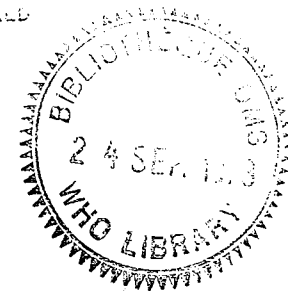




ACTIVE SEARCH OPERATIONS - EQUATORIA PROVINCE, SUDAN

by

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Introduction

From the late fifties until 1969, no cases of smallpox were reported from Equatoria Province (population 1.4 million), the southernmost of Sudan's 10 provinces. Then in April 1969, cases appeared near Juba town, the provincial capital. Because of civil disturbances, effective containment of the cases could not be undertaken outside the provincial or district capitals and the infection spread. By March 1972, when the civil disturbances ended, many areas in the Province had become infected and threatened the smallpox-free bordering countries of Kenya, Uganda, Zaire and the Central African Republic. In addition, the level of vaccination immunity in the Province was low as health activities had been hampered during the preceding 17 years of civil disturbances.

Surveillance teams from the successful smallpox eradication campaign in the north of Sudan were moved to Equatoria and began active surveillance and vaccination activities. By the middle of 1972, a sharp decrease in smallpox incidence was apparent and the seasonal increase expected in November and December was not observed (Figure 1). No cases at all were reported or detected after November 1972.

To determine whether transmission had been interrupted, it was decided that an active search for smallpox cases should be conducted throughout the province.

Active search programme

A three-phase programme was developed to cover (1) the most recent foci, (2) border areas, and (3) old foci and previously unvisited areas. The first phase of the programme was initiated to be certain that the most recent outbreaks had been properly contained. Areas where cases had occurred since August 1972 were selected. Experienced surveillance personnel revisited affected households in these areas; villages, chiefs, subchiefs, schools and health facilities within at least a 10-mile radius of the affected areas were contacted and questioned.

The second phase of the programme was a longer term active search/vaccination campaign along border areas. This was designed to detect smallpox among the large numbers of refugees returning from the bush and from bordering countries after the end of the civil disturbances. Vaccination teams were distributed to reception centres and resettlement camps where refugees

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were being registered and resettled. They were equipped with smallpox recognition cards and instructed to question all people whom they vaccinated about possible smallpox cases. In the final phase of the programme, a systematic active search of the remaining areas of the Province was planned.

Active search operations in the Province were conducted by three teams, each team consisting of a supervisor, two vaccinators and a driver.

Sources of information

Reporting "units" of varying reliability were contacted by surveillance teams during their active search operations. Schools were considered to be of primary importance since experience in other countries had shown that a few hours of questioning at a school provided a considerable amount of information about smallpox in the surrounding area. Health facilities were also valuable sources of information. Generally, if a large outbreak were present, sources at either schools or health facilities could be relied upon to report to surveillance teams. However, during the civil disturbances many schools and health facilities were destroyed or badly damaged and were not functioning at the beginning of the active search programme. Markets, which usually draw large numbers of people from the surrounding areas, were visited early in the programme but it was found that many were not well attended by the local people and the information received was of limited value. Alternate reliable sources of information were considered to be necessary to supplement information provided by schools, health facilities and markets. The most reliable and valuable additional sources of information were felt to be the chiefs and subchiefs. They are responsible for specific areas and villages and are expected to report immediately to local health authorities any suspect cases of smallpox. Through a system of chief's courts over which they preside, a chief or subchief has almost daily contact with villagers from his area. Thus chiefs and subchiefs were felt to be reliable sources of information about smallpox for most areas. It was thought that an active search programme during which all chiefs and subchiefs, schools and health facilities in an area were contacted, would provide the most reliable information about smallpox.

Sketch maps and guidelines for each district were prepared and distributed to the surveillance teams. Specific active search tasks were assigned and teams were required to record active search activities on a summary form. Any suspect cases were to be investigated and the results of the investigation recorded on the form. With this information, it was possible to summarize the extent of active search operations in a given area and to reach reasonable conclusions about the smallpox situation in the area.

