Pan American Health Organization

NINTH MEETING OF THE
ADVISORY COMMITTEE ON MEDICAL RESEARCH


LATIN AMERICAN TRAINING AND RESEARCH CENTERS IN PARASITOLOGY

(Item 5 of the Agenda)

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Diseases caused by animal parasites are inherent ecological problems of man. Their prevalence is more or less inversely proportional to man's ability to control his environment. In most of rural Latin America and to a considerable extent in urban slum areas, ecologic conditions favor parasitism, and environmental control has not progressed to the point of effectively interrupting the transmission of a variety of parasitic diseases.

These diseases fall into three principal categories. The first includes diseases transmitted via direct or indirect contamination with human feces, principally intestinal helminthiases and amebiasis. Vector-borne diseases comprise the second group; these include malaria, Chagas' disease, schistosomiasis, leishmaniasis, filariasis, onchocerciasis, and fascioliasis. The third group is due to a combination of circumstances stemming principally from contaminated food or animal feces; these include trichinosis, hydatid disease, cysticercosis, diphyllobothriasis, and toxoplasmosis.

A crude measure of the importance of parasitic diseases relative to other major types of communicable diseases is indicated in the following tabulation.

*Prepared by the author, serving as a consultant to the Pan American Health Organization, based on a recent survey trip to Latin America.
COMMUNICABLE DISEASES IN LATIN AMERICA AND THE CARIBBEAN REGION

<table>
<thead>
<tr>
<th>Etiology</th>
<th>Rate per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viruses</td>
<td>1991</td>
</tr>
<tr>
<td>Bacteria &amp; Spirochaetes</td>
<td>219</td>
</tr>
<tr>
<td>Animal Parasites</td>
<td>163</td>
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</tbody>
</table>


These statistics, along with the complexities in the epidemiology of parasitic diseases, emphasize the importance of parasitology in the health and economy of Latin America.

Solutions to the various parasite problems will, in the final analysis, depend largely upon the contributions and leadership of specialists residing in endemic areas and intimately acquainted with local conditions. The most logical approaches to assure maximum progress are (1) to develop Latin American centers devoted to training and research in parasitology, and (2) to devise a structure favoring international cooperation on a multi-disciplinary basis among specialists dealing with particular disease problems.

With these approaches in mind, visits were made recently to most of the leading centers of parasitology in Latin America. Only eight weeks were available for the visits, which precluded contact with many active groups, but the itinerary did include thirty-one institutions in nine countries and a total of forty-three departments. These visits and discussions, along with information gained from previous visits, international meetings, and the literature, serve as the basis for this report.

B. Centers Visited

Puerto Rico: Parasitology is emphasized in the Department of Medical
Zoology, University of Puerto Rico. Senior men include Drs. J. Oliver-González and J. Maldonado in general parasitology and Dr. I. Fox in medical entomology. The Department offers a Ph.D degree in parasitology. Considerable expansion of the facilities and staff are planned within two years.

The Puerto Rico Nuclear Center has an active parasitology research program under the general direction of Dr. J. Chiriboga. Specific areas of work include the study of *Trypanosoma cruzi* in tissue culture by Dr. R. Martínez Silva, schistosomiasis and fascioliasis by Dr. L. Ritchie, and immunochemistry and biochemical studies by Drs. R. Brown and R. Ramos Aliagra. The unit has good laboratory and animal facilities. Collaborative work also is conducted on schistosomiasis with the U.S.P.H.S. Unit under Dr. F. Ferguson.

**Venezuela:** Vigorous public campaigns are being pursued against malaria, Chagas' disease, schistosomiasis, and intestinal helminthiases under the coordination of the Ministry of Health. Outstanding research centers include the Institute of Tropical Medicine of the Central University, where a broad program of research on Chagas' disease is carried on by Drs. F. Pifano and G. Maekelt. Specialized research on the inter-relations of intestinal helminths and nutrition is underway at IVIC by Dr. M. Layrisse. An excellent control program on schistosomiasis and ancylostomiasis is underway in the Ministry of Health laboratories at Maracay under the direction of Dr. H. Ferrer Faria.

**Colombia:** Government-supported research on Chagas' disease and leishmaniasis are emphasized at the National Institutes of Health under the direction of Drs. H. Groot and A. Corredor. Their studies deal particularly with vectors and epidemiologic aspects of these diseases. Excellent work also is being done at
private institutions; these include work on Chagas' disease at the University of the Andes by Dr. C. Marinkelle and work on the immunology and serology of parasitic diseases at the University of Javeriana School of Medicine by Drs. H. Ucros and D. Fernández.

Research on fascioliasis in livestock is being done at the School of Veterinary Medicine of the National University by Dr. G. Luque F.

