

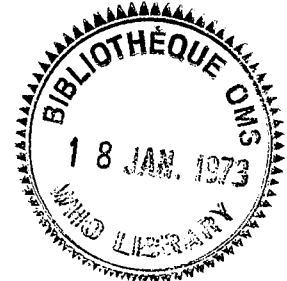
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THE USE OF SURVEILLANCE TEAMS IN BANGLADESH

by

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With the help of technical assistance from WHO, Bangladesh initiated a nationwide smallpox eradication programme in 1968.

This programme was based, initially, upon the establishment of surveillance teams, in association with a mass vaccination campaign, started in ten out of the country's nineteen districts. Independent assessment at this time showed a vaccination rate in the different districts varying from 50% to 90%. As a result of these measures, especially the surveillance, successful results were achieved extremely rapidly, and in 1970 a zero incidence of smallpox was recorded.

This state persisted up to the time of the army crackdown and it was felt that smallpox transmission had been interrupted within the country.

In March 1971, a military crackdown started, persisting for nine months during which no cases were recorded in the country, although it was not possible to maintain our previous level of surveillance as the work was considerably hampered and the organization was completely disrupted.

In December 1971, millions of returnees left camps outside the national boundaries, in which a number had been exposed to smallpox, and returned to their homes. As a result of this influx, there was a massive introduction of cases of smallpox into Bangladesh, affecting most districts, to a greater or lesser extent.

In spite of this large number of initial cases, there were many factors present which augured well for the containment of the outbreaks. There was the existing, although disrupted, infrastructure of the surveillance system, the reporting system already in operation and most important the knowledge

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that the interruption of transmission was possible. Coupled with this, 4 000 trained vaccinators were still at their posts at the Union level. Therefore, with the re-establishment of central surveillance teams, it was felt by the Government and WHO that the initial outbreak, in spite of its size, could be rapidly controlled.

Nearly nine months later, the epidemic is still with us, although tremendous work has been done in managing to contain the infection within a few areas. It is necessary at this stage to review the situation, impartially and dispassionately, to see why we have not completely succeeded in containing the epidemic and to ensure that we learn from the lessons of the past few months.

Organization of the surveillance teams

It is necessary to describe the organization and functions of the surveillance teams.

The Smallpox Eradication Programme was re-established under the supervision of an Assistant Director of Health Services, and the Headquarters staff consisted of two Medical Officers, two Subdivisional Health Inspectors and 16 Sanitary Inspectors. In addition a team of four WHO advisers was posted to the country. The composition of these central surveillance teams varied according to the situation, but they usually consisted of one medical officer plus three sanitary inspectors.

Functions of the surveillance teams

1. To review the smallpox situation and to assess the effectiveness of the currently employed control measures.
2. To identify the areas where smallpox transmission was occurring.
3. To review the methods of containment and surveillance.
4. To accurately determine the resources available to the programme.
5. To establish efficient surveillance in the non-infected areas.
6. To interrupt transmission in the infected areas.

Reporting system

Mention might be made here of the all important question of good reliable reporting of cases to the Smallpox Eradication Headquarters. Previously, this had been considered extremely good. The field worker, responsible for about 15 000 inhabitants, would search for and, having found cases, would report them to his superior officer. The latter, as well as sending a regular weekly report, would report by cable all newly discovered outbreaks to HQ.

However, at the start of this programme, weekly reporting from the subdivisional level was as low as 27 reports out of an anticipated 56.

Additional help in the detection of outbreaks was received from other sources, e.g. the Red Cross, newspaper reporting, etc. Many of these reports were found to concern diseases other than smallpox but it was felt that they were an additional valuable check on our formal channels of reporting.

The initial control of operations after liberation

Prior to the introduction of smallpox and, presumably, also in the early stages of the epidemics, there was a very low vaccination coverage in many areas, e.g. in Rangpur, where none of the children in the 0-4 age group in the infected households, were found to have vaccination scars (Table 1).

TABLE 1
Pre-epidemic vaccination scar rate
in infected households - Rangpur, 1972

Age Group	Inspected	With vacc. scar	Scar Rate
0-4	41	0	0.0
5-14	75	12	16.0
15+	108	76	70.4
TOTAL	224	88	39.3

At this stage, only the local staff were responsible for the containment of outbreaks and it became very obvious during the initial assessment by central teams in Faridpur, Barisal and Khulna, that very often the local staff could not grasp the principles involved in the concept of containment. The basic practices of an active search for cases and the vaccination of all immediate contacts was not being done.