Active search in Torit Rural Council

A typical example of the active search activities performed is that in Torit Rural Council (district). Torit Rural Council (Figure 2) has an area of 10 625 square miles and a population of approximately 170 000. The population is comprised of four principal tribes, three of which live on either side of the southern border with Uganda. Most of the population live in small scattered rural settlements of less than 500 people; only the capital town of Torit and one settlement in the northern part of the rural council have more than 5000 inhabitants. The entire northern third of the rural council is uninhabited. The northern and western parts of the rural council are savanna grasslands and the eastern and south-eastern part is a mountainous area with some peaks rising to over 3000 metres. It is an area of scattered population and difficult terrain.

During 1972, smallpox was reported predominantly from the central and south-eastern sections of the rural council (Figure 3). Although only 29 cases of smallpox had been reported from the rural council in 1972, it was suspected that there were a great many unreported cases and that, in fact, Torit Rural Council was perhaps one of the most heavily affected in the Province. Some 16 localities were known to be affected. Because of the civil disturbances, surveillance and containment work could not be undertaken until April 1972,

and the rains slowed operations until September. By that time, surveillance teams investigating reported (but until then uninvestigated) foci were unable to discover evidence of continuing transmission in the rural council. The need for an intensive systematic active search of the rural council for any remaining "hidden" foci was clear.

The next to last focus in the Province occurred in November 1972 at Obbo village in the south-central section of Torit Rural Council. The first phase (most recent foci) active search operations were conducted in the Obbo area but no additional cases were detected.

Three two-man vaccination teams under the supervision of the head chief in the area were then posted at three border reception centres to vaccinate returnees and to search for cases. Teams were instructed that their primary responsibility was to search for suspect cases. One team was equipped with bicycles and given a tour schedule for all villages along the southern Uganda border.

From February to mid-May 1973, the final phase of the programme, a systematic active search of the rural council was conducted by three different surveillance units. Because of reports of suspect cases and active search activities in other rural councils, the work was broken up over a three-and-one-half month period. Surveillance units were assigned specific active search tasks and equipped with sketch maps and lists of places to be visited (Figure 2, Table 1). Using the WHO smallpox recognition card, teams visited chiefs and subchiefs, health facilities, schools, government field workers, and forestry-agriculture stations, questioning all persons contacted about any infections with skin rash in the area. It was felt that such "over-reporting" of any suspect skin rash would uncover any possible cases.

All active search activities were recorded on a summary sheet (Table 2). Any reports of suspect cases were also recorded on the summary sheet (including information about date, name and position of reporter; name, age, sex and location of suspect cases; and outcome of investigation) and immediately investigated.

Surveillance teams worked in the rural council for a total of 23 team-days and visited 38 villages, five head chiefs, 11 subchiefs, six schools, 15 health facilities, and five forestry-agriculture stations. Twenty-eight suspect cases were reported to the teams in 10 localities. Fifteen suspect cases were reported by head chiefs and subchiefs, 10 by villagers

REPORTING UNITS VISITED BY SURVEILLANCE TEAMS IN TORIT RURAL COUNCIL

Unit	No. in rural council	No. visited	% visited
Village	-	38	-
Head chief	5	5	100
Subchief	22	13	59
School	6	6	100
Health facility	20	15	75
Forestry-agriculture station	11	5	46

and three by health facilities. Investigation of the reports revealed 19 cases of chickenpox, two cases of measles, and seven cases of skin rash due to miscellaneous causes. No cases of smallpox were discovered.

SOURCE OF REPORT AND RESULT OF INVESTIGATION FOR
28 SUSPECT CASES IN TORIT RURAL COUNCIL

Source	Infection				Total
	Smallpox	Chickenpox	Measles	Skin-rash	
Chiefs and subchiefs	-	2	-	1	3
Health facilities	-	11	2	2	15
Villagers	-	6	-	4	10
Total	-	19	2	7	28

Of the 28 suspect cases only four were reported from localities outside the one where the report was received. One suspect case was reported by a villager 20 miles from the affected village and three suspect cases were reported 25 miles from the affected village.

Because of the onset of the rains, active search operations had to be suspended at the end of May. Five remote localities, five health facilities and nine subchiefs remained to be visited. While originally it had been planned that all localities, chiefs, subchiefs, schools and health facilities would be visited within a four-week period, absences at the time of visit and difficulties with supply and transport meant that not all goals could be achieved. Plans were made, however, to complete active search operations in the rural council once the rains subsided.

