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1. IN MEMORIAM

Dr Lewis Wendell Hackett died on 28 April 1962 aged 77 years, after a short illness.

During his long career as a public health administrator with the Rockefeller Foundation, Dr Hackett's greatest single contribution was made in malaria control, but the techniques of demonstration of disease control measures based on sound scientific principles developed in the field by use of field laboratories were equally effective in his operations against hookworm, yellow fever and many other disease problems.

After ten years working on hookworm control and general rural sanitation schemes in Central and South America with the Rockefeller Foundation, in 1924 Dr Hackett was placed in charge of the Foundation's International Health Board malaria project in Italy. At that time 38 of the 69 provinces in Italy were malarious. In Rome a Central Malaria Experiment Station was developed and gradually staff were recruited and assigned to work in Greece, Bulgaria, Spain and Albania, in addition to Italy. Studies were carried out in association with Professor Martini of Hamburg and Professor Swellengrebel of Amsterdam on the biology of mosquitos, particularly on the A. maculipennis complex.

Dr Hackett published in 1937 his book on "Malaria in Europe". He was a member of the League of Nations' Malaria Commission from 1935 to 1946, and of the Expert Advisory Panel on Malaria of the World Health Organization from 1948 until his death.

Dr Hackett's great experience and sage advice will be a loss to all workers in the field of public health.

2. NATIONAL CO-ORDINATION COMMITTEES ON MALARIA ERADICATION

This article was prepared by Dr C. A. Alvarado, Director of the Division of Malaria Eradication, Geneva, and was presented at the Second European Conference on Malaria Eradication, Tangier, March 1962, and at the WHO Inter-Regional Technical Meeting on Malaria Eradication, Teheran, May 1962.

Introduction

By essence, malaria eradication programmes are country-wide operations and as such they necessarily require the collaboration of the entire community, its representative groups, the governmental agencies and the non-governmental organizations. This wide participation of different kinds of agencies, degrees of participation and opportunities to collaborate must be appropriately marshalled to ensure that the nature, timing and location of such co-operation is co-ordinated into an effective combined effort. This is the rationale of the National Co-ordination Committees for malaria eradication. As countries are so diverse in their historical, political and administrative features, the set-up for such co-ordination must be conditioned to the particular requirements of each individual country, but malaria eradication being a national enterprise, co-ordination must be assured first at the top national level. As the programme has different phases, each with somewhat different needs, co-ordination must be carefully adjusted to the changing conditions of the programme, but preceding its requirements.

(1) Purpose and authority

The main purpose and function of the National Co-ordination Committees are to develop co-ordination policy, to establish the concurrent responsibilities of the different agencies involved and to facilitate the execution of the different activities of the malaria eradication programme. Malaria eradication is a "composite" operation in which its constituents are closely interdependent; any failure in the development of one of them would certainly upset and handicap the general progress of the campaign. Co-ordination must therefore gather and ensure the support for the timely attainment of each intermediate objective.

Analysing the purposes mentioned above it can be seen that all of them are fundamental, but the enunciation of a co-ordination policy (which, in some cases, could require the endorsement of the top authority of each agency represented) is the corner stone of the functions of such committees. As a consequence of such policy, the specification of duties and responsibilities of each co-operating agency will come out as a natural result, after which comes the study of the procedural details to implement such policy in order to facilitate the smooth and efficient execution of a tough, time-limited operation.

(2) Composition

As can be inferred from the introduction, a standard pattern cannot be laid down for the composition of the National Co-ordination Committees. The following comments show the wide range from where, according to the historical, political and administrative background of each country, the members of the Committee can be selected as representatives of the main agencies and groups involved.

Needless to say, the most outstanding members need to be the representatives of the ministries more closely involved: public health, finance, education, defence, etc; then, the representatives of some official agencies like the planning board or planning commission, the national insurance boards (such as the workers insurance agency), the agency for social and agricultural development, and finally, the non-governmental agencies and organizations like the Red Cross or Red Crescent, the Federation of Labour Unions, religious leaders, etc. This latter group could be considered as "associate members" to be convened only when appropriate. The national director of the malaria eradication programme must be considered a member "ex officio" and should act as secretary. Normally the multilateral and bilateral agencies assisting the programme have their representatives as "advisers" to the Committee. The highest authority on public health should be the chairman of the Committee.

