A PILOT SCHEME OF VENEREAL DISEASE CONTROL IN EAST AFRICA *

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In a report from the Colonial Office (1950) it is stated that the venereal diseases are second only to malaria as a cause of ill-health in East Africa. Writing on the same subject, McElligott (1951), dealing with East and Central Africa, and Lees (1951), discussing West Africa, agree that the incidence is very high—"a formidable medical problem". The summary by Rae (1951) of the venereal diseases problem in the Colonial Empire as a whole gives little real information because of lack of dependable data. This lack of vital statistics and the quite inadequate pathology services in the colonies have served to mask to a great extent the gravity of the situation.

Until recent years little effective action could have been taken; before the introduction of the antibiotics the courses of treatment were such that the default rate was practically 100 per cent. This no longer need hold true.

VENEREAL DISEASES IN EAST AFRICA

In its effects on the natives of East Africa, gonorrhoea behaves in the same fashion as it does among infected Europeans. For example, to quote the position in the Bukoba District of Tanganyika, the hospital male venereal diseases ward rarely has less than twelve beds occupied at one time with gonorrhoeal strictures and their sequelae, and the surgeons and physicians alike agree that in the infected females the gynaecological problems caused by gonorrhoea are a serious and common cause of ill-health. A similar state of affairs is found in the related Bantu tribes of South Africa where it is estimated that about one-fifth of the work of gynaecology departments is due to gonorrhoea (Lithgow, 1956).

The effects of syphilis on the infected native are less easy to analyse. Over 50 years ago Boeck began an investigation into the late effects of untreated syphilis in Europeans. Gjestland (1955) investigated the after-history of a number of Boeck's untreated group and found that, while almost 70 per cent. of

them seemed to have been little inconvenienced by their disease, the remainder had been incapacitated to a greater or lesser degree by the disease and a significant proportion had died of it. A similar investigation has been reported recently from the United States: in a study of an untreated group of syphilitic Negroes, none had had contact with other treponematoses. From this study, Shafer, Usilton, and Gleeson (1954) concluded that the life expectancy of those untreated patients between 25 and 50 years of age is on the average 17 per cent. less than that of non-syphilitic Negroes in the same age group.

In any study of the problem in East Africa one must consider the theory that the course of syphilis in the East African native differs from that seen in the infected European; one suggestion is that this is the result of cross-immunity following exposure to other treponematoses (Topley and Wilson, 1946; Guthe and Willcox, 1954). There are certain superficial differences; considering the incidence of syphilis in the population, frank congenital syphilis is rare (McElligott, 1951) and general paralysis of the insane is most uncommon in the East African native (Carothers, 1951). Both these authors suggest, however, that the differences between syphilis in the European and syphilis in the East African are more apparent than real. This is possibly because syphilis is relatively new to East Africa having become widespread only between the two great wars partly because of the breakdown in the tribal system of rule. The earlier workers who described a 90 per cent. incidence of syphilis in Uganda early in the 20th century (Keane, 1912) had almost certainly confused this disease with widespread yaws.

The little satisfactory evidence that is available suggests that syphilis in the East African is as serious a problem as it is elsewhere. Carothers (1953) from Kenya considers that the belated neurological effects of this disease will become increasingly apparent in East Africa with the passage of time; Williams, Trowell, and Hutton (1952) found syphilis to have been responsible for 20 per cent. of a series of 352

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patients admitted to Mulago Hospital, Uganda, with heart disease; and McElligott (1951) stated that syphilis was responsible for 30 per cent. of all cases of insanity seen at the same hospital. The findings from the related Bantu tribes of South Africa are similar; Becker (1946), from the records of *post-mortem* examinations of 3,000 unselected Bantu, found evidence of a significant degree of syphilitic heart disease in 12.7 per cent. and considered syphilis to have been the direct cause of death in at least 55 cases.

It would seem that even syphilis and gonorrhoea, apart from the other venereal diseases, represent so grave a threat to the well-being of the peoples of East Africa as to justify large-scale planning and expenditure on their control. One more reason for undertaking such control measures is that yaws is still as wide-spread in certain parts of East Africa as it was 50 years ago.