Discussion and conclusions

Markets, schools, medical facilities and gatherings of local leaders are used for smallpox surveillance through the world. The Ethiopian programme has reported encouraging results particularly with markets and schools in their active surveillance programme. However, different countries and even different areas within a particular country may require different surveillance techniques adapted to local customs.

In the Southern Sudan, schools and markets were not found to be highly productive for surveillance purposes. Because of the disturbances, many schools had closed and had not yet reopened and markets were found only in the larger district capitals. However, most dispensaries and dressing stations had been reactivated and these proved to be most useful sources of information. Such facilities usually see between 30 and 40 patients per day. Since patients are often brought from many miles around and since the staffs are familiar with the local people, it is unlikely that a large outbreak of smallpox in the vicinity of a medical facility would go unnoticed. In addition, field public health personnel are attached to these rural health stations. They are usually from the local area and are trained in basic public health. They proved to be reliable informants concerning smallpox.

For surveillance of areas far removed from schools, markets, or medical facilities, the tribal system of chiefs and subchiefs proved most effective. All refugees returning to Sudan were registered according to their tribal chiefs in their districts. All chiefs are responsible by law for certain duties; one of which is the notification of infectious diseases to district officials. The chiefs in turn rely on their subchiefs for detailed information about their villages. Chiefs represent populations of up to 10 000 people and may have as many as 12 subchiefs. The chiefs were found to be very knowledgeable about events in their areas and both villagers and chiefs recognized smallpox when shown the

recognition cards and knew the benefits of vaccination. Moreover, when a case of smallpox exists in an area, word quickly spreads from one chief's court to another over distances of many miles. The last three outbreaks discovered in Equatoria Province in 1972 serve as examples. Two chiefs and one villager (at a chief's court) notified the surveillance personnel, hospital, or public health personnel of three outbreaks of smallpox 43, 31 and 33 miles distance from the point of notification.

NOTIFICATION OF THE LAST THREE OUTBREAKS OF SMALLPOX - 1972

Outbreak	Source of information	Distance between notification and outbreak
Obbo	Chief reported suspect cases to hospital	43 miles
Karkamugi	Villager notified survey team at chief's court	31 miles
Na-Ungulli	Chief reported to public health office	33 miles

Active search together with the reporting of infectious diseases by health units (weekly) and by chiefs (when a case occurs), form a network designed to discover any remaining cases of smallpox. By the end of the two-year period prescribed by WHO before absolute freedom from smallpox can be assumed, Equatoria Province and the other Provinces of Sudan, where similar programmes are in progress, will be confident that smallpox has truly been eradicated.

TABLE 1. SMALLPOX ACTIVE CASE SEARCH GUIDELINE
TO TORIT RURAL COUNCIL

I. <u>Head chief</u>	<u>Location</u>	<u>No. of subchiefs</u>
1. Sabasio Okumu Abdalla	Loa (Nimule)	3
2. Severino Odur	Magwo (Obbo)	4
3. Marcello Iwari	Ikatos	5
4. Mohamed Morbum	Kiyella	4
5. Osvaldo Lachalli	Bur (Torit)	6
II. <u>Functioning health facilities</u>		
Torit Civil Hospital	Lobira Dressing Station	
Ikatos Dispensary	Imirok Dressing Station	
Katire Dispensary	Panyikwara Dressing Station	
Kiyella Dispensary	Opari Dressing Station	
Nimule Dispensary	Parajok Dressing Station	
Lafou Dispensary	Palwar Dressing Station	
Magwe Dispensary	Agoro Dressing Station	
Magwe Dispensary	Agoro Dressing Station	
Magejik Dispensary	Hepatu Dressing Station	
Loa Dispensary	Bur Dressing Station	
Chakari Dressing Station	Lalanga Dressing Station	
Obbo Dressing Station	Kerepi Dressing Station	
Isoko Dressing Station	Mole Dressing Station	
Lotome Dressing Station	Mugale Dressing Station	
Lairwa Dressing Station	Lolabo Dressing Station	
III. <u>Government schools</u>		
Torit East Primary School	Torit Junior Secondary School	
Torit West Primary School	Magwe Junior Secondary School	
Kiyella Primary School	Nimule Junior Secondary School	
Ikatos Primary School		
Katire Primary School		
Nimule Primary School		
IV. <u>Agricultural stations</u>		
Torit Agricultural Station		
Obbo Coffee Plantation		
Katire Coffee Plantation		
Magwe Coffee Plantation (Proposed)		
Opari Coffee Plantation (Proposed)		
Kerepi Coffee Plantation (Proposed)		
Nimule Coffee Plantation (Proposed)		
Palwar Coffee Plantation (Proposed)		
Parajok Coffee Plantation (Proposed)		
V. <u>Forestry stations</u>		
Katire	Torit	
Gillo	Kerepi	
	Lairwa	Okaru
	Lomarati	Imala

