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FOREWORD

Research in Progress 1984-1985 is the ninth volume in the series, dating back to 1961, that addresses the health research activities of the Pan American Health Organization. This issue describes 125 research projects which were mostly financed with external funds. These projects involve almost all countries of the Region and were operational during the 1984-1985 biennium. The kinds of research activities supported by the Organization reflect the diversity of the needs and research capabilities in the different countries. These activities may range from research directed at problems in health services delivery to those involved with basic research into biological and genetic questions of significant complexity.

The Organization will continue to cooperate with Member Countries in strengthening national capabilities to conduct research and to mobilize the international scientific community for the solution of major health problems. It will, as well, devote efforts to identify critical areas for research, to promote research in those areas, and to act as a regional clearinghouse for disseminating the results.

It is hoped that this publication will serve to inform those researchers and research groups unaware of our efforts in this area, as well as to further motivate those involved in our research endeavors and to attract support for the development of new research.

Carlyle Guerra de Macedo
Director

INTRODUCTION

This volume of Research in Progress presents information from the Technical Programs and Regional Centers of the Pan American Health Organization on research activities in which the Organization was involved directly or indirectly during the 1984-1985 biennium. Information was provided on 125 projects.

These projects are distributed and shown in this volume, according to discipline, under the following headings:

Cancer ✓	2
Chronic Diseases ✓	1
Diarrheal Diseases ✓	13
Environmental Health ✓	
Engineering	3
Foot-and-Mouth Disease and ✓	
Vesicular Stomatitis	4
Health Services Research ✓	16
Infectious Diseases ✓	
(other than diarrhea)	15
Maternal Health	9
Nutrition and Food Sciences	14
Parasitic Diseases ✓	22
Perinatology ✓	19
Zoonoses	7

The above distribution gives some idea of the priority areas being addressed in the Region of the Americas and the predominance of research on infectious and diarrheal diseases. It is also of interest to note the marked increase in the number of projects presented under health services research from previous issues.

The projects were carried out in 33 countries of the Region and in approximately 13%, their activities involve more than one country.

Budgetary information was provided for 85 projects. Funds budgeted for the 1984-1985 biennium, if not stated, were estimated by assigning the project's total budget

equally over its duration. Consequently, it is estimated that a minimum of 4.1 million dollars was spent during the biennium. PAHO/WHO provided approximately 25% of this total in the form of direct monetary contributions excluding any consideration of staff time and use of facilities or equipment. The United States through the National Institutes of Health and the Agency for International Development provided approximately 22% of the total. In all, some 28 institutions, international organizations, agencies and governments collaborated with PAHO in funding the research described here.

In Annex I, a summary of active projects awarded during 1985 by the recently revised PAHO Research Grants Program is shown by program priority. Research grants under this program are now offered only to research groups or institutions in the following priority areas: health situation analysis; and health problems of specific population groups. Within the health situation analysis area, sub-areas of health profiles, technological development, health policies, labor market, utilization and accessibility of health services, financing of the health sector and utilization, accessibility and efficiency of environmental sanitation services have been identified as areas of high interest. With regard to the area of health problems of specific population groups, the sub-areas of particular interest are child survival, chronic diseases of adults, health problems of workers, and health problems of the aged. The Research Grants Program is designed to give modest support to research in these priority areas with imposed ceilings per project of \$20,000 and 2 years duration.

During 1985, the first year of operation, 68 projects totaling \$968,319 were approved for funding.

In Annex II we present, for the first time, information provided by WHO on institutionally based research related activities during 1984-1985 conducted in the American Region which were supported by WHO through technical services agreements. A total of 142 activities are shown according to the WHO classified list of programmes. These activities had total budgets of \$453,175 in 1984 and \$1,613,231 in 1985.

In Annex III, information from the Special Programme for the Control of Diarrheal Diseases is presented for projects active in the American Region during 1984-1985. The projects are listed by Scientific Working Group with budgets for 1984 and 1985. A total of 79 projects were carried out in 17 countries of the Americas amounting to \$1,792,358 of programme funds for the biennium.

