Bull. Org. mond. Santé / *Bull. Wld Hlth Org* 1956, **15**, 911-935

YAWS ERADICATION CAMPAIGN IN NSUKKA DIVISION, EASTERN NIGERIA
A Preliminary Review

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SYNOPSIS

Nsukka Division in Eastern Nigeria was chosen as the starting point for a yaws eradication campaign undertaken by the Government assisted by WHO and UNICEF. Yaws was found to be hyperendemic, and a policy of total mass treatment was therefore adopted. The objectives of the campaign, the field organization and methods of operation, and the clinical findings and treatment schedules used are described.

A total of 383 769 persons were examined and treated with penicillin; of these 12 221 were infectious cases, 42 553 were late cases, and 328 995 were latent cases and contacts. It is believed that over 95% of the population was seen. Resurveys at intervals of six months showed a dramatic fall in the reservoir of infectious cases.

The campaign was also used to stimulate better rural health services, and a network of local health centres was built by the people themselves.

Introduction

Topography

Nsukka Division occupies the most northerly portion of Onitsha Province in Eastern Nigeria. It lies about 7°N. and 7.3°E., and has a rainy season lasting from May to October, with an average rainfall of 70 inches (approximately 1800 mm). Maximum and minimum absolute shade temperatures are 99°F (37.2°C) and 62°F (16.7°C), respectively.

Vegetation is mainly Guinea savannah, but there are patches of relic high forest and high forest outliers along the stream banks. Palm trees are present in fairly large numbers.

The people

The estimated population of the Division is 445 096 (1953 census), of whom 75% are Ibo, the remaining 25% being of Okpoto and Igala origin. They are spread over some 1314 square miles (approximately

3400 km²), with an average density of 342 people per square mile (132 per km²). The population density is highest in Enugu-Ezike (643 per square mile, or 248 per km²).

The main occupation is farming, and Nsukka is one of the largest agricultural Divisions in the Eastern Region. The people are very likeable, with a keen sense of humour, and are co-operative in any scheme of progress.

Housing conditions and sanitary standards are still primitive. Most compounds consist of a variable number of mud-walled houses with the roof made of stick rafters and grass-thatching cover. The huts are dark, badly ventilated, and difficult to keep clean. There is usually no furniture, except a square wooden stool and occasionally a table. The bedstead is usually a mud platform with a small fireplace underneath it; it is covered with a mattress of palm branches or a raffia mat. During the evening, the family sits closely huddled round the fire in the centre of the room.

For administrative purposes, the Division is divided into four Districts—namely, Igbo-Etiti, Igbo-Eze, Isi-Uzo, and Uzo-Uwani Districts. Local government was introduced early in 1954, replacing the former Native Authority Organization. The local government bodies consist of the Nsukka County Council (a central body responsible for hospitals, ambulance service, drugs and equipment for health centres, water, roads, and education), and four district councils. The latter are responsible for environmental sanitation and for the local health centres, dispensaries, and maternity homes in their respective areas. Seventy-one local councils with minor health responsibilities, such as the notification of infectious diseases, also exist in the Division.

The social and political village group (or town) in each District is made up of quarters (or villages), hamlets, kindreds, extended families (sub-kindreds), compounds, and households, each of these being a subdivision of the preceding entity. An understanding of this organization in each village group is essential to the everyday work of the yaws eradication unit. As described below, the success of adequate preliminary propaganda and coverage of population throughout the campaign depended upon contacting all communities at the sub-kindred and kindred levels through the intermediary of their local councillors, elders, and title holders.

Owing to its hyperendemicity, yaws is well known and recognized by the people. They realize that it is mainly a disease of childhood, but that a few adults may also develop it. Hyperkeratosis, periostitis, the Dupuytren type of finger contractures, and rheumatic pains, are all attributed to previous yaws infection. Gangosa is, however, attributed to witchcraft. Yaws is locally known by the name " okija " or " ikete ". Before the mass campaign, treatment was given by travelling private practitioners, and was usually inadequate, achieving mainly the temporary aesthetic effect of drying up the wet skin lesions.

Inception of the Yaws Campaign in Nsukka Division

General preliminary analysis of problem and plan of operation

Yaws occurs in all five provinces of the Eastern Region. Through the survey activities of the Nigerian Medical Field Units since 1947, the prevalence of yaws and other endemic diseases in a number of widely scattered areas is known. Very useful groundwork was achieved by the medical field units long before the inception of the yaws campaign. This made it possible to pass rapidly from the planning phase to the mass campaign proper.

As a result of discussions with the World Health Organization (November 1952), a plan of operations for a yaws eradication project was evolved between the Government of Nigeria and WHO and the United Nations Children's Fund (UNICEF). Nsukka Division of Onitsha Province was chosen as the starting-point. For this purpose the full staff of a medical field unit (one medical officer, one superintendent, and twenty auxiliaries) was mobilized in September 1953. The first consignment of UNICEF penicillin (procaine penicillin G in oil with 2% aluminium monostearate (PAM)) did not reach Eastern Nigeria until mid-February 1954, and that became the actual " target date " for the beginning of the campaign. This interval was used as the planning phase.

