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BCG VACCINATION IN LEPROSY

U A PRELIMINARY REPORT OF A "BLIND" CONTROLLED TRIAL¹

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Many studies have been directed toward assessment of the value of *Bacillus Calmette-Guerin* (BCG) as a prophylactic for leprosy. Wade (³⁴) has described the beginnings with BCG in leprosy work. Other investigators have studied the relationship between the lepromin and tuberculin reactions in various populations in an attempt to demonstrate that tuberculosis infection is related to resistance to leprosy (^{6, 8, 11, 14, 16, 20, 31, 35}). On the other hand, Alonso (¹), following a comparative study of the epidemiology of the two diseases in Rio de Janeiro, concluded that tuberculosis infection affords no protection against leprosy. The results of several studies (^{5, 25, 33, 37}) strongly suggested that BCG may be effective in reducing the incidence among contacts. Convit (⁷) seemed to provide evidence as to the value of BCG but his work was later criticized by Bluth and Fonte (³) on the grounds that the experimental and control groups were not comparable.

The Expert Committee on Leprosy of the World Health Organization (³⁶) has confirmed their earlier findings that there is indirect evidence of the protective value of BCG against leprosy and has suggested that some investigations be undertaken to include a study of leprosy in campaigns to control tuberculosis. However, the committee reported that the most accurate assessment of the value of BCG would result from an experiment that would meet the following requirements:

1. A group of household contacts under 9 years of age in close contact with lepromatous or other open cases should be selected and

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this group should be tested with tuberculin in small dosage (1 TU) but not with lepromin. The tuberculin-negative contacts should then be divided into three or possibly four groups as follows:

- (a) A control group receiving no treatment.
 - (b) A group vaccinated with BCG in accordance with WHO standards.
 - (c) A group treated with sulfone at half the therapeutic dosage, with the provision of a fourth group, if possible, to comprise those to be given both sulfone and BCG.
2. The tuberculin-positive contacts should be divided into two groups, viz.,
- (a) A control group to discover the role of natural infection with tuberculosis in protection against leprosy.
 - (b) A group to be treated prophylactically with sulfone. Each group should include at least 100 individuals.

Dharmendra (⁹) and McFadzean and Singh (²¹) also have suggested requirements that need to be met to assess the value of BCG vaccination against leprosy. It is the purpose of this paper to describe a trial meeting most of the requirements stated above.

LOCATION OF THE TRIAL

During 1960, reports from an area known as Karimui in the Eastern Highlands District of New Guinea indicated that a high prevalence of leprosy existed in the region. Karimui is the last section of the Eastern Highlands to be brought under administration control, the patrol post and airstrip having been opened in 1960. Prior to this date, minimal contact had been maintained with the area since 1956, mainly by the passing of an occasional medical or administration patrol. It was known from previous work on tuberculosis control in New Guinea that there is a low prevalence of this disease in the Highlands, and it was thought that Karimui presented an opportunity to test BCG as a leprosy prophylactic in a situation uncomplicated by the presence of tuberculosis.

Karimui is situated about 50 air miles southwest of Goroka, the administrative center of the Eastern Highlands District, and virtually in the geographic center of the Territory of Papua and New Guinea. Mt. Karimui, an extinct volcano 7,800 feet high, dominates the area. A plateau extends around the base of Mt. Karimui at an elevation of approximately 3,500 feet, which is bounded on the west and south by an escarpment varying in height from 500 to 1,000 feet, which drops sharply to the River Tua, a large swiftly flowing stream that drains the Eastern Highlands. Westward of the River Tua is an almost depopulated area known as the Bomai, while to the north and east the country is extremely rugged and mountainous, the nearest patrol post being a four day walk from the airstrip at Karimui. These natural barriers account for the isolation of the Karimui Plateau. Walking within the area is difficult. With the exception of a short stretch of cleared track north of the airstrip, native paths traverse deep ravines, with rain-forest vegetation a prominent feature.