In Annex IV, a summary of activities of the WHO/UNDP/World Bank Special Programme for Research and Training in Tropical Diseases in the Americas during 1984-1985 is presented by country. This program has funded 355 projects in 18 countries during 1984-1985 with budgeted amounts of \$5,435,919 in 1984 and \$6,615,732 in 1985. The biennial budget of \$12,051,651 represents 35% of the total program budget for the biennium.

There are many gaps in this publication but we hope that, as in the past, it will serve as one of the ways by which information about research activities in progress in the Region of the Americas and PAHO's contribution to that effort both directly and catalytically is made known. PAHO is committed to the exchange of information as a mechanism of speeding progress toward the goal of Health for All by the Year 2000.

This publication is the result of a collaborative effort of many people who contributed the information presented here. Their contributions are gratefully acknowledged. We would also like to thank all those who worked so hard to produce the publication in its final form.

Unit of Research Coordination

May 1987

Collaborative Cancer Treatment Research Program (CCTRP)

OBJECTIVES

This is a program of clinical cancer research involving Phase II and III studies. The objective is to enhance the cancer clinical research abilities of investigators, institutions and countries, and consequently, to improve the treatment and care of cancer patients. The CCTRP also includes a short-term training component for junior physicians and nurses.

METHODS AND APPROACHES

The basis for each study is the clinical research protocol which is prepared in conjunction with a Latin American principal investigator and a coinvestigator in the United States. It is reviewed by the Scientific Advisory Committee of the CCTRP and approved by the Institutional Review Board (IRB) of each institute.

RESULTS AND CONCLUSIONS

As of 31 December 1985, over four thousand patients have been entered in some 45 protocols. This represents eight years of active research in protocols which cover the full range of cancer sites. Thirty-five persons have been trained in the fellowship program.

OTHER DATA

<u>Investigator(s):</u>	Dr. Jorge Litvak, Dr. Santiago Pavloski and Dr. Jane Carey
<u>Institution:</u>	Grupo Argentino de Tratamiento de la Leucemia Aguda (GATTS); Grupo Argentino de Tratamiento de los Tumores Solidos (GATTS); Instituto "Angel H. Roffo"; Hospital A. C. Camargo; Instituto Nacional de Cancer; Universidad Catolica de Chile y Hospital San Jose; Hospital Luis Clavo Mackenna; Hospital de Niños "Dr. Carlos Saenz Herrera"; Hospital de Oncologia, Instituto Mexicano del Seguro Social; Instituto Nacional de Enfermeras Neoplasicas; Hospital de Clinicas, "Dr. Manuel Quintela"; Georgetown University Hospital; M.D. Anderson Hospital and Tumor Institute; Memorial Sloan-Kettering Cancer Center; University of Wisconsin; Baylor University Medical Center; New York University Medical Center; University of Maryland Cancer Center
<u>Country:</u>	Argentina, Brazil, Chile, Costa Rica, Mexico, Peru, Uruguay, United States of America
<u>Technical Program Responsible:</u>	Adult Health Program
<u>Duration:</u>	1977 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
U.S. National Cancer Institute (December 1984-November 1985)	US\$ 267,000

PUBLICATIONS RESULTING FROM THE RESEARCH

A total of 87 papers and abstracts have been published based on the protocols of the program, during the last eight years.

Latin American Cancer Research Information Program (LACRIP)

OBJECTIVES

To collect and disseminate cancer information from and to Centers of Latin America and the Caribbean.

METHODS AND APPROACHES

Abstracts are selected from updates of the CANCERLINE database of the U.S. National Cancer Institute and included in the LACRIP Selective Dissemination of Information (SDI) quarterly bulletin. Bibliographic searches of the CANCERLINE databases are performed in response to individual requests. ICRDB publications and other materials are distributed to Latin American oncologists, as well as, the collections of ongoing cancer projects and protocols from the region which are forwarded to the CANCERLINE database.

RESULTS AND CONCLUSIONS

This has been an extremely successful program which has grown in size and in activities. As the problem of cancer in the Region increases, this program becomes more important.

