WEST AFRICA
SMALLPOX ERADICATION/MEASLES CONTROL PROGRAM

SURVEILLANCE REPORT NO. 7
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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
BUREAU OF DISEASE PREVENTION AND ENVIRONMENTAL CONTROL
NATIONAL
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PREFACE

Summarized in this report is published information pertaining to the West Africa Smallpox Eradication/Measles Control Program and information received from health officials, university investigators 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 surveillance report are most welcome.
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I. INTRODUCTION

During the first quarter of 1967, a substantial increase in the incidence of reported smallpox cases has been noted as related to the comparable period in 1966. Table 1 summarizes by continent the incidence of smallpox for these comparable periods.

Table 1. Reported Cases by Continent
January-March, 1966 and 1967

Continent	January-March, 1967	January-March, 1966
Americas	41	77
Africa	2,304	3,397
Asia	8,922	4,983
Europe	3	-
Total	11,270	8,457

It is interesting to note that Asia alone accounts for this increase as the Americas and Africa have experienced declines during this time interval. Within Asia the increase can be attributed to several current epidemic situations in India.

The incidence of smallpox in the world for the period 1961-1965 is shown in Table 2. In general a notable decrease in the incidence of smallpox is evident. Provisional data for 1966 have not yet been compiled by the World Health Organization.

Table 2. Reported Smallpox Cases by Continent
1961-1965

Continent	1961	1962	1963	1964	1965
Africa	24,182	24,837	16,723	12,362	15,882
Americas	8,168	7,860	7,126	3,051	1,529
Asia	53,217	49,579	75,621	34,543	33,145
Europe	27	137	129	-	1
Total	85,594	82,413	99,599	49,956	50,557

Source: WHO Weekly Epidemiological Record Vol. 41, #21.

II. SMALLPOX: INDIA

Through the first 12 weeks of 1967, 7,993 cases of smallpox were reported to the World Health Organization. Similarly for this period in 1966, 4,033 were reported, hence almost twice as many cases have been reported this year.

Dramatic increases have been observed in the cities of Bombay (Maharashtra State), Nagpur (Maharashtra State), Gaya (Bihar State), Kanpur (Uttar Pradesh State), Lucknow (Uttar Pradesh State) and Visakhapatnam (Andhra Pradesh State) during these 12 weeks. Table 3 shows the total reported smallpox cases for the first 12 weeks for both 1966 and 1967 in each of these cities.

Table 3. Reported Smallpox Cases by Selected Cities, India 1966 and 1967

City	Number of Cases Through First 12 Weeks 1967	1966
Bombay	1,145	107
Nagpur	420	-
Gaya	98	12
Kanpur	321	8
Lucknow	134	3
Visakhapatnam	266	11
Total	2,384	141

Clearly within these cities smallpox is of epidemic proportions as a 16-fold increase is observed. The pattern of weekly incidence is shown for Bombay, Gaya, Nagpur, and Visakhapatnam in Figures 1 through 4. The case fatality ratios for these two periods are similar, i.e., 42.4 percent for 1967 and 36.9 percent for 1966. This similarity would indicate that the reporting of the disease is at about the same level for the two periods.

The 1967 epidemic in Bombay is of interest as that city also experienced an epidemic in 1965. The seasonal incidence by 4-week periods for Bombay is shown in Figure 5. The 1967 epidemic is some four weeks later in time than the 1965 epidemic but in its early stages similar sharp increases are noted.

The case fatality ratios for the 1965 and 1967 epidemics are 29.6 and 40.4 respectively. Here again, these case fatality ratios indicate no drastic changes in reporting practices.

As for all infected areas the risk of importations into non-infected areas is a matter of some concern. Two importations into Europe have occurred in persons visiting in Bombay. A third importation into Europe occurred in a dermatologist from Hanover, Germany, who had been travelling in India with visits to New Delhi and Jaipur.

III. EUROPE: SMALLPOX IMPORTATIONS

With the incidence of smallpox in India being at a relatively high level the activity of international travelers presents a problem. Toward the end of February and during March, three persons travelling through India with destinations in Europe were diagnosed as having smallpox infection. Summaries of these importations are presented (copied and/or abstracted from MMWR Vol. 16, Nos. 10-12). Dates of departures are noted for the patients who acquired their infection in Bombay (Figure 1).