TABLE 2
Sample survey in Showarupkati Thana
Barisal District - 1972

	Reported	Sample	Estimated	% reported
Deaths	78	138	828	9.4
Cured cases	} 165	146	876	} 11.2
Active cases		99	594	
TOTAL	243	383	2 298	10.6

Two figures prove this quite conclusively, firstly in the Barisal District, case detection by central teams estimated only a 10% true case reporting (Table 2) and secondly, appraisal of the effective containment measures, showed that after containment 16% of the inhabitants of infected households were still unprotected. This was most marked in the 0-4 age group (Table 3).

TABLE 3
Contacts in infected households never vaccinated
Rangpur and Barisal Districts

Age	No. of contacts	No. unvaccinated	% unvaccinated
0-4	95	46	48.4
5-14	108	56	51.9
15+	200	99	49.5
TOTAL	403	201	49.9

At this stage, we had therefore the position of poor case detection and a failure of extensive contact vaccination.

Inevitably, the number of cases increased and as an emergency measure, 3 300 extra vaccinators were employed to start a mass vaccination campaign. Reviewing this now, as we must, in a critical light, this measure also was of doubtful value in the short-term control of the epidemic.

Assessment by the central team showed that following a visit from these vaccinators recording the number of vaccinations performed, over 100% of the community was vaccinated. Whether this was the result of poor census figures, poor recording of vaccinations or villagers making sure of their protection by being vaccinated twice, is open to debate.

The areas of smallpox transmission

According to official reports received at HQ, cases were occurring in Khulna, Faridpur, Barisal, Rangpur and Jessore and indeed, the central teams found these to be the most heavily infected areas.

However, by careful surveillance and visits to the Infectious Diseases Hospital we were able to establish the presence of further, smaller outbreaks in Dacca, Chittagong and Rajshahi, not officially recorded; by visits to schools, asking the always honest children if they knew of cases, of other unreported outbreaks in Faridpur and Barisal; and simply by showing the recognition card in the markets, we discovered cases in Sylhet and Rajshahi.

From newspaper reports, we usually found either chickenpox or smallpox outbreaks of which we were already aware.

Most important, in all these outbreaks, but especially those occurring in the lightly infected areas, cases were discovered by the central surveillance team before a wide spread had occurred and as a result control by containment was quickly achieved.

Our active search in April 1972 failed to reveal any cases of smallpox in 27 subdivisions out of the country total of 56 subdivisions. The accuracy of this figure has been borne out by the subsequent non-development of outbreaks in most of the country.

Review methods of surveillance and containment

A plan of action for surveillance and containment was drawn up in April and the central teams had the responsibility of putting it into action (Annex I).

The resources available

These were assessed by our teams. They found that many vehicles, boats, motorcycles and bicycles, even refrigerators, had been lost, stolen or damaged during the hostilities. We found that, of the machinery required for the smooth running of the programme, we had only 53% of the vehicles needed, 29% of the bicycles and 45% of the refrigerators.

On the manpower side, there was a shortage of Subdivisional Medical Officers of Health, although numbers of sanitary inspectors and vaccinators were adequate, even if their standard was extremely variable and there was an obvious need for retraining and orientation.

Surveillance in non-infected areas

Because of the limited staff available, and the overwhelming needs for urgent action in the heavily infected areas, surveillance in the non-infected area has largely been the responsibility of the local staff, who have received adequate instruction from the HQ staff and have at all times been backed up by central teams, in the immediate investigation and control of suspect cases and outbreaks.

The interruption of transmission in infected areas

In spite of the presence in Bangladesh of a considerable area still infected, the record of the eradication programme in interrupting transmission is not wholly unsatisfactory. Three outbreaks in Rajshahi town, one in Rajshahi district, three in Dacca city, two in Dacca Sadar, three in Noakhali, one in Bogra and several outbreaks within the heavily infected areas have all been completely contained by the direct intervention of the central surveillance teams, who have been immediately despatched to the areas where outbreaks had occurred to carry out containment and to take steps so as to ensure that the local staff continued the work.