Planning phase: Field organization, training and surveys in area of operation

The five months prior to the receipt of the penicillin were employed as follows:

Medical field unit staff were trained to:

(*a*) carry out a household census before the survey;

(*b*) diagnose yaws according to the nomenclature recommended by WHO in 1952; [3]

(*c*) record findings accurately and according to a certain coding;

(*d*) carry out treatment aseptically and speedily;

(*e*) view yaws as a community problem, to be attacked as such.

All the staff had had several years' field experience with the Sleeping Sickness Service or a medical field unit, or with both.

As much information as possible on the epidemiology of yaws in various parts of the Division was collected by means of detailed spot surveys on a household basis. This house-to-house approach is essential for study and training purposes. It serves to illustrate certain epidemiological problems in the various households; gives as high a coverage of the population as possible; facilitates the tracing of absentees and teaches the people the

necessity of 100% attendance; reduces the selection factor likely to occur if the examinations were performed in a clinic or centre; and facilitates future follow-up.

A period was then spent becoming acquainted with the geography and social and political organization in the Division, and spreading information concerning the unit's future activities through talks to and meetings with local councillors, village heads, elders, and schools at the kindred level of each community. The efficacy of the treatment to be given was emphasized, and also the fact that, to be successful, the campaign had to be supported by 100% active participation and coverage of the population. The necessity of future regular resurveys was emphasized throughout this planning phase, and, of course, throughout the campaign. To this end, the various district councils were strongly advised to recruit and employ a team of young literate men from their areas, who would be trained in resurvey work after the initial treatment surveys. These local auxiliaries are called " yaws scouts ". This advanced planning for resurveys proved very satisfactory later on.

The medical field unit was converted into a self-contained yaws eradication unit in respect of transport, stores, drugs and equipment.

Expansion Phase: Mass Campaign Proper

Objectives

With knowledge of the local problem and taking into account the lessons of previous campaigns in Sierra Leone [2] and Bosnia, Yugoslavia,[1] the aim of the Nsukka unit has always been to adapt itself to a well-proved system of operations which would enable it to achieve the following essentials:

(*a*) active participation of the people, leading to over 95% coverage in the initial treatment surveys;

(*b*) rapid coverage;

(*c*) regular resurveys; and

(*d*) development of, and building into and around the yaws eradication programme, better general rural health services.

Problem and policy

Since earlier pilot surveys had revealed the prevalence of active yaws to be high throughout most of the Division, the policy adopted has been that of total mass treatment, that is, a mass clinical survey and simultaneous " blanket " treatment designed to cover the population. Each individual receives either therapeutic or suppressive treatment based on a clinical assessment of each case.

Survey findings in each village throughout the Division support this policy (see Tables II-V).

These clinical surveys show that over large areas more than about 70% of the population are yaws cases (infectious cases, other active cases, or latent cases with a history of yaws), and less than about 30% show no clinical signs and deny having had yaws. Admittedly grouping into " latent cases with a history of yaws " is open to criticism. It has, however, been the experience of other workers that 60% seropositivity is actually expected in such hyperendemic areas. On the other hand, some of the " contacts " (most of whom are children) in clinical surveys may be true latent cases or may be incubating the disease.

The density of population has previously been emphasized. Villages in this Division generally consist of a number of family groups (i.e., kindreds) packed into groups of closely knit compounds. Moreover, the Ibo population is far from stable, and much movement goes on throughout the year.

As mass serological examinations cannot be considered in routine mass treatment, the above-mentioned epidemiological, sociological, and environmental considerations in a densely populated area like Nsukka Division reduce the problem of definition of contacts to an academic one, since all community members are at risk. The difficulty of the latent group is now mainly solved by the practical definition given to " latent cases and contacts " in relation to the three treatment policies recommended in the paper by C. J. Hackett & T. Guthe appearing on page 869 of this number.

To have adopted any other policy in Nsukka Division would, with little doubt, have imperilled the whole project, with no ultimate saving in the expenditure of penicillin. Total mass treatment, as shown in the resurvey results, has rapidly brought the disease under control. It has been economical of time, supplies and manpower. Moreover, it has enjoyed universal popularity with consequent maximum co-operation from the people, both in attendances at the initial treatment surveys and also subsequently in laying the foundation of and implementing the consolidation phase and organization of rural health services.

The Northern Region mobile yaws units have carried out yaws control in the Idoma and Igala Divisions which border on Nsukka Division. Such inter-regional co-operation and integration of policy has considerably reduced the risks of reinfection in both projects.

Field organization, and survey and treatment methods

By May 1954 the unit's staff had increased to: 1 medical officer, 2 field unit superintendents, 34 field unit assistants, 2 leprosy inspectors, 3 clerical workers, 4 drivers, 54 " yaws scouts ", and 3 " court messengers ".

Survey and treatment: initial stage

During the first two months of the campaign, three different methods of survey and treatment were applied:

(1) Preliminary census-taking of the village, followed by survey and treatment on a household basis. Attendances were practically 100%. Work proceeded smoothly, although comparatively very slowly. Registration of names was carried out.