In Cali, an ICMRT program is conducted by Tulane University and the University del Valle under the direction of Drs. P. Beaver and A. D'Allesandro. Clinical parasitology and the inter-relation of intestinal helminths are stressed. The unit has an outstanding clinical faculty for nutritional and metabolic studies under Dr. K. Tripathy. Other active programs include medical entomology under Dr. P. Barreto, trypanosomiasis by Dr. A. D'Allesandro, and echinococcosis by Dr. V. Thatcher. The ICMRT program has just been renewed for a five-year period.

In Medellín, the Department of Microbiology of the University of Antioquia, School of Medicine, is planning to offer next year a M.S. degree in parasitology. Specific areas of research interests include work on intestinal parasites by Dr. D. Botero, on amebiasis by Dr. H. Zuluaga, and on immunology, serology, and toxoplasmosis by Dr. M. Restrepo.

Peru: An Institute of Tropical Medicine has been developed under the direction of Dr. H. Lumbreras at the new Universidad Peruana Cayetano Heredia. The University also includes a medical school, a teaching hospital, and a tropical disease field station. Specific areas of work in parasitology include fascioliasis, Chagas' disease, and strongyloidiasis by Dr. Lumbreras and associates, medical entomology by Dr. B. L. Zuluaga, and immunology by Dr. R. Cantella.

Research on hydatid disease is underway at the School of Veterinary
Medicine of San Marcos University by Dr. C. Guerrero, and surveys are being done on fascioliasis.

The Institute of Tropical Medicine of San Marcos University has work underway on toxoplasmosis, Chagas' disease, and cysticercosis under the direction of Dr. A. Corenjo Donayre.

At the National Institutes of Health, Dr. M. Vásquez is working on fascioliasis and has done surveys on echinococcosis and cysticercosis in animals. This institution conducts diagnostic tests for parasitic diseases and conducts work on the taxonomy of *Phlebotomus* and on hydatid antigens under the direction of Dr. J. Zapatel.

**Costa Rica:** The Department of Parasitology of the University of Costa Rica includes seven experienced and well-trained professional people and an equal number of technicians. Active areas of research include Chagas' disease and leishmaniasis by Dr. R. Zeledón, amebiasis and toxoplasmosis by Dr. A. Ruíz, paragonimiasis by Dr. R. Brenes, and medical entomology by Dr. M. Vargas. The Department has excellent facilities for the above types of work.

**Chile:** The chief centers of parasitology in this country are in the University of Chile. The Department of Microbiology and Parasitology, under the direction of Dr. H. Schenone, is working on the serodiagnosis of Chagas' disease, toxoplasmosis, trichinosis, fascioliasis, cysticercosis, and hydatid disease. Dr. Schenone also is working on venomous arachnidism. The group also is active in epidemiologic studies of such endemic parasitic diseases as scabies and Chagas' disease. The Department has an excellent parasitology library and accepts trainees in its areas of active work. About half of the thirteen professional staff members work on various aspects of parasitic diseases.
Research interests under Dr. I. Tagle in the Department of Parasitology of the School of Veterinary Medicine include fascioliasis and hydatid disease.

**Argentina:** Strong research programs on Chagas' disease are underway in Buenos Aires. In the Ministry of Health laboratories, Dr. J. Cerisola, along with ten professional associates and thirteen technicians, test about two hundred blood bank serum samples daily for *T. cruzi* antibodies. They also prepare antigens for use in other Argentine laboratories and work on xenodiagnosis and other aspects of Chagas' disease. In the Department of Microbiology of the University of Buenos Aires, Dr. J. Yanovsky and several associates are working on immunizing agents for use in Chagas' disease and on immunological and life cycle aspects of the disease.

Research on hydatid disease is underway at the Pan American Zoonoses Center in Buenos Aires, principally by Drs. J. Williams and P. Schantz. Their program includes both experimental and field work.

**Brazil:** Visits were made to parasitology training and research centers in São Paulo, Ribeirão Preto, Rio de Janeiro, and Belo Horizonte.

In São Paulo, several departments in the University of São Paulo School of Medicine are active in various aspects of parasitology, tropical medicine, and medical entomology. Most of these activities are coordinated through the Institute of Tropical Medicine under the direction of Dr. C. da Silva Lacaz. The serodiagnosis of Chagas' disease and of schistosomiasis are particularly emphasized in the laboratory of Dr. M. Camargo. Other areas of specific activity include general parasitology under Drs. A. Franco do Amaral, M. Deane, and L. Deane, clinical parasitology under Drs. J. Meira and G. del Negro, epidemiology under Dr. G. Rodrigues da Silva, and
entomology under Dr. P. Forratini.