Mindful of the fact that the National Smallpox Eradication Programme was reorganized in the month of March, there is a significant correlation in the time-lag between the onset of an epidemic and the arrival of a central surveillance team and the effective control of the epidemic (Table 4).

TABLE 4
Time-lag between onset of outbreak
and first visit of the central surveillance team
Bangladesh - 1972

Outcome	Outbreak	Date of onset 1st rash*	Date 1st visit	Time-lag (in days)
Not Controlled	Khulna District	13.1.72	23.3.72	71
	Barisal District	15.1.72	24.3.72	70
	Rangpur District	1.12.71	14.4.72	105**
	Madaripur	5.1.72	12.3.72	68
	Gopalganj	5.1.72	13.3.72	69
Controlled	Chittagong	5.3.72	5.4.72	30
	Rajshahi Town 1	19.2.72	12.4.72	54**
	Rajshahi Town 2	5.4.72	29.4.72	25
	Rajshahi Town 3	8.4.72	30.4.72	22
	Dacca Town 1	17.2.72	20.3.72	33
	Dacca Town 2	29.3.72	5.4.72	8
	Dacca Sadar	5.6.72	15.6.72	10
	Noakhali	21.5.72	26.6.72	37
	Faridpur Town	1.6.72	31.7.72	61**
Goalundo Town	12.8.72	17.8.72	5	

* Date officially recorded by reported letter

** Isolated population

*** One team sent before the re-establishment of SEP, in February

When studying these figures, it should be reiterated that the central teams were not created until March and during the apparently long delays, doctors and Subdivisional Health Inspectors were active in the field.

However, the point is relevant that the greater the delay before the arrival of a central team, the greater was the risk of non-containment of the outbreak.

A second major factor in the containment of epidemics became obvious from our incidence figures and the graph for Gopalganj demonstrates it clearly (Figure 1). Whilst the central team was working in the field, the level of case detection and the associated number of vaccinations performed rose at a

most satisfactory rate. However, as soon as the central team left, the reported cases and vaccinations performed slumped very quickly. This, to our mind, emphasizes the need for a strict supervision at all levels to ensure a lasting good quality of work.

Because of this, in August, a new scheme for the heavily infected areas was evolved, whereby the Subdivisional Health Inspectors, the most vital and best trained field workers in the programme, were posted to the subdivisional level to try and avoid these previously mentioned variable levels of work. It is still too early to be able to fully assess results from this move, but initial reports from Faridpur seem encouraging (Figure 2).

Final comments

There can be no doubt in our experience of the value of surveillance teams.

At the beginning of the Bangladesh epidemic, there were few good committed teams working in the field, but now all the teams have been trained and are working effectively.

We anticipate good results from these workers, with their skill in surveillance; containment, supervision and health education. All are important.

They should detect the outbreaks at an early stage and contain them fully; they can also assess the level of protection of the community and from their extensive knowledge of the local situation discover cases in problem areas, where smallpox transmission is most likely to occur and result in large outbreaks.

It is essential that these teams be fully mobile, so as to ensure their rapid arrival at the site of the outbreaks and to provide an efficient means of supplying field workers with adequate stocks of vaccine, needles and other necessities.

