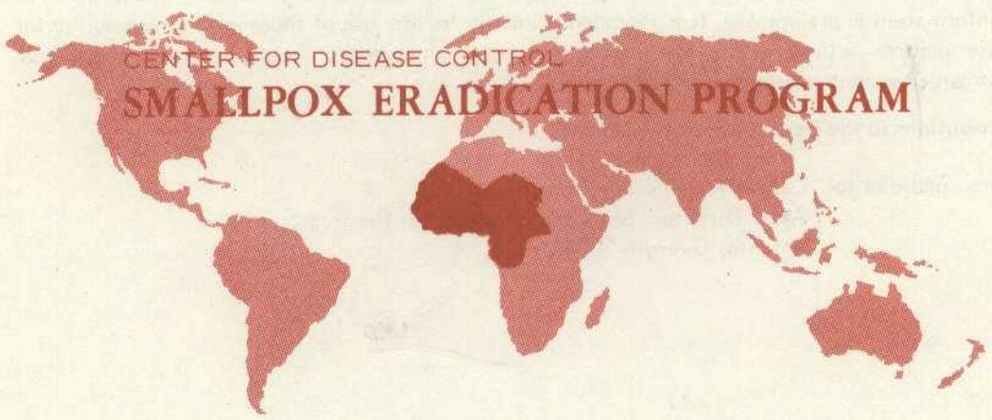
August-September, 1970



CENTER FOR DISEASE CONTROL

SMALLPOX ERADICATION PROGRAM

SEP REPORT

I. FINAL REPORT: NIGERIA SMALLPOX OUTBREAKS; 1970

II. SMALLPOX IMPORTATIONS INTO DENMARK AND NORWAY

III. CHOLERA IN WEST AFRICA

IV. YELLOW FEVER: EASTERN REGION OF GHANA

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

PUBLIC HEALTH SERVICE

PREFACE

Summarized in this report is information pertaining to smallpox eradication and information received from Ministries of Health investigators, WHO, PAHO and other pertinent sources. Much of the information is preliminary. It is intended primarily for the use of those with responsibility for disease control activities. Anyone desiring to quote this report should contact the original investigator for confirmation and interpretation.

Contributions to the Report are most welcome.

Please address to: Center for Disease Control
Attn: Director, Smallpox Eradication Program
Atlanta, Georgia 30333

Center for Disease Control ..... David J. Sencer, M.D., Director

Smallpox Eradication Program ..... William H. Foege, M.D., Director

TABLE OF CONTENTS

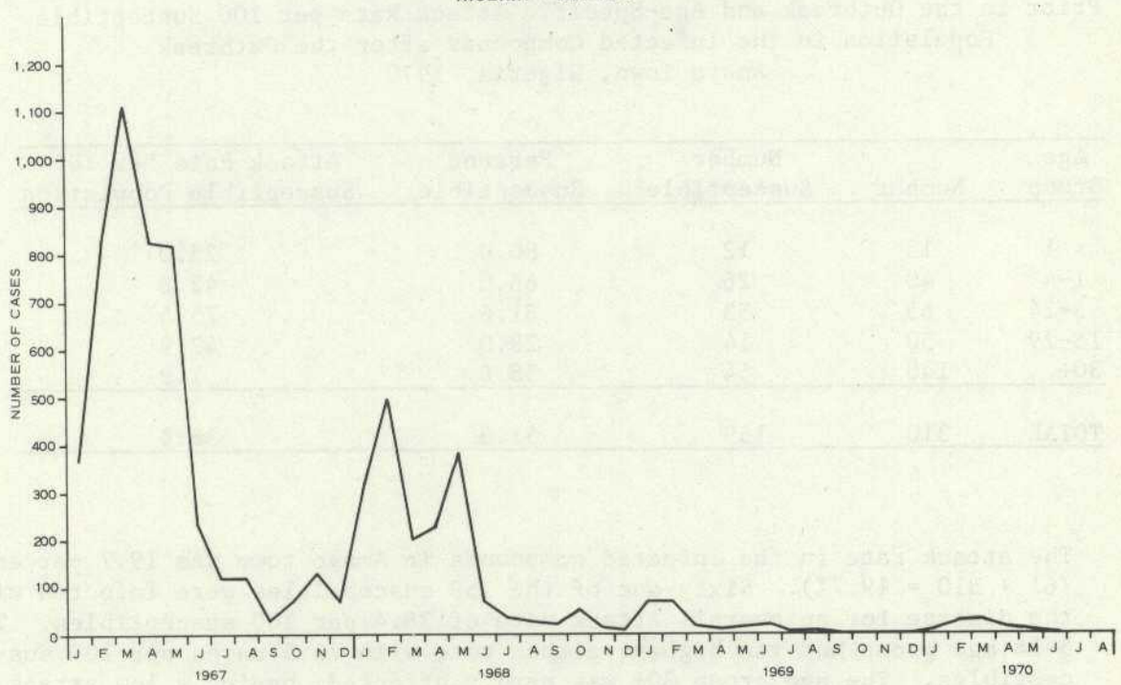
I. FINAL REPORT: NIGERIA SMALLPOX OUTBREAKS; 1970

