

MEASLES IN LAGOS

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Measles in Lagos, as elsewhere in West Africa, is a disease of infants and young children. During the last two years, the Federal Ministry of Health in cooperation with Lagos State and Lagos City Council has undertaken special studies at the Lagos Defectious Disease Hospital (IDH). This hospital is located in Yaba on the border between Lagos City and the adjoining metropolitan areas (Lagos Urban). Prior to the initiation of the Measles Control Programme, approximately 4,000 cases of measles were admitted to the Lagos IDH annually. This is estimated to represent approximately 10% of the cases of measles occurring in the metropolitan area. An analysis by age of 10,078 consecutive measles admissions to the Lagos IDH is presented in Figure 1.

Table I presents the age and cumulative age distribution of these 10,078 measles cases.

Table I

Distribution of Measles Cases by age groups in
Lagos IDH 1965-1967

<u>Age</u>	<u>Distribution (%)</u>	<u>Cumulative %</u>
0 - 5 months	3.2	3.2
6 - 11 months	32.9	36.0
1 - 1.4 years	24.3	60.3
1.5 - 1.9 years	13.4	73.8
2.0 - 2.4 years	8.2	81.9
2.5 - 2.9 years	3.5	85.4
3.0 - 3.4 years	3.7	89.1
3.5 - 3.9 years	1.1	90.2
4 years+	9.8	100.0

In Lagos, 36% of cases occur before the first birthday and 60% by 18 months of age. It is theorized that the traditional practice of carrying young babies on the back as mothers attend markets, social, and other gatherings, is responsible for the early age of measles transmission in urban Africa. This heavy concentration of cases in the very young is much less common in isolated rural areas. In these rural areas of Nigeria measles has a definite seasonal (dry) and biennial distribution. However, as shown in Figure 2 measles in Lagos is endemic at all times of the year and reported cases do not reveal a definite seasonal pattern.

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MASS-VACCINATION CAMPAIGN

As part of the West African Smallpox Eradication Measles Control Programme, a smallpox-measles vaccination campaign was conducted in the Lagos area from July until December 1967 as a cooperative programme of the Federal Ministry of Health, the Lagos City Council, and the Ikeja District Council.

The campaign was conducted on a Ward by Ward basis, using fixed vaccination sites and mobile teams. Advance publicity and health education were provided by the Health Authority, Local Government, press and radio. Sound trucks, including those loaned by commercial firms, were used around vaccination site announcing the presence of the vaccination teams in the area.

During this period, 115,429 children from 6 months through 3 years of age were vaccinated by jet injector. Post campaign assessment was carried out independently using a random sampling technique. The assessment showed that in Lagos City 94.5% and in Lagos Urban (Mushin Shomola) 81.1% of the children in this age group had been vaccinated.

EFFECT OF MASS CAMPAIGN ON MEASLES INCIDENCE

Figure 3 presents the measles admissions to the Lagos IDH between January 1967-March 1969. As the campaign reached the residential areas near the IDH during August, September and October 1967, (four week periods 9 through 11), there was a striking fall in the number of measles admissions.

However, in February 1968, the number of measles cases began to increase and investigation of all cases admitted to the Lagos IDH was undertaken. Information on age, sex, and history of immunization were recorded by hospital personnel on a standard form.

The results of 434 measles case investigations are summarized in Table 2.

Table 2

Measles Case Investigations at Lagos Infectious Disease Hospital

Classification of Patients	Number of <u>cases</u>	% <u>of cases</u>
Non-participants in mass campaign	250	57.5
Too young for measles vaccine at time of mass campaign	94	21.7
Measles within 10 days after immunization	16	3.7
Measles 10 days or more after measles immunization	72	16.6
Not measles	<u>2</u>	<u>0.5</u>
Total	434	100.0

The 15 cases of measles occurring within 10 days after immunization probably represent pre-immunization exposure or possibly vaccine reaction. The 72 cases occurring post measles immunization were investigated further. Complete information was available on 66 cases. Figure 4 presents data on the age of immunization of these cases.

