



SMALLPOX ERADICATION IN BOTSWANA  
STATUS REPORT - 8 NOVEMBER 1978



1. Brief Description of the Smallpox Eradication Programme

Three mobile teams started the mass vaccination campaign in 1967 and a fourth one joined in 1970. They were based at Lobatse, Serowe, Francistown and Maun. Each team consisted of a Health Inspector and two to three Field Assistants. All of them were trained by the Medical Officer of Health. Fixed units also participated in the programme on a national basis.

Liquid vaccine from the South African Institute of Medical Research was used. Vaccinations were performed by the scratching method using a vaccino-style. Most people living in towns and large villages as well as school children and travellers were vaccinated. Vaccination data was sent monthly to the Medical Officer of Health (Ministry Headquarters).

The mass campaign was fully launched during the first large epidemic of smallpox in 1971, with technical and financial help from WHO. Freeze dried vaccine together with bifurcated needles were introduced. More mobile teams were created and trained and static units provided unlimited support to make the programme a success. Through publicity by radio, posters and community leaders the whole population was mobilised and made more receptive to the campaign. In this way two major epidemics and a minor one were contained in a very short time.

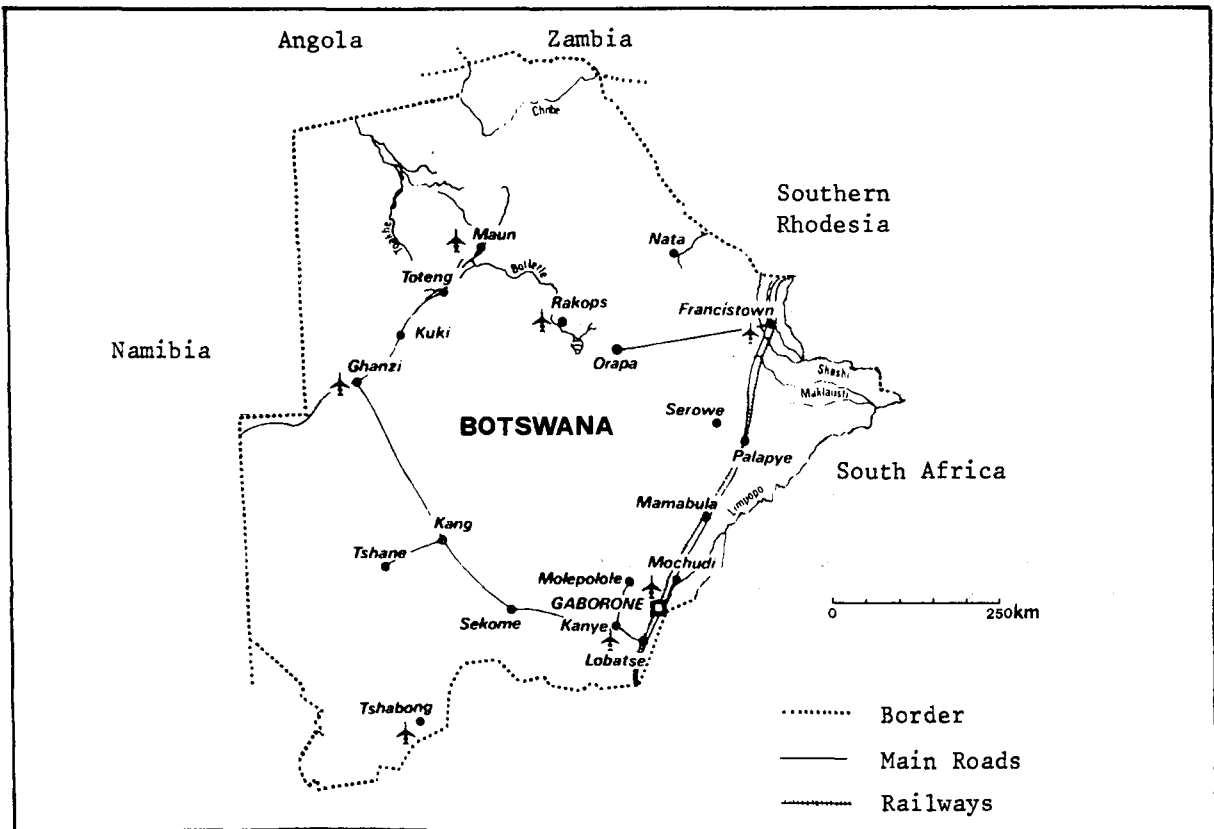
Three surveillance teams were created. They covered the whole country twice yearly to look for new cases of smallpox and to vaccinate those without smallpox vaccination scars, irrespective of age.