Nigeria is the only West African country to report smallpox cases in 1970. Four outbreaks; Amayo (61), Ilorin (9), Lagos (2), and Shagamu (3), totaling 75 cases have been previously reported in the SEP Report, Vol. IV, Nos. 3 and 4.

From August 1969 to March 1970, Nigeria had seven months of negative reports, during which the surveillance system failed to identify endemic transmission. This occurred during a period of intensified smallpox disease surveillance in which 82 reported suspect smallpox cases were investigated and found not to be smallpox.

The investigation of the 1970 outbreaks identified transmission dating back to October of 1969; and in all probability, to known foci in the spring of 1969. Figure 1 presents reported smallpox cases from Nigeria during the period 1967-1970. The normal seasonal pattern of high and low periods of transmission have been maintained during the period of declining incidence.

FIGURE 1
REPORTED SMALLPOX CASES BY MONTH
NIGERIA – 1967-1970



The failure of surveillance was also demonstrated in Ilorin town where a pock mark scar survey of 5,000 people indicated that 0.1% of the population (or 300 cases in the town) had been infected with smallpox during the previous 12 months. During this same period only 9 smallpox cases were officially reported through the disease reporting system; a reporting efficiency rate of 3 percent.

Amayo Outbreak

Epidemiologic investigations of infected compounds in the Amayo outbreak provide further information regarding the susceptibility pattern in Amayo town prior to the outbreak. These data are shown in Table 1. Susceptibles were defined as individuals who did not have vaccination scars or smallpox pock marks or histories of smallpox. These compounds, contained 310 people; 159 (51.3%) of them susceptible to smallpox. Generally, persons less than 15 years of age were found to be more susceptible than older age groups.

Table 1. Age-Specific Smallpox Susceptibility Rates in the Infected Compounds Prior to the Outbreak and Age-Specific Attack Rate per 100 Susceptible Population in the Infected Compounds after the Outbreak
Amayo Town, Nigeria, 1970

Age Group	Number	Number Susceptible	Percent Susceptible	Attack Rate Per 100 Susceptible Population
< 1	15	12	80.0	25.0
1-4	40	26	65.0	42.3
5-14	65	53	81.6	75.5
15-29	50	14	28.0	42.9
30+	140	54	38.6	1.9
TOTAL	310	159	51.3	38.4

The attack rate in the infected compounds in Amayo town was 19.7 percent (61 ÷ 310 = 19.7%). Sixty-one of the 159 susceptibles were infected with the disease for an overall attack rate of 38.4 per 100 susceptibles. The 5-14 age group had the highest attack rate with 75.5 cases per 100 susceptibles. The age group 30+ was hardly affected, having a low attack rate of 1.9 per 100 susceptibles.

Thirty-five of the 61 cases were identified as the primary case in a particular compound. These 35 cases lived in 28 compounds including one compound which contained 5 co-primary cases. The age distribution of the primary cases are presented in Table 2.

Table 2. Age Distribution of the Primary Case in a Compound in Amayo Smallpox Outbreak, Amayo Town, Nigeria, 1970

Age Group	Number of Susceptibles	Number of Primary Cases	Ratio: Primary Cases to Susceptibles x 100
< 1	12	2	16.7
1-4	26	5	19.3
5-14	53	24	45.3
15-29	14	3	21.4
30+	54	1	1.8
TOTAL	159	35	22.0

The 5-14 age group was the major infector of new compounds. It is postulated that this was due to the high degree of inter-compound visiting of this age group.

Twenty-six of 124 susceptible compound contacts were infected for a secondary attack rate of 21.0% (Table 3). Again, the 5-14 age group was the most vulnerable group to smallpox infection but the rate is not significantly different from the 1-4 and 15-29 age groups. The low attack rate in the adult age group is unusual and it is postulated that the immunity level in this age group was considerably higher than detected.