Regensburg, Bavaria, West Germany

An imported case of smallpox in Regensburg, a city of 125,000 in the state of Bavaria, was reported to the World Health Organization by the West German Federal Ministry of Health on March 11, 1967. The infection occurred in a 58-year-old German woman who manages a toy shop in Regensburg. She had been on vacation in India with a tour group during the first 3 weeks of February. The last 3 days before her return to Germany had been spent in Bombay, an area declared by WHO as locally infected with smallpox.

On February 20, she began her return trip home, arriving February 22. She remained in good health until March 2 when she complained of feeling indisposed. On March 4 she became febrile and complained of severe headache and aching of her limbs. On March 6 she consulted a physician who made the diagnosis of a flu-like illness. On March 8, 4 days after the onset of fever, the patient noted a skin rash.

By March 10, she had been hospitalized and a diagnosis of smallpox, fulminating type with secondary hemorrhage, had been presumptively confirmed by electromicroscopic visualization of poxivurs particles in scrapings made

from vesiculo-pustular skin lesions. Similar lesion material inoculated on the chorio-allantoic membrane of embryonated eggs was reported positive for variola virus on March 13, confirming the presumptive findings. All diagnostic studies have been performed at the Bavarian Vaccine Institute laboratories under the direction of Professor A. Herrlich.

The patient was isolated at the Regensburg Hospital where she was critically ill but subsequently recovered. She reportedly had been vaccinated as a child and revaccinated 2 years ago when she made another trip abroad; however, examining physicians were unable to discern an old primary vaccination scar or locate a certificate of vaccination.

A total of 141 persons have been quarantined in a local school. They include all known face-to-face contacts since March 2 and all persons living in the eight apartments of the 3-story building where the patient resides and has her shop. As of March 14, no secondary cases have been reported.

A total of 50,000 persons have been vaccinated in Regensburg; eight of the initial 11 vaccination stations opened on March 11 remain active. Vaccine supplies are ample to provide for all exigencies.

All 35 air travelers on her return flight from Bombay have been located in Germany, France, and Switzerland and their local health authorities notified. None of these persons nor any contacts of the patient in Regensburg are known to have subsequently traveled to the United States.

Regensburg is to be considered a noninfected local area as the one case is an importation from India.

Prague, Czechoslovakia

Smallpox has been reported in a crew member of Czechoslovak Airlines who returned to Prague on March 5, 1967. He had spent the previous 14 days in Bombay, India. His illness began on March 7 and was characterized by an atypical rash; laboratory tests confirmed the diagnosis of smallpox. The patient remained at home from March 7 until isolation on March 11 and is considered to have been in contact with only a limited number of people, all of whom have been isolated.

The patient is said to have been repeatedly vaccinated; his last vaccination in 1965 was unsuccessful.

Hanover, Germany

A Hanover, Germany, dermatologist is the third patient with imported smallpox to be identified in Europe since March 5. He apparently became ill 2 days before leaving Bombay on March 23 and had facial lesions on arrival in Hanover the same day. Smallpox virus was recovered from these lesions. His travels in India included visits to New Delhi and to Jaipur (March 4 and 10 respectively) where he was reported to have been exposed to smallpox. He gave a history of revaccinations in 1966 and in February 1967, both accompanied by minimal reaction.

The patient flew from Bombay to Frankfurt on Air India flight 107 leaving Bombay about 1:00 a.m. After intermediate stops in Beirut and Rome, he deplaned in Frankfurt and traveled to Hanover aboard Lufthansa flight 541. Air India flight 107 meanwhile flew on to London and John F. Kennedy Airport in New York City, with a total of 15 passengers aboard having direct contact with the patient.

Summary

No secondary cases have occurred among contacts of the three smallpox cases imported into Germany and Czechoslovakia.

IV. UNITED STATES: SMALLPOX CONTACTS

Fifteen passengers known to have been aboard Air India flight 107 and subsequently entered the United States with final destinations in Georgia, Idaho, Maryland, Texas, Virginia, Wisconsin and Puerto Rico.

On March 27, the names and addresses of persons bound for each State were provided to the responsible State Epidemiologist who immediately arranged with local health officers to locate these individuals and institute surveillance procedures. Surveillance will include daily health status inquiries and temperature recordings through April 8 (16 days after last exposure to smallpox).

Identifying information for those persons traveling to other countries

was provided to the pertinent health agencies through international channels.

None of these individuals developed any signs or symptoms suggestive of smallpox infection.