(3) Position

Countries with a federal organization will need to have a national federal co-ordination committee and other co-ordinating committees at state or provincial level which should consist of representatives of state or provincial agencies. In such cases the National or Federal Committee would be mainly responsible for developing a high co-ordination policy and the State or Provincial Committees define the responsibilities and develop the procedural means to implement such policies.

In some countries a national commission, council or board has been established as the top authority for the campaign, but such body's capability of co-ordination will depend for its effectiveness upon the origin and authority of its members, otherwise a separate co-ordinating committee should be appointed.

(4) Other considerations

The essential principle of co-ordination, based on well-known psychological factors, is that every participant contributing in the effort towards the eradication of malaria, must be fully aware of the methods employed, what is expected from him, at what time, by what means, and also receive credit for his participation.

According to the phases of the campaign some agencies would have to have a bigger share in their possible collaboration; for example, during the attack phase the army may provide transport, logistic experts and in some cases military support for operations in unsafe areas; in other cases the navy may provide transport to spray villages along the sea coast or on small scattered islands.

The ministers of agriculture and public work or the agencies in charge of socio-economic developments need to have the responsibility of duly reporting new agricultural settlements or concentration of labour for public or industrial work, in order to locate these new groups and include them in the normal spraying cycle or organize an emergency spray if the cycle has been completed already. Educational authorities may collaborate on briefing the students about the purpose and requirement of the campaign so that, in due course, they will brief their parents to ensure their co-operation, to avoid refusal or the deterioration of the sprayed surface. During the consolidation phase the notification of malaria cases, the detection of fever cases and the radical treatment of the positive ones require the alertness and full-hearted participation of every member of the public health service and of the medical and paramedical professions as well as of others who can be enrolled for the same purpose.

As the eradication programme successfully progresses and the hazard of malaria recedes, numerous new settlements may be observed in the previous malarious areas especially in those which were undeveloped due to the presence of malaria; this increase of population is apt to create problems and drawbacks if some undetected carrier comes in and, due to the lack of experience of the young community, no measures are taken to prevent its early detection and avoid an outbreak of new cases.

It is impossible to foresee in theory all the circumstances which may be present in any given case and in any given time. National co-ordination committees must, therefore, have the possibility of adapting themselves and their composition and responsibilities to such given circumstances, places and time and possess enough authority to deal with any problems of co-ordination and support as they may occur.

3. THE REPORTING MECHANISM IN THE NATIONAL MALARIA ERADICATION PROGRAMME, INDIA

The following extract has been made from a report of Dr C. W. Göckel, Medical Officer, Epidemiological Assessment Unit, Division of Malaria Eradication, Geneva, on his visit to India.

The purpose of the visit was to study the organization of surveillance operations and the reporting mechanism of the National Malaria Eradication Programme, India, the latter aspect only being dealt with in this note. From the beginning it was clear that the time available for the study of a programme of the size of India was so short that one had to select but a few aspects. Priority was therefore given to the case detection mechanism and to the collection and handling of epidemiological data at various levels of the programme. Even these two specific subjects cover such a wide field that only an over-all picture could be obtained.

The outstanding problem of the Indian Malaria Eradication Programme is not of a technical nature as no serious setbacks have as yet been encountered, but is rather an organizational/administrative problem created by the magnitude of this giant programme. In India, 400 million people at risk are covered by one single malaria eradication programme, in a country presenting just as many variations in the epidemiology of malaria as a continent elsewhere.

The planning of a malaria eradication programme for over 400 million people is a tremendous undertaking. Such a task can only be achieved if a very strict organization pattern is adhered to, otherwise the service would be overcome by a mass of different types of organizational details. This idea of uniformity has been applied and the Indian NMEP has been broken down into five major levels: national, regional (6), state (22), zone and unit (390).