(2) " Multiple-centres " approach. As previously explained, villages in this division can be divided into their varying components of quarters, kindreds, and sub-kindreds. Examination and treatment centres were built in each of the quarters and the various kindreds or sub-kindreds asked to attend on different days in the respective centres. No preliminary census was carried out, and no names were registered, but the clinical manifestations seen and the treatment given were recorded. Work proceeded smoothly and the speed of work was more than doubled. Attendances were also maximal, being 95% or over.

(3) " Single-centre " or " clinic " approach. Only one centre was set up, which the various quarters of the village were asked to attend on different days. A preliminary census was not made and names were not registered, but again the findings and treatment were recorded. The speed of coverage was only slightly higher than with the multiple centres system. Work was eventually slowed down because the people from the various quarters were compelled to walk longer distances, and several extra working days were employed waiting for the remaining stragglers.

Intensification of mass treatment

Throughout the planning phase and the initial stage of the treatment campaign, all personnel worked as one team under the maximum guidance and supervision, while the examinations were carried out by the medical officer. However, a nucleus of field unit assistants soon became proficient in examining and classifying cases according to the required dosage, while the rest of the staff were trained in other tasks. Thus the three senior officers were able to devote themselves to supervisory duties. From April 1954, the multiple-centres method of surveying was adopted. The criterion on which the number of centres per village depended was that no person should need to walk more than 1-1½ miles (approximately 2 km) from house to centre. The work was greatly facilitated by the density of the population. The unit was then re-organized into three teams—A, B, and C.

Since the average population of a Nsukka village is 3000 or more, teams A and B usually move in together, but in different convenient centres, and deal with the bulk of the population. Team C follows to search for

and deal with the stragglers, enabling teams A and B to move to other population groups.

Each week the unit spent five working days (Mondays to Fridays) in the field; Saturdays were employed on routine duties, e.g., statistics, penicillin expenditure returns, office correspondence, propaganda meetings, maintenance of vehicles, and so on.

The average monthly coverage of 15 000 in previous months was thus increased to 20 000 in June and to 40 000 in July, and maintained at the latter figure. Attendances in all villages have been satisfactory. Although the aggregate attendance works out at only 86% of the official census population, it is believed that the census is an overestimate and that the attendance was over 95% of the actual population. Resurveys have shown that there were few absentees.

Mass treatment, begun in February 1954, was completed in May 1955. A total of 383 769 people were examined and treated in initial treatment surveys, a monthly average of 25 451. These figures do not take into account resurveys undertaken at intervals of three to six months after the initial treatment surveys.

TABLE I. YAWS CASES FOUND IN INITIAL TREATMENT SURVEYS, NSUKKA DIVISION, EASTERN NIGERIA, FEBRUARY 1954 TO MAY 1955

District	Number examined and treated	Estimated population *	Attendance (%)	Active cases			Latent cases and contacts
				infectious	late	total	
Igbo-Eze	117 315	122 359	95.9	5 888	15 367	21 255	96 060
Igbo-Etiti	119 874	145 403	82.4	1 531	10 002	11 533	108 341
Isi-Uzo	108 318	127 496	85.0	3 899	13 525	17 424	90 894
Uzo-Uwani	38 262	49 838	76.8	903	3 659	4 562	33 700
Total: Nsukka Division	383 769	445 096	86.2	12 221	42 553	54 774	328 995

* Based on 1953 census

Operation of a sub-team

Preliminary work

Preliminary propaganda, with education of the leaders of the community, was carried out by the medical staff, often after working hours. This work should not be passed to the administrative department, whose officers are

already occupied with problems of their own. Their assistance should, however, be sought if opposition in a community is sensed. It is a medical need and problem that is being explained, and the best person to do it and to win the willing co-operation and confidence of the people is the doctor. Once knowledge spreads of the rapid effect of penicillin on yaws and other diseases, propaganda is rendered considerably easier.

At the meetings, of which several days' notice is given, the immediate object of the campaign and its advantages to the village are explained, emphasizing that the treatment is modern, effective, harmless, and free. The necessity of full attendance by the community, healthy or otherwise, is conveyed by explaining that the penicillin injection not only rapidly cures yaws but also acts as a " cleansing " agent for other conditions latent in the body and that, unless the whole family attends and receives treatment, it cannot be considered " cleansed ". Such simplified explanation does carry weight in rural communities. As gonorrhoea is very prevalent, the possible beneficial effects of penicillin on fertility of women is mentioned. It is important to explain why the treatment is " free "—that it has been paid for with the tax revenue that the people themselves have contributed in the past. The post-campaign activities aim at improving and expanding existing medical health facilities, and together with the resurvey work, should also be mentioned, even at this early stage; this prevents the impression that the doctor has come and given injections quickly, never to return again or to take any interest in their problems. It is the policy of the Eastern Region Medical Department to ensure, wherever possible, continuity of service of its officers throughout both the campaign and post-campaign activities in an area.

Arrangements are made for the construction of palm-frond shelters to house the examination and treatment centres in the most suitable sites, and for the attendance of the villagers by kindred groups on specified days. The various councillors and other influential members are made responsible for spreading the information and ensuring full attendances of their own kindreds.