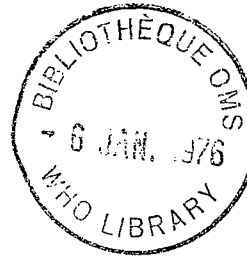




SIERRA LEONE



INDEXED

Area: 72 646 km<sup>2</sup>

Population: 2 500 000

Density of population: 34/km<sup>2</sup>

Medical officer currently in charge of smallpox eradication: Dr E. S. Johnson

Title: Senior Medical Officer Endemic Diseases Control Unit



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### 1.1.3 Number of mobile health units by district/province

For the period 1967-1971 there were six mobile endemic diseases control unit teams (each team consisted of four members) which systematically went round the entire country vaccinating against smallpox and measles. Each province/district did not have its own mobile team, rather all six teams were deployed to work in any one area at a time, thus they would attack one district at a time and after finishing this district, would move on to do another district.

In addition a few MCH clinics and dispensaries ran mobile clinics at which smallpox vaccination and other immunizations were carried out. However the number of villages or areas covered by these MCH mobile teams was very small and in terms of coverage of the entire country can be considered negligible.

## 1.2 Vaccination programme

1.2.1 In January 1968, the national smallpox eradication programme was launched in Sierra Leone. The staff deployed for the programme consisted of the following:

- (1) Principal Medical Officer, Bo, Southern Province - Administrative head of programme;
- (2) Senior Medical Officer, Bo - In charge of the endemic diseases control unit, technical head of programme;
- (3) USAID epidemiologist - Adviser;
- (4) USAID operations officer - Adviser;
- (5) Field supervisor - In charge of all field teams;
- (6) Deputy field supervisors - In charge of vaccinating teams only. The deputy field supervisor was selected on rotational basis from the rank of team leaders;
- (7) Team leaders - one to each team;
- (8) Advance team - Consisted of four members excluding team leader;
- (9) Vaccination teams - Total number six. Each team consisted of four members excluding the team leader;
- (10) Assessment team - Consisted of four members excluding the team leader;
- (11) Fire-fighting team - consisted of five members excluding the team leader.

Apart from the Principal Medical Officer and the two USAID advisers, all members of staff listed above belonged to the Endemic Diseases Control Unit (EDCU).

The six vaccination teams were solely in charge of immunizations. They worked as a single group, progressing from one district to another until the entire country was covered. The teams did not vaccinate on a village to village basis, rather the gathering point method was used in which one village was used as a vaccinating centre whilst people from surrounding villages within a three mile radius of the centre would gather at a central village. The advance team always preceded the vaccination teams: their first visit was usually made a month previous, and their last visit seven days prior, to the arrival of the vaccination teams. Primarily, the advance team was concerned with informing people about the date of arrival of the vaccination and assessment teams, educating them about the programme, getting cooperation from the local village heads, chiefs and paramount chiefs, preparing work schedules for the vaccination teams and making arrangements for lodging of the vaccination and assessment teams that would follow. Localities vaccinated by the vaccination team received visits seven days later from the assessment team which carried out a vaccination scar survey. Not all villages were visited by the assessment team; selection was done on a random sampling basis. The fire-fighting team was based at the EDCU headquarters in Bo. Its main function was to investigate and institute rapid control measures whenever there was an outbreak of smallpox anywhere in the country. This allowed the vaccination teams to carry out their systematic vaccination of the country uninterrupted. To a limited extent, some of the outbreaks were investigated and controlled by public health inspectors.

Vaccination by the EDCU teams was by jet injector, though multiple puncture was also used from time to time. Over 90% of the vaccinations were done by the EDCU mobile teams. Public health inspectors used the multiple puncture method only.

For the programme two Land Rovers, eight Dodges and 1 Bedford truck, were used to transport the teams from one area to the next. For river areas, two speedboats were used.

#### VACCINATIONS PERFORMED (1967-1971)

Year	No. of vaccinations
1967	619 222
1968	965 217
1969	981 296
1970	247 629
1971	257 485

Vaccination of the entire country which started in January 1968 was completed in January 1970. A total of 2 096 513 vaccinations were carried out during this period out of an estimated national population of 2 398 391, giving a percentage coverage by tally of 87% for the entire country.