National. The national headquarters situated in Delhi, close to the Malaria Institute of India, has the technical direction of the entire programme which theoretically consists mainly of advice but in practice it exercises a great deal of direct supervisory authority. All data finally arrive at this central office from unit level.

Regional. This level is used mainly for the supervision of technical operations and for inter-state co-ordination activities with little actual operational authority.

State. The state level is again a very important one as here technical and administrative authority are combined.

Zone. The zone level, similar to the regional, is primarily a supervisory one with a strong emphasis on epidemiological assessment.

Unit. The unit is the fundamental structure of the whole service and carries high administrative and operational responsibility. For planning purposes one unit with a fixed establishment of staff is assigned to one million people. This rigid planning, however, is mainly to cope with budgetary needs. In reality a unit might cover more or less than one million, as for instance in Madras where units vary from 0.7 to 1.5 million people, the number of staff likewise varying according to the area in which the unit functions. It is for the state to decide the size of each unit and to distribute the necessary number of officers within the limits of the total state provisions.

The division of the state into zones, sub-zones and units is usually independent of any existing administrative area and is designed primarily on the basis of accessibility. The only common boundary between malaria administration and political administration is the state boundary.

To date mainly active case detection has been practised in India. Without exception the entire programme is based on visits at fortnightly intervals. The population assigned per surveillance agent, although principally calculated at ten thousand, varies widely according to the accessibility of the terrain and whether urban or rural. This is another flexibility in planning allowed to the state authorities.

POPULATION ALLOTTED TO EACH SURVEILLANCE AGENT DEPENDING
UPON THE TERRAIN, DISTANCE INVOLVED, ETC.
(STATE OF MADRAS)

Area	Population per surveillance agent	Average density of population per sq. mile	Monthly salary of surv. agent
Most difficult	500- 2 000	160	130 Rs *
Very difficult	2000- 5 000	172	105 Rs
Difficult	5000- 7 500	336	90 Rs
Ordinary - Rural	8000-12 500	692	77.80 Rs
Urban	12 500-20 000		

* 4.76 Rupees = US\$ 1

In comparison with programmes elsewhere the population assigned to one surveillance agent, especially making fortnightly visits, is considered very high. That this proves workable, and a high coverage of the terrain during each round is attained, may well depend on the following factors:

There are 13 "surveillance days" to every round and two full rounds per month. This implies that frequently a Sunday too has to be included in the routine working itinerary.

Working hours are strictly adhered to.

Itineraries are worked out with exceptional thoroughness and care and they are set out for the surveillance agent and inspector level not only by the day but by the hour.

Any additional work-load, that is, revisiting of previously locked houses, writing of reports, team discussions, etc., must be coped with in overtime hours.

Each household visit is timed to a maximum two minutes with standard questions. Only in the event of taking a slide will this time be extended.

Rigid system of supervision.

However, there is a considerable turnover of surveillance agents varying from 12-33% over a period of 18 months in some sub-units.

Another factor, probably resulting from the tight schedule, is the rather low annual examination rate, on the average around 5%.

In urban areas of Madras State female surveillance agents are employed and according to the local authorities they are extremely efficient and considered even better than male agents. This is due to easier entrance into houses where the women are alone at home and to the fact that they are of slightly higher educational standard. They are generally supervised by a female malaria inspector.

Every four surveillance agents are supervised by a malaria inspector who is usually recruited from the ranks of surveillance agents. At this level, too, a rigid itinerary exists.

Each surveillance agent and inspector keeps a small book in which the supervisor can write any complaint or suggestion based on his observations of the man. The holder of the book has to countersign and comment on these statements on the opposite page - very useful for continuous supervision of work performance. This is a procedure not encountered elsewhere but which seems to prove efficacious and might be recommended for other programmes.

The co-operation of other health services as a form of passive case detection is still in its early stage of development. The National Malaria Eradication Programme intends to stimulate this part of case detection in the future and will use the experience gained in Ceylon where a person paid by the MEP will be assigned to every large out-patient department of hospitals and dispensaries solely to collect slides from all fever cases.