The population of 5,086 is grouped in 48 villages, varying in size from 34 to 240 persons. Two language groups, the Tudauwhe and the Daribi are represented. The former occupies 5 hamlets to the northeast of Mt. Karimui. Five hamlets are bilingual. The remainder of the population speaks Daribi. Prior to 1959 the people lived in two-storied long-houses, 20 to 80 persons to a dwelling, the men and older boys in the upper story, women and pigs beneath. Many of these are still in existence,

but recently there has been a change in some villages to the construction of smaller dwellings occupied by nuclear families. The system of agriculture is that known as "bush fallow rotation," the staple foods being sweet potato, taro and leafy greens, supplemented by wild nuts and sago. Foods rich in first-class protein are scarce, and, although the diet may be considered low in protein content, particularly with regard to the intake recommended for children and pregnant and lactating females, very few cases of obvious malnutrition have been noted. The villages are not permanently occupied, the people spending most of their time in their gardens, which may be at a considerable distance from the village, where they live as nuclear family groups in small one-storied houses. These people believe in supernatural causes for most diseases, although they consider leprosy to be contagious. They have known it as a specific disease for generations and also recognize the distinction between lepromatous and other types of leprosy.

In recent years some young adult males have joined the Highland Labour Scheme, in which they usually spend two years working on plantations in other highland or coastal districts of the Territory. During 1963 several men in this category returned to Karimui, and this group accounts for the small number of persons who have received a previous BCG vaccination, which was given because it is considered necessary to provide some protection to highland people when they are employed on the coast, where tuberculosis is more prevalent.

Polygyny is practiced. The marriage rule is clan exogamy and there is patrilocal residence after marriage. Adoptions are of frequent occurrence, and although we noted a tendency for children whose parents are dead, to be received into the family of the father's brother, there appears to be no fixed rule concerning adoptions. Ownership of land is vested in the clan; the males reside on the land of their clan, the females marrying out to other clans. Rights to land are jealously guarded and before the establishment of the patrol post infringements were often productive of interclan warfare.

Medical services at Karimui consist of four aid posts, staffed by New Guinean medical orderlies who have received simple basic training in first aid, environmental sanitation, and the treatment of such frequently encountered diseases as malaria, tropical ulcer, dysentery, and respiratory infections. All four of these aid posts are in villages adjacent to the airstrip; in the southern section of Karimui there are no medical services at all. At this stage of their development the people do not believe in the efficacy of western medicine and are unwilling to travel to seek medical attention. Malaria is endemic at Karimui, the infant parasite rate being 17.6 per cent with *Plasmodium falciparum* predominating.

PRELIMINARY INVESTIGATIONS

A leprologist visited Karimui in February 1961 and his pilot survey of the population living near the airstrip confirmed the reports of a high prevalence of leprosy; 68 cases were found among 1,114 persons examined, a prevalence rate of 6.1 per cent. A survey for tuberculin-positive reactors revealed that, of 832 persons tested, 3.7 per cent were positive reactors, most of them adult males. No BCG vaccinations had been carried out at Karimui. An anthropologist then visited the area at our request and studied the beliefs and attitudes of the Karimui people relating to leprosy. As biopsies would later be necessary, it was important to determine the beliefs of the people regarding sorcery. In some areas of New Guinea it is difficult to obtain specimens of blood, skin or feces, as it is believed that this material

may be obtained by a sorcerer and used to bring ill health to his victim. The anthropologic data obtained indicated that the people recognized the lesions of leprosy and believed it to be transmissible, but their attitude was such as not to hinder the discovery of affected persons nor the taking of biopsy specimens. The people are tolerant to persons affected by the early stages of the disease, but with regard to the late stages some isolation practices and marriage restrictions were noted (¹³). Prior to Stage I of the trial, i.e., the leprosy survey, the Karimui people were informed of our interest in the disease and the purpose of the survey. The extent of coverage of the population obtained is evidence of their interest and cooperation in the project.

STAGE I. THE LEPROSY SURVEY

The estimated population of Karimui was approximately 5,000, and to determine accurately the prevalence of leprosy it was decided to examine every individual in September-October 1962, by which time internal peace, cooperation with the government, and census procedure had been established. A survey card was completed for every person, on which was recorded such essential information as name, father's name, mother's name, age, sex, village of residence, and other data that would enable determination of the identity of the individual with certainty at subsequent surveys. A photograph was taken of the head of each household. Established census-taking procedure as adopted by the patrol officer was followed, the people being interviewed in self-selected nuclear family groups, which were designated "households." These household units, which were based as far as possible on males of marriageable age, varied in size from one (a single male) to 17 (the male head of the household, his wives, children, stepchildren and adopted children). However, in some cases the head of the household was a widow, or a young unmarried boy who apparently had no family ties and lived in what was known as the "single men's house." A system of serial numbering was adopted which indicated not only the village of residence but also a person's relationship to other members of the household. The card was designed to be divisible into two portions; on the lower portion was recorded all information relating to the results of tuberculin tests, the type of inoculation received (BCG or saline), and an indication whether or not the person was affected by leprosy. All persons attending were examined by the leprologist, who recorded the clinical details on the reverse side of the card and noted miscellaneous conditions, such as scabies, yaws, tinea and tropical ulcer. In addition, all females of child-bearing age were questioned to determine if they were pregnant at the time of the survey, so as to facilitate the inclusion of newborn into the trial at a later date and also to provide some estimate of the infant mortality. The classification of leprosy used during this survey was that developed by

Ridley and Jopling (²⁹). Biopsy specimens were collected from every case diagnosed or suspected as leprosy, and these will be examined by Dr. D. S. Ridley in London.