#### RESULTS OF YEARLY ASSESSMENT SUMMARY FOR THE PERIOD 1968-70 BY DISTRICT

District	Estimated 1968 population	Number of smallpox vaccinations	Mass vaccination completed	% coverage tally/scar assessment
Bo	230 729	202 892	March 1968	88/-
Kenema	250 171	242 288	April 1968	87/-
Kono	184 707	170 730	June 1968	93/82
Koinadugu	141 967	113 496	Oct. 1968	80/83
Kambia	151 587	160 174	Nov. 1968	106/71
Port Loko	272 209	150 765	Jan. 1969	56/70
Bombali	218 654	199 939	March 1969	91/81
Western Area	214 525	288 305	March 1969	135/85
Bonthe	88 152	70 358	May 1969	80/68
Tonkolili	202 906	102 183	June 1969	51/65
Moyamba	184 168	126 940	July 1969	69/60
Pujehun	93 356	92 795	Nov. 1969	99/79
Kailahun	165 260	175 648	Jan. 1970	107/67
Total	2 398 391	2 096 513	Jan. 1970	87/75

RESULTS OF YEARLY ASSESSMENT (1971)

Date	Chiefdom	District	% coverage by scar assessment
27/11/71	Gbonkelenken	Tonkoli	74.6
27/11/71	Kaffu Bullom	Port Loko	62.5
Total		Tonkolili & Port Loko District	68.6

Nearly all of the vaccines used for the entire programme both for jet gun injection and multiple puncture method were produced by Wyeth Laboratory.

Other vaccines used to a very limited extent in the programme were from: (1) Federal Laboratory Services, Yaba, Nigeria, used in 1969, and (2) USSR origin vaccine.

1.3 Surveillance-containment programme

1.3.1 Usually all notifications from static units went through the district medical officers who notified subsequently to the central authorities. All units were supposed to provide weekly and monthly reports. Although some units defaulted and did not provide weekly reports regularly, virtually all units listed under 1.1.2 provided at least monthly reports regularly for the period 1967-1971.

1.3.2 Method of reporting:

from reporting to district - by means of telegrams and notification forms  
(for areas where telegraph or postal services were not available, notification was conveyed by messengers or anybody travelling to the district headquarters);

from district to province - by means of telegram;

from province to national level - by means of telegram;

from reporting units to national level - by telegrams, notification forms and monthly return forms.

1.3.3 Summary of number of smallpox cases for the period 1967-1971 by district/province (for monthly breakdown see Annex)

	District	1967	1968	1969	Total 1967-1969
Eastern	Kailahun	5	9	-	14
	Kenema	23	2	-	25
	Kono	350	123	-	473
Southern	Bo	302	14	-	316
	Pujehun	60	-	-	60
	Moyamba	11	42	24	75
	Bonthe	5	10	12	17

	District	1967	1968	1969	Total 1967-1969
Northern	Tonkolili	33	2	-	35
	Koinadugu	233	7	-	240
	Bombali	66	3	-	69
	Port Loko	25	427	27	479
	Kambia	6	-	-	6
Western Area	Freetown	7	16	1	24
Total for Sierra Leone		1 126	655	64	1 833

Note: For the period 1968-1969 there were actually 1180 cases of smallpox recorded for this period, of which only 719 are listed above, the information regarding the origin and exact date of onset of the remaining 461 cases is not available and therefore they are not included in the above table.

#### 1.3.4 1969 - Reported cases of smallpox and location

Month	Village	Chiefdom	District	No. of cases
January	Maska	Loko Masama	Port Loko	19
	Dodo	Kargboro	Moyamba	1
	Gbongbatoke Kabah	Banta	Moyamba	3
February	Kathoma	Loko Masama	Port Loko	1
	Maska	Loko Masama	Port Loko	2
	Mokponguba	Banta Mokelle	Moyamba	2
	Mokpewah	Banta Mokelle	Moyamba	6
	Madina	Banta Mokelle	Moyamba	8
	Hemabu	Banta Mokelle	Moyamba	1
	Niagorehun	Banta Mokelle	Moyamba	3
	Levuma	Bun	Bonthe	10
March	Njala	Bun	Bonthe	2
	Gbombana	Loko Masama	Port Loko	3
	Maska	Loko Masama	Port Loko	2
April		Rural area	Western Area	1
Total				64

