WHO'S ROLE IN THE DEVELOPMENT AND COORDINATION OF BIOMEDICAL RESEARCH:
GREATER INVOLVEMENT OF THE REGIONS IN RESEARCH

Progress report by the Regional Director

1. INTRODUCTION

The Regional Committee at its twenty-sixth session adopted resolution WPR/RC26.R10 endorsing proposals for strengthening and broadening the Region's role in research and recommending that the Regional Director arrange a study on the feasibility of establishing a WHO regional centre for research and training in tropical diseases, including the effects of malnutrition in such diseases, as part of the network of WHO collaborating centres being developed for this purpose, and that he report the results of the study to the Regional Committee at its twenty-seventh session.1

The attention of the Regional Committee is drawn to resolutions adopted by the Twenty-ninth World Health Assembly, and the Executive Board at its fifty-seventh session:

- EB57.R32 - WHO's role in the development and coordination of biomedical research
- WHA29.64 - Development and coordination of biomedical research
- EB57.R20 - Intensification of research on tropical parasitic diseases
- WHA29.71 - Intensification of research on parasitic and other communicable and tropical diseases

The full text of these resolutions is given in Annex 1.

2. ACTION TAKEN

2.1 Adviser in biomedical research

A post of adviser in biomedical research, who will be responsible for research activities in the Region, has been established. The search for a well-qualified candidate is in progress; and pending this recruitment, an Assistant Director of Health Services continues to provide a focus for research activities in the Region.

2.2 Regional Advisory Committee on Medical Research (RACMR)

The Committee has been established by the Regional Director. It has nine members, including the Chairman, who is Professor G.J.V. Nossal, Director, Walter and Eliza Hall Institute of Medical Research, Melbourne, Australia. The Committee held its first meeting in Manila from 29 June to 1 July 1976, making a number of recommendations which are attached as Annex 2.

2.3 Report on a study of the feasibility of WHO sponsorship of a centre or centres for research and training in tropical medicine, including nutrition, in the Western Pacific Region

The summary and conclusions of the WHO team that carried out the study is attached as Annex 3.

2.4 Other matters

RACMR made recommendations which would certainly result in promotion, strengthening and improved coordination and collaboration of research activities in the Region (see Annex 2). It is foreseen that the WHO representatives, other WHO regional staff, members of RACMR and national research staff will play important roles in this regard in the near future.

3. PROPOSALS FOR CONSIDERATION

The Regional Committee's attention is called to the RACMR recommendations, in particular that three task forces responsible for health services research, parasitic and other communicable diseases and cardiovascular diseases, be set up and that as an essential first step the Regional Director seek additional funds estimated at US$250 000 as "seed" money for the task force meetings and their pilot activities.

The RACMR recommendations concerning the report of the feasibility team on the establishment of a WHO regional centre for research and training in tropical infectious diseases in the Institute for Medical Research, Kuala Lumpur, establishing close collaboration with the Korea Health Development Institute, providing additional support for an effective multidisciplinary research project to find new means of treating and controlling S. japonicum infections in the Philippines and supporting Singapore in its expressed desire to concentrate on problems of urban tropical health should also be considered.

The Regional Committee's decision on the above proposals is requested, bearing in mind that additional funds will be required to implement them.
RESOLUTION OF THE EXECUTIVE BOARD OF THE WHO

Fifty-seventh Session

WHO'S ROLE IN THE DEVELOPMENT AND COORDINATION
OF BIOMEDICAL RESEARCH

The Executive Board,

Having considered the progress report on WHO's role in the development and coordination of biomedical research\(^1\) submitted by the Director-General in accordance with resolution WHA28.70;\(^2\)

Realizing that the encouragement and coordination of scientific research, and the accumulation and proper transfer of scientific knowledge, are fundamental to the success of WHO's long-term programmes;

Recognizing the importance of determining the best possible relationship between fundamental and applied research;

Noting that, in the draft sixth general programme of work of WHO covering the period 1978-1983, submitted to the Assembly, assistance in the development and coordination of biomedical research, identification of research priorities, strengthening of national health capabilities, and application of scientific knowledge and methods are singled out among the main fields of WHO activity; and

Noting with satisfaction the intensification of the work of the Advisory Committee on Medical Research and of medical research activities at regional level, including the establishment of regional advisory committees on medical research, and also the increasing extent to which the assistance of experts and national research establishments is being utilized in the implementation of WHO research programmes,

1. THANKS the Director-General for his report;

2. REQUESTS the Director-General to give consideration to measures to broaden the areas of expertise represented by the membership of the Advisory Committee on Medical Research so as to reflect the increasing importance of health services research within biomedical research; and

3. REQUESTS the Director-General to take into account, in his report to the Twenty-ninth World Health Assembly, the comments made by members of the Board and also to include information on progress made in reviewing the system of reference and research centres collaborating with WHO, with a view to evaluating the work they have done and to developing ways of strengthening their future role in the Organization's programme.

\(^1\) Document EB57/17.

RESOLUTION OF THE WORLD HEALTH ASSEMBLY

TWENTY-NINTH WORLD HEALTH ASSEMBLY

DEVELOPMENT AND COORDINATION OF BIOMEDICAL RESEARCH

The Twenty-ninth World Health Assembly,

Having considered the Director-General's report on WHO's role in the development and coordination of biomedical and health services research;

Noting with satisfaction the intensification of WHO's research-coordination activities in pursuance of Resolution WHA25.60 and subsequent Resolutions of the Assembly and the Executive Board;

Noting with satisfaction also the increased activity of the ACMR, the establishment of regional advisory committees on medical research and the beginning of the development of coordinated research programmes on such subjects as health services, health manpower training, environmental health, cancer, tropical and parasitic diseases, including schistosomiasis and onchocerciasis, cardiovascular diseases, virus and other diseases;

Considering that the principal objectives of WHO's research activities are to provide guidance for effective coordination of national research efforts, to strengthen national research capabilities, particularly in developing countries, and to promote the application of existing and new scientific knowledge and research methodology on problems related to the stated priorities and programmes of the Organization;

Considering that the importance of information, methodological and ethical problems will grow with the further development of biomedical and health services research;

Considering the results already achieved by the institutes and centres already established in the African and other regions for the control of the major endemic diseases, in the field both of epidemiological surveillance and of applied and basic research;

1. CONFIRMS the need for the drawing-up of a comprehensive long-term programme for the development and coordination of biomedical and health services research, which should reflect WHO's attitude in regard to defining priorities in scientific and organizational research, the methodology, coordination of international research programmes, the improvement of research information systems, a review of the system of collaborating centres and the collation of scientific biomedical and organizational forecasts, and

2. INVITES the Director-General to prepare a comprehensive report containing an analysis and evaluation of WHO's research-coordinating activities, including a report on the implementation of the relevant Executive Board and Assembly resolutions and proposals for further improvements in those activities and formulating WHO research policy including possible ethical and other recommendations, and to submit the report to the Executive Board at its Fifty-ninth Session and to the Thirtieth World Health Assembly;