Suspected Smallpox: Honolulu, Hawaii

On April 3, a 39-year-old man arrived in Honolulu, Hawaii, and was hospitalized with a febrile illness suggestive of prodromal smallpox. Alert Quarentine Officials at the Honolulu Airport, in clearing passengers from Japan Airlines flight 062, noted one traveler who appeared ill. On questioning him they learned he had experienced malaise for 2 days since departing New Delhi, India, on April 1. Further questioning revealed a distinct exposure to presumed smallpox 14 days prior to departure. His temperature as recorded at the Quarantine Station was 101°F. There was no rash. The patient was transported to Tripler Hospital, Honolulu, and admitted as a case of suspected smallpox.

He left Frankfurt, Germany, on March 17, and from March 18 through 26, he visited several areas in India where smallpox was occurring. He stated that, on March 19, he was "within 10 feet of a young Indian male with presumed smallpox" in a village near Jaipur.

The patient had been vaccinated in infancy and revaccinated at ages 5 and 10 years. He was revaccinated in 1959 with an erythematious response, in 1962 with response not known, and in 1965 without clinical reaction. On March 29, just prior to leaving India, he was revaccinated with double insertion of vaccine.

On April 1, he developed a non-specific illness characterized by general malaise. On arrival in Honolulu, he demonstrated vaccination lesions described as "maximal reactions," and lymphadenopathy of the related axilla. Within 12 hours after hospitalization, the patient's temperature returned to normal levels and his symptoms subsided; no eruption appeared. He has remained afebrile through April 5.

Further laboratory tests on the suspected case of smallpox in Honolulu, Hawaii, have failed to confirm this diagnosis. Specimens sent to the National Communicable Disease Center for examination were negative by electronmicroscopy

and agar gel tests; cultures in embryonated eggs were negative on first passage.

V. SMALLPOX: WEST AFRICA REGION

The annual incidence for smallpox is shown in Table 4. Countries having higher incidence in 1966 than in 1965 are Dahomey, Niger, Nigeria, Togo, Sierra Leone and Upper Volta. Figures 6 and 7 show similar patterns for the two years.

Smallpox incidence for 1967 is shown in Table 5. Comparable time periods for 1966 are not shown as inconsistent reporting periods present problems for country interpretations.

Table 4. Annual Smallpox Incidence Rates per 100,000 Population for 19 West African Countries

Country	1965 Estimated Population(ooo's)	1965 Smp. Cases	Per 100,000 1965 Case Rate	1966 Estimated Population(ooo's)	1966 Smp. Cases	Per 100,000 1966 Case Rate
Cameroon	5,210	0	-	5,309	3	0.06
C.A.R.	1,352	-	-	1,376	-	-
Chad	3,352	74	2.21	3,409	-	-
Congo(B)	840	81	9.64	854	2	0.23
Dahomey	2,365	168	7.10	2,419	490	20.26
Gabon	462	1	0.22	470	-	-
Gambia	330	6	1.82	340	3	0.88
Ghana	7,740	7	0.09	7,957	13	0.16
Guinea	3,500	55	1.57	3,598	15	0.42
Ivory Coast	3,835	8	0.21	3,946	-	-
Liberia	1,066	49	4.60	1,079	-	-
Mali	4,576	632	13.81	4,686	285	6.08
Mauritania	920	-	-	946	7	0.74
Niger	3,328	477	14.33	3,454	995	28.81
Nigeria	57,500	4,478	7.79	58,650	4,900	8.35
Senegal	3,490	-	-	3,574	-	-
Sierra Leone	2,290	60	2.62	2,354	293	12.45
Togo	1,638	10	0.61	1,677	200	11.93
Upper Volta	4,882	13	0.27	5,009	75	1.50

Population Source: Population estimates based on data published in United Nations, Demographic Yearbook, 1965.
Smallpox Cases : WHO Weekly Epidemiological Record, 1965 and 1966.