There is a clustering of cases in infants who were immunized during the second through the ninth month of life. This is the period when maternal antibody is still present, though decreasing, and cases in this age group are undoubtedly due to inactivation of the injected vaccine by maternal antibody. Interference by maternal antibodies is frequent under six months, and such children should not have been vaccinated. Cases in children six to nine months old represent a very small fraction of the population in that age group. Failures in this group probably represent late interference through maternal antibody. The remaining 16 cases must be classified as programme failures. Analysis of these 16 cases failed to reveal any clustering by time or vaccination site. Such a clustering would have been expected if there had been technical failure. If one accepts a 95% efficacy for measles vaccine as administered, the ratio of immunized to non-immunized children in a population in which coverage was 90% should be 0.45. In this study the ratio is 0.29 which estimates a programme efficacy of 97%.

MEASLES MAINTENANCE

In Lagos, (Lagos City and Lagos Urban), with a population of about 800,000, it is estimated that new susceptibles enter the population at a rate of approximately 4% per year or 3,000 per month. Effective measles control will require the identification and immunization of this population before the age at which the child is infected with wild measles virus. Two repeat mass campaigns have been carried out in Lagos City. The effects of these campaigns on measles cases and the pool of susceptible children are presented in Figure 5.

The maintenance programmes as administered did not control measles nor did it reduce the number of susceptibles to a level at which there was a great reduction in transmission. As a guess we estimate that the susceptible pool must be kept below 10,000 to achieve an acceptable level of control. Although it was possible to achieve this level with the mass campaign, maintenance of such a level will require a continuing programme of measles immunization. Currently in Lagos City six clinics are routinely providing measles vaccine at Child Welfare Clinics three times a week. If such a programme can be expanded to Lagos Urban, it is hoped that a better degree of measles control can be achieved in the future.

SUMMARY

In Lagos, measles is a disease of infants and young children with 36% of cases occurring in children under one. During a mass measles campaign 90% of the target population was immunized. Follow-up investigation of measles cases occurring after the campaign showed that 80% of cases were in non-immunized children. Of the remainder, 15% represent vaccine failure due to maternal antibody interference and 5% must be classified as programme failures. The overall efficacy of the measles programme, as administered, is estimated to be 97%.