2. Basic Demographic Data: Botswana

Population	718 440 in 1976
Area	570 000 km <sup>2</sup>
Population density	1.26 per km <sup>2</sup>
Urban population	113 200
Rural population	594 670
Nomadic population	10 570
Total number of towns and villages	1 071
Refugees	12 000 in 1978

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3. Administrative Units



<sup>a</sup> These divisions apply only for the administrative purposes of the Ministry of Health.

#### 4. Health System

Number of urban hospitals - 7, clinics - 13

Number of rural hospitals - 7, clinics - 69, health posts - 316

There are no specific infectious disease hospitals nor wards but there are 487 infectious diseases beds in general hospitals and health centres.

The health system structure relevant to communicable diseases control is shown in the diagram below.

<u>Level</u>	<u>Responsible Health Officer</u>
National	Principal Medical Officer of Health
Regional	Regional Medical Officer Regional Health Inspector and Public Health Nurse
Health Unit	Health Assistant (Sanitation)

#### 5. Reporting System for Notifiable Communicable Diseases

Reports from all health units are sent to the Regional Medical Officer, who in turn sends a weekly notification return to the Medical Statistics Department (Annex 1). Communicable diseases such as smallpox, plague, cholera etc., are notified as early as possible to the Regional Medical Officer, either by telephone or by sending someone in a motor vehicle. The Regional Medical Officer notifies the Principal Medical Officer and should take appropriate action. He also prepares a weekly epidemiological report. Nil reports are sent to Medical Statistics even if no disease is reported.

Regularity of reporting is still to be improved due to lack of communications in certain seasons from places far away from the Regional Headquarters.

Chickenpox as well as smallpox is among the compulsorily notifiable diseases and reports should include cases and deaths.

In the case of suspected smallpox, immediate action is taken by the health worker who has found the case. The Regional Medical Officer is notified and the case is isolated, specimens are collected for testing and the immediate contacts are examined and vaccinated. A house to house check is made to trace more cases. The Regional Medical Officer after notifying the PMOH goes immediately to examine the suspected case and takes appropriate action, e.g. closing the schools, keeping children at home etc. By this time the smallpox eradication unit from the central level visits the area concerned to assess the situation and in collaboration with the Regional Medical Officer, take more measures if necessary. After all the appropriate actions have been taken, one health assistant or junior nurse is left on the spot to trace and follow up any cases of fever for 10 - 15 days following the notification of the suspected smallpox cases.

6. Smallpox Data

6.1 Reported Smallpox Incidence by Year 1950 - 1978<sup>a</sup>

<u>Year</u>	<u>Cases</u>	<u>Year</u>	<u>Cases</u>
1950	237	1964	175
1951	255	1965	-
1952	73	1966	-
1953	34	1967	1
1954	4	1968	-
1955	-	1969	-
1956	-	1970	-
1957	154	1971	27
1958	104	1972	1 056
1959	5	1973	27
1960	31	1974	0
1961	36	1975	0
1962	8	1976	0
1963	2	1977	0
		1978	0

<sup>a</sup> Compiled from data available at SME Unit, WHO HQ, Geneva.

6.2 The Last Major Epidemic

The last major epidemic occurred in 1972. Between January and December 1056 cases were registered and there was one death. The most heavily infected areas were the Kweneng Region with 954 cases and Francistown with 36 cases.