During the leprosy survey a test was made of the repeatability of the field diagnoses made by the leprologist. At the 1961 pilot survey the name, age, sex and clinical type of the disease were recorded; these diagnoses were compared with the diagnosis made on the same individual at the 1962 survey. Of the 68 persons diagnosed as having leprosy in 1961, 61 could be identified in the 1962 survey population. Inability to identify the remaining seven cases was due to inaccurate recording of the individual's name or that of his village, a change of name, or death in the intervening period. Of the 61 persons mentioned above, the leprologist made an identical diagnosis in 60. One male, aged 40, diagnosed as tuberculoid in 1961, was considered to be affected by tinea in 1962 and a biopsy was carried out to establish the diagnosis. As the names of all persons examined by the leprologist were not recorded during the 1961 survey, it is not possible to provide an estimate of the diagnoses missed in 1961 nor the incidence of the disease. When it is considered that the time available for the 1961 survey was short and that the leprologist was unaware at this time that the data would be used subsequently as a test, a good level of repeatability was demonstrated. We were aware of the possible difficulties associated with identification prior to the 1962 survey, and particular care was taken to record sufficient information and write down names of places and persons as closely as possible, using English letters. This was a difficult task because of the tonal qualities of the two languages spoken in Karimui and because we are not trained linguists. Nevertheless, no difficulty was experienced in reidentification in the 1963 surveys. To prevent possible loss of records due to fire or other hazard, a set of duplicate cards was prepared. These are held at the School of Public Health and Tropical Medicine, Sydney. The data on these cards are brought up to date as information comes to hand in subsequent surveys.

The prevalence of leprosy at Karimui in October 1962.—Table 1 is a summary of the information obtained. The epidemiology of leprosy in Karimui will be the subject of a later paper. It may be mentioned here, however, that there is a marked difference in the prevalence of leprosy in the two census divisions into which the region is divided for administration purposes. The population is approximately equal in each census division, but the Karimui Census Division provided 246 cases and the Daribi Division only 55.

The male: female ratio was 1.25 to 1. The population, according to a census held early in 1962, was 5,086, and it will be seen that virtually 100 per cent of the population has been examined. It is our opinion, based on the headmen's statements, that the nonexamined

TABLE 1.—Prevalence of leprosy at Karimui in October 1962.

Type of Leprosy	Number of persons (males and females) clinically diagnosed as leprosy					
	Age Group					
	0-9	10-19	20-29	30-39	40 and over	all ages
Lepromatous	1	13	7	3	1	25
Borderline	0	1	0	0	0	1
Tuberculoid	24	91	75	33	19	242
Indeterminate	8	14	2	3	2	29
Polyneuritic	0	3	1	0	0	4
All forms	33	122	85	39	22	301
Population examined	1,428	1,262	990	891	492	5,063
Prevalence %	2.31	9.67	8.59	4.38	4.47	5.95

group of 23 does not contain any affected persons. It is indicative of the attitude to leprosy shown by the Karimui people that where an individual was temporarily absent at the time of the visit by the survey team, the *tul-tul*, or village headman, was questioned as to whether this individual was affected or not, and when the individual was subsequently examined by the leprologist, the opinion given by the headman was confirmed in every case.

STAGE II. SELECTION OF THE VACCINATED AND NONVACCINATED GROUPS TUBERCULIN TESTING AND INOCULATION

To avoid any suggestion of biased selection in the field, the allocation of the cards to vaccinated (BCG receptors) and nonvaccinated (saline receptors) groups was completed in Sydney. The population as defined during the 1962 survey was subdivided into eight strata by means of the following criteria: (a) sex, (b) age (0-15 and 16 and over), and (c) residence in a leprous or a nonleprous household. "Household" was defined as the family group, based on the nuclear family, which attended for examination. A household was designated "leprous" if one or more cases of leprosy were present in such a family group. Each alternate person in each of the eight strata was then selected for BCG inoculation. Lists were prepared and the New Guinea series of cards was then marked in pencil with appropriate letters indicating to which group the individual belonged. In the field, after identity had been established, and at the moment of inoculation, the card was stamped with the letters BCG or SAL. We are confident that the field procedure precluded the possibility of recording erroneous

data on the cards. Provision was made also for random allocation of new arrivals in the population as they were encountered in the field.