1.3.5 Epidemiological information on last two outbreaks

Address	Name	Age	Sex	Vaccination status	Date of onset of rash	Outcome	Source of infection
<u>Last but two outbreaks</u> Kathoma village, Loko Masama Chiefdom	Amara Kamara	27	M	Not vaccinated	20/2/69	Recovered	Maska. Where between December 1968 and January 1969, 26 cases with 5 deaths had occurred.
Gbombana village, Loko Masama Chiefdom	Sumana Kamara Sedu Kamara	4 3	M M	Not vaccinated Not vaccinated	9/3/69 7/3/69	Recovered) Recovered)	Gbombana. Lived with mother who had smallpox few weeks <u>previously</u> .
	Maliki Sesay	8	M	Not vaccinated	10/3/69	Recovered	Gbombana
<u>Last but one outbreak</u> Masaka village, Loko Masama Chiefdom	Dora Kamara Lamina Bangura	28 60	F M	Not vaccinated Not vaccinated	March 1969 15/3/69	Recovered Recovered	Maska. Where between December 1968 and January 1969, 26 cases with 5 deaths had occurred.

Note: The last outbreak actually occurred in the Western Area in April 1969. It consisted of only 1 isolated case. However, information regarding the details surrounding this case is not available.

Containment measures

- (1) In Kathoma village, 18 contacts not previously vaccinated were vaccinated. This case occurred after the area had been previously vaccinated.
- (2) In Gbombana village, all the inhabitants not previously vaccinated, 129 in all were vaccinated against smallpox. These cases also occurred after the area had been previously vaccinated.
- (3) In Maska village both cases were isolated and disinfection of their houses carried out. In addition, all contacts and those resident in the village without vaccination scar, 50 in all were vaccinated against smallpox. The 2 cases also occurred after the area had been previously vaccinated.

Follow-up activities

After these two outbreaks had been controlled, the local heads and chiefs were asked to report without any delay any further cases which might occur. No more cases were reported. Further, between 3 and 4 May 1975, all three villages concerned were visited. The local chiefs confirmed that no further case of smallpox occurred in these villages since April 1969 after the last two outbreaks had been controlled. Moreover a pock mark survey was carried out in all three villages. Of the population present at the time of visit, that is, 95 in Maska, 37 in Kathoma and 43 in Gbombana, only two in Maska had pock marks; both had the diseases before April 1969 (most of the population in these villages were not available at the time of visit). Furthermore active case finding for smallpox was carried out in the entire Western Area in March 1975 in which 105 810 (90%) children between the ages of 0-15 years were seen. No case of smallpox was found and a pock mark survey carried out at the same time revealed no case of smallpox after 1969.

## PART 2 - SURVEILLANCE AND VACCINATION PROGRAMME 1972-1975 (UP TO APRIL)

2.1 Surveillance programme

2.1.1 Reporting units: same as in 1.1.2 plus the following new additional units:

Province	District	Category of reporting unit	Number
Northern	Kambia	Treatment centre	2
	Tonkolili	Treatment centre	1
	Port Loko	Treatment centre	1
Southern	Bo	Treatment centre	1
Eastern	Kailahun	Treatment centre	1
	Kenema	Treatment centre	1
Total		Treatment centres	7

2.1.2 Table showing number of reporting units and the number of units not reporting in weeks Nos. 11, 12, 13 and 14 in 1974 and 1975

Week	1974		1975	
	No. of units reporting	No. of units not reporting	No. of units reporting	No. of units not reporting
11	(9) ((1))	(3)	((1))	(12)
12	(9) ((1))	(3)	-	(12) ((1))
13	(9) ((1))	(3)	-	(12) ((1))
14	(9) ((1))	(3)	-	(12) ((1))

Note: The figures in brackets refer to district medical officers of which there are 12 in number. District medical officers usually send to the Ministry a weekly summary of the notifications received from all static units in their respective district without specifying the individual units the notification originate from. Thus information regarding the actual number of individual units in the 12 districts in the country reporting in weeks numbers 11, 12, 13 and 14 is not available at central level. Similarly numbers in double brackets denote the Principal Medical Officer, Western Area who sends centrally a weekly summary of notifications received from all static units in the Western Area without specifying name of individual units. The state of records system in the country is such that further details other than the above cannot be obtained.