A strong course in basic immunology is offered annually under WHO auspices at the Butantan Institute in São Paulo; this program is directed by Dr. Otto Bier.

At the University of São Paulo in Ribeirão Preto, excellent work on the serology and pathology of Chagas' disease is being pursued by Drs. J. Almeida and F. Koberle, respectively. Drs. A. Ferraz Siqueira and M. Barreto also work in the area of general parasitology, particularly Chagas' disease and intestinal helminthiases.

The University of Rio de Janeiro has a Department of Tropical Medicine and Institute of Medical Tropicology under the direction of Dr. J. Rodrigues Coura and a professional staff of nineteen associates. The group gives training in tropical medicine. Their activities include clinical and laboratory research on malaria, Chagas' disease, leishmaniasis, filariasis, schistosomiasis, and intestinal parasites.

Much attention is devoted to parasitology and endemic parasitic diseases of Brazil at the University of Minas Gerais and the Institute of Rural Endemic Diseases in Belo Horizonte. Parasitology in the University is being consolidated into one large department; a Master's degree program in parasitology is planned. The University has developed an outstanding Schistosomiasis Research Unit which is comprised of experienced specialists from many departments; the hub of the Unit is Dr. J. Pellegrino's laboratory. A strong program of laboratory research on Chagas' disease is being pursued by Dr. Z. Brener. Dr. R. Cancado is engaged in clinical research on various parasitic diseases, particularly Chagas' disease and schistosomiasis.

Mexico: A strong and diversified program of laboratory and clinical research on amebiasis is being pursued at the General Hospital of the Institute
of Social Security in Mexico City. Leaders in this program are Drs. B. Sepulveda and L. Landa of the Department of Gastroenterology. Highlights of this program have been presented in excellent three-day seminars in 1969 and 1970; plans are being made for additional similar seminars and for publication of the 1970 program.

Parasitology training and research are emphasized in the Department of Human Ecology of the National University in Mexico City. Six faculty members, headed by Dr. F. Beltrán, direct a Master's degree program in general parasitology. Specific areas of active research include Chagas' disease, intestinal helminthiases, fascioliasis, cysticercosis, leishmaniasis, amebiasis, onchocerciasis, and arthropod transmission of diseases.

C. General Comments on Visits

It is precarious on the basis of short visits to assess the quality and quantity of research in the Latin American centers of parasitology. My general overall impression is that the work is of good quality and is roughly commensurate in amount with the economy and general educational levels of the various countries.

I was impressed most of all with the high motivation of many of the scientists and with the extent of their accomplishments, even though working in many instances under adverse conditions.

Low salary levels frequently requiring two jobs are common and must be considered in assessing performance. A recent three-fold increase in professor's salaries in Brazil should contribute greatly to research in Brazil. Salary increases are needed generally in Latin America to assure continuity and efficiency in research.

Lack of library facilities has frequently been a handicap, and it is
gratifying to note that relief along this line is being provided through the excellent contributions of the PAHO Library in São Paulo under Dr. A. Neghme.

Based on impressions gained from a series of Latin American visits in the early 1960's, there are indications of a general up-grading of laboratory personnel and both more and better training in the basic sciences.

D. Recommendations

PAHO could contribute greatly to training and research in parasitology via a program of fellowships and visiting professorships, particularly in the strongest centers.

Centers recommended as first choices are as follows:

- **Training in General Parasitology:** Department of Parasitology, University of Minas Gerais, Belo Horizonte; **Training in Tropical Medicine,** Including Clinical Parasitology: Institute of Tropical Medicine, University of São Paulo, São Paulo; **Training in Immunology:** WHO Training Center in Immunology, Butantan Institute, São Paulo; **Training in Immunodiagnosis of Parasitic Diseases:** Institute of Tropical Medicine, University of São Paulo, São Paulo; **Research on Schistosomiasis:** Department of Parasitology and Schistosomiasis Research Unit, University of Minas Gerais, Belo Horizonte; **Research on Chagas' Disease:** Division of Microbiology and Biology, University of Costa Rica, San José; **Research on Amebiasis:** Gastroenterology Department, General Hospital, Institute of Social Security, Mexico City.

To provide a structure for continuity and maximum efficiency in international cooperation and communication, it is recommended that PAHO make the following appointments and support periodic conferences by the appointees:

A. Appoint a central PAHO Board of Parasitology with due respect to discipline and nationality in its membership; and
B. Appoint subsidiary PAHO Commissions on Schistosomiasis, Chagas' Disease, Intestinal Helminthiases, Amebiasis, Leishmaniasis, Echinococcosis, and Fascioliasis.