MATERIALS AND METHODS

Tuberculin testing.—The Mantoux technic was adopted, 0.1 ml. of 1:1000 Old Tuberculin being given intradermally in the ventral surface of the left forearm. The OT was prepared by the Commonwealth Serum Laboratories, Melbourne. A standard technic was adopted and all tests were performed by European members of the Tuberculosis Control Unit of the Public Health Department, Territory of Papua and New Guinea. Before the commencement of the tuberculin survey in March 1963, a trial was conducted to assess the uniformity among and within observers who would read the results of the tuberculin tests. An area of induration 5 mm. or more in diameter was considered positive. Lack of uniformity among and within observers was noted in 6 cases, and five of the subjects in these cases were recorded as having an area of induration of 5 mm. \pm 2 mm. In the field all Mantoux tests were read by the observer who had exhibited the greatest consistency in this trial.

BCG vaccination.—The vaccine used was the freeze-dried glutamate BCG vaccine prepared by the Japan BCG Laboratories in Tokyo. The vaccine was reconstituted as recommended by the manufacturers, and vaccination was carried out by the intradermal injection of 0.1 ml. of reconstituted vaccine at a site above the insertion of the deltoid muscle on the left arm. Throughout reconstitution and injection, the strictest precautions were taken to protect the vaccine from light and heat, rubber-covered syringes being used. Previous experience with this vaccine in New Guinea had given satisfactory results in the field, with conversion rates in excess of 95 per cent at two months.

Saline inoculation.—The control group received 0.1 ml. of carbolized saline intradermally at the same site as that adopted for BCG vaccination. The saline was the

TABLE 2.—Population, tuberculin tests and allocation to vaccinated and nonvaccinated groups in March 1963

Age group		Total population	Prop. of pop. tested with tuberculin (%)	Tuberculin-positive rate (%)	No. of BCG receptors	No. of saline receptors
0-9	M	787	84.4	0.3	346	377
	F	702	85.2	0.0	332	335
10-19	M	790	83.8	2.1	366	330
	F	471	84.7	0.5	233	200
20-29	M	426	84.3	10.6	182	196
	F	550	83.5	1.5	270	226
30-39	M	417	86.3	13.0	177	186
	F	464	86.4	2.7	197	226
40 and over	M	241	88.4	14.6	119	106
	F	238	84.0	3.0	96	113
All ages	M	2,661	84.9	5.9	1,190	1,195
	F	2,425	84.8	1.3	1,128	1,100
Grand (M & F) Total		5,086			4,613	

usual commercial product of the Commonwealth Serum Laboratories of Melbourne.

All members of the Karimui population were included in the trial, regardless of their leprosy status or tuberculin positivity. The decision to include affected or tuberculin-positive persons in the vaccinated group was made only after assessing the possible harmful effects of BCG vaccination. The consensus indicated that the latter could be done without provoking undue reactions^(10, 15, 19, 22, 23, 24, 26, 28). Experience with BCG vaccination in the Territory of Papua and New Guinea has also shown that this can be done without harmful side-effects. The syringes were prominently marked and used for one type of inoculation only; all unused materials were disposed of in such a manner that the control group would remain unaffected by any mycobacterial antigen. Table 2 summarizes the information obtained as a result of tuberculin testing and allocation of the population to vaccinated and nonvaccinated groups.

Four hundred and seventy-three persons who were not included in the experiment during this survey in March 1963 have been included during a subsequent visit to the region in September 1963. A test was made of the conversion rate at three months in the vaccinated group, 59 per cent of whom were retested. A conversion rate of 87.5 per cent was observed.

The results of the tuberculin survey reveal that tuberculosis is not active in Karimui and that there was no marked concentration of tuberculin-positive reactions in households. The predominance of positive reactors in males probably reflects previous contact with *Mycobacterium tuberculosis* as a result of travel from the mountains along major streams to the heavily infected Papuan coast, a long-established indigenous trade route.