OTHER DATA

<u>Investigator(s):</u>	Dr. Jorge Litvak, Dr. Santiago Pavlovsky and Ms. Lucia Hoffenberg
<u>Institution:</u>	Regional Library of Medicine (Biblioteca Regional de Medicina - BIREME) and seven LACRIP subcenters
<u>Country:</u>	Regional
<u>Technical Program Responsible:</u>	Adult Health Program
<u>Duration:</u>	1976 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 30,000
U.S. National Cancer Institute (July 1985 - July 1986)	US\$ 143,000
TOTAL	<hr/> US\$ 173,000

PUBLICATIONS RESULTING FROM THE RESEARCH

The Selective Dissemination of Information (SDI) and the PDQ/LACRIP, which is a current statement of prognosis, histology and treatment of 67 tumor sites.

Risk Factors in Chronic Diseases

OBJECTIVES

To identify the main risk factors for major chronic diseases.

METHODS AND APPROACHES

A multinational population based survey will be used in this study.

RESULTS AND CONCLUSIONS

Study in progress.

OTHER DATA

<u>Investigator(s):</u>	Dr. Helena Restrepo and Dr. Luis Ruiz
<u>Institution:</u>	Ministries of Health
<u>Country:</u>	Brazil, Chile, Cuba, Mexico and Venezuela
<u>Technical Program Responsible:</u>	Adult Health Program
<u>Duration:</u>	1985 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 75,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Treatment of Childhood Diarrhea in Rural and Urban Haiti, Community Level Knowledge, Acceptance and Use of Oral Rehydration Therapy

OBJECTIVES

To study community practices of treating childhood diarrhea one year after the initiation of the national program. Oral rehydration salt (ORS) distribution posts and mothers reaction/response to the program will receive particular attention.

METHODS AND APPROACHES

This descriptive study will focus on mothers and ORS distributors/promoters (both formal health services, at all levels as well as informal traditional healers) in 9 rural and 3 urban slum areas throughout the 4 regions of the country. Information will be collected through questionnaires, focus groups, and in depth interviews of mothers, distributors and other key informants.

RESULTS AND CONCLUSIONS

The results point to major accomplishments of the national program in improving knowledge and use of ORT in a short period of time at relatively low cost. Social marketing and a commercial retail sales approach appear to have played a major role in the widespread use of ORS packets in urban areas. The training of health personnel was primarily responsible for increasing ORT use in rural areas. Much work needs to be done to mobilize community participation, particularly in rural areas where ORT use is much less widespread than in the capital city. In addition, health institutions are the major source of supply of ORS packets in rural areas.

Community volunteers appear ready to play a more important role in the program.

OTHER DATA

<u>Investigator(s):</u>	Dr. James Allman
<u>Institution:</u>	Center for Population and Family Health, Columbia University
<u>Country:</u>	Haiti
<u>Technical Program Responsible:</u>	Maternal and Child Health/Diarrheal Diseases
<u>Duration:</u>	1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 18,000

PUBLICATIONS RESULTING FROM THE RESEARCH

In preparation.

Impact of Health Education on the Control of Diarrhea

OBJECTIVES

To determine what effect a well structured health education program will have on the control of diarrheal disease.

METHODS AND APPROACHES

This study is an added component to an ongoing health education program. In the study, the behavioral changes induced by health education messages will be measured and correlations made with diarrheal disease morbidity. The study population consists of 400 families followed during the last two years grouped into 3 categories: a) families with low incidence of diarrhea; b) families with high incidence of diarrhea; c) families with significant changes in diarrhea rates over the last two years.

The diarrhea morbidity rates have been monitored by family visits and behavioral changes will be elicited by questionnaire and observation.

RESULTS AND CONCLUSIONS

Forthcoming.

OTHER DATA

<u>Investigator(s):</u>	Dr. David Bersh
<u>Institution:</u>	Fundación para el Desarrollo de la Salud en Quindío
<u>Country:</u>	Colombia
<u>Technical Program Responsible:</u>	Maternal and Child Health/Diarrheal Diseases
<u>Duration:</u>	1984 - 1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 5,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None

Community Acceptance of Oral Rehydration in Haiti

OBJECTIVES

To measure differential acceptance of oral rehydration therapy (ORT) according to characteristics of the family, source of information about ORT, and beliefs about the procedure.