Table 5. Reported Smallpox Cases in 19 West African Countries 1967

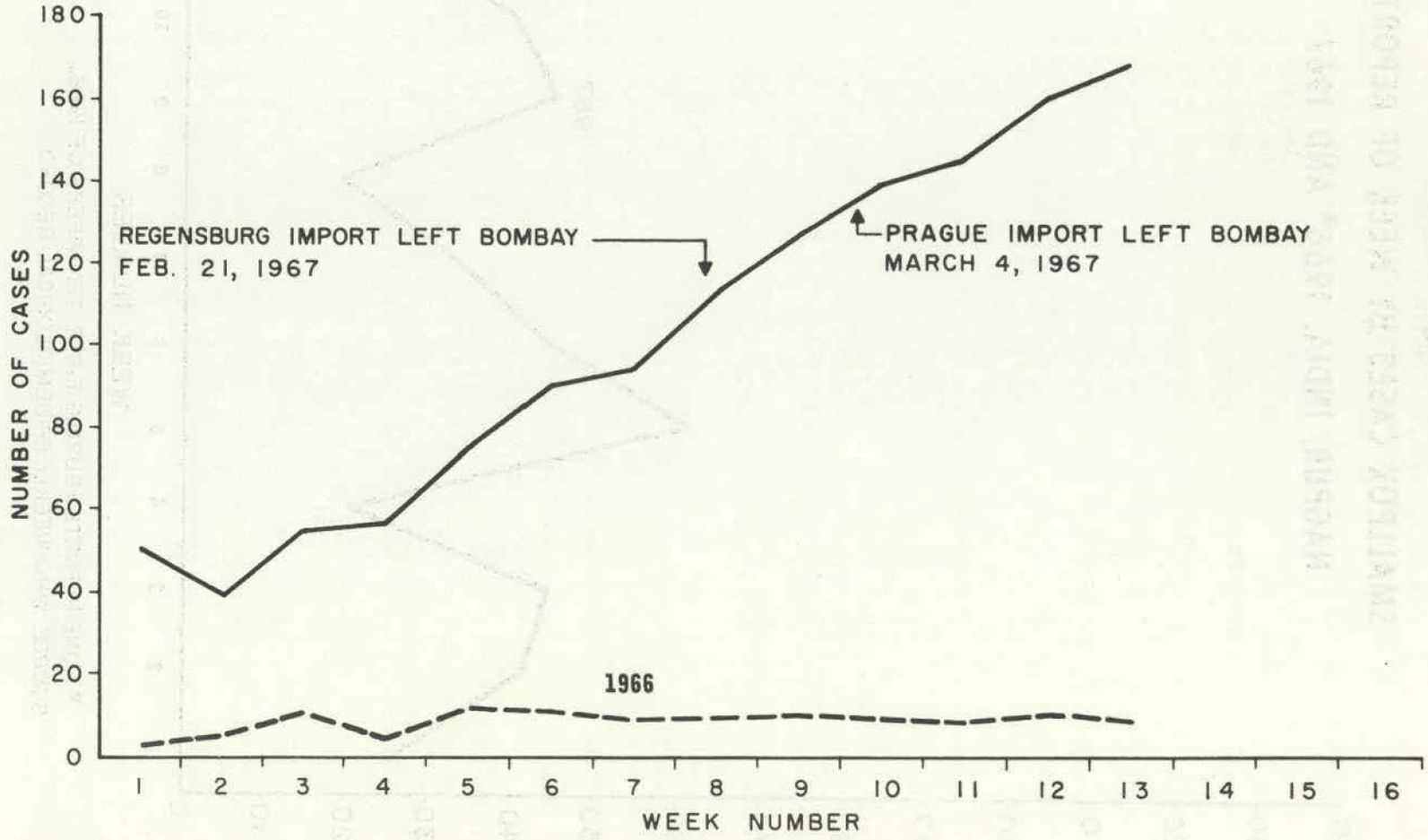
Country	Most Recent Reporting Date in 1967	Cumulative Number of Cases 1967*
Cameroon	January 31	1
C.A.R.	**	-
Chad	**	-
Congo(B)	**	-
Dahomey	March 14	231
Gabon	**	-
Gambia	**	-
Ghana	April 5	3(i)***
Guinea	March 18	30
Ivory Caost	**	-
Liberia	**	-
Mali	March 7	8
Mauritania	**	-
Niger	March 14	538
Nigeria	February 18	895
Senegal	**	-
Sierra Leone	February 18	63
Togo	February 19	52
Upper Volta	January 28	9
	Total	1,830

* Reports received by WHO through April 6, 1967.
** No cases reported to WHO through April 6, 1967.
*** Accra, Ghana declared infected as of 3/31/67.
(i) Includes imported cases.

Figure 1.