Table 3. Secondary Attack Rates of Susceptibles in Infected Compounds, Amayo Town, Nigeria, 1970

Age Group	Number of Susceptibles	Secondary Cases	Secondary Attack Rate Cases/100
< 1	10	1	10.0
1-4	21	6	28.6
5-14	29	16	55.2
15-29	11	3	27.3
30+	53	0	0.0
TOTAL	124	26	21.0

Control of the Amayo outbreak was directed at the identification and vaccination of compound contacts. This involved daily visits to Amayo to follow up cases, identify and vaccinate contacts. Because of the low coverage obtained in the collecting point mass campaign and the documented case hiding, Ilorin Division in which Amayo was located, was revaccinated on a hamlet-to-hamlet basis. After appropriate advance publicity, vaccination was carried out using both a collecting point jet injector campaign and compound-to-compound campaign using bifurcated needles. Teams were not moved until coverage in excess of 85% was obtained. At the request of the Kwara State Ministry of Health, two additional teams were provided by the Federal Ministry of Health. Over 350,000 vaccinations were performed in the Amayo control program. Independent assessment is being carried out on a district basis and any district with an immunity level of less than 85% is to be revaccinated. No additional foci of smallpox were detected during the control program.

Current Status

Continued surveillance in the geographic areas where the 1970 smallpox outbreaks occurred have failed to identify any additional cases. The last known case occurred in Shagamu on May 21, 1970.

(Reported by E. Ademola Smith, For Permanent Secretary, Federal Ministry of Health.)

II. SMALLPOX IMPORTATIONS INTO DENMARK AND NORWAY

On September 5, 1970, the Center for Disease Control was informed by WHO that a case of smallpox had been imported into Denmark by plane on August 26, 1970. The patient was a 23-year-old Norwegian Medical student who had been working in Afghanistan for the summer and had remained in the capital city of Kabul. He was in Istanbul from August 22 to August 26, and on the 26th he flew to Copenhagen via Vienna. He was asymptomatic on arriving in Copenhagen, but developed fever and dysentery on August 27, the day after disembarking, and was treated in Copenhagen with a penicillin preparation. He developed backache and malaise on August 28, a rash on August 29, and died on September 22. Electron microscopic confirmation of the case as variola was made on September 4. The student possessed a vaccination certificate dated May 26, 1970, and reportedly was vaccinated as a child, however, no vaccination scars were noted.

On September 5, the Foreign Quarantine Program of CDC was informed that the passenger sitting next to the smallpox case on the flight had gone on from Copenhagen to Stockholm, and then to the United States. This person was located on the night of September 8, in Olympia, Washington,

and at the time was noted to be well and to have a good vaccination history. Specifically, he has been vaccinated each year for the past three years. He has three smallpox vaccination scars on his arm and described a good vaccination take to his last vaccination (on July 26, 1970). He was placed under limited quarantine at his college dormitory and has been visited daily by a representative of the Washington State Health Department in order to verify his continuing good health.

In the meantime, a second case of smallpox, not yet confirmed by laboratory methods, has been reported in Norway. This person reportedly slept in the room adjacent to the smallpox case in Copenhagen on the night of August 26 and 27, and had face-to-face contact with the person on August 28. On September 4, he was put into isolation, and on September 5, developed fever and a transient rash. On the 6th, he felt better but on the 7th his fever returned and on the 8th he developed fever and back pain. On the 10th of September he developed a vesicular rash and a smallpox vaccination performed on the 4th of September was interpreted as an accelerated take. No other secondary cases from the index case have been detected.

Four hundred contacts have now been isolated in Denmark and all are without illness. Four of five plane contacts who flew on to the United States are currently under surveillance, the fifth is still being sought.

The World Health Organization reports that a focus of smallpox infection has been identified in Kabul.

(Reported by State Health Departments in Oregon, Texas and Washington, Foreign Quarantine Program and Smallpox Eradication Program Center for Disease Control and the World Health Organization.)

III. CHOLERA IN WEST AFRICA

Cholera has again been identified in West Africa. This is a new extension of the seventh pandemic which began in Indonesia in 1961-62. It has spread throughout southeast Asia in 1961-62; into Korea 1963; and into the Middle East in 1965-66. Prior to the start of this most recent expansion, Indonesia, Philippines, Viet Nam, Malaysia, Burma, India, Nepal, East Pakistan and the Republic of Korea were officially reporting cholera to the World Health Organization. Unofficially, Russia and Egypt were also thought to have been infected.