## 2.1.3 Line listing of reported smallpox suspects (1972/1975)

Date of notification	Date of investigation	Locality	Name	Age	Sex	Vaccination status	Date of onset of rash	Outcome	Clinical diagnosis	Lab. diagnosis	Action taken
3/1/72		Gomborhun, Jaiama Bongor Chiefdom	Marie Mustapha	A	F						
3/1/72		Gomborhun, Jaiama Bongor Chiefdom	Jureh Mustapha	12	F						
12/1/72		Kandor, Jaiama Bongor Chiefdom	Feimata Lamin	A	F						
12/1/72		Kpetema, Jaiama Bongor Chiefdom	Mamie Manyeh	A	F						
27/4/72	2/5/72	Kamakwei Sec. Sch. Sella Limba Chiefdom	Alimamy Kamara	16	M	Vaccinated previously	26/4/72	Recovered	Chickenpox	-	Case isolated. School vaccinated against smallpox
13/9/72		Gbogboma Makpele Chiefdom	Watta Massaquoi		F			Died			Entire village vaccinated against smallpox
16/10/72	18/10/72	Manso, Neya Chiefdom	Faconde Koroma	33	M	Previously vaccinated	5/10/72	Recovered	Chickenpox	-	Entire village of Manso and neighbouring Yarawadugu vaccinated against smallpox
9/2/73		Massama, Tonko-Limba Chiefdom	Kadiatu Bangura	12	F						
12/2/73		Bafodia, Wara-Wara Bafodia Chiefdom	Hono Mansaray	16	F						
			Benti Kamara	30	F						
2/3/73		Kambia, Magbema Chiefdom									
28/4/73	15/5/73	Kambia, Magbema Chiefdom	Elizabeth Lahai	C	F		April, 73	Recovered	Chickenpox	-	All household contacts were vaccinated against smallpox
			N'thuma Yillah	A	F		April, 73	Recovered	Chickenpox	-	
			Fatmata Conteh	C	F		April, 73	Recovered	Chickenpox	-	
			Alimamy Conteh	17	M		April, 73	Recovered	Chickenpox	-	
4/2/74		Kurubonla, Neya Chiefdom							Chickenpox		
5/2/74		Dema Chiefdom									
8/2/74	13/2/74	Luawa, Jong Chiefdom	Brima Allie	25	M		8/2/74	Recovered	Chickenpox		
		Nyadehun Sogbini Chiefdom	Siaka Sorie	30	M		5/2/74	Recovered	Chickenpox		
			Kema Bongoh	40	M		30/1/74	Recovered	Chickenpox		
		Vaama, Sogbini Chiefdom	Salu Danema	45	M		4/2/74	Recovered	Chickenpox		
			Daniel Gbangba	5	M		6/2/74	Recovered	Chickenpox		
12/2/74		Gbane Chiefdom									
6/3/74		Bafodia, Wara-Wara Bafodia Chiefdom							Chickenpox		
5/5/74	6/5/74	Lunsar, Marampa Masimera Chiefdom	Musa Barbar	39	M	Previously vaccinated	10/4/74	Died	Chickenpox	Not smallpox (Pasteur Inst. Dakar)	Contacts vaccinated against smallpox



Date of notification	Date of investigation	Locality	Name	Age	Sex	Vaccination status	Date of onset of rash	Outcome	Clinical diagnosis	Lab. diagnosis	Action taken
11/3/75		Binkolo Safroko Limba Chiefdom	Nekeh	5M	F	Not vaccinated		Recovered	Measles		Entire town vaccinated against smallpox
			Marie Sesay	4M	F	Previously vaccinated		Recovered	Measles		
			Saidu Samura	2	M	Previously vaccinated		Recovered	Measles		
			Monday Kanu	2	F	Previously vaccinated		Recovered	Measles		
			Saidu Conteh	17	M	Previously vaccinated		Recovered	Measles		
			Tamba Conteh	4	M	Previously vaccinated		Recovered	Measles		
			Ema Kamara	4	F	Previously vaccinated		Recovered	Measles		
			Yamba Kanu	16	M	Previously vaccinated		Recovered	Measles		
			Sorie Kanu	5	M	Previously vaccinated		Recovered	Measles		
			Lucy Kargbo	3	F	Previously vaccinated		Recovered	Measles		
			Saidu Sesay	6	M	Previously vaccinated		Recovered	Measles		

Even though details are not available in some cases in the tables under 2.1.3, virtually all notification of suspected smallpox listed above was investigated and found to be either chickenpox or measles.