3. REQUESTS the Director-General to keep a reasonable balance between the strengthening of existing research institutions and the establishment of new centres, the latter measure to be envisaged only in exceptional cases where no host institution exists that is capable of carrying out the projected studies.
RESOLUTION OF THE EXECUTIVE BOARD OF THE WHO

Fifty-seventh Session

INTENSIFICATION OF RESEARCH ON TROPICAL PARASITIC DISEASES

The Executive Board,

Having examined the progress report¹ submitted by the Director-General in accordance with resolution WHA27.52;²

Considering that continuing importance should be given to intensifying research on tropical parasitic and other communicable diseases,

1. THANKS the Director-General for his report;

2. ENDORSES the steps taken or envisaged to implement the above resolution and also resolutions WHA28.51, WHA28.70 and WHA28.71;³

3. RECOMMENDS the active development of the special programme for research and training in tropical diseases;

4. THANKS those governments and voluntary agencies which have already contributed support to test the new strategies being developed for research on tropical diseases and to implement the pilot activities involved;

5. EXPRESSES the hope that funds and other necessary forms of cooperation will continue to be made available for this purpose; and

6. TRANSMITS the report to the Twenty-ninth World Health Assembly, along with the comment of the Executive Board.

Twentieth meeting, 26 January 1976

EB57/SR/20

¹ Document EB57/18.
³ WHO Official Records, No. 226, 1975, pp. 26, 39 and 40 respectively.
RESOLUTION OF THE WORLD HEALTH ASSEMBLY

TWENTY-NINTH WORLD HEALTH ASSEMBLY

INTENSIFICATION OF RESEARCH ON PARASITIC AND OTHER COMMUNICABLE AND TROPICAL DISEASES

The Twenty-ninth World Health Assembly,

Having examined the progress report\(^1\) submitted by the Director-General describing the present status of planning and pilot operations of the Special Programme for Research and Training in Tropical Diseases, in accordance with resolution WHA27.52;\(^2\)

Recalling also resolutions WHA28.51, WHA28.66 and WHA28.71;

Taking note of the discussions at the fifty-seventh session of the Executive Board and of resolution EB57.R20\(^3\) endorsing the steps taken and envisaged to intensify research on parasitic, other communicable and tropical diseases;

Realizing the need to mobilize all possible resources including particularly the potential from the pharmaceutical sector; as part of the role of WHO in coordinating and accelerating the important Special Programme for Research and Training in Tropical Diseases;

1. THANKS the Director-General for his report;

2. APPROVES the development so far of the Special Programme for Research and Training in Tropical Diseases;

3. APPROVES the strategy of the development of scientific aspects of the research through scientific working groups (task forces) of eminent scientists brought together for the purpose by WHO, and the progress already made in establishing these groups and in their work which should best focus the available resources on correct priorities particularly in developing new pharmaceutical, e.g. chemotherapeutic and immunological tools for disease control;

4. THANKS those governments and voluntary agencies which have contributed financially to the development of programme planning and pilot projects in this field;

5. URGES that all Member States participate as fully as possible in the work of the Special Programme by offering the cooperation of their researchers, and by donations of funds and the provision of facilities, in order to further the research and training activities planned;

6. REQUESTS the Director-General:

\(^{(1)}\) to enlarge the net of WHO national scientific collaborating centres and institutions in order to enhance their contribution to this programme;

\(^{(2)}\) to establish contacts with universities, appropriate research institutions and the pharmaceutical sector for the development of new methods of controlling tropical diseases and evolving new preventive and therapeutic substances;

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\(^1\) Document A29/14.


(3) to report to the fifty-ninth session of the Executive Board and Thirtieth World Health Assembly on the progress made.
1. The terms of reference, membership, terms of appointment and method of work of RACMR should be as outlined in document WPR/ACMR/76.2 (Appendix 1). The Committee further recommended that it would be desirable to increase the number of members by one or two so as to include experts in parasitology and enteric infections.

2. The criteria for selection of priority areas for regional research should be as listed in Appendix 2.

3. Research in the Region should be directed to the following areas:
   
   (a) Strategy for health service research.
   
   (b) Family health.
   
   (c) Environmental health.
   
   (d) Parasitic and other communicable diseases, in particular schistosomiasis, leprosy, malaria, filariasis, dengue haemorrhagic fever and enteric infections. Regional research programmes concerned with first four infections should be conducted in collaboration with and form part of the WHO global programmes.
   
   (e) Cardiovascular diseases, including rheumatic fever, rheumatic heart disease, atherosclerosis and hypertension.

4. The Committee recommended the establishment of three task forces which would be responsible for advising on the development of regional research programmes in the following areas:

   (a) Health service research, including operational research and demonstration projects in relation to the primary health care available in countries of the Region.
   
   (b) Parasitic and other communicable diseases, including their interaction with nutrition.
   
   (c) Cardiovascular diseases, including rheumatic heart disease.

The task forces would plan and advise on the implementation of regional research programmes to be developed in harmony with the global research programmes conducted under the coordination of WHO Headquarters. The task forces should prepare comprehensive proposals on different aspects of the research, including budgeting, for consideration at the next RACMR meeting.
5. The Committee urged the Regional Director to seek the additional funds required for the task force meetings and their pilot activities. It is estimated that US$250,000 will be needed for this essential first step in developing regional research activities and in formulating sound proposals as a basis for raising further funds under the WHO regular budget and from extra-budgetary sources.

6. The Committee recommended that the Regional Committee consider initiating a feasibility study to evaluate the need for a regional centre or network of collaborating centres to undertake research on environmental health problems which are of particular importance to the countries of the Region.

7. The Committee endorsed the suggestion of strengthening national medical and scientific library networks and ultimately establishing sub-regional and regional networks of such libraries. It recommended that this matter be further explored, that an approach be made to institutions in Australia, Japan, Malaysia, United States of America and other countries, and that the outcome be reported at the next meeting of RACMR.

8. The Committee broadly endorsed the report on the feasibility of establishing a WHO regional centre for research and training in tropical infectious diseases. In particular, it approved the following suggestions in the report:

   (a) WHO should arrange to draw up detailed plans for the development of an international centre for tropical diseases research within the Institute for Medical Research, Kuala Lumpur, Malaysia. This centre will be an important part of a network of collaborating institutions in this field. It is suggested that a consultant be employed for several months to help in the planning.

   (b) The Korea Health Development Institute, which plans to conduct extensive field research and demonstration projects to determine optimal means of health care delivery, is a valuable resource and close collaboration between it and WHO would be most beneficial.

   (c) The Philippines currently offers the best opportunity for research on Schistosoma japonicum. It is recommended that WHO give the authorities additional assistance in setting up an effective multidisciplinary research project to find new means of treating and controlling S. japonicum infections. WHO should also consider supporting Nutrition Center of the Philippines with a view to its development as a base for research on nutritional problems in urban and rural areas.

   (d) Singapore should be supported in its expressed desire to concentrate on problems of urban tropical health.