6.3 The Last Smallpox Outbreaks

Three months after the last case of the major epidemic in 1972, in March 1973, another case was discovered followed by 18 more cases in two different localities. The source of infection was traced back to known previous outbreaks which had occurred in 1972. These cases were mostly among the Masesuru tribe, who on religious grounds had always refused to be vaccinated.

Following the last case in 1973, and six months of intensive surveillance, another case was found on 14 September 1973 in Selebi Pikwe. During house searching, four more cases which had occurred earlier were found. Another outbreak occurred in Gaborone (the capital) and was linked to the cases of Selebi Pikwe.

During all the outbreaks which occurred in 1973, all immediate contacts were revaccinated and house to house checks were conducted. The leaders of the Masesuru tribe were addressed by the Minister of Health and Home Affairs for cooperation and they responded reasonably well.

The total number of cases registered during the 1973 epidemics is 27 and without any deaths.

Since that time no more cases of smallpox have been reported.

6.4 Details of All reported Suspected Smallpox Cases Since the Last Outbreak <sup>a</sup> <sup>b</sup> <sup>c</sup>

Date Notified	Date Investigated	Locality	Name	Sex/ Age	Vaccination Status	Date of Onset of Rash	Clinical Diagnosis	Laboratory Diagnosis	Action Taken
06/03/75	08/03/75	Nshangashokwe	P. Maditse	Male 25	unknown	23/02/75	suspected smallpox	variola negative	contacts vaccinated
28/04/75	30/04/75	Francistown	F. Supiwa	Male 7	Vaccination scar	unknown	suspected smallpox	variola negative	contacts vaccinated
09/10/75	10/05/75	Ditlwe	T. Modise	Male 2½	Vaccination scar	30/04/75	suspected smallpox	variola negative	contacts vaccinated
unknown	unknown	Kasane	B. Tebelele	Female 12	Vaccination scar	unknown	suspected smallpox	variola negative	contacts vaccinated
08/09/75	10/10/75	Molepolole	M. Opeleng	Female 13	Vaccination scar	08/09/75	severe chickenpox	variola negative	contacts vaccinated
08/11/76	11/11/76	Molepolole	M. Moletanwa	Female 6	Vaccination scar	07/11/75	suspected smallpox	variola negative	contacts vaccinated
15/12/76	16/12/76	Serowe	O. Seboloko	Female 13 days	Vaccinate	13/12/76	vaccinia	variola negative	patient isolated

<sup>a</sup> Specimens were collected from all cases listed.

<sup>b</sup> All cases recovered from their illness.

<sup>c</sup> There were 3 other cases reported: one in 1975 and two in 1976. Details of these cases are not currently available.

7. Smallpox Vaccination Data

7.1 Vaccination System

Although the last case of smallpox was in 1973, the vaccination campaign has continued to be as intensive as it was during the mass campaign. House to house searching has continued to look for people without vaccination scars and to have them vaccinated irrespective of age.

7.2 Vaccination performed 1950 - 1978

No data is available from 1950 to 1966. The vaccinations data from 1967 to July 1978 is as follows:

1967	49 000	1973	146 470
1968	39 000	1974	68 876
1969	20 000	1975	93 345
1970	46 000	1976	62 235
1971	113 000	1977	95 660
1972	393 000	1978	39 678

TOTAL: 1,166 264

7.3 Vaccination Coverage Assessment

An assessment for the coverage of the population by smallpox vaccinations was done in 1977 and 1978; the coverage ranges from 83% to 97% as follows:

0 - 4 years - 83%  
5 - 14 years - 89%  
over 14 years - 97%

8. Chickenpox Data

1. Reported chickenpox cases and deaths from 1976 to August 1978, are as follows:

Year	Total	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1976	1 245	45	33	47	23	36	32	72	215	159	196	171	208
1977	1 640	103	115	157	95	94	105	148	257	187	154	131	95
1978	132	-	-	-	-	20	14	31	61	-	-	-	-

No deaths were reported

9. Summary of Laboratory Investigation of Specimens Tested for Pox Viruses 1976 - 1978

The results of laboratory testing of specimens received at Geneva HQ and forwarded to WHO Collaborating Centre laboratories are shown below.