SMALLPOX CASES BY WEEK OF REPORT

BOMBAY, INDIA, 1966-1967

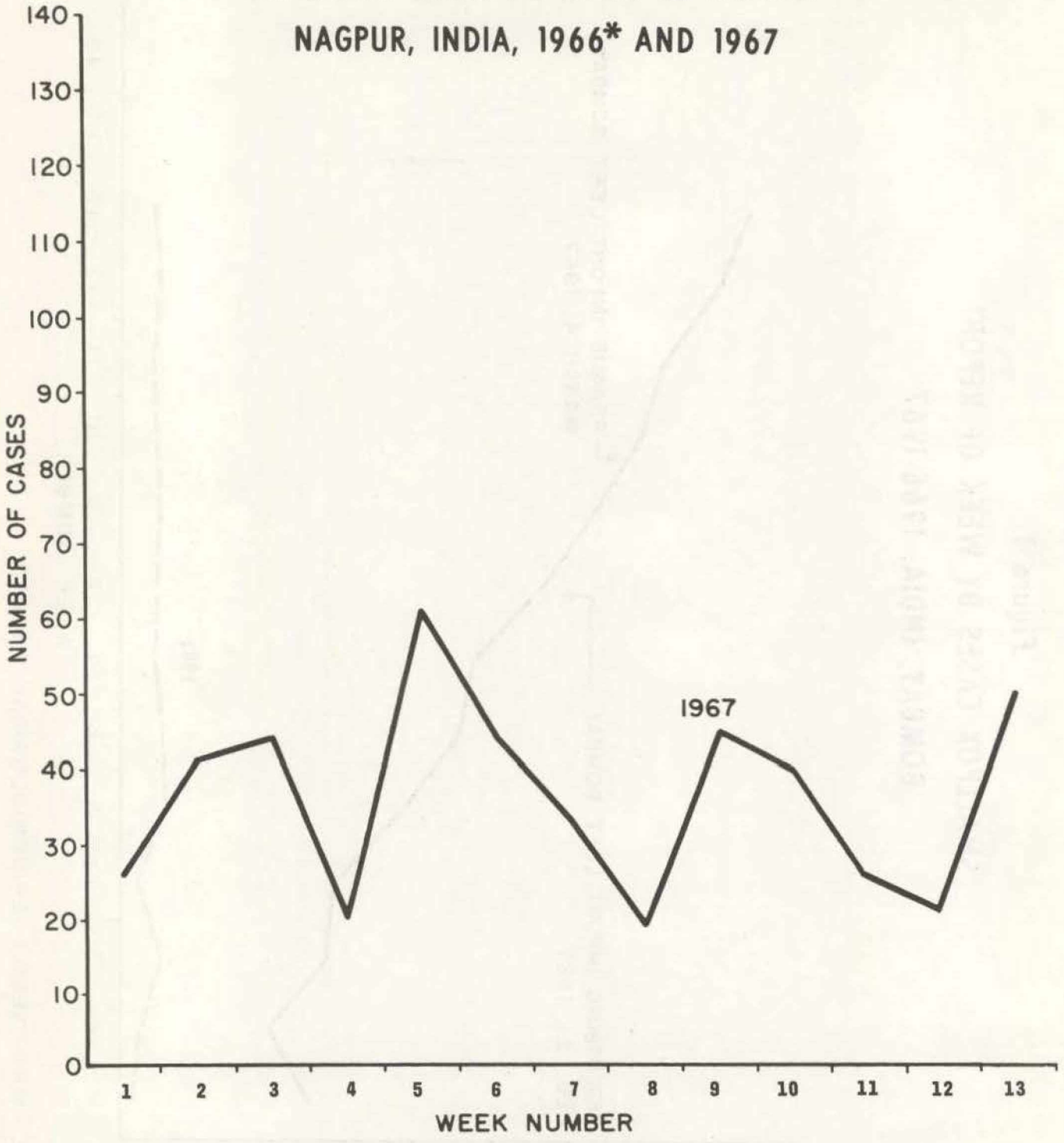


SOURCE: WHO WEEKLY EPIDEMIOLOGICAL RECORD

Figure 2.

