

MAINTENANCE OF MEASLES CONTROL IN KANO STATE, NIGERIA

R. B. Arnold<sup>1</sup>

INTRODUCTION

In September 1968, a pilot project was established in Kano State, Nigeria, for the "Maintenance" phase of the Smallpox Eradication and Measles Control Programme. This followed the mass campaign which was conducted between April and July 1968. Kano State was chosen for this pilot project because it was the first of the Northern States to have completed the "attack" phase of the programme. In addition, Kano State was considered a focal point in the epidemiology of smallpox in Northern Nigeria.

The population in Kano State is estimated to be 5.7 million, with 0.5 million residing in Kano City itself. Rural Kano State is a heavily populated (133.6 persons per sq. km.), predominantly groundnut growing area. Kano City, which is the biggest city in Northern Nigeria, as well as the commercial and transport centre, has a large transient population. Resident are many non-Hausa traders, travellers and government employees along with many rural workers who come to Kano City at the end of the harvest season to look for work.

MAINTENANCE PROGRAMME

In November 1968, the Kano State Epidemic Control Unit was organized with the stated purpose of "administering both measles and smallpox vaccine to the children entering the population, thus eliminating the prime source of susceptibles". It was decided that the first cycle of maintenance vaccinations would be of the "mass campaign type", i.e. all children between 6 and 12 months would be given measles and smallpox vaccines. In addition, any child up to age 48 months in urban Kano and up to age 36 months in rural Kano would be given measles vaccine if he had not previously received this antigen. All persons of any age who had not received smallpox vaccine in the recent mass campaign would also be vaccinated. This approach was felt to be necessary for the first maintenance cycle to increase overall immunity to smallpox to a more acceptable 90% level. Further, although there had been no major outbreaks of measles in the city since the mass campaign, in some portions of the city, coverages of only 35% to 68% had been recorded in children 6 months to 4 years of age.

Training of five teams of three men each began on 2 December. In an effort to reach the large number of transients as well as the more resistant segments of the population, schools, industries, markets and motor pools were vaccinated between 6 December and 13 January. At this time only smallpox vaccinations were given.

On 14 January 1969, the official maintenance campaign began in Kano City. Through the Local Government Authority, the heads of all wards were notified as to dates, times and places of vaccination. The State Ministry of Information and the Local Government Authority Ministry of Information each provided two sound trucks which were operated daily for two and one-half weeks including four days before the programme started. For 14 nights a film show was presented at different sites with a feature film on smallpox and talks by Kano Commissioners emphasizing that mothers should bring their children for measles vaccinations.

In this first maintenance cycle 27,392 (17.7% of the total vaccinated) between 6 months and 4 years of age received measles vaccinations; 4,892 of these were between 6 and 13 months old. Subsequent assessment showed that the immunity level in the population residing outside the city walls was raised to 89.8%, whereas before the maintenance cycle it was 76.3%. In those 6 to 13 months old, the immunity level rose to 84.6% (Tables 1, 2).

<sup>1</sup>Medical Officer Adviser, NCDC/USAID, Kaduna, Nigeria.

Table 1. Proportion of Persons Vaccinated (in %) - Kano (Outside the City Walls)

Proportion vaccinated in	6-13 mo.	1-3 yrs.	4-14 yrs.	15+ (Male)	15+ (Female)	Total
May 1968	( -80.8- )		84.4	76.7	68.8	76.3
Jan. 1969	<u>76.9</u>	<u>74.3</u>	<u>75.8</u>	<u>56.2</u>	<u>53.4</u>	<u>70.1</u>
Total						
May-Jan.	84.6	89.8	94.4	85.4	88.4	89.8

Table 2. Proportion of Persons Vaccinated (in %) in Sabon Gari\*

Proportion vaccinated in	6-13 mo.	1-3 yrs.	4-14 yrs.	15+ (Male)	15+ (Female)	Total
May 1968	35.7	68.2	51.0	56.0	56.8	58.7
Jan. 1969	<u>56.5</u>	<u>51.8</u>	<u>50.0</u>	<u>50.8</u>	<u>47.4</u>	
Total						
May-Jan.	69.3	81.2	77.9	79.5	76.9	

\* Sabon Gari is a section of Kano City that had the poorest coverage in the mass campaign.