   (e) As Japan is one of the well-developed countries in the Region, WHO must further pursue, to the maximum extent possible, regional cooperative research efforts involving Japanese institutions.
(f) Close collaboration and coordination of effort between WHO and the Southeast Asian Ministers of Education Organization regional tropical medicine and public health project is recommended.

(g) Feasible methods of ensuring close collaboration between the Western Pacific and South-East Asia advisory committees on medical research should be explored.

(h) The Committee recommended that the task forces consider implementation of the feasibility team's recommendations, with regard to their areas of responsibility.

9. The Committee recommended that technical research materials be presented at its next meeting - if possible, the reports of the three task forces.
APPENDIX 1

THE REGIONAL ADVISORY COMMITTEE ON MEDICAL RESEARCH 

1. BACKGROUND INFORMATION

Resolution WPR/RC26.R10 "WHO's role in the development and coordination of biomedical research: greater involvement of the Regions in research" endorsed the proposal to establish a regional advisory committee on medical research (RACMR) to advise the Regional Director on research activities that might be considered by the Regional Committee for development. RACMR has now been formed and the following suggestions are made regarding its terms of reference and method of work.

2. TERMS OF REFERENCE

RACMR would advise the Regional Director on the following matters:

(a) definition of policies for the promotion of research in the Region, within the framework of the global WHO policy and the policies evolved by the Advisory Committee on Medical Research (ACMR) at WHO Headquarters;
(b) determination of regional priorities for research and establishment of mechanisms for this purpose;
(c) coordination in the area of research between WHO Headquarters and the Regional Office, between the Regional Office and the countries and among the countries themselves;
(d) development of research capability in the Region, identification and maximum utilization of locally available talent and better use of untapped talent;
(e) establishment of meaningful collaboration between RACMR and ACMR, thereby enhancing the work of ACMR and linking the local resources of developing countries with those of the developed countries;
(f) establishment of close contacts with national and international bodies engaged in biomedical research, so as to coordinate selected research

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Original issued as document WPR/ACMR/76.2, Meeting of the Western Pacific Regional Advisory Committee on Medical Research, Manila, 29 June - 1 July 1976.
activities, ensure rapid application of the results of scientific advances through public health action wherever appropriate and assist in setting up national medical research councils (or analogous bodies) in countries where they do not exist;

(g) collection of data on institutions, facilities, personnel and projects in the Region with a view to ultimately developing a regional research information system;

(h) by these and other means, stimulation of research in the Region on problems whose solution is identified as being of priority importance for the health of the peoples, improvement of coordination among countries of the Region, and promotion of a sense of awareness and communication among all scientists and institutions working on common problems;

(i) evaluation of the programmes in terms of stated objectives and the mechanisms for their implementation.

3. MEMBERSHIP AND TERM OF APPOINTMENT

Membership of RACMR would be restricted to outstanding research scientists from countries of the Region whether they are heads of research agencies or not; the group could in fact be constituted by a judicious mixture of scientists and heads of agencies. A total of 9-10 members would probably be appropriate.

In the case of ACMR, the Chairman and members are appointed by the Director-General, who takes a great deal of trouble to ensure that they represent as wide a variety of relevant disciplines as possible. The term of appointment is four years for members and five for the Chairman. Every year those who have completed a four-year term retire, and new members are appointed by the Director-General to replace them. This system of turnover has merit in that it facilitates bringing into the body a variety of research talent to advise the Director-General. A similar principle could be applied to RACMR. The Chairman and all the members would be appointed by the Regional Director, some for two years and the others for four years initially. The process of retirement and appointment of new members would thus start in the third year of functioning of RACMR. After the initial round, this process would become automatic. The Vice-Chairman and Rapporteur would be elected at each meeting of RACMR and remain in office until the following meeting, when another election would take place.

4. METHOD OF WORK

4.1 Frequency of meetings

ACMR meets once a year. RACMR might also meet annually to begin with; and as its work proceeded the frequency of the meetings could be adjusted suitably. Whatever the frequency, however, adequate preparations should be made for each meeting so that as much as possible could be achieved.
4.2 Agenda and planning of meetings

Preparation of the agenda and planning of each meeting would be facilitated by a visit of the Chairman and perhaps one or more members to the Regional Office some time in advance (this is the practice in the case of ACMR).

4.3 Presentation of programmes

Research programmes should be presented to RACMR in a form that would facilitate discussion. This could be achieved by reviewing the problems, specifying the proposed research priorities, preparing programme summaries, giving them to one or more Committee members for study before being presented to the meeting for discussion, and arranging for visits by such members for consultations with others involved wherever this appeared feasible and desirable.

4.4 Outside expertise and consultantships

Although the RACMR will have scientists of various disciplines as members, it cannot be expected that it will always be in a position to review all spheres of biomedical research. It is quite likely that a situation will be faced when, for review of a particular area of biomedical research of regional priority, the experience and competence of the Committee's own members will not be adequate and expertise from outside will be needed. In such situations, support might be obtained as follows:

4.4.1 Scientific groups

Where the required review involved collaborative multidimensional in-depth study by a number of recognized experts in different fields or different aspects of the same field, a scientific group might be formed. The group convened should be given specific terms of reference and a time-target for completion of the work. Its size would depend on the nature, extent and complexity of the work; but in no case should the group be so large that it would lose its effectiveness.

4.4.2 Consultants or temporary advisers

Sometimes there might be a need to review a particular aspect of a problem in depth, with the outside help of a scientist recognized for his or her contribution in that particular area. In such cases a temporary advisor/consultant might be appointed. Here again, the terms of reference and time-target should be clearly specified as far as practicable.

4.5 Task forces

RACMR as an advisory body cannot be expected to be involved in formulating, implementing and evaluating research projects with specific missions, which WHO would like to sponsor. Thus it might sometimes be necessary to appoint a task force which would establish a time-target for projects identified as a result of in-depth review and study either
by RACMR itself or by scientific groups/consultants/temporary advisers. The success of a task force, however, would depend greatly on the quality of its members. Thus criteria for the selection of members of each task force would have to be very carefully defined.

5. ATTENDANCE AT SCIENTIFIC MEETINGS AND VISITS TO RESEARCH INSTITUTIONS IN THE REGION BY MEMBERS OF RACMR

It would be helpful if members of RACMR were able to attend, as observers, meetings of relevant scientific groups and similar meetings in the Region in their fields, thus enabling them to contribute effectively to the meetings and gain first-hand knowledge which would be valuable when the subjects came up for discussion in RACMR.

Members of RACMR should be encouraged to visit research workers who are cooperating with the Regional Office and they could help to disseminate information on WHO's scientific programme to national research organizations, thus opening the way for exchanges in fields of common interest.

6. REGIONAL CENTRES FOR SPECIFIC AREAS OF RESEARCH

For high quality multidisciplinary research on priority health problems in the Region, competent research workers and institutions are needed. It would appear possible to find dependable scientists and even institutions prepared to initiate appropriate biomedical research activities; but to continue them and to maintain high quality, it may be necessary to strengthen such institutions in terms of research facilities and manpower. RACMR may identify institutions in the Region with a view to developing them as regional research centres for specific subjects, depending on the present and future possibilities of such development, and the facilities and manpower available for the research. Where feasible, intra or intercountry pooling of manpower and other resources may be encouraged for developing such regional research institutions. RACMR may take the initiative in this direction by preparing concrete proposals, either by itself or with the help of a task force.