Year	Number of specimens	Results			
		Number positive for:			No virus identified
		Variola virus	Herpes varicella	Vaccinia	
1976	2	0	0	0	2
1977	42	0	7	1	34
1978 <sup>a</sup>	104	0	26	0	73 <sup>b</sup>

<sup>a</sup> up to 8 November 1978

<sup>b</sup> results pending for five specimens

## 10. Status of Field Surveys

### 10.1 Chickenpox Survey

This has been in operation for a long time. In the past only one or two specimens were collected from each outbreak, but for the survey in preparation for certification of smallpox eradication, specimens are being collected from all cases of chickenpox, whether hospitalised or not, whether with or without vaccination scars.

### 10.2 Selection of Localities

One hundred and sixty-nine of 1071 localities have been selected for the survey (Annex 2). The criteria used for selection of these localities were as follows:

- (a) All localities with population of 2000 or more.
- (b) 50% of the localities of population 1000 to 1999.
- (c) 7.1% of the localities of population less than 1000.
- (d) Localities where the last outbreaks in 1973 occurred.
- (e) Areas where Bushmen (Basarwa) live.
- (f) Localities where Mazeduru live.
- (g) Refugee camps.
- (h) Localities where there are large outbreaks of chickenpox.

### 10.3 Planning

A meeting was held at the Ministry to brief R.M.O.'s about how field surveys would be conducted. A circular was thereafter issued to further spell out the logistics of the programme and another to emphasize the importance of the programme.

### 10.4 Implementation

The survey work was done concurrently with the normal delivery of health services. The teams collected information from primary schools, health units, markets, kindergartens, refugee camps and nomadic populations.

A special survey was conducted to trace out most of the old cases of smallpox.

### 10.5 Supervision

The teams worked under the supervision of the Regional Medical Officer. A central evaluation team with WHO collaboration visited at least 10% of the localities visited by the survey teams. Such visits included primary schools, where younger children were re-examined and fixed health units to verify survey teams' observations. As many chickenpox cases as possible from whom specimens had been collected, were also examined. A number of circulars were issued by the Ministry to guide survey teams whenever any errors and omissions occurred.

10.6 Recording and Reporting

Appropriate forms were filled by the survey teams and are kept at National Headquarters level to be presented to the international commission.

A monthly report is submitted to WHO (AFRO).

10.7 Final Report

Annex 3 shows the compiled reports for the months of July to September. The final report will be compiled when the survey will be completed.

11. Future Programme up to March 1979

October 1978: Completion of surveys.

November 1978: Edit data collected.

December 1978: Compile final report and when complete send to WHO at AFRO.

October 1978 to March 1979:

Vaccinate all newborns.

Continue surveillance.

Continue chickenpox survey and collection of specimens.

Investigate suspect smallpox cases.

Investigate deaths from chickenpox or similar rash disease.

Check and vaccinate refugees.

Check smallpox vaccination certificates at border posts.



Form No. MH ND 1/78

**REPORT OF NOTIFIABLE DISEASES**

For Week Ending: ..... 19  
(day) (month) year

Reporting Unit: ..... Town/Village: ..... District: .....

Notifiable Disease	Number of Patients Diagnosed	
	Case	Deaths
1. Cholera	.....	.....
2. Plague	.....	.....
3. Smallpox	.....	.....
4. Yellow Fever	.....	.....
5. Chickenpox	.....	.....
6. Diphtheria	.....	.....
7. Infective Hepatitis	.....	.....
8. Malaria	.....	.....
9. Measles	.....	.....
10. Meningitis	.....	.....
11. Poliomyelitis	.....	.....
12. Rabies	.....	.....
13. Typhoid	.....	.....
14. Whooping Cough	.....	.....

Other Diseases (If any) occurring in epidemic form

- 15. ....
- 16. ....
- 17. ....

Notes Observations, if any: .....

.....

Officer in Charge: (Name)

Signed: .....

