

# LEPRA Control Project in Malawi\*

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## INTRODUCTION

In the agreement drawn up between the Government of Malawi and the British Leprosy Relief Association (LEPRA) the main objectives of the Leprosy Control Project were laid down, these being: (1) to demonstrate to the world that, for all practical purposes, leprosy can now be eradicated, and (2) to show how best this can be done. It was also agreed that the duration of the Project would be from 7 to 10 years.

The selection of Malawi for this project depended on the following factors: (1) a fairly high leprosy prevalence of between 10 and 20 per 1000; (2) a high population density with reasonable communications passable at most seasons; (3) a relatively untouched area; and (4) most important of all, the full co-operation of the Government with the personal interest of His Excellency the President, without which the Project could not be carried through.

The project area situated in the southern region of Malawi seemed most nearly to fulfil these conditions. This is an area of some 2000 sq. miles,  $15\frac{1}{2}^{\circ}$  south of the equator, with the inhabited parts lying between 2000 and 4500 ft. above sea level. Rainfall is heavy but is confined to the first 4 months of the year, during which rivers—normally almost dry beds—become impassable, and earth roads become treacherous and slippery. According to the 1966 census there were 1.3 million people within the area, so population is dense and villages are mere local concentrations of the housing, which is scattered throughout the farms. The area includes the city of Blantyre-Limbe with some 120,000 inhabitants, Zomba the administrative capital (20,000 inhabitants), and 2 smaller townships.

In the south many people are engaged in the tea industry, but elsewhere work is largely on small farms, with some estates (tobacco or tung oil), and in the north-east there is fishing around the shores of the large shallow Lake Chilwa.

## MATERIALS AND METHODS

The leprosy prevalence rate was believed to be at least 10 per 1000. In-patient treatment was available only at one large Mission Leprosarium in the south-west corner of the area, or at 2 others, one small and one large, outside our area to the north. Dapsone was available at the Government dispensaries, but these were often far apart and the staff were too busy to be concerned with chronic sickness, with the result that little treatment was given and very few of the patients registered attended regularly.

After the preliminaries were agreed, Dr. Gordon Currie was seconded in 1965 by the Malawi Government to start local planning. It was extremely fortunate that a fund for leprosy work, given in memory of a local family, already existed in the country and from this a very generous donation was made for our capital expenditure. In general, the plan was a base in Blantyre within the grounds of the Queen Elizabeth Hospital with office, laboratory and ward facilities, and from this mobile treatment units were to cover the area, coupled with case-finding teams who were to give BCG vaccination to all leprosy contacts under 20 years of age. Initially it was decided that routine treatment would be with dapsone in a dosage of up to 100 mg daily. Detailed records were to be kept of all leprosy patients and a punch-card system was devised for these and for their contacts who received BCG.

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By the beginning of 1966 the team was assembling and Dr. Currie handed over to Dr. Molesworth as Director, with Mr. J. H. Eldon as Administrator, and Mr. Drake as Survey Officer. Three medical assistants were seconded by the Malawi Government for training. During this training period all existing clinics were visited, their registers amended and brought up to date, and the villages from which patients came were plotted on a large scale map on which the runs of the mobile treatment units could then be planned. Treatment of all out-patient leprosy cases was taken over by the team.

By May, 1966, we were able to launch the first "mobile treatment" run, and though this was an entirely novel idea it proved very popular from the start. Intensive planning and propaganda at all levels contributed largely to its success. August, 1966, saw the start of a second unit based on Mlanje, and in September a third unit based on Zomba. These units were in the charge of the medical assistants and 3 more assistants were brought in for training.

During this period the plans for the Centre were finalized and building began in August, 1966. The publicity which accompanied the unveiling of the foundation stone by His Excellency the President highlighted a fear, obviously felt by many, that the presence of the Centre in the heart of Blantyre would bring more leprosy patients into the town. This was countered in both the press and on the radio, and we are now fully accepted as a part of the hospital, but the incident was revealing of the underlying fear of leprosy that exists.