7. COLLABORATION AND COORDINATION OF RESEARCH ACTIVITIES

7.1 Collaboration

In some countries of the Region, institutions are already involved in biomedical research. However, it is not uncommon to find that an individual laboratory is not capable of undertaking a research investigation on a multidimensional problem that might be quite feasible if a group of institutions were selected to study different aspects of the problem,
depending on the specialized facilities and manpower they had available. This kind of collaborative research would probably enable a larger research programme to be undertaken than would be possible for a single institution. It would also encourage free exchange of information among the participating institutions and develop a deeper sense of cooperation. Moreover, collaborative research would prevent duplication of effort and ensure maximum utilization of scarce resources and trained manpower. To promote collaborative research, however, RACMR would have to take strong initiative in identifying the institutions, assessing their capabilities and coordinating the entire process of launching the research in which they would be involved.

7.2 Coordination

Advice on coordination of regional biomedical research activities is expected to be an important function of RACMR. In view of the scarce research resources in the Region it is extremely important that time and physical means should not be wasted by duplication of effort. It may not be easy to coordinate the activities of different national institutions and lead them in the desired direction to achieve a particular goal; it will be necessary for this purpose that each institution conducts its research in a coherent manner instead of acting in isolation, thus ensuring that the aggregate research effort in the individual country or the Region produces the maximum benefit. RACMR could play an important role in this respect. It might also be necessary to organize regional research groups for coordination. Alternatively, a member or a sub-committee within RACMR might be made responsible for technical coordination of research in particular fields in the Region and report to RACMR, which would remain responsible for the overall coordination of regional biomedical research activities. Thus advice on coordination of research would be given by RACMR at intra and intercountry levels as well as intra and interdiscipline levels.

8. CONSULTATIVE MEETINGS WITH MEDICAL RESEARCH COUNCILS OR ANALOGOUS BODIES

While RACMR members would be appointed to the Committee as individual scientists and as such be expected to function in their personal capacity, the heads of medical research councils or analogous bodies could be invited to consultative meetings as official representatives of the respective governments. Though such consultative meetings might not be needed frequently, there would be definite justification for convening them occasionally. While RACMR would give emphasis to technical and scientific aspects, consultative meetings might also provide an appropriate forum for dealing with administrative and policy matters in relation to national research.
9. SPECIAL PROGRAMMES

The launching of special research programmes of regional importance should be considered as soon as basic data are available and priority areas of research identified. Such programmes might be implemented in conjunction with global special programmes, like that of tropical diseases, within the framework of expanded research programmes or in coordination with similar special programmes of contiguous regions.

10. DISSEMINATION OF INFORMATION

Dissemination of information in the field of biomedical research is an important means of keeping research workers up to date in their technical and scientific knowledge, which in turn has been recognized as a useful means of stimulating research. RACMR might make tangible contributions in this respect by organizing the issue of newsletters and preparing scientific documents as well as contributing to a central information service.

10.1 Newsletters

These might be prepared with a view to providing research workers, research administrators and even policy-makers of different countries with concise but relevant information. Placing sharp emphasis on biomedical research in the scientific, administrative and policy information would have the effect not only of stimulating research activities but also of interesting, motivating and benefiting the research administrators and policy-makers. Newsletters might be issued periodically: monthly or quarterly.

10.2 Scientific documents

These would be reports of reviews, investigations and other research. They would be printed and distributed to relevant organization or research workers as and when available and probably there would not be a definite time schedule for their publication.

10.3 Information service

In addition to issuing materials such as newsletters, scientific documents, etc., members of RACMR should be encouraged to contribute to a central information service developed to meet the specific needs of research workers and institutions that could draw upon its resources as and when required. RACMR might prepare concrete proposals for establishing such a service and efforts might also be made to develop sub-systems at the national level at a later date.
THE CRITERIA FOR SELECTION OF PRIORITY AREAS OF REGIONAL RESEARCH

1. The research should relate to a priority health problem in some of the countries of the Region.

2. The priority of this problem should be recognized by the individual countries themselves.

3. The problem being tackled should be of major importance for the socioeconomic development of certain of the countries of the Region so that its alleviation can be seen as a means of improving the health and quality of life of those afflicted.

4. The problem should have a demonstrable potential for solution or further clarification within a reasonable time and at reasonable cost.

5. In considering the availability of the manpower, facilities and funds needed for an effective research programme, account should be taken of the resources within the Region, recognizing that successful development of the programme could depend on funds from a variety of sources, including the WHO Regional Office.

6. Programmes whether large or small should be developed with major involvement and contribution of the scientific communities and facilities of the countries concerned, and be seen as a means of enhancing national research aspirations, facilities and expertise.

7. In research on problems requiring regional collaboration, use should be made of the machinery of WHO and the special task forces established by the Regional Director to ensure that effective collaboration is achieved and that adherence to a clearly defined protocol, as well as critical evaluation and periodic assessment by either the task forces or peer groups, are accepted by the collaborating groups as conditions for involvement in the programme.

8. Consideration should be given, where scientific merit can be ascertained, to areas of research where advantage can be taken of the particular opportunities that exist in the Western Pacific Region. These include:

   (1) the opportunity to study problems in health care organization and delivery, in view of the wide range of systems being developed;
(2) the opportunity for research on the frequency and distribution of health and disease problems in different geographic areas with populations at "low risk" and at "high risk", possibly including studies on small compact "isolated" societies with little involvement in "modernization" as compared with populations involved in migration and development that are moving rapidly into urban industrialized areas;

(3) the opportunity to study certain problems in relation to racial and genetic background.
ANNEX 3

A STUDY OF THE FEASIBILITY OF WHO SPONSORSHIP
OF A CENTRE OR CENTRES FOR RESEARCH AND TRAINING IN
TROPICAL MEDICINE INCLUDING NUTRITION IN
THE WESTERN PACIFIC REGION (WPRO)

Report of a WHO team visit to five countries
15 May-15 June 1976

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1. GENERAL INFORMATION

A. BACKGROUND

The Regional Director presented to the 26th Meeting of the Regional Committee for the Western Pacific document WPR/RC26/9 "WHO's role in the development and co-ordination of biomedical research: greater involvement of the Regions in research", which gives a review of the development of the Organization's research programme and outlines some of the means by which the Region may increase its involvement.

The Committee endorsed the Regional Director's proposals, and in addition recommended that "the Regional Director arrange a feasibility study for the establishment of a WHO regional centre for research and training in tropical diseases, including consideration of the effects of malnutrition in tropical infectious diseases, notably parasitic infections, as part of the network of WHO collaborating centres being developed for this purpose, and to report the results of such a study to the 27th meeting of the Regional Committee".