The World Health Organization has shown that such large-scale control schemes are practicable (Grin, 1953; Guthe and Willcox, 1954). From their experience the latter authors lay down five main stages for the development of such mass-treatment campaigns, the preliminary investigations, demonstrations, and treatments being the responsibility of special teams which later hand over to strengthened local health services. They stress the importance of an initial pilot scheme in a restricted area in which selected groups may be examined, treated, and followed up.

A PILOT SCHEME OF VENEREAL DISEASES CONTROL IN TANGANYIKA

In East Africa, as elsewhere in the colonies, the main stumbling-blocks to control of the venereal diseases and treponematoses are lack of trained staff, lack of laboratory facilities, and lack of money. No adequate analysis has yet been made of the problem nor has control planning been possible. To some extent these shortcomings were met by the forming of the East African Medical Survey, the chief duties of which were to obtain information on the relative seriousness of the major diseases in East Africa and to initiate pilot schemes of control. The survey was staffed with field medical teams with adequate central laboratory facilities, and its work was therefore similar to that of FOREAMI in the Belgian Congo (Laurie, 1949-1953).

Among the peoples investigated by the survey was the Bahaya tribe of the Bukoba District of Tanganyika; in this work cooperation was given by the East African Institute of Social Studies. Bukoba District possesses certain advantages over most other areas

of East Africa; it lies at 4,000 feet, bounded by Lake Victoria to the East, Uganda to the North, Ruanda-Urundi to the West, and Fly-bush to the South; the rainfall is high and the ground is fertile, yielding large cash incomes from coffee in addition to food crops. The people are rich by East African standards and the social services are good.

One reason for undertaking a survey of the Bukoba District was the widespread belief that the tribe was decreasing rapidly in numbers in spite of the physical advantages of the area. This was confirmed by our finding that the fertility of the tribe was very low, practically the same as the current rates for the United Kingdom and much lower than average rates for East African tribes. The various factors affecting these fertility rates have been analysed by Brass (1952). A possible factor in the decrease was the high incidence of the venereal diseases among the Bahaya, the reasons for which are discussed by Laurie (1952). The high incidence of gonorrhoea was easy to detect among the adult males and the incidence of serological reactions suggestive of syphilis was 15 per cent. after excluding likely false-positive reactions and all single-plus Kahn reactions. In view of this and of the high incidence of yaws in the Bukoba area, it was decided to conduct a pilot scheme of venereal disease control in the area much along the lines later laid down by Guthe and Willcox (1954).

The decline in the tribe's numbers had so alarmed the people that money was forthcoming from tribal funds for the pilot scheme, and it was agreed that in addition a charge should be made for all drugs administered. It is unlikely that such favourable financial conditions would be found elsewhere in East Africa.

STAFF AND METHODS

From the funds supplied, a simple treatment centre was built, with examination room, laboratory, office, and treatment room. The examination of patients was carried out by the field medical teams of the East African Medical Survey; the control of the treatment centre and the laboratory work was the duty of an experienced survey technician. This use of technicians is strongly stressed by McElligott (1951). Ancillary staff and equipment were supplied from tribal funds and were sufficient for treating fifty patients daily and carrying out all laboratory investigations including fifty Kahn reactions daily.

As stated above, the European survey technician was responsible for the dark-ground examinations of exudates from venereal sores, for the microscopic examination of venereal discharges, and for all serological investigations.

From the point of view of diagnosis and treatment, the only major difficulty lay in interpreting the significance

of the "positive" Kahn reactions in this district where yaws, malaria, leprosy, and other diseases are common. It has been said of the Kahn reaction in the tropics that the only report of value is a negative one, but, providing one bears in mind and excludes other conditions giving a "positive" Kahn reaction, this laboratory test is most useful and specific for syphilis (Raper, 1954; Laird, 1954)*

To exclude all false positive reactions caused by yaws, etc., all patients were examined by the survey medical staff; all individuals showing only single-plus Kahn reactions with no physical signs were also excluded; it is possible, therefore, that our figures do not include a certain number of patients with early syphilis.

ANALYSIS OF FINDINGS

Work on the Bukoba pilot scheme began in March, 1952, and remained for 6 months the responsibility of the East African Medical Survey; it was then handed over to the local medical services, the method used by the World Health Organization.

Table I summarizes the laboratory and clinical findings in 1,533 venereal disease patients who

* The Kahn antigen used was supplied by Messrs Burroughs Wellcome.

consented to partial or complete laboratory and physical examinations. The totals do not include patients with non-venereal conditions who were treated for propaganda purposes.