#### *Case-finding*

Generally, of course, before such a project starts a preliminary survey should be conducted, but for various reasons, such as lack of staff, size of the area and its population, and most important the very loose cohesion of village structure, this could not be done. It was therefore decided in July, 1966, to begin work with the examination of contacts of known leprosy patients. However, this method proved ex-

tremely arduous and time-consuming and produced very limited results; in fact, after 5 months it became obvious that for practical purposes everyone in a village must be considered a contact. The results were as follows: 6886 people were examined, 163 new cases of leprosy were discovered, and 4780 contacts were vaccinated with BCG. In addition, a number of new "unrelated" cases were found, as well as some unrecorded patients who had received some treatment elsewhere (designated P.T.U., i.e., previously treated but unrecorded).

Following this, an attempt was made to gather the people of different villages together at one time and place for examination of spite of intense preparation this plan proved unworkable, as well as costly of time and personnel, owing to the loose structure of village life. Although a large number of people were examined it was sometimes impossible to discover just where they came from, and the village headmen proved of little help.

In the light of this experience it was decided to select a reasonable area, establish the team in it on a residential basis, and from this to move from village to village in an attempt to obtain complete coverage which would give us a base-line from which to assess the progress of the Project. We chose Chief Nkalo's Authority as it was of manageable size, and also the team leader came from the area and was well known and respected. Much local publicity was given and we received a big send off at a meeting with the District Commissioner, Chief Nkalo, and all his headmen when we were introduced and in turn introduced our team and our objects. In return we were promised full co-operation. The team then moved in and, living at the team-leader's village, radiated from there. All new cases were referred to the Mobile Treatment Unit which covered the district very adequately, so that treatment followed discovery with minimal delay.

Our final figures for this work were as follows: total number of persons examined 19,581, new cases discovered 59, P.T.U. cases 4, known cases 119, and doubtful cases 14, giving a

prevalence of almost exactly 10 per 1000. The coverage achieved was 87% of the census figures. Most of the new cases were in the age group 5 to 19 years, 3 times as many being discovered as were already known. It is very difficult with this age-group to convince them that early lesions are in fact those of leprosy and do need treatment. This survey occupied the team leader, 2 writers and a driver for 6 months. BCG vaccination was given to 11,900 children, but only to those aged under 15, as school surveys had shown that by this age nearly all were Mantoux positive. The team then moved on to a second area which has proved much more difficult and the work there is still going on. A second team has just been created to work further north, in the south of Zomba District.

The Centre building which was begun in August, 1966, was habitable by April, 1967, as far as office accommodation was concerned, and was functioning in all departments by the end of the year. Ward accommodation is 36 beds, and the unit is largely self-supporting, drawing on the Queen Elizabeth Hospital only for such facilities as feeding, sterilizing, radiography, and the daily dispensing for the wards. Co-operation with the hospital staff is excellent.

In February, 1968, a fourth mobile treatment unit was started in the south-west corner of the region, filling a gap which we had not reached before. This is a difficult area, with hills and deep valleys involving much back trekking.



FIG. 2

Clinical examination en route.

It is also an area with a high rate of onchocerciasis.

In the opposite corner of the project area, that is, just north of Mlanje Mountain, 2 bicycle mobile treatment units were sited in a region where landrover vehicles get bogged down during the rains. These units are working reasonably well, but are costly of supervision as they consist of a single man with minimal training whose main duties are the faithful distribution of dapsone and to refer any suspected cases to the visiting officer. One more such run is to be set up along the line of the rivers entering Lake Chilwa from the west, and this will complete our coverage. No patient will then, except by choice, have to travel more than 3 miles to obtain treatment.

Attendance has built up well but varies from season to season, from 55% in the wet and planting seasons to 75% in the dry season. The largest group of defaulters is among patients with non-lepromatous (tuberculoid and indeterminate) leprosy and aged 20 to 40 years, among whom work and marriage produce more movement and also the urgency for treatment is less apparent. We have now just completed the first 3 years of the mobile treatment runs and of our total of 9368 registered patients, 7547 are receiving treatment from these units. We have also found these units by far the best advertisement for leprosy treatment; patients spontaneously report to them for diagnosis and children are brought to be seen—in fact, the units have gained the confidence of the people.