To implement the resolution, a feasibility team consisting of the following was formed:

Dr Nevin Scrimshaw - Team Leader
Chairman, HQ Advisory Committee on Medical Research
Head, Department of Nutrition and Food Science
Massachusetts Institute of Technology, Boston

Dr Alfred A. Buck
Chief Medical Officer, Research Co-ordination, Epidemiology and Training Division of Malaria and Other Parasitic Diseases
WHO Headquarters, Geneva

Dr Arturo C. Reyes
Assistant Director of Health Services
WHO Regional Office for the Western Pacific
Manila

B. TERMS OF REFERENCE

(a) To assess the need for a multidisciplinary research centre in the Region having regard to:

1. existing national research institutions
2. existing research training programmes
3. existing research resources including manpower
4. the potential catalytic effect of such a centre upon the countries' commitments to research
5. the requirements for research and training that could be met through a special programme.
(b) To consider establishment of the centre in a suitable country, taking into account:

1. the present commitment to international collaborative research
2. the prospects of a long-term commitment in support of the centre
3. the probable effect of the centre on local research and health services
4. the availability of required clinical material
5. the possibility of capital costs being met jointly by the country and a special programme
6. the possibility of operating costs being shared
7. the likelihood of the country eventually assuming responsibility for operation of the centre
8. the availability of scientific and technical research manpower
9. the activities and resources of other local research institutions, and the relationships they are expected to establish with the centre
10. the case of communications between the centre and institutions in other countries.

C. ITINERARY

Following a review of current health problems and of research institutions and their activities in the various countries in the Region, it was decided in view of time constraints, to limit the scope of the feasibility study to the Philippines, Singapore, Malaysia and the Republic of Korea. A visit to Japan was included in the team's itinerary with the objective of getting acquainted with the Japanese institutions and workers actively engaged or interested in carrying out research on tropical diseases.

The team reviewed pertinent available information on research institutions in the countries visited, interviewed national officials, heads of institutions and research workers and visited the facilities of various research institutes.

The conclusions and recommendations of the team follow.

2. PHILIPPINES

In the Philippines heavy service loads and the necessity for professionals to hold multiple jobs greatly reduced the opportunity and incentive for University and Department of Health personnel to engage in research. In the College of Medicine and Philippine General Hospital there is no current basis for WHO-supported research in tropical diseases although the prospects may be better when the proposed new Philippine Medical Center is established as the apex of the pyramid of medical care and training programmes in the Philippines.
Some research is in progress in the Institute of Public Health. This Institute has the potential for a significant effort in schistosomiasis, filariasis, dengue-haemorrhagic fever and intestinal parasites. In the case of the first of these, schistosomiasis, there is sufficient co-operative work among the Department of Parasitology of the Institute of Public Health, the National Schistosomiasis Council of the Department of Health, and scientists from the National Institute of Health of Japan to form a possible nucleus for a WHO-supported project of research on *Schistosoma japonicum*. This species is the most resistant to chemotherapy of the three principal forms, is the only one with significant animal reservoirs, and is an uncontrolled endemic problem in the Philippines as well as in some of the countries of Indochina and is of increasing importance in Sulawesi, as irrigation projects are developed.

There should be more research on each form of schistosomiasis and the Philippines represents the best current opportunity for research on *S. japonicum*. Such a project, however, will demand much greater co-ordination and co-operation among the interested institutions than at present. Moreover, WHO would need to provide an experienced investigator as project leader who could both guide research and enlist co-operation. Additional professionals would also be needed in view of disciplinary deficiencies currently evident.

The Philippines has a strong applied nutrition programme which is receiving good guidance from the Nutrition Center of the Philippines and implementation by the Department of Health. There is also a Food and Nutrition Research Institute in the National Science Development Board. These institutions collectively can provide nutritional appraisal of individuals as part of epidemiological studies of infectious diseases in the field including field studies of immune status. However, they could not be expected to undertake fundamental nutritional studies in hospitalized patients with infections without additional trained personnel.

In summary, it is recommended that within its global programme of research on the control of schistosomiasis WHO arrange for the additional scientific assistance and other support required to mount an effective multidisciplinary research project designed to find new means of treating and controlling *S. japonicum*. If such a project is to go forward a further WHO consultant visit will be required to develop a detailed plan and budget.

3. SINGAPORE

Interest and competence in research on tropical infectious diseases in Singapore is limited almost wholly to two departments in the Faculty of Medicine of the University of Singapore. In the Department of Parasitology, Professor Victor Zaman, a long-time recipient of WHO research support, is doing high quality research on filariasis using animal models, including several species of non-human primates and experimental chemotherapy of filarial parasites. His publication record is impressive. His associates are also productive investigators whose extensive publications have been
concerned mainly with immunodiagnostic tests and taxonomy. The Department of Microbiology, with the financial support of the U.S. Army Medical Research and Development Command, is continuing studies of dengue-haemorrhagic fever which have been productive in the past and which promise improved methods of immunological diagnosis of this disease. The Department also functions as a WHO collaborative centre for virus research. No research competence in nutrition could be identified in Singapore.

The WHO Immunology Centre in Singapore makes a positive contribution to the research environment, although greater effort to make the facilities of the Centre known to all interested and qualified investigators in the University and General Hospital is indicated. WHO fellowships will continue to be an important means of training potential investigators and encouraging relevant research on health problems including the tropical infectious diseases and malnutrition.

Singapore's unique health research contribution could well be the study of urban tropical health problems which are increasing with the explosive growth of tropical cities, and in devising improved means of dealing with them. These include tuberculosis, food-borne diseases, drug abuse, occupational health hazards and psychiatric problems.

4. MALAYSIA

In Malaysia the Institute for Medical Research (IMR) in Kuala Lumpur has a 75-year tradition of research on infectious tropical diseases. It has made the transition from a colonial institute staffed mainly by expatriates and managed by the London School of Hygiene and Tropical Medicine with a wholly national staff which included a number of internationally recognized scientists. It is now in the midst of a construction programme which will modernize its facilities and increase the available space by 150%. As part of the SEAMEO-TROPMED network, it already provides a diploma course in Applied Parasitology and Entomology for the SEAMEO countries.

It is strong in parasitology, filariasis, medical entomology, medical ecology and certain aspects of arbovirus research and bacteriology, as well as competent in human genetics and nutritional biochemistry. In addition, the US Army Medical Research Unit, hosted by the IMR, has a comprehensive scrub typhus research programme and investigators from the University of California International Center for Medical Research (UC-ICMR) provide additional professional staff for parasitology, human genetics, arbovirus research and community health research. It has relative disciplinary deficiencies in epidemiology, immunology, clinical nutrition, biostatistics and computer science, and only limited data processing facilities.
It has good library facilities and will soon have the most modern and complete facilities for experimental animals in South-East Asia. A wide variety of tropical habitats are readily accessible within less than an hour's drive from the Institute and there are no security restrictions on field work in these accessible areas. The widespread use of English and the long tradition of cooperation with expatriate investigators would be additional advantages for any WHO-sponsored project or centre.