The findings quoted in the Table are from a highly non-random population, representing only individuals with enough pain or enough intelligence to make them seek help. Table I does not therefore give a picture of the incidence of venereal disease throughout the tribe as a whole.

Males.—The 1,017 males included those with obvious lesions and individuals detected during routine examination by the survey medical field teams. Of the 30 per cent. labelled as syphilitic, in only one-third was the diagnosis made on serological findings alone. A further 16 per cent. of the group had both syphilis and gonorrhoea, 46 per cent. had only gonorrhoea, while the remaining 6 per cent. had either chancroid or venereal urethritis.

Females.—The 516 females were even more highly selected than the males; as is common in less well-educated tribes there is a strong prejudice against the medical examination or questioning of females. Also, in the female the venereal diseases do not usually manifest themselves so strikingly as in the male, e.g. primary

TABLE I
BUKOBIA MALES AND FEMALES: CRITERIA OF

Sex	Age Group (yrs)	Totals		Syphilis									
				Primary						Secondary			
				<i>T. pallidum</i> Positive Serology		<i>T. pallidum</i> Positive Serology		<i>T. pallidum</i> Negative Serology		<i>T. pallidum</i> Positive Serology		<i>T. pallidum</i> Negative Serology	
		No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.
Male	Under 15	14	1.37	2	0.2	—	—	1	0.1	—	—	—	—
	15-24	228	22.4	13	1.27	21	2.06	15	1.47	12	1.17	7	0.6
	25-34	387	38.11	12	1.17	28	2.75	16	1.57	13	1.27	12	1.1
	35-44	200	19.66	1	0.1	6	0.59	4	0.4	3	0.29	3	0.3
	45-54	140	13.76	2	0.2	6	0.59	5	0.49	3	0.29	2	0.2
	55 and Over ..	48	4.7	—	—	3	0.29	1	0.1	—	—	1	0.1
	Totals	1,017	100	30	2.95	64	6.3	42	4.12	31	3.02	25	2.5
Female	Under 15	14	2.71	—	—	—	—	—	—	—	—	—	—
	15-24	180	34.8	—	—	5	0.97	5	0.97	19	3.69	1	0.2
	25-34	180	34.8	—	—	5	0.97	4	0.77	10	1.93	2	0.4
	35-44	90	17.4	—	—	1	0.19	1	0.19	3	0.58	3	0.6
	45-54	28	5.4	—	—	1	0.19	—	—	1	0.19	—	—
	55 and Over ..	24	4.76	—	—	—	—	—	—	1	0.19	—	—
	Totals	516	100	—	—	12	2.32	10	1.93	34	6.58	6	1.2

Single + Kahn patients are not included in totals or percentages. No chancroid sores were found in female patients.

chancres or chronic gonorrhoea. Thus a much higher proportion of females than males were diagnosed as syphilitic on serological evidence alone. Most of them were detected in routine serological examinations of patients examined by the survey teams.

In females the incidence of gonorrhoea was 19 per cent. compared with 46 per cent. in males.

TREATMENT

In this pilot scheme the only drug used for both syphilis and gonorrhoea was procaine penicillin in 2 per cent. aluminium monostearate. (P.A.M.)*

The dosage given to adult gonorrhoea patients was 600,000 units P.A.M. administered in one intramuscular dose of 300,000 units on each of two successive days. This dosage is twice that previously found sufficient to cure over 90 per cent. of cases of acute gonorrhoea, but it is unlikely to be sufficient to mask a concurrent attack of syphilis (Willcox, 1950).

The dosage for syphilis was not easy to decide. As was later pointed out by Guthe, Reynolds, Krag, and Willcox (1953), penicillin is one of the most expensive items of a mass-treatment programme, and

the decision regarding dosage must be a "calculated risk, a compromise between maximum therapeutic efficiency and administrative expediency". McElligott (1951b), who was in East Africa when this pilot scheme was planned, suggested that P.A.M. be used, with a minimum dosage of 1·2 mega units, repeated if possible about 5 days later. To allow for defaulting, we decided to aim at a total dosage of 2·4 mega units for all patients with syphilis; local conditions were such that it was necessary to crowd this total dosage into as short a time as possible, and the patient was given an intramuscular injection of 0·6 mega units of the drug on each of 4 successive days. For those patients who had walked a long way, *e.g.* from Uganda 90 miles away, we gave a one-shot dose of 2·4 mega units, 1·2 mega units into each buttock.