To determine patterns of ORT use in the home.

To determine to what extent traditional healers have incorporated ORT knowledge and practice in their healing activities.

METHODS AND APPROACHES

The study was carried-out in a coastal town of Haiti in which a primary health care program was initiated 6 months previously and consisted of 3 parts:

1. A carefully designed and tested household survey questionnaire administered to mothers of children less than six years of age in 300 households.
2. Structured interviews with four categories of traditional healers (total of 20).
3. Collection of ethnographic data relevant to diarrheal disease, through interviews and visits.

Data will be analyzed using descriptive statistics, cluster analysis, analysis of variance, multiple classification and multiple regression analysis.

RESULTS AND CONCLUSIONS

The study found a one week prevalence rate of diarrhea of 34 percent in preschool children in both urban and rural areas with little difference related to source of drinking water. No serious cultural barriers were found that would conflict with ORT. Seventy-four percent (74%) of the mothers had heard of oral rehydration salt (ORS) and 39% knew where to buy ORS packets. About one half (48%) had used ORS in the past and 25% had used ORS in the previous week. Traditional healers generally accepted ORS and expressed interest in collaborating with health officials in the program.

OTHER DATA

<u>Investigator(s):</u>	Dr. Jeannine Coreil
<u>Institution:</u>	Department of Preventive Medicine and Community Health, University of Texas
<u>Country:</u>	Haiti
<u>Technical Program Responsible:</u>	Maternal and Child Health/Diarrheal Diseases
<u>Duration:</u>	1984 - 1985

FUNDING

Agency

PAHO

Amount

US\$ 25,134

PUBLICATIONS RESULTING FROM THE RESEARCH

Forthcoming.

**Epidemiological Characteristics of Infectious Diarrhea in Two Low Income
Communities with Different Sanitation Facilities Situated in
the City of Rio de Janeiro**

OBJECTIVES

To evaluate the impact of environmental sanitation on diarrhea.

To determine groups at high risk to diarrhea in relation to etiology, social and environmental variables.

To provide operational data for the health services concerning case evaluation duration and severity of disease and use of ORT.

METHODS AND APPROACHES

Two communities were selected: one with recently provided city water, electricity and sewage facilities; and the other, similar to the first, but without the environmental improvements. During 4 consecutive 6 month periods, 4 cohorts of children under 6 months of age will be followed in each community. Diarrheal surveillance will be established by weekly home visits (during which stool samples will be collected from all episodes of diarrhea), and anthropometric measurements obtained monthly. Socioeconomic status will be determined by a questionnaire at the beginning of the study.

RESULTS AND CONCLUSIONS

Study in progress.

OTHER DATA

<u>Investigator(s):</u>	Dr. Maria do Carmo Leal
<u>Institution:</u>	National School of Public Health, Oswald Cruz Foundation Ministry of Health
<u>Country:</u>	Brazil
<u>Technical Program Responsible:</u>	Maternal and Child Health/Diarrheal Diseases
<u>Duration:</u>	1983 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 39,935

PUBLICATIONS RESULTING FROM THE RESEARCH

None

Frequency, Clinical Characteristics and Transmission Mechanisms of Diarrhea by Campylobacter jejuni

OBJECTIVES

The objective of this project is to perform an etiological study to determine the relative frequency of Campylobacter associated diarrhea in the southeastern highlands of Mexico.

METHODS AND APPROACHES

The study will examine a sample of 600 children less than five years of age: 400 cases and 200 controls. The sample cases will be selected from multiple clinical facilities in the areas of San Cristobal and Comitán, each of which differ dramatically in altitude, climate and diarrheal problems.

An analysis of home and environmental factors to assess the socioeconomic conditions of each positive diarrheal case will be made. Campylobacter isolations will be verified and strains characterized using ISET-SSA for confirmation.

RESULTS AND CONCLUSIONS

The data obtained from a total of 450 cases and 252 controls showed that Campylobacter isolation rates were essentially the same in each group and could be isolated from cases for up to 5 weeks following recovery. Cases of diarrhea from which Campylobacter were isolated lasted from 2 to 21 days with an average of 8 days illness.