In rural areas, regular efforts were made to educate the District and village heads on the need for immunizing only certain groups (unvaccinated persons and all 6-13 month old children). This was done by a Senior Health Superintendent who visited each district a week before the teams arrived.

Operating with six teams of 3 men each, the maintenance programme completed seven rural districts between 10 February and 15 April. They gave a total of 33,103 measles immunizations. Table 3 lists by district the estimated populations and numbers vaccinated. Assessment has not been completed in any of these districts. However, coverage figures based on population projections appear to be disappointing in most districts.

Table 3. Estimated Coverage in the 6 - 12 Month Target Group

District	1968 Population	Estimated Population 6-11 Months	Number Vaccinated 6-11 Months	Estimated Coverage (%)
Ungogo	99,243	2,084	751	36.0
Kumbotso	95,512	2,006	511	25.4
Kura	227,922	4,786	1,443	30.1
Dwakin Tofa	384,074	8,065	2,418	30.0
Karaye	183,034	3,844	3,025	78.7
Rano	231,492	4,861	2,688	55.3
Tudun Wada	123,740	2,598	1,055	40.6

## MEASLES INCIDENCE

The mass campaign was conducted in Kano State from April through July 1968 and achieved a coverage of greater than 90% in the rural areas while Kano City had an overall coverage of 79.5%. In the rural areas, the coverage in the 0-4 year age group was less than 90% and in Kano City the coverage for the same group was 80.8%.

After the mass campaign it was felt that measles in Kano State should decline. Measles normally occurs in epidemic form every other year, but during non-epidemic years there are still a large number of cases (Fig. 1). The increased number of cases that were reported during the years 1966-1968 probably represents more complete reporting. Since the May 1968 mass campaign, Kano has continued to report measles cases. Figure 2 superimposes the graphs for the years 1966-67 and 1968-69. There is little difference in the number of cases reported in the period June 1966-April 1967 and June 1968-April 1969 although this period in both instances represents the seasonal low so that numbers are relatively small. The question arises as to why there has been no difference in measles incidence since the mass campaign. Assessment in Kano State showed that 85.9% of the 0-4 year age group was vaccinated. However, smallpox vaccination coverage in the adult females was only 71.3% and it seems reasonable to assume that the youngest age groups, who were carried on their mothers' backs, may have been vaccinated in the same proportion. Second, measles vaccine may be only 95% effective under field conditions and this small increment of vaccine failures would enlarge the pool of susceptibles to 25% of the children in this age group. Third, there may have been an increase in completeness of reporting after the mass campaign.

On the positive side, it is noted that between January and April, Kano State reported only 4 measles deaths compared to an average of 76 in the January-April period during the previous four years (1965-1968).

## CONSIDERATIONS FOR THE FUTURE

1. On the basis of experience to date in Kano City, it is believed that the maintenance cycles should be aimed at the 6 to 12 month age group only and no vaccinations should be given to anyone older. Every effort should be made to increase the coverage in this age group to 90-95% so that it is not necessary to vaccinate individuals who were missed initially. These cycles should occur at six month intervals until the State's services are so developed that they can be responsible for vaccination on a continuing basis. This should be achieved as soon as possible as the administrative as well as public enthusiasm for periodic "cycles" of mass vaccination is likely to decline. X
2. In the rural Districts, immunizations should be given to those who are six months of age plus those who have reached this age since the last maintenance cycle. Until experience indicates otherwise, these cycles should be conducted at twelve month intervals.
3. At least in some States, if the task of fielding permanent maintenance units to administer one or two antigens is prohibitive, it may be necessary to consider the mechanics and costs of adding other antigens.
4. In urban areas, permanent vaccination sites should be established which are clearly marked with a large sign announcing the date and time when these vaccination sites will be used. These signs should be posted at least one month in advance. The same vaccination sites should be used in each cycle so as to form a routine for the mother to have her child vaccinated at this specific site when he is between 6 and 12 months of age.

5. A measles report form should be considered for urban areas to be submitted weekly by the various clinics giving age, sex and address of each case. Cases should be followed up by the maintenance unit.
6. A full-time surveillance and assessment team with its own transport should be established which is capable of rapid follow-up of suspect cases of smallpox and outbreaks of measles. Assessment should be scheduled only once each year in any given area to keep sample sizes at a minimum.
7. The task of training the teams as well as the public in the concept of vaccinating only a specific age group is a long-term project. Efforts to explain to village heads will have to be much more intensive. Establishing a target based on age obviates the troublesome and perhaps unreliable screening for smallpox scars as a mark of having received measles antigen. This type of screening would be a difficult and time consuming task with the large populations of Northern Nigeria.