Because, on investigation, (usually by the local public health inspectors) these cases were found to be clear-cut cases of chickenpox or measles, details regarding onset of rash, vaccination status etc. were not supplied, in fact in some instances the only reports received from the public health inspectors were telegrams or telephone calls informing that outbreak investigated was not smallpox.

2.1.5 Localities which recorded suspect smallpox cases by village, chiefdom, district and province (1972-1975)

Province	District	Chiefdom	Village	
Southern	Bo	Jaiama Bongor	Gomborhun Kandor Kpetema	
		Bumpa	Taninahun	
		Gbo	Baiima Mogbibesie	
		Tikonko	Ngalahun	
		Bonthe	Dema	-
			Jong	Luawa
	Sogbini		Nyadehun Vaama	
	Moyamba	Bum	Torma	
		Kamajei	Joya	
	Pujehun	Dasse	Yebara	
		Makpele	Gbogboma	
	Eastern	Kono	Gbane	-
	Northern	Kambia	Tonko Limba	Massama
Magbema			Kambia	
Bombali		Sella Limba	Kamakwie	
		Safroko Limba	Binkolo	
Port Loko		Marampa Masimera	Lunsar	
Koinadugu		Neya	Manso Kurubonla	
		Wara Wara Bafodea	Bafodia	

2.1.5 Line listing of deaths due to chickenpox

Date of notification	Date of investigation	Locality	Name	Age	Sex	Vaccination status	Date of onset of rash	Outcome	Clinical diagnosis	Lab. diagnosis	Action taken
5/5/74	6/5/74	Lunsar, Marampa-Masimera Chiefdom	Musa Barbar	39	M	Previously	10/4/74	Died	Chickenpox	Negative for smallpox (Pasteur Institute)	Contacts vaccinated against smallpox

2.2 Vaccination programme (1972 to present)

2.2.1 Brief description of programme

In Sierra Leone, over 80% of the vaccinations against smallpox are carried out by mobile teams of the Endemic Diseases Control Unit (EDCU), the remaining 20%, mostly by static units. The EDCU mobile teams cycle the country once a year. Between 1968-1970, during the attack phase of the smallpox eradication programme, a coverage of over 80% of the population was achieved. Between 1971-1974 coverage fell to an estimated level of 50-60%, but since the beginning of this year, when visits on a village to village basis were adopted in place of the gathering point method that was formerly used, coverage has risen again to an estimated level of over 90%. In every village visited, the teams vaccinate against smallpox new-borns and all those who have never been previously vaccinated. At the same time BCG and measles vaccination are given. In addition, during large outbreaks of chickenpox (which are very frequent in this country) EDCU mobile teams and public health inspectors routinely give smallpox vaccination. This practice is adopted for two reasons:

(1) It obviates serious consequences if smallpox is by chance misdiagnosed as chickenpox. It is a safety measure which is useful where expert opinion by a doctor may not be available, as is frequently the case.

(2) It allays fear and panic and gives the villagers a false sense of security that something is being done to control the chickenpox outbreak even though this is not true, whilst at the same time their immunity against smallpox is being increased.

No. of smallpox vaccinations performed yearly (1972-1975)

Year	No. of vaccinations performed
1972	329 146
1973	130 986
1974	202 033
1975 (up to April)	11 466

RESULTS OF YEARLY ASSESSMENT - VACCINATION SCAR SURVEY (1972-73)

Year	Chiefdom	District	Percentage of population with scar
1972	Freetown		76
	Rural areas	Western Area	72
	Maforki	Port Loko	48
	Bramaia	Kambia	66
	Tambaka	Bombali	78
	Sorogbema	Pujehun	74
	Makpele	Pujehun	92
	Tunkia	Kenema	85
	Gorama Mende	Kenema	67
	Wande	Kenema	52
	Simbaru	Kenema	70
	Kandu Leppiama	Kenema	62
	Lower Bambara	Kenema	66
	1973	Kakua	Bo

Note: No assessment was carried out in 1974 as the assessment teams were involved in a meningitis outbreak and refresher courses.