FIG. 1. SMALLPOX INCIDENCE BY DATE OF ONSET OF RASH,
EQUATORIA PROVINCE, 1971-1973

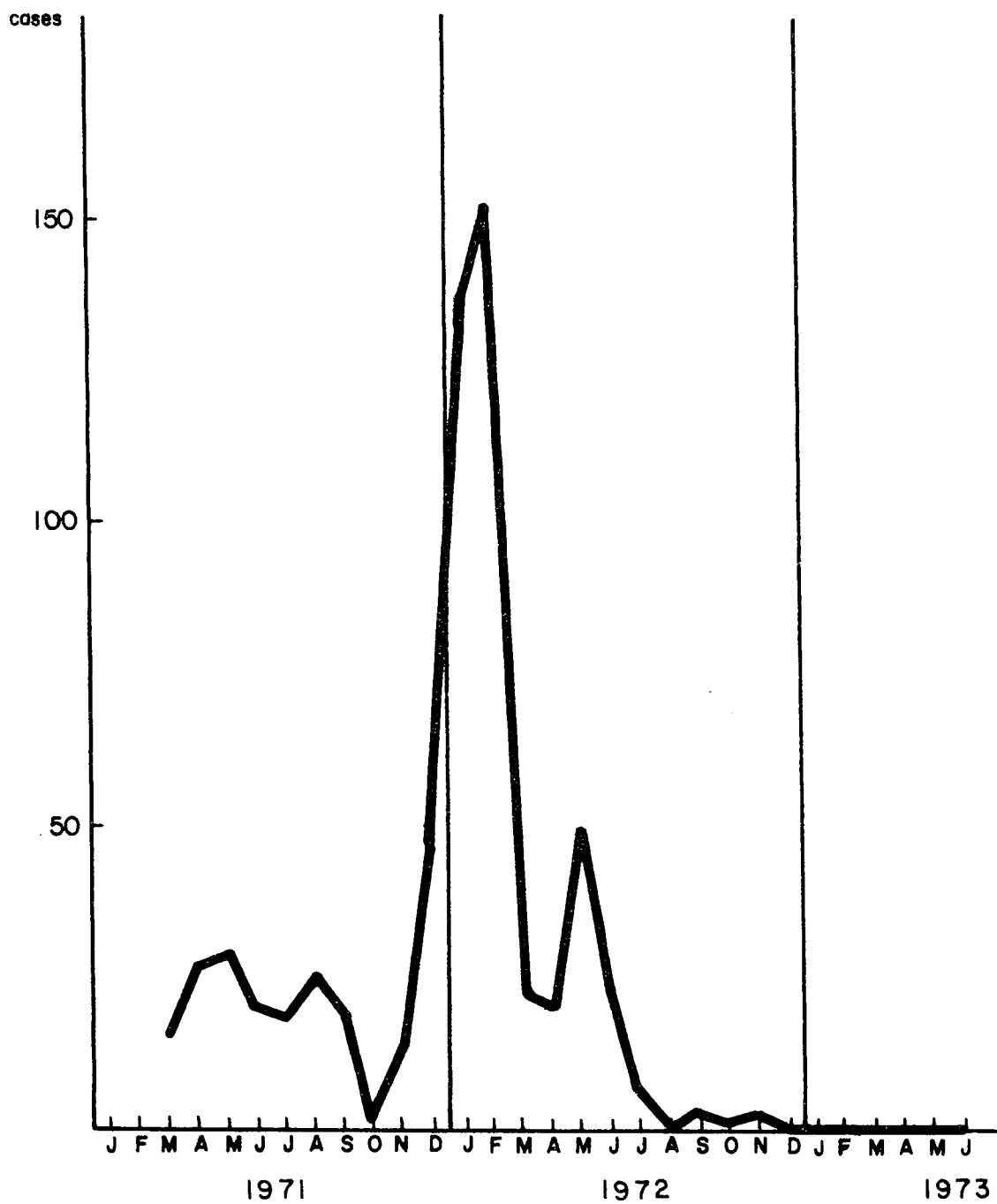