FIGURE 1
AGE DISTRIBUTION OF 10,178 MEASLES PATIENTS
ADMITTED TO IDH - LAGOS, NIGERIA - 1965-1967

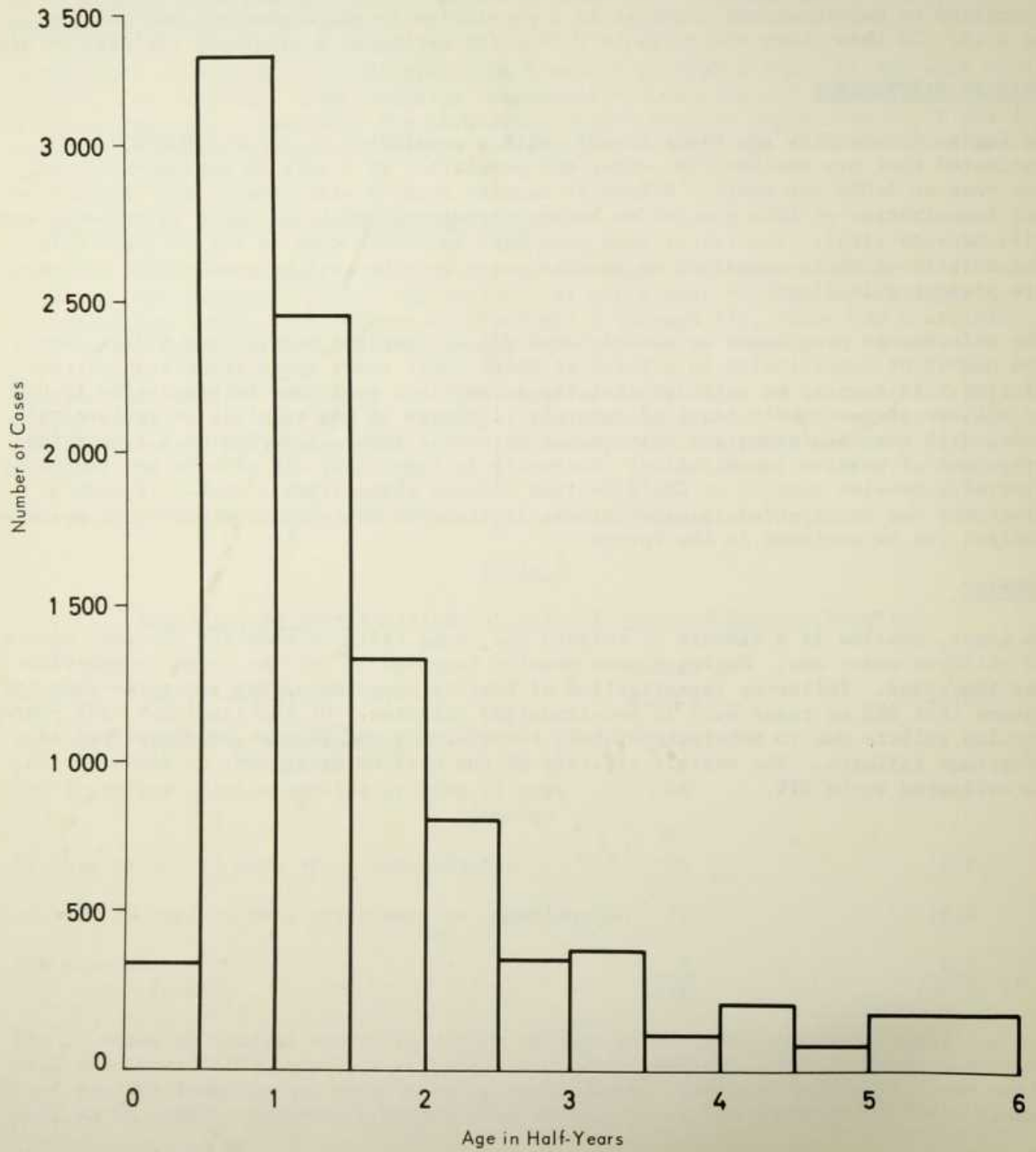


FIGURE 2
NUMBER OF MEASLES CASES ADMITTED TO IDH
LAGOS, NIGERIA - 1965-1966