Hitherto we have deliberately not discharged patients from treatment, although many which we inherited could obviously now be sent home, but they were retained as giving us a line on source cases in our case-finding work. New patients who began treatment with us are only just becoming due for review. The detailed recording of each case has hitherto prevented reviews being carried out on the mobile runs.

The number of new cases has remained almost the same, namely 1500 in 1968 and 1557 in 1967, but now there is a marked decrease in P.T.U.s. At the beginning of 1967

P.T.Us averaged 145 per month and new cases 125; by the end of 1968 the number of P.T.Us was 60 and of new cases 110.

The case-finding team discovers only a small proportion of new patients, as the majority of them report spontaneously to a Mobile Unit or to the Centre, but the team discovers the earlier cases as well as giving us the basic information we need. Laboratory control consists of taking smears 6-monthly from lepromatous and borderline cases (BI and morphology). It is remarkable that the percentage of solid-staining forms, even in untreated cases, is very low, and we are at a loss to explain this finding.

#### *Running costs*

The total budget divided by the total number of patients gives a figure of £3 10s. per head per annum; but allowing for the fact that quite half of this figure is absorbed by the Centre, the actual cost per patient is under £2 per head, and this will, of course, decrease as the patient load increases.

#### *Staff*

The Centre staff consists of a director, medical officer, administrator, laboratory superintendent, physiotherapist, 2 registered nurses (SRN), a secretary, a clerk, and a relief driver. For the wards and Centre out-patients department the staff comprises: a medical assistant, an assistant nurse, 7 assistant nurses in training, and 7 ward

servants. In the *Laboratory* there are 2 laboratory assistants, and a hospital servant. The 4 *Mobile Treatment Units (Landrover)* have each a medical assistant, a clinic attendant with bicycle, and a driver, the 2 *Mobile Treatment Units (Bicycle)* have each a clinic attendant, while lastly, the 2 *Case-finding Teams* have each a medical assistant, a driver, and 2 writers—one male and one female (locally and temporarily recruited).

#### *Present position and comments*

An out-patient system for treatment has now been set up which gives adequate coverage to the project area. Each Landrover team averages 70 miles a day 5 days a week, with a patient density of 4.5 per mile travelled. This system is based on the Centre, which has full facilities, including ward accommodation, surgery, physiotherapy, and laboratory, and is sited within the grounds of the main hospital of Blantyre; this arrangement works well. We have found that patients with lepromatous and borderline leprosy need hospital treatment more often than those with the non-lepromatous forms (in the ratio of 70% to 30%), a fact to be borne in mind for future planning; and also that more male patients are admitted, or are more ready to accept admission, than female (again in ratio of 70% to 30%).

Training of all grades of personnel is undertaken. We consider this to be a very important part of the work, for the more that leprosy can be recognized by general medical and social workers the better. A case-finding team has covered one Native Authority area and has moved to a second, while (1969) another team is about to become operational. BCG vaccination has been given to 40,000 children under 15 years of age. Although the rate of new cases (patients reporting voluntarily or being discovered) shows no fall as yet, the type of leprosy shows a swing towards the tuberculoid form. The sex distribution is almost exactly the same as that of the census, i.e. 48% male and 52% female. These divide into: lepromatous (lepromatous and borderline): male 17%, female 11%; non-



FIG. 3

Giving treatment for leprosy in a village.

lepromatous (tuberculoid and indeterminate): male 31%, female 41%. These observations are based on a total of 7311 patients seen up to December, 1968.

## CONCLUSION

The progress to date has justified this imaginative venture undertaken by LEPRA. It is too early as yet to attempt an overall evaluation, but out-patient treatment has been shown to be possible and, with the necessary

modifications, applicable to many conditions and lands.

We feel that the original objective, namely the eradication, for all practical purposes, of leprosy will be realized and the area left only with non-infective cases and the few sporadic new cases which are bound to occur. But these can be readily dealt with by the existing health services which, provided training and teaching have been adequate, will be well equipped to carry on the work.