STAGE III. INOCULATION OF NEWBORN AND IMMIGRANTS AND MAINTENANCE OF TUBERCULIN POSITIVITY IN THE VACCINATED GROUP

At intervals of six months a patrol will visit the Karimui villages to inoculate the newborn and permanent immigrants with BCG or saline as indicated by the method of random allocation. Tuberculin positivity will be maintained in the vaccinated group by routine tuberculin testing and administration of BCG to those exhibiting a negative response. It would be ideal if the newborn could be inoculated shortly after birth, but the difficulties of travel to and within the Karimui Plateau, and the absence of adequately trained medical personnel resident in the area, render any such scheme impossible. However, Yanagisawa⁽²⁷⁾ has reported that BCG is effective as a prophylactic against leprosy even though vaccination is carried out after infection could be presumed to have occurred.

STAGE IV. DETERMINATION OF LEPROSY INCIDENCE

Additional leprosy surveys will be made at two-year intervals, but for the next survey a shorter time interval will be adopted (see below). Before this survey, the lower portion of the card, which records the group to which the individual belongs, will be removed and all persons attending for examination will have a piece of adhesive tape attached to the upper arm, covering the BCG scar in the vaccinated group and in a similar position in the nonvaccinated group. During these surveys the leprologist will be working "blind." He will have a continuation card on which to record clinical details, but the cards with the previous

clinical notes will be held by the epidemiologist and the data they carry will not be available to the leprologist until he has completed his examination. Biopsy specimens will be taken as previously, and in the event that a leprologist other than the author enters the trial, care will be taken to standardize clinical diagnoses.

DISCUSSION

Assuming an annual incidence of 0.8 per cent and 50 per cent protection due to BCG vaccination, preliminary estimates indicate that a minimum period of 5 years' observation will be necessary to produce a statistically significant result. A longer period of observation, however, should not present any great difficulty.

This trial differs in several respects from the recommendations laid down by the Expert Committee on Leprosy (³⁶). Leiker (²⁸) has shown that the nonlepromatous types are more frequent in Netherlands New Guinea. Russell (³⁰), following a series of leprosy surveys in Papua and New Guinea in which 74,659 persons were examined, found an overall prevalence of 14.21 per thousand, with the lepromatous type comprising 10.0 per cent of all cases diagnosed. The WHO recommendation of observation of children under 9 years of age in household contact with open cases, is impossible to follow, because of the scattered distribution of the population and the difficulty of travel and communication, not to mention the possible loss of subjects due to population movement and failure of follow-up procedures. Brown and Stone (⁴) have adopted a more positive approach than that suggested by the Expert Committee in that they are studying the development of leprosy in the children related to patients rather than the contacts of open cases. In our opinion the recommendation adopted by the Expert Committee has one important defect, viz., that the trial would not be associated with an investigation of the natural history of leprosy. In the interpretation of results, some consideration would need to be given to the development of leprosy and its subsequent course among the children or contacts of nonlepromatous persons. By administering BCG we may in some way alter the ecology of Karimui, and it would seem advisable to observe the nonaffected population as well as the affected persons and their contacts. The Karimui trial appears to succeed in filling this gap.

The relative scarcity of lepromatous cases (Table 1) might seem to be a source of difficulty, but we are not sure that, in past years, lepromatous cases have not been eliminated more quickly than others from the population. Skinsnes (³²) pointed out the role of protein deficiency in the defense mechanisms in leprosy, and Pfaltzgraff (²⁷) emphasized the role of intercurrent infections in inciting reactional states with particular reference to malaria and the beneficial effect of malarial suppressives in reducing reactional states. Both these factors, protein insufficiency and endemic malaria, are operative at Karimui.

The Expert Committee also recommended that a subgroup be treated with sulfone at half the therapeutic dosage. It would prove impossible to supervise the administration of sulfones at Karimui because of the low standard of training of the medical orderlies and the real difficulty of ensuring that only those persons selected for oral prophylactics would receive them. The population is so dispersed that it would be impossible to provide adequately staffed medical aid posts in each of the villages; also it should be emphasized that the people do not seek medical treatment for most illnesses which affect them, even those amenable to simple therapeutic procedures, such as malaria and respiratory infections. At the present time, half the population are eight hours' walk from the nearest aid post, over a difficult and dangerous track, liable to be closed by even a short period of adverse weather. The Expert Committee also made recommendations concerning the tuberculin-positive contacts with a view to investigating the role of natural infection with tuberculosis in protection against leprosy. As only 132 males and 26 females were found to be tuberculin-positive, and of these 158 persons, 140 were over the age of 20 years, the group was too small to permit significant conclusions from observing the development of leprosy. Hence we cannot explore the hypothesis that resistance to tuberculosis is related to resistance to leprosy. On the contrary, precautions have been taken to ensure that tuberculosis does not enter the Karimui region.