FIGURE 3
NUMBER OF MEASLES CASES ADMITTED TO IDH
LAGOS, NIGERIA - JANUARY 1967 TO MARCH 1969

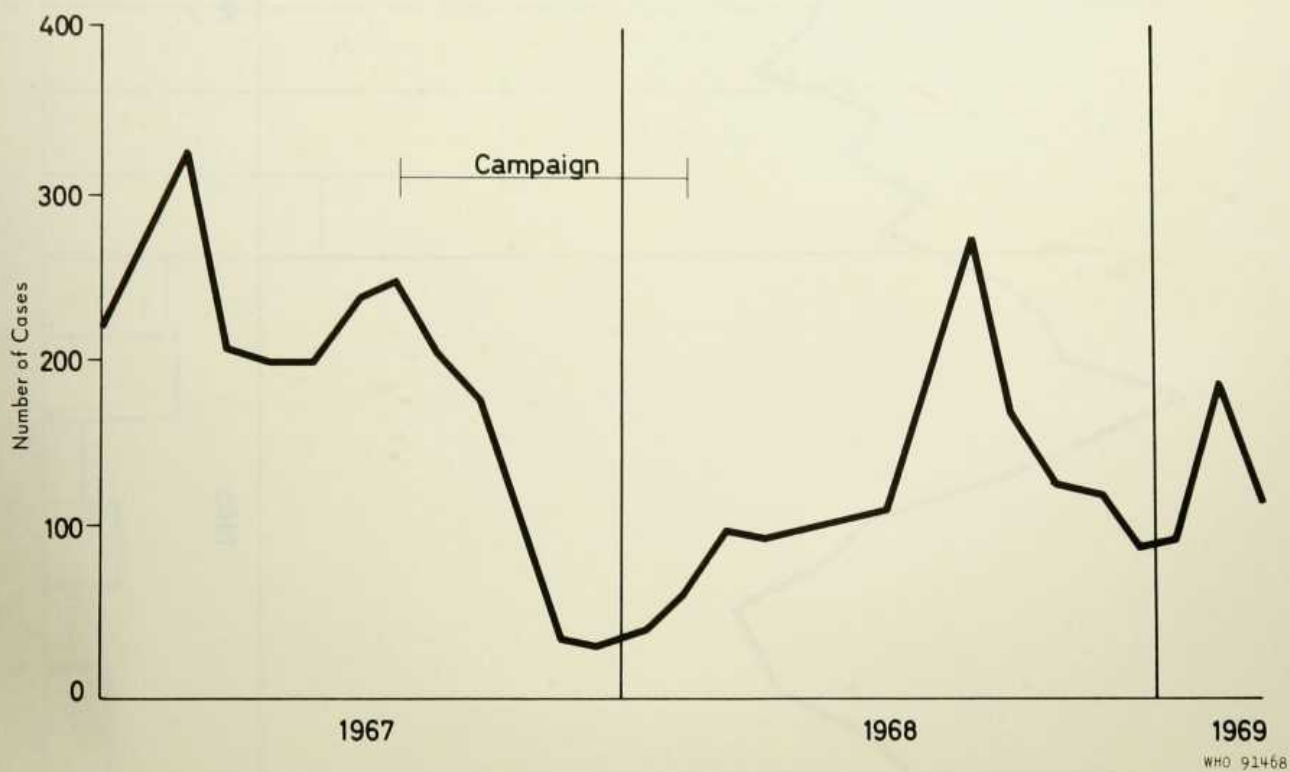


FIGURE 4
MEASLES CASES IN VACCINATED CHILDREN BY
AGE AT TIME OF IMMUNIZATION