VACCINATION SCAR SURVEY 1975 (CHILDREN 0-15 YEARS)

Chiefdom	District	No. seen	No. with scar	No. without scar	Percentage of population
Bargbo	Bo	4 300	3 195	1 105	74
Lugbu	Bo	4 590	3 362	1 228	73
Rural areas	Western Area	12 119	9 807	2 312	81
Freetown	Western Area	85 080	73 488	11 592	86
Sanda-Loko	Bombali	370	313	57	85
Magbaimba	Bombali	113	105	8	93
Tambaka	Bombali	350	306	44	87
Sela-Limba	Bombali	1 339	1 208	131	90
Gbinti Kamaranka	Bombali	761	713	48	94
Paki Masabong	Bombali	213	193	20	91
Libiesaygahun	Bombali	262	221	41	84
Sanda-Teraran	Bombali	1 062	891	171	86

Note: Name of producers of the vaccine used for the programme - Wyeth International.

NUMBER OF SMALLPOX CASES REPORTED BY DISTRICT AND  
PROVINCE BY MONTH AND YEAR (1967-1971)

Month/year	District	No. of cases in district	Province	No. of cases in province
January 1967	Kono	6	Eastern	6
February 1967	Bo	1	Southern	1
March 1967	Bo	6	Southern	6
	Kono	2	Eastern	2
April 1967	Kono	175	Eastern	177
	Kenema	2		
	Bo	98	Southern	98
May 1967	Freetown	5	Western Area	5
	Bo	2	Southern	2
	Kono	158	Eastern	177
	Kenema	14		
	Kailahun	5		
June 1967	Bo	20	Southern	20
July 1967	Bombali	42	Northern	200
	Kainadugu	158		
	Pujehun	22	Southern	130
	Bo	103		
	Moyamba	1		
	Bonthe	4		
	Kenema	1		
August 1967	Kainadugu	75	Northern	75
August 1967	Bo	54	Southern	103
	Moyamba	10		
	Pujehun	38		
	Bonthe	1		
	September 1967	Bo		
November 1967	Freetown	2	Western Area	2
	Bombali	24	Northern	88
	Kambia	6		
	Port Loko	25		
	Tonkolili	33		
	Kenema	6	Eastern	15
	Kono	9		
Bo	1	Southern		
Total 1967	Sierra Leone	1 126		

Annex

Month/year	District	No. of cases in district	Province	No. of cases in province
January 1968	Port Loko	14	Northern	21
	Koinadugu	7		
	Kono	1		
February 1968	Bo	1	Southern	1
	Kono	17	Eastern	17
	Port Loko	9	Northern	9
March 1968	Kenema	1	Eastern	9
	Kono	8		
	Moyamba	21	Southern	22
	Bonthe	1		
April 1968	Bombali	2	Northern	2
May 1968	Bombali	1	Northern	1
	Kailahun	9	Eastern	106
	Kono	97		
June 1968	Freetown	11	Western Area	11
	Kenema	1	Eastern	1
July 1968	Port Loko	168	Northern	33
August 1968	Port Loko	168	Northern	170
	Tonkolili	2		
September 1968	Port Loko	182	Northern	182
	Bonthe	4	Southern	7
	Bo	3		
	Freetown	5	Western Area	5
October 1968	Port Loko	19	Northern	19
	Bonthe	5	Southern	5
November 1968	Moyamba	13	Southern	13
December 1968	Moyamba	8	Southern	18
	Bo	10		
	Port Loko	2	Northern	2
Total 1968		655		

Annex

Month/year	District	No. of cases in district	Province	No. of cases in province
January 1969	Port Loko	19	Northern	19
	Moyamba	4	Southern	4
February 1969	Port Loko	3	Northern	3
	Moyamba	20		
	Bonthe	10	Southern	30
March 1969	Bonthe	2	Southern	2
	Port Loko	5	Northern	5
April 1969		1	Western Area	1
Total 1969		64		

\* \* \*