Floch and Mailloux⁽¹²⁾ and also Bechelli and Quagliato⁽²⁾ reported an apparent increase in tuberculoid cases among children of school age after intradermal BCG vaccination. They concluded that BCG may accelerate the development of latent leprosy, resulting in a predominantly tuberculoid type. Montestruc *et al*⁽²⁴⁾ reported a similar finding. Lara and Nolasco⁽¹⁷⁾ pointed out that 75 per cent of their cases in young children healed spontaneously; the average healing time for all cases with undifferentiated histology was 2.0 years, and for those with tuberculoid lesions, 3.25 years. As a result of these findings, the leprologist will resurvey the population in March 1964, and thereafter at two-year intervals.

A high mortality rate among the Karimui population causes us some concern because of the wastage of life, particularly in the younger age groups. Table 3 provides a summary of the mortality data and indicates the number of deaths actually recorded on the survey cards. The deaths shown in Table 3 do not include those of infants born during the interval between the official census in early 1962 and the March 1963 survey, who died before they could be included in the study population at the time of the October 1962 or March 1963 surveys.

By comparison with western countries, losses due to mortality may seem considerable, but from data obtained in a series of mortality surveys being conducted in the Territory of Papua and New Guinea,

TABLE 3.—Numbers of deaths in the Karimui population in the 14 month period ending March 1963.

Sex	Age Group					All ages
	0-9	10-19	20-29	30-39	40 and over	
Males	41	1	5	8	20	75
Females	28	2	8	16	18	72
TOTAL	69	3	13	24	38	147

it would appear that the Karimui people do not experience a greater mortality than those in other parts of the Territory where the inhabitants are in a similar stage of development. The figures shown in Table 3 represent a crude death rate of approximately 30 per thousand, with malaria and respiratory diseases appearing to be the most common causes of death. During the 6 month period ending March 1963 none of the persons with leprosy had died. As medical services improve in the area it is expected that there will be a considerable reduction in mortality. At the present time several young Karimui men are receiving training as medical orderlies at the Goroka Hospital, but the difficulties which this loss of life may cause in the interpretation of results cannot be disregarded.

SUMMARY

An account is given of the institution and first year's operation of a "blind" controlled trial to study the epidemiologic and clinical effects of BCG vaccination in relation to leprosy. The population under study, living in an isolated area in the Territory of Papua and New Guinea, has scarcely yet been influenced by civilization or scientific medicine, and no treatment for leprosy is yet accepted by the people. The prevalence of the disease is high and the naturally occurring positive tuberculin rate is very low. The methodology of the trial is outlined and the necessity for departures from the recommendation of the Expert Committee on Leprosy of the World Health Organization is discussed.

RESUMEN

Se relata la institución y primer año de operación de un ensayo de control a ciegas (blind controlled trial) para estudiar la epidemiología y efectos clínicos de la vacunación con BCG en relación a la lepra. La población bajo estudio, viviendo en un área aislada en el territorio de Papua y de Nueva Guinea, ha sido apenas influida por la civilización o la medicina científica, y aún no es aceptado por el pueblo el tratamiento para la lepra. La prevalencia de la enfermedad es alta y el nivel de tuberculina positiva natural es muy baja. Se delinea la metodología del ensayo y se discute la necesidad de partidas desde las recomendaciones del Comité de Expertos en Lepra de la Organización Mundial de la Salud.

RÉSUMÉ

Ce rapport décrit l'établissement et rend compte de la première année de fonctionnement d'un programme destiné à étudier les effets de la vaccination par le B.C.G.

sur l'épidémiologie et sur les manifestations cliniques de la lèpre. Ce programme a été mené chez des individus vaccinés et chez des témoins sans que l'observateur soit au courant du produit administré (blind controlled trial). La population étudiée vit dans une région isolée du Territoire de Papouasie et de Nouvelle-Guinée, et n'a guère été touchée jusqu'à présent par la civilisation non plus que par la médecine moderne. Le traitement de la lèpre n'y est pas encore accepté. La prévalence de la maladie est élevée, et le taux de réaction positives naturelles à la tuberculine est très bas. La méthodologie de cette étude est décrite, et la nécessité de s'écarter des recommandations faites par le Comité d'Experts de l'Organisation Mondiale de la Santé est discutée.

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