FIGURE 1
Smallpox - reported cases and vaccinations
Gopalganj - 1972

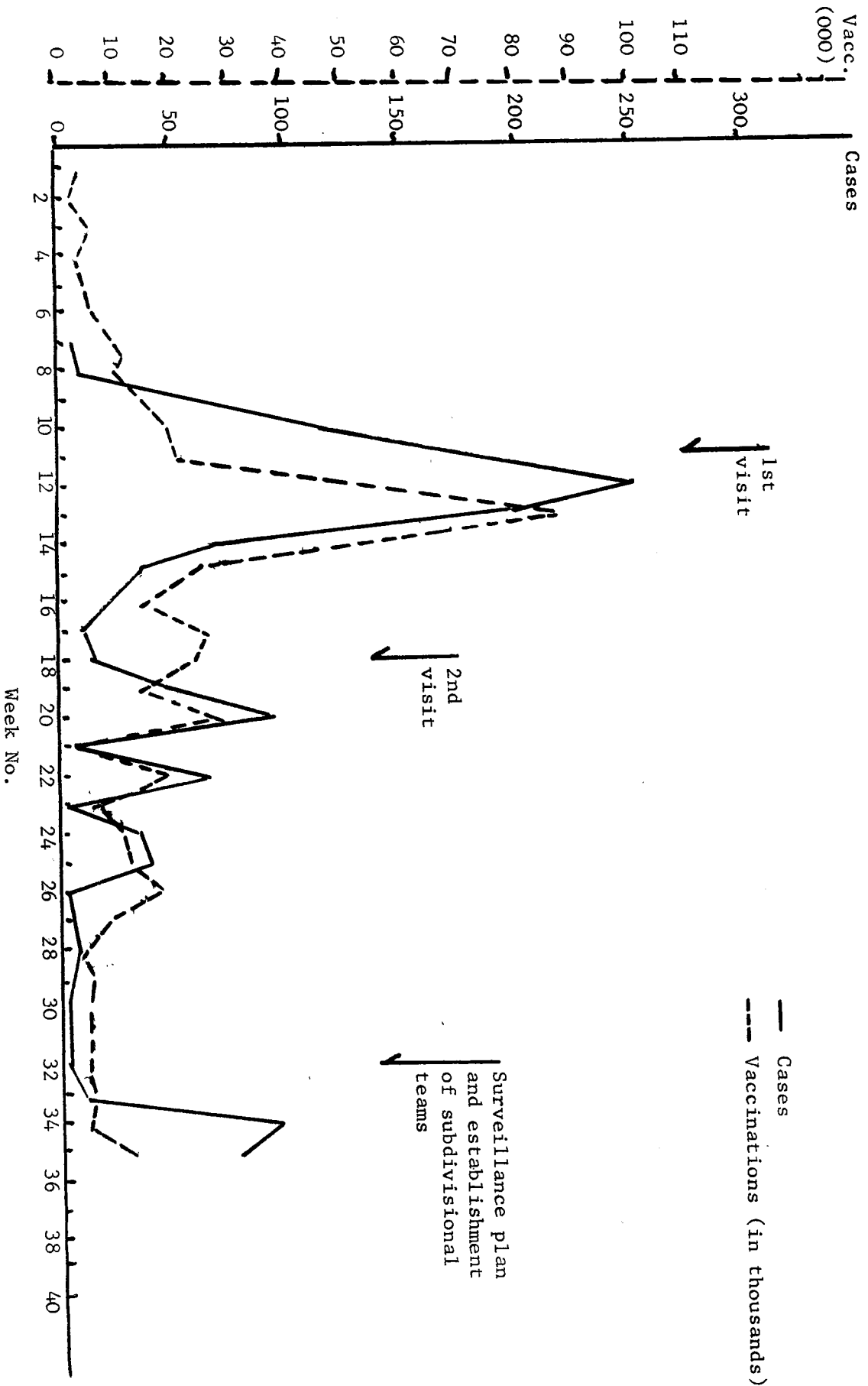
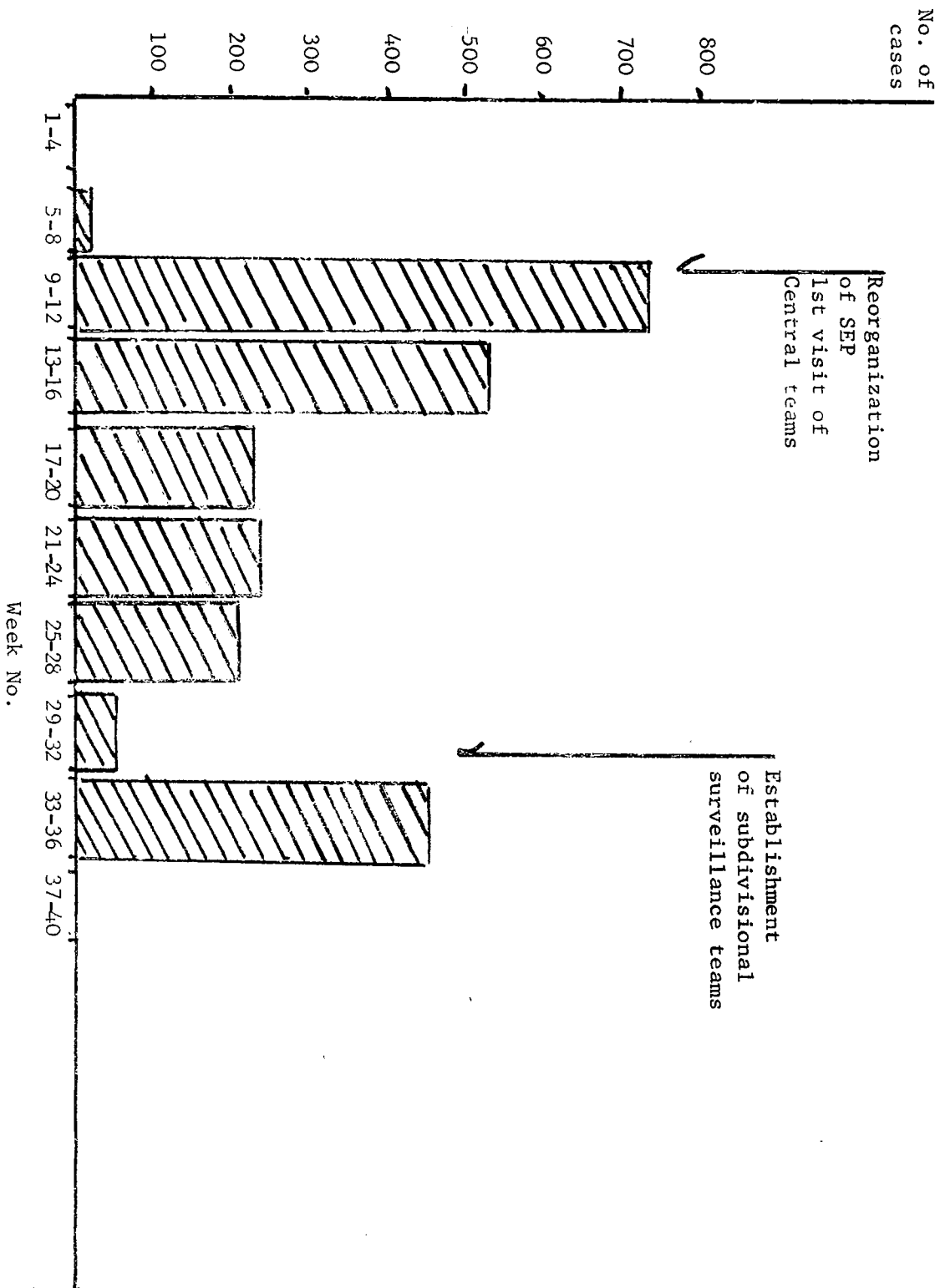