Cholera had been reported previously in West Africa. During the fourth pandemic which occurred during the period 1863-1875, Senegal, The Gambia and Portuguese Guinea were infected. This infection occurred during

1868-69, presumably from Morocco by caravans moving across the Sahara. The epidemic was severe in Bathurst, causing an alleged 1,700 deaths among the population of 5,000. Cholera then disappeared and is reported to have occurred again in 1893-94 in French West Africa, during the fifth pandemic.

The present pandemic is caused by the El Tor strain of Vibrio cholerae which is a hardier and more infectious strain than the ones involved in the previous pandemic experience.

In August 1970, Russia announced the presence of El Tor cholera in the Caspian seaport of Astrakhan. Restrictions were placed on travelers in the Caspian and Black Sea area extending as far north as Volgograd. Subsequently, Israel, Lebanon and Libya, officially reported the presence of cholera to the World Health Organization. However, because of travel restrictions and requests for vaccine it is assumed cases of cholera are occurring in most of the countries in the Middle East.

Guinea is the only West African country to date officially reporting Cholera with 2,000 cases and 60 deaths reported from Conakry. One case has been reported from Accra, Ghana, which was imported from Conakry. The patient was traveling from Conakry and was severely ill upon arrival at the Accra airport. He was immediately hospitalized and placed in isolation. Death occurred shortly after admission. Ghana, however, should not be considered an infected area for cholera on the basis of this imported case.

Immunization of hospital personnel and working groups in the International and fishing ports are in process in Ghana. Vaccinations for cholera are being given in Togo, where no cases have been reported at this time. In Sierra Leone vaccinations are underway and similar efforts are being undertaken in Liberia. No cases of cholera have been reported from either Sierra Leone or Liberia.

SOURCE: WHO, WER, Volume 45, No. 36.

IV. YELLOW FEVER: EASTERN REGION OF GHANA

On May 15, 1979, the Virus Laboratory, Ghana Medical School was requested to assist in the diagnosis of two possible yellow fever cases.

The first case was a 15-year-old female. She was admitted to Korle Bu Hospital on May 10. She complained of fever, frequent vomiting, right-upper-quadrant abdominal pain, headache, and "reddish" urine. At the time of examination she had a jaundiced appearance and a palpable, tender liver. Laboratory studies showed leukocytosis (23,000) 2+ albuminuria, 45 percent prothrombin time, a normal sickle-cell preparation, and an increasingly elevated BUN (147 mg percent on May 12, 287 mg percent on May 13). The patient died May 15. A post-mortem examination revealed

a "firm and fatty" liver. Specimens of liver, kidney, and blood were taken for future viral isolation.

The second case was an 11-year-old female. She was a cousin of the first case and was admitted to the Fevers Unit at Korle Bu Hospital on May 11, after complaining of fever, headache, and abdominal pain. On examination she was febrile, jaundiced, and had a tender liver. The following day she was described as drowsy, and vomiting was noted. Laboratory studies showed a negative sickle-cell preparation, normal hemaglobulin electrophoresis, and 2+ proteinuria. She died May 13. An autopsy performed May 14 indicated a "firm and fatty" liver.

Histologic examination of the liver specimens on both cases showed classic changes of yellow fever.

Both patients were of the same household in the village of Asikasu, Eastern Region of Ghana. A third member of the family a 9-year-old boy became ill with an acute, jaundiced illness in April 1970, but recovered after hospitalization. A fourth member, a 20-year-old woman, suffered a jaundice illness in July or August 1969 and subsequently died at Nsawam Hospital.

Upon visiting the village of Asikasu it was learned that 12 deaths had occurred in April and May and that 23 persons had died since the first of the year.

Vaccination activities were initiated immediately in the infected area. Active surveillance measures were instituted including a morbidity and mortality registry to be completed by the town secretary on an ongoing basis.

(Reported by Dr. F. C. Grant, MOH, Korle Bu, Ghana, and CDC personnel.)

STATE AND COMMUNITY
SERVICES DIVISION

'70 OCT 7 AM 10:53

OFFICE OF THE DIRECTOR

6/70 52.2
J D MILLAR, MD, ~~ACTING~~ DIRECTOR
STATE AND COMMUNITY SERVICES DIVISION
BLDG B, ROOM 207