To some extent, complementary strengths exist in other institutions in Malaysia. The adjacent medical school and teaching hospital of the new National University offer opportunities for clinical collaboration, and there is a competent epidemiologist in the Public Health Institute which, like the IMR, is a part of the Ministry of Health. The Faculty of Medicine of the University of Malaysia is at present hosting the UC-ICMR Virus Research Unit which is expected to come to the IMR when the new facilities become available. The University of Malaysia has an excellent general medical library plus good laboratory facilities and equipment for its departments, good computer facilities which are to be expanded, as well as many faculty members with research training in Australia, Europe or the United States. An ambitious programme offers specialized training of medical and health scientists outside the Ministry of Health of Malaysia; it will also help to ensure competent local counterparts in any programme involving outside consultant assistance.

The University of Science in Penang has a school of biological sciences, with 42 Ph.Ds. on its faculty and valuable work on the epidemiology of filariasis and animal parasites, including those of man. The School of Applied Sciences and Pharmaceutical Sciences has equipment and experience in studies of pharmacokinetics and could cooperate in new drug trials. There is high competence on filariasis research in the area with well-known specialists in Malaysia and in Singapore.

It is concluded that the research facilities of the IMR represent an opportunity to build, with WHO assistance, a centre of excellence for basic research on a number of tropical infectious diseases. These include filariasis caused by \textit{B. malayi}, dengue-haemorrhagic fever, leprosy, malaria, scrub typhus and intestinal parasites in different ethnic groups, as well as population genetics, the interaction of malnutrition and infection, and experimental studies on the snail hosts of trematodes.

It is recommended, therefore, that WHO arrange for the drawing up of detailed plans for developing an international centre for tropical infectious diseases research in the IMR, with WHO participation. However, this centre cannot cover all of the major tropical infectious endemic diseases of South-East Asia and the Western Pacific which also include: schistosomiasis due to \textit{S. japonicum}, particularly in the Philippines, Indonesia and the countries of Indochina; filariasis caused by \textit{W. bancrofti} in many countries of the area; clonorchiasis in the Republic of Korea; paragonimiasis in the Republic of Korea, Philippines, Thailand and neighbouring countries; opisthorchiasis in Thailand, and probably in the Indochinese area. In addition, Malaysia does not appear to have the
xerophthalmia, keratomalacia and severe forms of protein-energy malnutrition, or the hyperendemicity and epidemics of gastrointestinal infections seen in most other countries of the area. For the study of these diseases, WHO should consider the possibility of specific programmes in other countries of South-East Asia and the Western Pacific, within a WHO coordinated network of cooperating institutions.

5. REPUBLIC OF KOREA

The University system is well-developed in the Republic of Korea, and there are a number of good investigators concerned with parasitic and other endemic infectious diseases and with human malnutrition. However, they are divided among several departments and universities.

In the Medical College of Korea University, excellent work in the Department of Parasitology of the Institute of Tropical Endemic Diseases includes systematic clinical and field trials of modern drugs in the treatment of clonorchiasis. The head of the Department of Microbiology may have achieved a breakthrough in identifying a viral agent as the cause of Korean haemorrhagic fever, and has suggested a mode of transmission not involving an arthropod vector. The head of the Department of Nutrition and Biochemistry is conducting clinical and biochemical field studies of malnutrition among rural pre-school children.

Yonsei University has an outstanding parasitologist and also a senior faculty member working on leprosy.

In Seoul National University College of Medicine, the head of the Parasitology Department is engaged in major studies of the mass treatment of filariasis. The chairman of the Microbiology Department has published evidence of successful laboratory infection of Korean chipmunks with M. leprae. In addition, good longitudinal studies of paragonimiasis and filariasis in randomly selected villages are being conducted by the Department of Epidemiology in the School of Public Health, and this department is also concerned with clonorchiasis. A Professor of Internal Medicine in this university has published the results of outstanding studies of iron loss in hookworm infection, in which he used isotope techniques. The Professor of Pediatrics is internationally known for his calcium balance studies in children, and in the Department of Biochemistry an associate professor is a well-trained clinical nutritionist responsible for most of the nutritional evaluation of Korean rural applied nutrition programmes.

The Korea Health Development Institute, as a semi-autonomous Government agency, is planning extensive field research and demonstration projects in three areas of the country to determine the best means of providing preventive and curative medical care for rural Korea. In addition, there are twelve health demonstration projects, primarily for training purposes, already sponsored by various medical schools, and by other institutions, including a WHO-sponsored project under the Ministry of Health and Social Affairs. The National Institute of Health can provide laboratory support for a wide variety of diagnostic services and prophylactic drugs and vaccine.
These diverse resources represent a unique and valuable opportunity for operational research on methods for the prevention or control of both systemic and intestinal parasitic diseases, leprosy, and their interactions with malnutrition. WHO should encourage and support co-ordination among the various institutional centres of competence and among the various rural health demonstration programmes. It should also provide assistance to the Health Development Institute to ensure that this Institute's new major health demonstration programme incorporates applied research on the control of parasitic diseases of local importance and studies of the interactions among infections, immunity, and nutritional status. The fields of social science, epidemiology, and biostatistics for health research are present disciplinary deficiencies for such a programme. Also needed are better sampling procedures and adequate data processing facilities. It is noteworthy that there is a high prevalence of leprosy in the Republic of Korea, although relatively little research is devoted to this disease.

6. JAPAN

That Japan has a number of Institutes and University Departments entirely or partly devoted to the study of infectious diseases is a well-known fact. Many outstanding investigations have been carried out in this field, among which studies directly concerned with parasitic and other diseases of importance to the developing countries of Asia. Three of the most important of these institutions were visited by the team - the National Institute of Health, the Institute of Medical Science, University of Tokyo and the Research Institute for Microbial Diseases, University of Osaka, but the Institutes of Tropical Medicine of Nagasaki, Kagoshima and Hiroshima Universities could not be visited in the time available.

Scientists from these institutions are already involved in bilateral research cooperation in a number of countries, including in Latin America on such subjects as the control of onchocerciasis in Guatemala, the control of leprosy in Paraguay and tropical parasitology in Costa Rica. Projects in Africa cover tropical parasitology in the Central African Republic, control of tuberculosis in Tanzania and support of institutions in Nigeria, Ghana and Kenya. In Asia, institutional support is provided in India, Sri Lanka, Burma, Thailand, Indonesia, Philippines, Republic of Korea, Afghanistan and Iran. Japanese participation in schistosomiasis research in the Philippines and filariasis research in the Republic of Korea is described in the full report of the team dealing with the visits to these countries.

At present, there is no provision for Japanese participation in multilateral programmes with Government assistance since all such aid must go through the Japanese International Cooperation Agency (JICA) which has authority only for bilateral assistance. Thus although the Japanese Ministry of Health and Welfare would be willing to contribute to WHO-sponsored centres or programmes it could at present only do so through agreements between JICA and the host countries to provide them with equipment, supplies,
fellowships for training in Japan and with the technical participation of Japanese scientists. The only alternative suggested was through private Japanese sources, most notably the Japanese Shipbuilding Industry Foundation.