SMALLPOX CASES BY WEEK OF REPORT

NAGPUR, INDIA, 1966* AND 1967

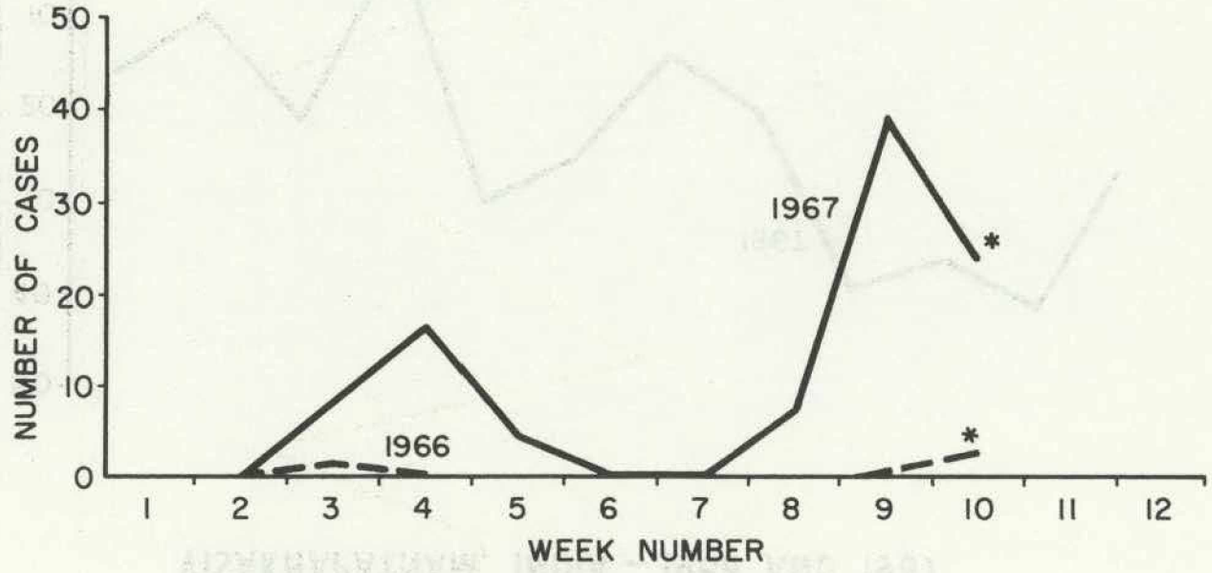


* NONE REPORTED DURING FIRST TEN WEEKS OF 1966.

SOURCE: WHO WEEKLY EPIDEMIOLOGICAL RECORD.

Figure 3.

SMALLPOX CASES BY WEEK OF REPORT
GAYA, INDIA - 1966 AND 1967

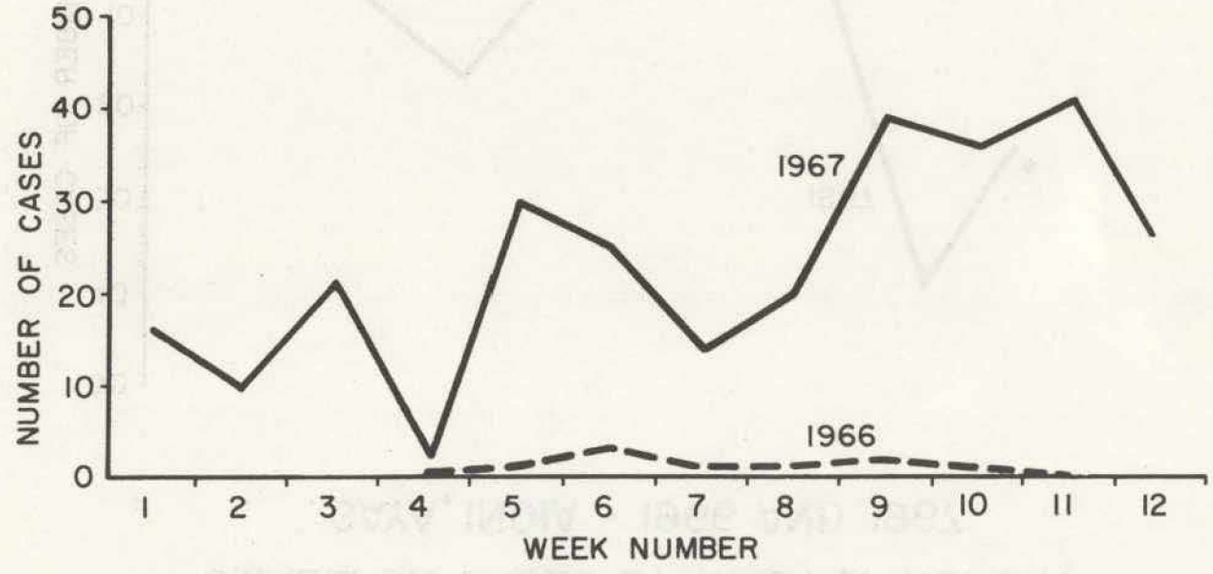


* DATA NOT YET AVAILABLE FOR THE 11TH. WEEK

SOURCE: WHO WEEKLY EPIDEMIOLOGICAL RECORD.