Tables IIA and IIB (overleaf) show the cases and types of venereal diseases treated at the centre during the first 6 months. The details differ from the laboratory and physical examinations findings, because certain individuals refused treatment after diagnosis and others received treatment after the diagnosis had been established elsewhere.

* This was supplied by Messrs. Evans of Liverpool.

I DIAGNOSIS OF VENEREAL DISEASES

									Syphilis and Gonorrhoea		Others					
Congenital		Serology (Other Signs Negative) Kahn Reactions Only							Smear Positive Serology Positive		G c +		Urethritis Venereal		Chancroid	
		(+)	++		+++		++++									
No.	Per cent.	No.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.
9	0·88	—	—	—	—	—	—	—	—	—	2	0·2	—	—	—	—
—	—	(1)	3	0·29	4	0·4	3	0·29	34	3·34	98	9·63	2	0·2	16	1·47
—	—	(1)	15	1·47	13	1·27	3	0·29	67	6·58	184	18·1	5	0·49	19	1·87
—	—	(2)	16	1·57	14	1·37	3	0·29	36	3·53	95	9·34	14	1·37	5	0·49
—	—	—	10	0·9	9	0·88	4	0·4	22	2·2	70	6·9	4	0·4	3	0·29
—	—	(2)	4	0·4	3	0·29	—	—	10	0·9	24	2·35	1	0·1	1	0·1
9	0·88	(6)	48	4·71	43	4·22	13	1·27	169	16·61	473	46·53	26	2·56	44	4·32
13	2·52	—	—	—	—	—	—	—	—	—	1	0·19	—	—	—	—
—	—	(13)	26	5·03	33	6·38	—	—	15	2·91	37	7·17	14	2·71	25	4·95
—	—	(20)	44	8·47	31	5·99	—	—	10	1·93	37	7·17	12	2·32	25	4·95
—	—	(19)	23	4·57	11	1·9	—	—	8	1·55	21	3·99	5	0·97	14	2·71
—	—	(9)	10	1·93	9	1·74	—	—	—	—	5	0·97	1	0·19	1	0·19
—	—	(4)	7	1·35	16	3·1	—	—	—	—	—	—	—	—	—	—
13	2·52	(65)	110	21·35	100	19·13	—	—	33	6·39	101	19·49	32	6·19	65	12·8

TABLE IIA
SYPHILIS PATIENTS TREATED

Age Group (yrs)	Sex	Total Treated		Full Course (2·4 Units)				Defaulters					
				Single Dose		Four Doses		1·8 Units		1·2 Units		0·6 Units	
		No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.
Under 16	Male	14	47	—	—	4	13	1	3·3	5	17	4	13·1
	Female	16	53	—	—	13	43·3	1	3·3	2	7	—	—
	Total	30	100	—	—	17	56·3	2	6·6	7	24	4	13·1
16 and Over	Male	544	58·3	44	4·7	389	41·7	12	1·3	52	5·6	47	5·1
	Female	388	41·7	16	1·7	327	35	4	0·4	32	3·5	9	1
	Total	932	100	60	6·4	716	76·7	16	1·7	84	9·1	56	6·1

All drug doses are in million units PAM. Percentages are based on totals in each age group.

TABLE IIB
GONORRHOEA AND OTHER PATIENTS TREATED

Age Group (yrs)	Sex	Total Treated		Full Course (0·6 Units)		Defaulters (0·3 Units)		NYD Venereal Sores and Non-Venereal Cases	
		No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.
Under 16	Male	2	50	2	50	—	—	—	—
	Female	2	50	2	50	—	—	—	—
	Total	4	100	4	100	—	—	—	—
16 and Over	Male	545	80	486	71	59	8·6	65	30·4
	Female	139	20	119	17·4	20	3	149	69·4
	Total	684	100	605	88·4	79	11·6	214	100

All drug doses are in million units PAM. Percentages are based on totals in each age group.

The East African native sees no point in submitting himself to painful treatment when he feels well, hence the large number of defaulters even from the 2-day course of treatment for gonorrhoea. With the 4-day course of treatment for syphilis the default rate was almost 24 per cent.

