of a helicopter. Some 500 people were deployed. During this time a number of rumours were checked and 180 specimens were collected, all were negative for smallpox.

Surveillance among displaced people who are now concentrated in major towns of the Ogaden area has been given top priority in building up basic information before the intensive search programme in the countryside could be organized.

The only region not now under routine surveillance is Eritrea. The activity since the end of 1974 had been restricted to monitoring through the existing health facilities and through rumour collection during the course of vaccination campaigns in all the major towns. Transmission in Tigre region, which extends across most of Eritrea's southern border, was interrupted in November 1972. Surveillance in Eritrea continued throughout the province for two full years following the last case with only one outbreak of three cases due to importation being detected in 1973. The following points about Eritrea are worth mentioning:

(1) Two years of surveillance throughout the region following the last case failed to detect any evidence of continuing transmission.

(2) Tigre which consists of a wide belt across the entire populated southern belt of Eritrea has been free of smallpox since November 1972 and is still under surveillance programme.

(3) Eritrea's network of health services and its level of vaccination immunity was far better than anywhere else in Ethiopia well before the campaign began and even now vaccination is given to all people coming to the major towns.

FIELD VISITS

1. Activities

An attempt was made within the limitations of the time available and possibility of travel to visit as many awrajas, woredas and farmers' associations (FA) as possible. They also paid visits to the SEP offices, Regional Health Department, health facilities (HF), schools and markets. The places visited are given in Table 2. Dr Dumbell visited Gojjam and Gondar regions and Dr Shrestha visited Gamo Goffa and Sidamo regions.

TABLE 2. PLACES VISITED

Region	Awraja	Number of woreda	FA	HF	Schools	Market	Festival
Gamo Goffa	2	4	8	4	-	1	-
Gojjam	4	4	2	-	1	-	-
Gondar	3	3	3	-	1	1	1
Sidamo	2	4	5	1	2	2	-
Total	11	15	18	5	4	4	1

In each SEP office attention was paid to the following points:

- (a) Results of FA search following reports up to March 1978, drawing attention to unvisited FAs.
- (b) Discussion of any unapproachable woredas.
- (c) Results of school search, health facility reports and chairman reports.
- (d) Number of rumour reports and how checked.
- (e) Amount of field assessment done by CO and SOs.
- (f) Training and knowledge of assistant surveillance officers (ASOs) (only seven of them could be met).
- (g) Inquired after chickenpox deaths.
- (h) Details of variolation practice (particularly in Wogera).
- (i) Any other difficulties raised by CO and SOs.

During visits to farmers' associations the FA chairmen were asked:

- (a) Whether there was or had been any smallpox in the area - and how long ago.
- (b) How many people have relatives in other FAs and towns.
- (c) Were variolators working, and how long since.
- (d) Whether chairman felt he could distinguish between smallpox and chickenpox.

All people met were examined for facial pockmarks.

A group of children were also examined for vaccination scars. People in the villages and the markets were asked whether they have seen the searcher and the smallpox recognition card and whether they know where to report in case of smallpox.

2. Findings

2.1 Search in the farmers' associations

The Ethiopian highlands are difficult country for any search operation. Roads are few and a large proportion of the population lives in the countryside, half of them being more than one day's walk from the nearest road. In addition they are not grouped in villages but in small clusters of houses (localities) fairly evenly spread over the landscape. It follows that any countryside search programme is a very large task and effective coverage must depend on the cooperation of the mass of the people. This cooperation has been generously given.

We found that most of the FAs in accessible areas are being visited regularly by the searchers, at least since January 1978. Most of 1977 had been devoted to developing and improving the search programme; this is shown in Table 3 which compares the first quarter of 1978 with the corresponding period of 1977. It had now been fully appreciated that, in the second quarter of 1978, priority should be given to visiting those FAs which have not been visited in the first quarter of the year. We found that, in some areas, FAs were being visited for the third or even fourth time in 1978, while others had received no visit at all this year.

TABLE 3. COMPARISON OF SEARCH ACTIVITIES: 1st QUARTERS OF 1977 AND 1978

	1st quarter 1977		1st quarter 1978	
	No. made	% of expected	No. made	% of expected
FA visits	7 581	32	13 227	59
Reporting from FA	1 069	1.4	13 577	20
Reporting from HF	107	3	836	28
Rumours registered	1 005		1 976	
Specimens collected	109		331	
Vaccinations performed	473 525		212 994	

We also had some misgivings about the present methodology of the FA search activity, principally because it would be very difficult to make a proper assessment of it. Some of the difficulties are these: the searcher makes a visit but does not necessarily visit all localities or more than a few houses. It would thus be a matter, largely of chance, whether a subsequent assessment gave a good or a poor result. Another difficulty is that, on week days, most of the men may be out working and houses may be unoccupied, or only the women may

be at home. This has sometimes led to failure to obtain the desired information and to difficulties in getting the visit recorded on SF III. This green card may reveal failures to conduct the search properly but its adequate completion is no guarantee that proper visits have been conducted. It seems to us that if the rural search were modified to give a more thorough search, at each visit, overall coverage would be better and assessment would be more reliable. We think that a single round of this more intensive search could give sufficient evidence, provided that concurrent and subsequent assessment confirmed that it had been properly done.