FIGURE 1  
MEASLES CASES REPORTED IN KANO CITY  
BY FOUR WEEK PERIODS - 1962-1969

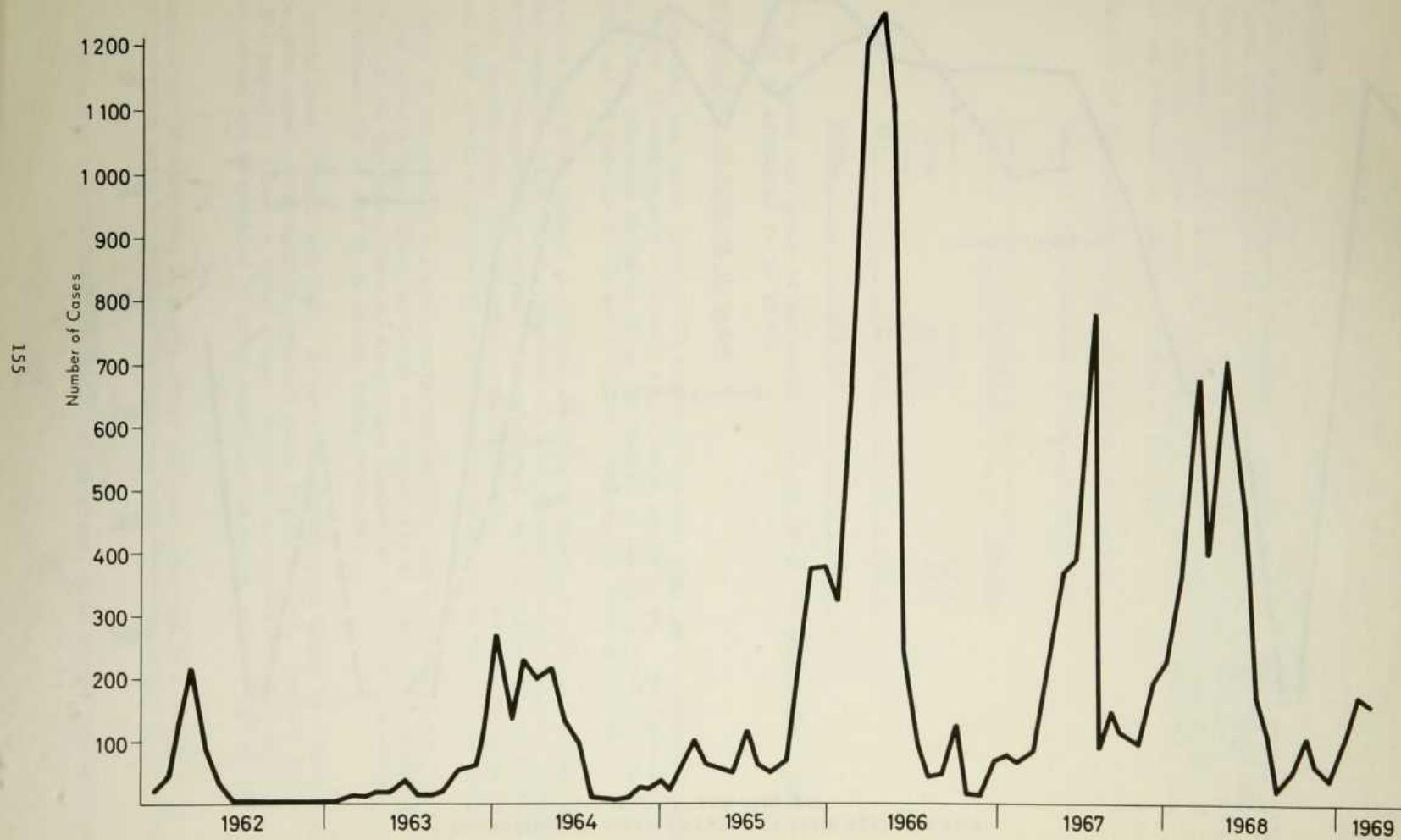


FIGURE 2  
COMPARISON OF MEASLES CASES BY FOUR WEEK PERIODS  
1966-1967 AND 1968-1969