It is obvious that the Japanese scientists can make a valuable contribution to research on tropical parasitic diseases and leprosy in Asia and that WHO should facilitate such participation in programmes and centres in which it is involved. Japan is also an important source of equipment and supplies for medical research and for the training of scientists.

The trend is for cooperative research and training efforts of groups of countries. The traditional pattern of bilateral assistance is likely to become increasingly limiting and anachronistic. WHO in its own policies must further such regional cooperative efforts and indicate to the appropriate Japanese officials the desirability of this trend.

7. SUMMARY AND CONCLUSIONS

Tropical infectious diseases and malnutrition do not respect national boundaries nor WHO regions. Both the diseases and the professional manpower trained to do research on them are unevenly distributed among countries and regions. Moreover, the greatest concentrations of research talent are often not located in the areas where the problems are most severe. In fact, in some of the areas most seriously affected research capability is almost entirely lacking. It is therefore WHO's role to take a global approach.

These considerations apply to the Western Pacific Region of WHO, but the Regional Office (WPRO) is faced with an added complication. The regional organization for training and research in tropical medicine including nutrition, the programme of the Southeast Asian Ministers of Education Organization (SEAMEO-TROPMEDE) includes two countries, Thailand and Indonesia, which are in WHO's South-East Asia Region and three which are in WPRO, Malaysia, Philippines and Singapore. Democratic Kampuchea, the Lao People's Democratic Republic and Viet-Nam are also members of both, SEAMEO and WPRO. Moreover, Thailand serves as the headquarters for the TROPMEDE Central Coordination Board and Indonesia for training in nutrition. The Republic of Korea and the islands of the South Pacific are part of WPR but are not included in TROPMEDE. New Guinea, which probably has the greatest concentration of serious tropical parasitic diseases in the Region, has virtually no personnel for research on them nor is the situation better in West Irian which shares the same island and is part of Indonesia, or in Sabah and Sarawak which are parts of Malaysia.

Each of the four tropical WPR countries visited has a different set of infectious disease problems, although all have tuberculosis, leprosy, intestinal parasites and malnutrition. The relative importance of each disease varies greatly in the different countries. In the Philippines schistosomiasis due to *S. japonicum*, filariasis due to *W. bancrofti* and *B. malayi*, malaria, leprosy, tuberculosis and malnutrition are particularly
significant. In Malaysia filariasis due to B. malayi, dengue haemorrhagic fever, scrub typhus, malaria, leprosy and tuberculosis can be studied. In the Republic of Korea the prevalence of tuberculosis and leprosy is particularly high and filariasis, paragonimiasis, clonorchiasis, amoebiasis and malaria are endemic. In Singapore, parasitic diseases are rapidly diminishing although tuberculosis and food-borne enteric diseases are still important as urban health problems in addition to those caused by industrial and traffic accidents, drug abuse, occupation hazards, sexually-transmitted disease and psychiatric disorders which Singapore shares with other large cities in the world.

The team found the physical facilities and research environment of the Institute for Medical Research (IMR) in Kuala Lumpur, Malaysia, to be favourable for multidisciplinary research on those tropical infectious diseases that are locally endemic. The team noted in particular: the professional strength of the Institute's programme in applied parasitology and entomology including filariasis, arbovirology, medical entomology and medical ecology and good expertise in human genetics and nutritional biochemistry; the physical facilities which will be increased by 150% and modernized by the end of next year; the accessibility of many different ecological zones within an hour's drive on good roads; the large and sophisticated new animal facilities; the Institute's role as a SEAMEO-TROPMED training centre in parasitology and medical entomology; the extensive collaborative relationship with institutions and individuals in Australia, the United Kingdom, the United States of America and other industrialized countries; the long standing and constructive integration of the University of California International Center for Medical Research (UC-ICMR) into the IMR; the familiarity of the professional staff with English and ready acceptance of scientists and students from other countries; and the willingness of the Ministry of Health to ensure continuing support for such a development. All this constitutes a convincing case for WHO involvement in strengthening the capacity of the IMR for multidisciplinary research in those diseases which can appropriately be studied in Malaysia.

Of all of the institutions visited in the four tropical countries, it is the only one in which all of the essential disciplines for work on tropical infectious diseases are represented although several of these need to be strengthened. Requirements would include epidemiology, immunology, biostatistics, pharmacology and anthropology. An additional general parasitologist and a clinical nutritionist would also be helpful.

In supporting such a development in the IMR, Malaysia, there should be no thought of WPRO focusing its research interests on a single institute or country in its geographically large and diverse region. Moreover, special links should be established with SEARO in view of the existing SEAMEO-TROPMED programme and the natural grouping of countries represented by ASEAN.

As part of its global research programme on schistosomiasis WHO should support a multidisciplinary programme of research on Schistosoma japonicum in the Philippines in cooperation with the Department of Parasitology of the Institute of Public Health of the University of the Philippines and the National Schistosomiasis Control Council. Similarly, the 12 existing health
demonstration areas in the Republic of Korea, plus the plans of the Korea Health Development Institute for three large operational research areas totalling 500,000 persons, to determine the best way of providing preventive medicine and medical care to rural Korea offer an unparallel opportunity for WHO to encourage and support applied research on the management of such important diseases as filariasis, paragonimiasis, clonorchiasis as well as intestinal parasites, tuberculosis and leprosy. WPRO should assist such a research effort. Singapore should be supported in its expressed desire to concentrate on the problems of urban tropical health.

In addition, WPRO and SEARO should join their efforts to aid the SEAMEO countries in their TROPMED programmes of training and research. WHO's regional structure must not be permitted to interfere with cooperative efforts initiated by countries with geographical, economic, cultural, or political affinities. WPRO could also seek arrangements for all of its Member countries to utilize the training programmes of TROPMED to the extent that this would be helpful to them. Moreover, it would also be of advantage if WPRO and SEARO could plan together how to make mutual use of the existing research and training facilities in the two Regions.

Research activities in a region are likely to be of two kinds. Those involving operational research on the application of knowledge in practical field programmes and those of a more basic nature. The former must be carried out by individual countries but both regional and headquarters staff can be helpful. To the extent that WHO is involved, the latter should be an integral part of a global network of collaborating centres within the Special Programme for Research and Training in Tropical Diseases coordinated by WHO headquarters. WPRO should continue to make use of headquarters' specialized services for guidance, assistance and coordination of research activities.

WPRO has a special opportunity and responsibility because it has as members Australia, France, Japan, New Zealand, the United Kingdom and the United States of America, all with regional commitments and interests and the capacity to provide strong technical and financial support to research programmes in the Region but also with global interests in tropical diseases. In the future, China can be expected to join this group. WPRO should promote the involvement of its industrialized members in a regional network of research and training on tropical infectious diseases and malnutrition, as a regional component of the worldwide research programme on tropical diseases. This should include encouraging the existing centres of competence in these industrialized countries to establish further field research programmes in those areas of the Region which have serious disease problems and few resources as for example New Guinea and some other islands of the South Pacific.