(See Reverse for notes and instructions on procedures)

**ON BOTSWANA GOVERNMENT SERVICE**

**Postage Paid**

MEDICAL STATISTICS OFFICE,

PRIVATE BAG 0024,

GABORONE.

**NOTIFICATION AND REPORTING OF INFECTIOUS DISEASES**

**NOTES AND INSTRUCTIONS ON PROCEDURES**

1. The main objectives of the notification system are to alert the health administration on the occurrence and course of infectious diseases, especially those occurring in epidemic form, and to inform officials concerned, of the control measures taken. It is, therefore, kept independent of the health records and reports system, i.e., cases of notifiable diseases are notified in form MH ND 1/78 and at the same time also recorded in out-patient statistics registers, admission and in-patient summary forms, etc., as appropriate.
2. In order to facilitate prompt action as required (including epidemiological investigations where necessary) notifications will be made as follows:
  - i. All private practitioner's, Regional Medical Officers and Medical Officers in charge of Hospitals will be responsible for notification as described below.
  - ii. Notifications should cover both in-patients and out-patients.
  - (iii) Notify immediately, by CABLE OR TELEPHONE, both the Regional Medical Officer concerned and the Principal Medical Officer of Health, Ministry of Health, Gaborone, if:
    - (a) cases of (suspected or confirmed) or deaths from cholera, smallpox, plague, or yellow fever occurs in your area or comes to your knowledge; and
    - (b) any disease or condition breaks out in epidemic form.
  - (iv) Notify promptly on each Saturday all cases and deaths (including those covered in (iii) above) occurred during that calendar week. If no case or death occurs, from any of the listed diseases, send in a "NIL" return.
  - (v) Notifications should be sent to the Medical Statistics Office, Private Bag 0024, Gaborone.
3. Notifications received for a calendar week will be summarised and shown in a weekly report by the following Friday and distributed to all reporting units and other agencies concerned.

POPULATION DISTRIBUTION 1976  
AND  
SELECTION OF LOCALITIES IN 1978 FOR POCKMARKS SURVEY

Population in localities	Number of localities	Total population in localities	%	Selected Number of localities	Total population selected	%
over 10 000	10	221 370	30.8	10	221 370	30.8
9 000 - 9 999	-	-	-	-	-	-
8 000 - 8 999	2	17 120	2.4	2	17 120	2.4
7 000 - 7 999	2	14 760	2.1	2	14 760	2.1
6 000 - 6 999	-	-	-	-	-	-
5 000 - 5 999	3	16 720	2.3	3	16 720	2.3
4 000 - 4 999	2	9 500	1.3	2	9 500	1.3
3 000 - 3 999	10	34 138	4.8	10	34 138	4.8
2 000 - 2 999	16	38 060	5.3	16	38 060	5.3
1 000 - 1 999	109	199 926	27.8	58	97 710	13.6
less 1 000	917	166 846	23.2	66	29 513	4.1
TOTAL	1 071	718 440	100%	169	478 891	66.7

COMPILED RESULTS OF SPECIAL SURVEYS <sup>a</sup>  
JULY - SEPTEMBER 1978

Number of localities <sup>b</sup>		Number of Primary schools <sup>b</sup>			Number of Health Units <sup>b</sup>		Other <sup>c</sup> Places Visited
Selected	Visited	Present	Visited	Children Examined	Present	Visited	
169	149	251	218	92 376	180	97	53

RESULTS OF POCKMARK SURVEY

Group of Persons	Number of Persons seen <sup>b</sup>	Number with smallpox pockmarks <sup>c</sup> and suffered in			Number of <sup>c</sup> smallpox suspects in 1974 or after
		1973 or before	1974 or after	Investigated	
Pre-school	8 742	Nil	Nil	Nil	Nil
Primary Schools	96 319	2	-	2	-
Adults	70 152	62	-	62	-
TOTAL	175 213	64	-	64	-

<sup>a</sup> provisional figures

<sup>b</sup> up to the end of September

<sup>c</sup> up to the end of August