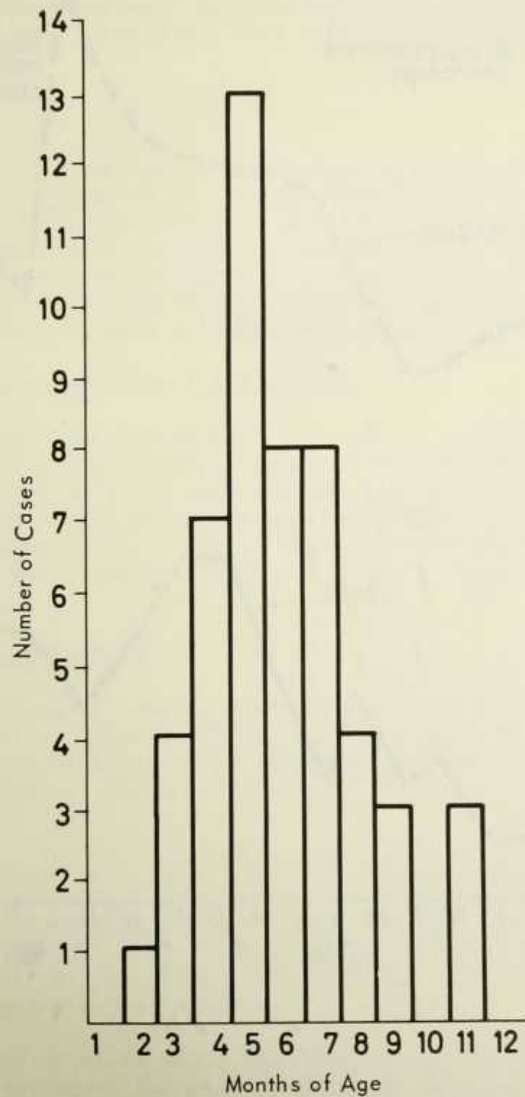
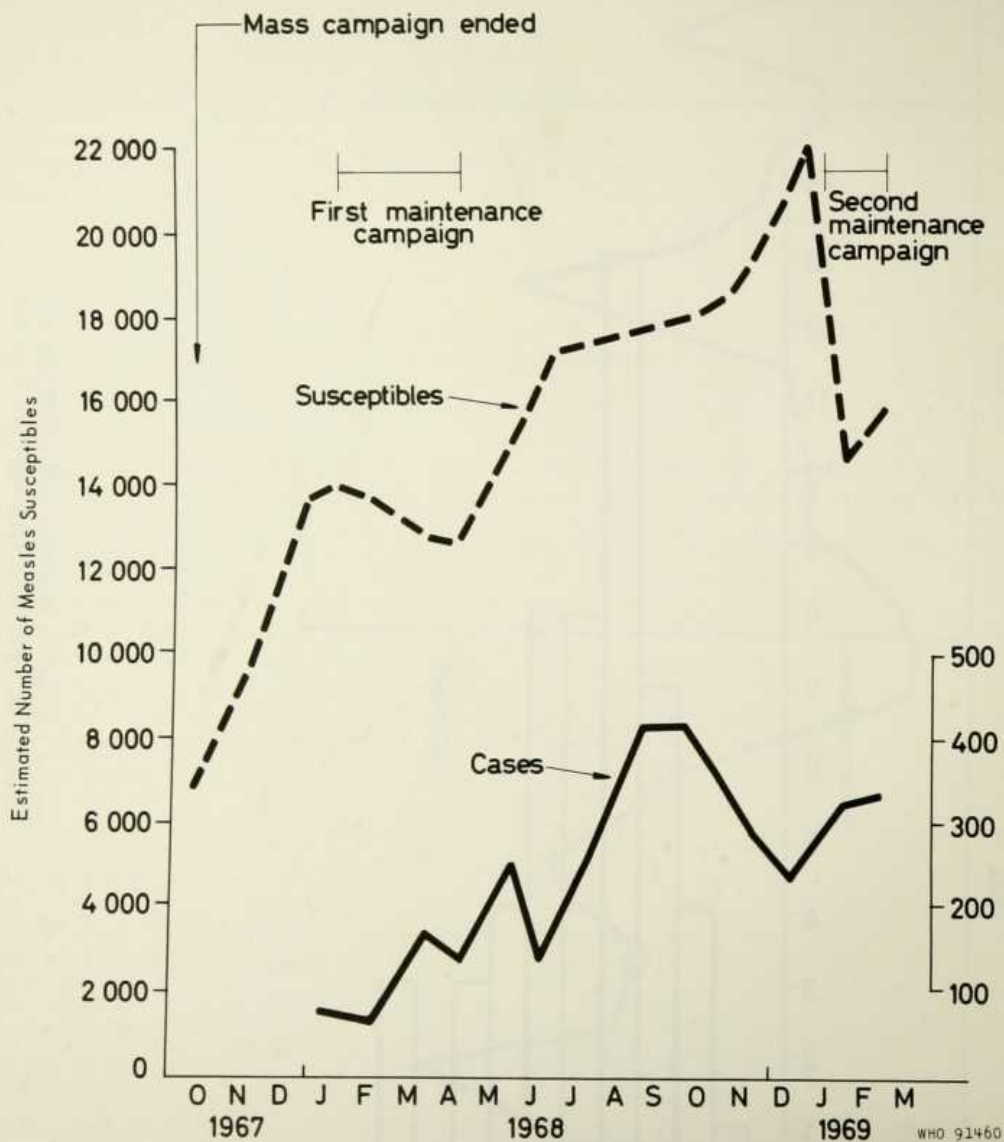


FIGURE 5
 MEASLES SUSCEPTIBLES AND MEASLES CASES IN LAGOS
 BY MONTH, OCTOBER 1967 TO MARCH 1969



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