Starting with the reporting procedure at field level, the surveillance agent keeps two registers from which he prepares his routine reports:

- (a) A village household register in which each visit is recorded as well as information on the number of fever cases encountered, and blood smears taken. The register gives this information by month and by round. At the end of each round the information is consolidated and forwarded to the surveillance inspector on Form S.F.1.

(b) A second register for the blood slides taken. This register has the same headings as Form S.F.2 which accompanies the slides to the unit laboratory.

The surveillance inspector, on receipt of Form S.F.1, combines and consolidates these forms received from the surveillance agents on to Form S.F.3 which is then forwarded through the sub-unit to the unit. Form S.F.2 which is passed through the inspector is copied by him and without delay passed on then to the laboratory. In addition the inspector has to summarize the information on Form S.F.2 on to a short form, S.F.2A, in which primarily the date of collection of the slides, date of handing over of the slides to the sub-unit or the date sent to the unit office is quoted. On the same form the laboratory notes the date of receipt and examination as a checking device for the speedy dispatch of blood slides. The sub-unit officer does not consolidate any report but simply keeps a village fever register.

The unit keeps a similar fever register as well as a malaria case register. The incoming reports are added and consolidated at unit level on to S.F.4 forms. Form S.F.5 contains the number of malaria cases by sub-unit with details on parasite species, origin of infection and radical treatment. S.F.4 and S.F.5 together comprise the unit surveillance report which has to be produced in five copies, one for each higher echelon up to national headquarters.

The negative results of blood examinations are sent back to the sub-unit and inspector, and are summarized on Form S.F.2B. In case of detection of a positive slide this information, after confirmation by the unit officer, will immediately be cabled to the inspector with the relevant directives for radical treatment of the case.

In addition to the malaria case register the unit keeps a file for each case which contains:

- the completed investigation sheet;
- the results of the epidemiological survey;
- information on radical treatment; and
- the result of follow-up examinations.

Within the unit certain information, such as number of household visits, and slides taken by villages, number of slides taken by surveillance agents, etc. is kept in the form of graphic presentation. No rates or proportions are calculated at unit level but absolute figures are used exclusively.

Sub-zones and zones receive copies of the unit surveillance reports on which they must comment but no consolidation is needed. Similar to the unit a malaria case register is kept without, however, having copies of the epidemiological details. The sub-zone keeps similar charts and maps to those of the unit.

At state level the unit surveillance report is consolidated monthly and a copy of this consolidated report is forwarded to the regional office and national headquarters. The state office also keeps a register with the names and particulars of confirmed malaria cases, similar to that kept by zone offices.

At national headquarters, the unit reports of all 390 units are received monthly and transferred to separate registers for each unit. At this level certain calculations and rates are worked out. A striking feature of the recording and reporting was the very limited number of clerical staff available at every level for the preparation of reports, of their consolidation and calculation. This was especially noticeable at the national level where only 14 clerks were employed for this task, and they had also to deal with spraying operations data and other relevant incoming reports.

In addition to data on active case detection which are identical with the unit report on surveillance operations, the "technical report" which contains primarily data on spraying operations includes the figures on malarimetric surveys where these are still performed, and on malaria morbidity data from dispensaries and hospitals, separated into morbidity figures referring to clinical diagnoses only and to microscopically confirmed malaria diagnoses.

The attached chart shows the origin and routing of the various reports on surveillance operations.

REPORTING ON SURVEILLANCE OPERATIONS
NMEP, INDIA

LEVEL	REGISTERS	FORMS
Surveillance agent	(a) Village household register (basis for S.F.1) (b) Fever case register (basis for S.F.2)	S.F.1 O ↓ S.F.2 O
Surveillance inspector		S.F.3 O ↓ S.F.2A O ↑ S.F.2B O ↑
Sub-Unit	Village fever register	Consol S.F.3 O ↓ cycle ↑
Unit	(a) Village fever register (b) Malaria case register	↓ ↓ ↓ ↓ Surv. report S.F.4 O ← → S.F.5 O
Sub-Zone	Malaria case register	← ←
Zone	Malaria case register	← ←
State	Malaria case register	← ← Consol. surv. report O
Region		← ← ↓
NMEP head-quarters	Surveillance report register by units	↓ ↓ ↓