FIG. 2. TORIT RURAL COUNCIL: ACTIVE SEARCH SKETCH MAP

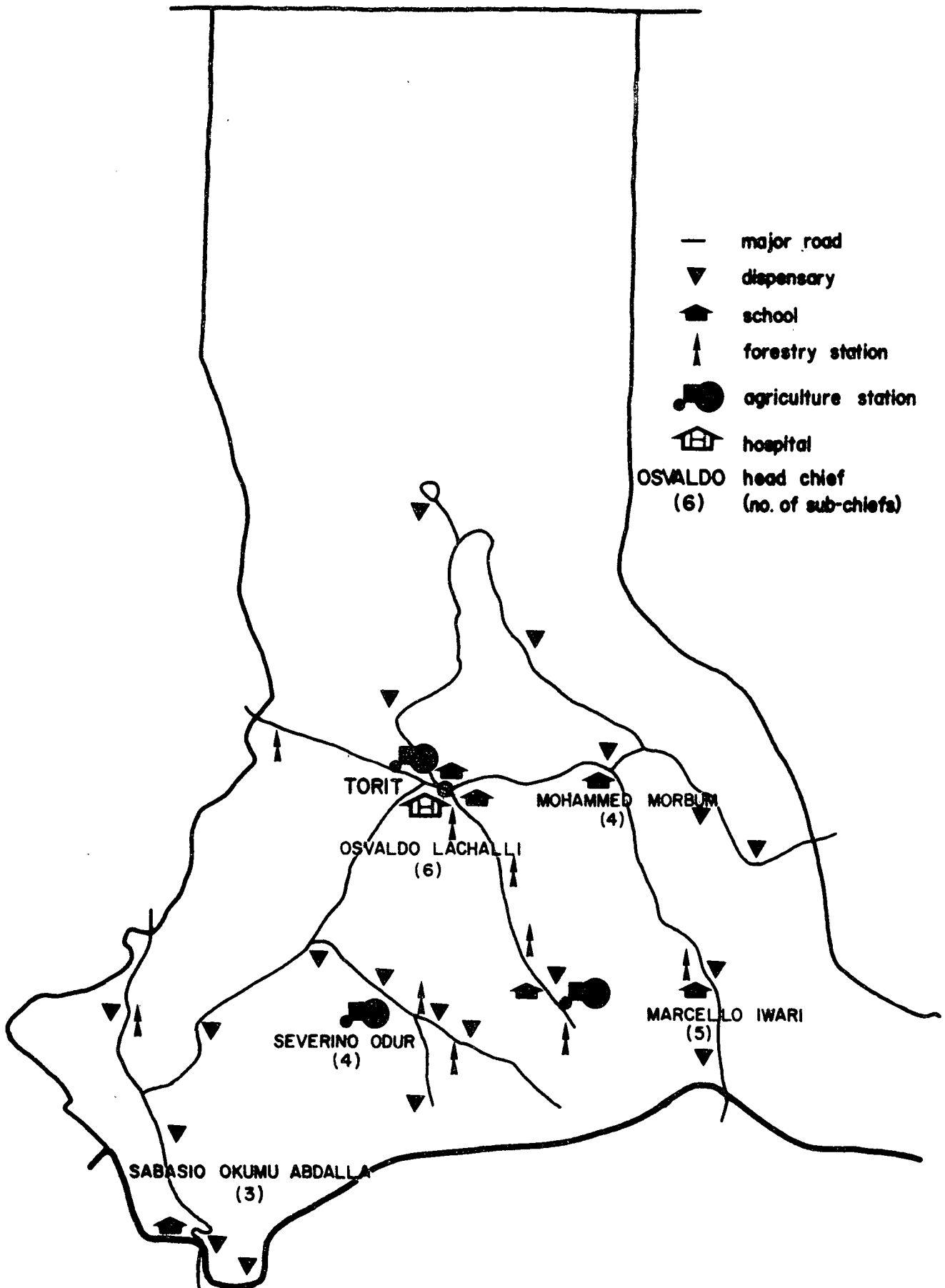


FIG. 3. SMALLPOX FOCI IN EQUATORIA PROVINCE, 1972