Figure 4.

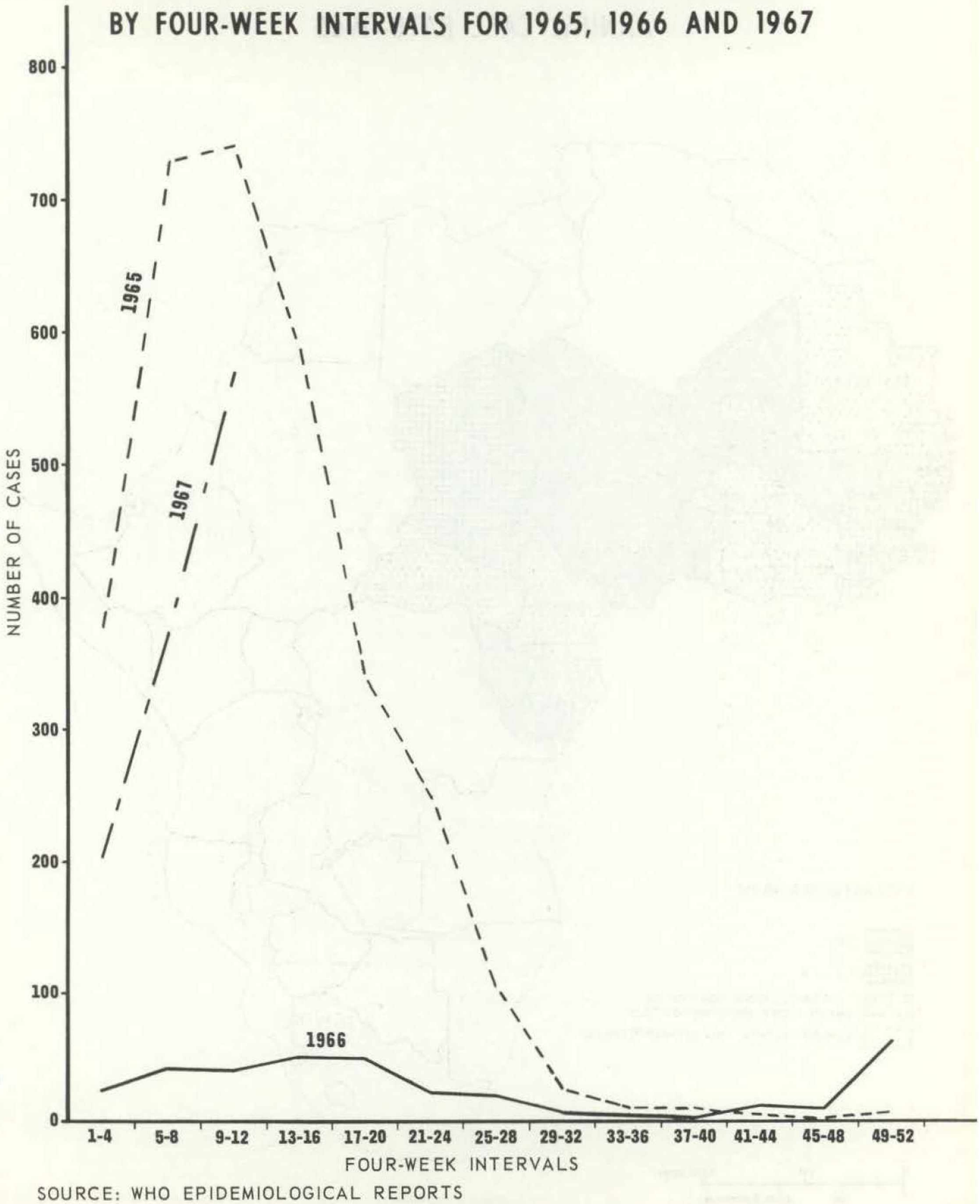
SMALLPOX CASES BY WEEK OF REPORT
VISAKHAPATNAM, INDIA – 1966 AND 1967



SOURCE: WHO WEEKLY EPIDEMIOLOGICAL RECORD.

Figure 5.