The other component of the FA search is the monthly report supposed to be submitted by the FA chairman. We found that the number of these received was very low in some areas, though in others it was reasonably good. It is easy to understand several reasons for the poor performance in these returns. However, the chairman is in a very good position to know the details of his association. Now that 20 months have passed since the last recorded case of smallpox in Ethiopia, we think that a single statement from the chairmen, confirming that they knew of no smallpox in their area within the last 12 months should suffice; provided that it was given more or less simultaneously by all (or nearly all) the chairmen in a particular woreda. This combined statement would be of such importance that we think it is warranted to go to some trouble and even expense to procure it.

In each of the regions we visited there were woredas or even whole awrajas which were inaccessible. This is a fluctuating situation; some of the woredas which were inaccessible during our visit, had been well visited up to only a few months ago. We were told that local searchers were still working in some of these difficult areas and that some information was being obtained, even though assessment could not be done. It is clear that a close watch must be kept on these difficult areas so that all opportunities can be taken to get as much information as possible from them.

2.2 Search in urban areas

Search has been planned in urban areas during the rainy season from July. It has already been started in Addis Ababa and training for other towns is in process. We support this urban search with slight modifications which have been spelt out in the recommendations.

2.3 Search in schools

This appeared to be very effective; most schools have been searched and in those we visited a high proportion of children remembered previous visits and had the appropriate knowledge of smallpox and where suspect cases should be reported. The teachers also, we found, were both knowledgeable and cooperative. We looked for, and failed to find, any evidence of facial pockmarks in the children under 10 years.

2.4 Search in markets

This requires a special technique and a team rather than a single searcher. So far no rumours have originated from market searches. We were impressed by the potential of markets as an important source of rumour and excellent places to conduct publicity because the bigger ones may draw together people from surrounding rural areas up to some days' walk away. We feel that the opportunities of markets deserve some consideration and study and that they might well be used for publicity and assessment by headquarters teams.

2.5 Rumours

Most of the rumours are being detected by the searchers; there are only rare instances of rumours being reported through health facilities. But it must be remembered that chicken-pox cases do not usually attend the clinics for treatment. Some awrajas and woredas have not reported a single rumour in 1978. Announcement of the global reward and subsequent publicity may be expected to improve this situation. Most of the rumours are being verified by assistant surveillance officers (ASOs), but their knowledge about the diagnosis of smallpox was very variable. Impressions gained of the ASOs in the north were more favourable than those gained in the south.

2.6 Specimen collection

The time lag between the collection and dispatch of specimens continues to be very long - sometimes as long as three months. This undermines the importance of the collection of specimens. There is also considerable delay in the regions being informed of results. As an example, 14 specimens have been taken from one awraja of Sidamo (Walayti) since January 1978 but no result has yet been received there. Similar complaints were made in Gojjam and Gondar.

2.7 Assessment

Most of the assessment is being done by ASOs. In view of the distances involved the SOs and COs have little time for assessment. Rumours, however, are checked by SOs. As stated above, we are doubtful about the validity of assessing FA searches done under the present methodology. Some modifications are required. We found, in general, that too little attention had so far been paid to the problems of assessment. This is a very important part of the preparations for certification and should receive priority attention in the last months of the programme.

2.8 Recording system

This seemed to us to be unnecessarily elaborate. Master records were kept in the SOs office both in books and in wall charts, as well as in the original forms. This complete duplication was also repeated at the Regional Office. The duplication of the records at the SO's office as wall charts was also confusing because of the difficulty of keeping them up to date with changes in the organization of FAs. We found that SOs whose office work was completely up to date had too little time to spend in the field. Wall charts might be more usefully employed, on a smaller scale, to draw attention to priority or urgent matters.

We also noted discrepancies between summary records at awraja and regional level compared with those at national headquarters. For example, we quote figures from Bahar Dar awraja in Gojjam for the first quarter of 1978.

Woreda	Existing FA		Primary visits		Coverage %	
	NHQ	CO & SO	NHQ	CO & SO	NHQ	CO & SO
Achefer	117	112	96	97	82	86
Bahr Dar	85	100	67	93	79	93
Mecha	150	115	111	106	74	92
Y. Densa	169	165	104	106	61	64

Although coverage figures are good in their example discrepancies like this would undermine the confidence of a commission; it is hard to justify the amount of unnecessary work which their existence implies. We are aware that most of them are due to the rapid changes in numbers of FAs but feel that they could be avoided by some improvement in planning.

2.9 Pockmark survey

We looked for facial pockmarks on all the people we met, but particularly in the schools and markets. No pockmarks were observed in children under 10 years old. Of those in whom we did see pockmarks none had the infection later than 1973.