FOLLOW-UP INVESTIGATIONS

To obtain the best results, each control scheme should include a follow-up survey at intervals of about one year (Guthe and Willcox, 1954). As the Bukoba scheme was handed over to the local medical authorities after 6 months, no adequate follow-up investigations were carried out by the Medical Survey; in any event the morals of the Bahaya are such that re-infection with venereal disease after cure is commonplace. The seriousness of this re-infection problem is discussed below.

COST

Guthe and Willcox (1954) quote costs in the WHO Treponematoses Control Programme. The cost per person treated ranged from about 14 to about 28 shillings in different schemes.

In the Bukoba pilot scheme it is difficult to estimate the cost per head; much of the cost of drugs was recovered from the patients, and both the medical staff and the European technical staff were Medical Survey Officials. It is probable that the costs per head of treatments in the Bukoba scheme were higher than those quoted by WHO, but the available Bukoba staff were not fully utilized at any time.

DISCUSSION

The venereal diseases and other treponematoses such as yaws present a grave medical problem in East Africa and in the British colonies in general. By its large scale schemes the World Health Organization has shown that control of these diseases is practicable. With the possible exception of Bechuanaland all the WHO work and treatment schemes have been carried out in areas outside the British dependencies; the Bukoba pilot scheme in East Africa showed that equally good results can be expected from such control schemes within the dependencies. Certainly there would be no lack of cooperation from either local government officials

or from the natives themselves. Hennessey (1956) considers the great growth of the Uganda Medical Service in recent years to have been the direct result of the anxiety of the natives to seek treatment for venereal disorders.

In any attempt to control the treponematoses and the venereal diseases the chief difficulties likely to be encountered in any colonial territory are lack of money and lack of trained staff. Even if money were available, the burden of initiating and carrying out control schemes is probably beyond the capacity of the territorial medical and pathology services. The method of staffing suggested by McElligott (1951a) is that most likely to succeed, *i.e.* the employment of an experienced whole-time venereal diseases officer who will train and lead a mobile survey and demonstration team to undertake the original work and then to hand over the maintenance phase to the local medical authorities.

The second problem, that of cost, is beyond the scope of this article; though it might be suggested that this is one justifiable use for Colonial Development and Welfare Funds.

The third problem is in some ways the most difficult to solve, namely the low standards of morals of the native as compared with normal standards of behaviour in European communities. This was especially found in the Bukoba area, where prostitution is rife; for instance, in one little village in the area there were 35 known prostitutes. It is a waste of drugs to treat only the promiscuous male as is done in the treatment centres in large towns. In 1952, in the annual report of the Uganda Medical Service, it was stated that expenditure on anti-syphilitic drugs was largely a waste of money. In each area the aim must be to treat practically all infected individuals during the one phase. McElligott (1951a) rightly considers that severe measures should be introduced, especially for the control of prostitution, and that in the large towns attempts will have to be made to house the wives and families of the male workers who come in from country districts.

CONCLUSIONS

The conclusions one must reach are those of the Editor of the *British Journal of Venereal Diseases* (1951):

A determined effort to stamp out venereal disease, especially the treponematoses, in the Empire is already overdue, and were it made with intelligence, enthusiasm and reasonable liberality it could not fail to increase our prestige as a great colonial power. It has been said that syphilis is a disease not a disgrace; in Africa this would seem not to be quite true but the disgrace is not entirely that of the patient alone.

In the 5 years which have elapsed since the above was written, little progress has been made apart from the work of the East African Medical Survey; the problem of venereal disease control is so difficult that it is likely to be beyond the resources of any one country and it would seem reasonable to ask for help from the World Health Organization. Such a request would especially be justified in the case of Tanganyika, which is a United Nations Territory.

SUMMARY

Details are given of the seriousness of the venereal diseases problem in East Africa, and of a pilot scheme of control in a district of Tanganyika in which the Bahaya tribe is steadily dying out in spite of the many advantages of the area.

From the experience gained in this pilot scheme it is suggested that large-scale schemes of control are likely to be successful in East Africa; it is further suggested that such control schemes are much overdue and that help should be sought from the World Health Organization.

All the medical work of the above scheme was the responsibility of my colleague, Dr. Hope Trant, and Mr. W. Edwards was the technician responsible for the work of the treatment centre.

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