In conclusion, the team recommends that WPRO cooperates with SEARO and WHO headquarters in establishing a network of programmes and centres for research and training in the Western Pacific and South-East Asian countries taking advantage of, and strengthening, existing programmes and centres and
regional associations for health research and training. As an initial and specific part of such an effort, the team recommends that, in the WPRO Region, extra budgetary support should be sought to strengthen the Institute for Medical Research, Malaysia, as a multidisease centre for research and training on selected tropical infections in Malaysia, contribute to a multidisciplinary programme on schistosomiasis in the Philippines with the Institute of Public Health, U.P. and cooperating agencies, and support a multidisciplinary programme of operational research on the public health control of selected tropical parasitic diseases, tuberculosis, leprosy, and malnutrition in the Republic of Korea.

A research component in the applied nutrition programme of Nutrition Center of the Philippines would also be of value to a regional network, as would research on urban health problems undertaken by the Ministry of Health of Singapore or the University of Singapore. In its research activities WPRO should seek the active participation of scientists from other parts of the world interested in research on endemic diseases of the Region. There is no need for WHO to become involved in either the construction or operation of physical facilities for research in the Region. There is, however, a need for a WPRO regional research officer with the experience and competence to initiate and coordinate such a programme. It will be essential that WPRO budget funds for his frequent and extended travel in the Region, and for the convening of small regional research meetings. Ideally, WPRO should also establish a fund to provide need or supplementary support for exploratory and pilot research projects of an applied nature and an advisory committee mechanism to evaluate requests for such assistance.

8. OPPORTUNITIES FOR WHO PROGRAMMES, PROJECTS AND CENTRES
FOR RESEARCH AND TRAINING ON TROPICAL RESEARCH PROBLEMS IN ASIA AND THE WESTERN PACIFIC

On meeting the terms of reference of WPRO, the team visited four developing countries of the Western Pacific Region; the Philippines, Singapore, Malaysia, and Republic of Korea, plus one industrialized member; Japan. However, the team could not limit its attention to WHO's Western Pacific Region since the regional tropical medicine programme of SEAMEO, the South-East Asian Ministers of Education Organization, include two in SEARO, Indonesia and Thailand, and three active members in WPRO, Malaysia, the Philippines and Singapore. Moreover, two of the team members represented WHO headquarters and the headquarters ACMR, respectively and it was necessary for them to take a broader view than that of any single WHO region.

Fortunately, a few weeks earlier the team leader had spent a week each in Pakistan and India and 10 days as consultant to the Technical Advisory Committee of the Dacca Cholera Laboratory and as Chairman of a site-visiting team for US NIH to the Johns Hopkins University International Center for Medical Research in Bangladesh. He was also familiar with institutions involved in medical research in Thailand, and the headquarters team member
visited Thailand immediately after the travel in the WPR countries.

Accordingly, sections on SEAMEO-TROPMED, the Dacca Cholera Laboratory and a Mosquito Genetics Research Unit in Lahore, Pakistan are included in this report to WHO headquarters along with the following additional overall conclusions and recommendations.

A broader view led to the following conclusions:

1. Research facilities and human resources in the SEARO and WPRO Regions should be viewed as a whole, recognizing the artificiality of the boundaries between the two Regions and the common problems and interests of the countries of the Western Pacific, South-East Asia and the Asia sub-continent.

2. This need is exemplified by the ASEAN grouping of countries and by SEAMEO-TROPMED and both SEARO and WPRO must support this important co-operative effort and the institutions it has established to regionalize training and research in tropical medicine, including nutrition, among countries belonging to both WHO Regions.

3. Since there is no centre in WPRO for research on enteric disease and population dynamics comparable to the Cholera Research Laboratory in Dacca, Bangladesh and since this laboratory has already become autonomous and international with the sponsorships of the United States, United Kingdom and Australia, WHO should seek an arrangement whereby this expanded centre can contribute to the research and training needs in these fields of the countries of both WHO Regions. This could appropriately become a WHO-sponsored centre in the same sense as the arrangement recommended for the IMR, Malaysia.

4. Other more specialized research and training opportunities exist in both Regions which might appropriately be utilized or identified as WHO programmes to the mutual benefit of both WHO Regions. Examples are the Mosquito Genetics Unit in Lahore, Pakistan, now part of the University of Maryland ICMR but receptive to becoming a WHO centre, the rural health delivery research planned by the All India Institute of Medical Sciences, Delhi and the Health Development Institute, Republic of Korea, the programme for the delivery of nutrition services within the Health Centre developed by the Food and Nutrition Center of the Philippines.

5. Many specific research activities within one or the other Region are of great potential value to both and should be better known. Examples from the infectious diseases area are: S. japonicum in the Philippines, Indonesia, China, and the "Mekong" variety in Bangkok; malaria in Thailand and Indonesia; filariasis in Malaysia (Kuala Lumpur and Penang), Singapore, Philippines, Indonesia, the South Pacific and Republic of Korea; leprosy in the Philippines, Malaysia and Republic of Korea; clonorchiasis and paragonimiasis in the Republic of Korea; opisthorchiasis in Thailand; hookworm disease in the Philippines, Malaysia, Republic of Korea and Thailand; intestinal helminths in all of the countries visited; amoebiasis in Thailand and Republic of Korea; dengue and dengue-haemorrhagic fever in Thailand, Malaysia and the
Philippines; and hemoglobinopathies and parasitic diseases in Malaysia and Thailand. Examples from the nutrition area are: the experimental programme of iron enrichment of foods of the Institute of Nutrition, Hyderabad and Faculty of Tropical Medicine, Mahidol University, Thailand; Vitamin A enrichment of tea by the nutrition cell of the Planning Commission, Pakistan; and studies of the energy costs of different tropical and developing country occupations by the Food and Nutrition Research Institute, National Science Development Board of the Philippines. Many more examples could be cited in both areas.

6. WHO must achieve co-ordination among the research activities of its various regions and its headquarters. One specific step recommended is attendance of the chairman or an alternate member of each regional ACMR at the meeting of the headquarters ACMR. Similarly, in the case of WPRO and SEARO there should be provision for attendance of members of each at the meeting of the other and possibly some joint meetings.

7. The Regional Offices of WHO do not have and cannot expect to have technical competence in the various disciplinary and subject matter areas of biomedical research important to WHO. Moreover, such expertise is at present available only to a limited and variable extent within the developing countries of the regions. The Regional Offices and the countries themselves look to WHO headquarters for such expertise. It is imperative for the continuing effectiveness and reputation of WHO in priority disease areas in the developing countries to maintain and improve its expertise at headquarters. It is equally important that such headquarters personnel spend a significant proportion of their time (and 50% would not be excessive) in direct work in developing countries to strengthen their institutions and to establish a global network by direct personal contact and stimulus. In fact, this would be an excellent way of complying with the General Assembly's mandate to shift expenditures on personnel from headquarters to country programmes.