REPORTED SMALLPOX CASES FOR BOMBAY, INDIA
BY FOUR-WEEK INTERVALS FOR 1965, 1966 AND 1967



SOURCE: WHO EPIDEMIOLOGICAL REPORTS

Figure 6.

REPORTED SMALLPOX MORBIDITY–WEST AFRICA

ANNUAL CASE RATE–1965

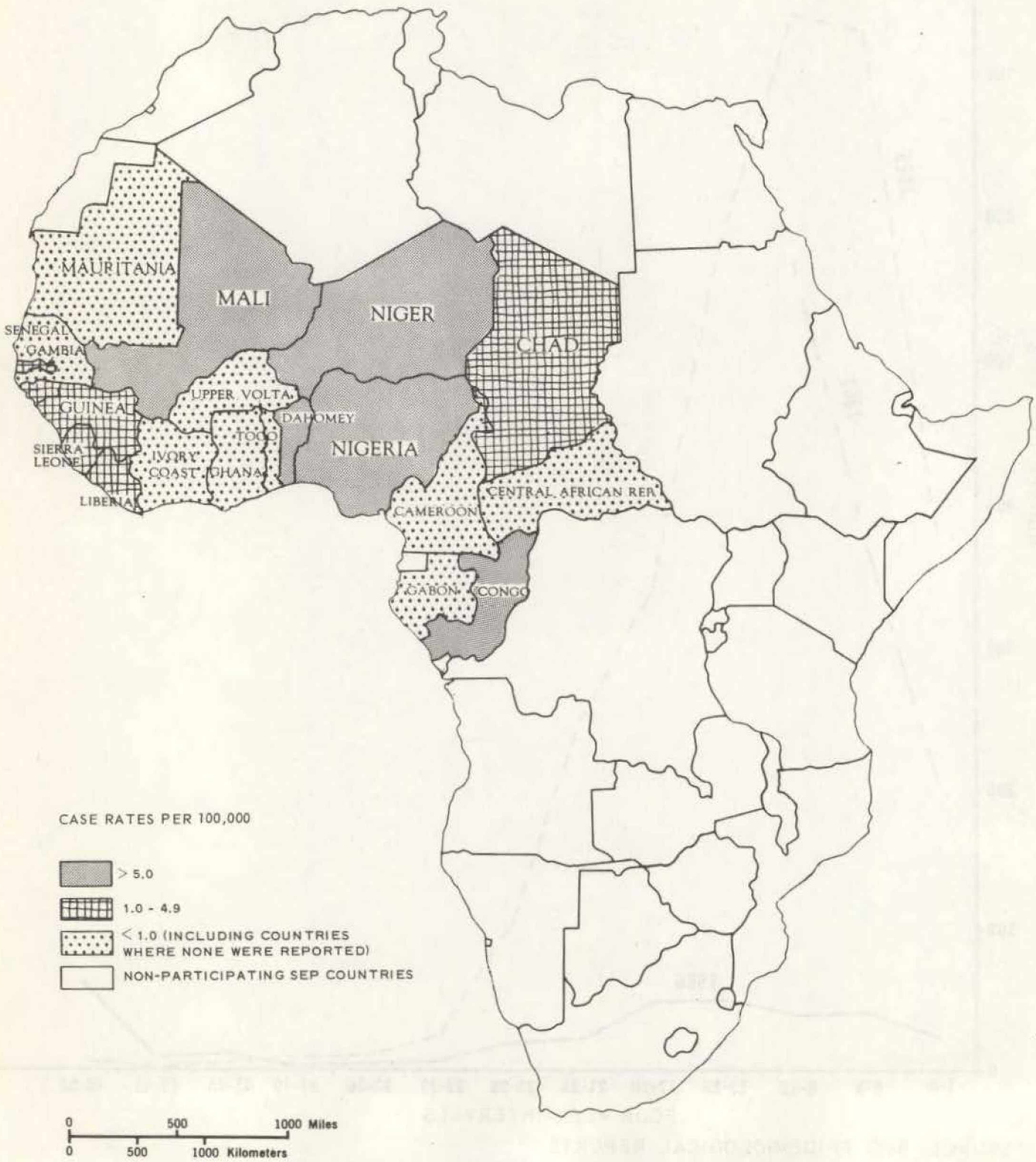


Figure 7.

REPORTED SMALLPOX MORBIDITY--WEST AFRICA
ANNUAL CASE RATE--1966