FIGURE 2
Smallpox - reported cases by groups of 4 weeks
Faridpur District - 1972



ANNEX I

GOVERNMENT OF BANGLADESH
DIRECTORATE OF HEALTH SERVICES
(SMALLPOX ERADICATION)
MOHAKHALI, DACCA

ACTIVE SURVEILLANCE CONTAINMENT PROGRAMME
FOR BANGLADESH

1. Assignment of Central Team consisting of Medical Officer, Sanitary Inspectors, Driver, Boat Driver, Vehicle, Boat and Motor to each infected Subdivision.
2. Meet with Subdivisional Medical Officer of Health to review current status of smallpox and to develop plan of attack.
3. Using messenger, arrange meeting with Sanitary Inspector and all Government Health Assistants at thana headquarters to review programme and assign work.
4. At meeting with Sanitary Inspector and Government Health Assistants, programme should be reviewed and a schedule developed for every village in the Thana to be visited within a 3 week period.
5. Each Government Health Assistant will be provided with a list of villages to be visited by date, a smallpox recognition card and a village report form.
6. He should visit each bari in the village and request as to presence or absence of smallpox. If smallpox is present all contacts are to be vaccinated. If no smallpox is present primaries only are to be vaccinated.
7. Results are to be recorded on the village report form.
8. A training session will be held in at least 5 baris in a nearby rural area.
9. Government Health Assistants will report weekly at their regular meetings.
10. During 1st week, Sanitary Inspector will accompany Government Health Assistants to reported villages.
11. As soon as infected baris are found, bari control form will be filled out. When all contacts are vaccinated, Sanitary Inspector should move on to the next infected bari.
12. Medical Officer of Subdivisional Medical Officer of Health will visit at least 10% of infected baris at 3 weeks to confirm effectiveness of control.

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