LEGEND: O = originator of report ← = copy only

- S.F.1 = daily recording of surveillance worker
- S.F.2 = reporting of blood smears by surveillance worker
- S.F.2A = receipt and dispatch of blood smears
- S.F.2B = communicating results of blood smear (negative)
- S.F.3 = surveillance inspector's report for fortnight
- S.F.4 = monthly report on surveillance (fever details)
- S.F.5 = monthly report on surveillance (parasite detection and treatment)

4. CONTROL OF IMPORTED MALARIA ACROSS A LAND FRONTIER

We are indebted to the Acting Director of Medical Services, North Borneo, for some details regarding the importation of cases between Kalimantan and North Borneo.

North Borneo commenced an eradication programme on 1 July 1961, prior to which it had carried out malaria control operations for some years. The eradication programme is proceeding satisfactorily and some areas are almost ready to enter the consolidation phase; Labuan island itself being in consolidation. Among the districts bordering on the Kalimantan frontier, a number of outbreaks of malaria have occurred and, although it had been previously established that there was a certain amount of movement of population between Kalimantan and North Borneo, the amount and the routes they took had not been fully investigated.

In planning to cover this movement check-posts were established as near the border as possible, though some of these for administrative reasons were up to 20 miles inside the country. The planned function of the check-post was to record persons who had crossed the border into North Borneo, prepare and examine a blood film from them and issue them with a card stating whether or not the film was positive, and, if positive, the type of malaria parasite. The traveller would then show his card to his prospective employer and would receive radical treatment. Before leaving the check-post all travellers, positives and negatives, would be given a one-dose treatment with chloroquine-pyrimethamine.

In the district concerned residual spraying and mass chemotherapy twice yearly had begun in 1957 to combat a pre-control infant parasite rate of 71 per cent. This rate was reduced to zero early in 1959 and remained so throughout 1960. In 1961 surveillance operations were begun in the area and during the year 19 positive cases were found, of which 14 occurred very close to the border with Kalimantan.

Investigations into the movements over the border indicated they were very free between villages on both sides where people were inter-related and where people went to make purchases from the markets. In addition to this short-distance movement, it has now been found that relatives and friends move from more distant places on either side of the border, in some cases even as far south as 50 miles within Kalimantan.

From 1 April 1961 up to 31 December 1961 one check-post examined 238 Indonesians proceeding to estates, of which 10 were positive. At another check-post from 19 November to 31 December 1961, 25 Indonesians were examined, one of which was positive. At a third check-post where operations began only on 22 December, 15 persons were examined, all of which were negative. At the fourth check-post which caters for traffic both from Indonesia and Sarawak, 81 travellers were examined, again with no positives.

At the time of the Tenth Borneo Malaria Conference, it was considered that the problem of imported infection could be contained by the check-post system, but it was hoped that the Republic of Indonesia would institute its eradication project in North Kalimantan as soon as possible. It is now clear that the check-post system alone is not sufficient, owing to the free movement between persons living close to the border on either side and in some cases further removed from it, that is, relatives and friends; movement along the various routes from various border points by those seeking work in North Borneo; attraction by Indonesian settlements within North Borneo of friends and families and others seeking work who may by-pass check-posts which were originally instituted with the co-operation of the estates. It would obviously be impractical to check the whole length of the border involved and it appears likely that a protective border zone in southern North Borneo will have to be established, within which the attack phase operations will have to continue until the border area of Kalimantan is under spraying. In determining the southern limit of this protective zone consideration will have to be given to the natural boundaries provided by uninhabited jungle areas. The proposed protective zone at present involves six thousand inhabitants although it may, following further surveillance operations, be found possible to reduce it in due course. Continuation of spraying in this zone involves the danger of the appearance of resistant strains of the vector, and the opening as soon as possible of attack phase operations in the Republic of Indonesia in the Kalimantan border area with North Borneo would be deeply appreciated.