Mucous was identified in feces of 15/25 cases and blood identified in 11/25 cases. Fever and vomiting were also fairly common symptoms. The organism was isolated frequently from animals and other family members of those cases and controls with positive isolations.

OTHER DATA

<u>Investigator(s):</u>	Dr. Emilio Escarzaga
<u>Institution:</u>	Centro de Investigaciones Ecológicas del Sureste
<u>Country:</u>	Mexico
<u>Technical Program Responsible:</u>	Maternal and Child Health/Diarrheal Diseases
<u>Duration:</u>	1983 - 1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 15,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None

Oral Rehydration Therapy in the Home and at the Community Level: Educational Modules for its Application

OBJECTIVES

The main objectives of this project are to complement the initiatives of the National Commission by: 1) identifying cultural aspects which would facilitate the use of oral rehydration therapy by mothers; 2) designing educational models for the application of oral rehydration therapy in the home and community setting; and 3) promoting behavioral change in the knowledge and treatment of diarrheal diseases.

METHODS AND APPROACHES

The district of Itauguá was chosen as the study site because of its geographical and economic similarities to other districts of the country. A knowledge, attitude and practice (KAP) questionnaire will initially be applied in two communities (375 per community) of the district to obtain basic population and treatment behavior information regarding the prevention and control of diarrheal diseases. Subsequently, a cadre of health personnel, community leaders, school teachers, and other community participants will receive training in teaching oral rehydration therapy techniques and basic health education methods to mothers. A comprehensive series of health education graphic methods, such as slides, posters and flyers, as well as, radio and TV spots will be developed. One community will receive both oral rehydration therapy health education and training intervention information while the other will receive only oral rehydration therapy training without any health educational input. An extensive series of evaluations are programmed for each community to determine the degree of health education effectiveness and change of behavioral attitudes and knowledge gained.

RESULTS AND CONCLUSIONS

The information accumulated from this project showed an initial lack of general knowledge on the problems of diarrheal disease (prevention, causes, etc.) and little knowledge of oral rehydration therapy. Nevertheless, the general knowledge was increased following a two-week community health education campaign.

OTHER DATA

<u>Investigator(s):</u>	Dr. Olimpia Gaona de Godoy
<u>Institution:</u>	Departamento Materno-infantil, Ministerio de Salud Pública
<u>Country:</u>	Paraguay
<u>Technical Program Responsible:</u>	Maternal and Child Health/Diarrheal Diseases
<u>Duration:</u>	1983 - 1985

FUNDING

Agency

PAHO

Amount

US\$ 9,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None

**Epidemiology of Rotavirus, Enterotoxigenic E. Coli, and
Campylobacter jejuni in Suriname**

OBJECTIVES

To determine the incidence and risk factors associated with acute and prolonged diarrheal disease in children less than 5 years of age and to make epidemiological correlations with etiology and the effect of breastfeeding.

METHODS AND APPROACHES

All children, less than 5 years of age in a population of about 5,000 will be followed for occurrence of diarrheal disease by twice weekly home visits over a period of two years. A knowledge attitude and practices (KAP) home survey will be conducted at the beginning and end of the study. Stool specimens will be collected from each child experiencing a diarrheal episode for laboratory examination. Specimens will also be collected from an appropriate number of healthy age/sex matched control children.

Data will be analyzed to identify correlations among risks factors, etiology, acute and chronic diarrhea, and effect of breastfeeding.

RESULTS AND CONCLUSIONS

Study in progress.

OTHER DATA

<u>Investigator(s):</u>	Dr. Sandra Hermelijn
<u>Institution:</u>	Department of Microbiology and Immunology, Institute for Biomedical Sciences
<u>Country:</u>	Suriname
<u>Technical Program Responsible:</u>	Maternal and Child Health/Diarrheal Diseases
<u>Duration:</u>	1983 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 12,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None

**Longitudinal Study on the Epidemiology and Etiology of Infant
Gastroenteritis and its Relationship to Nutritional Status**

OBJECTIVES

To describe clinical and epidemiological characteristics of child gastroenteritis in a low-income urban community and establish the relative distribution of viral, bacterial, and parasitological etiologies.

To study the relationship between diarrheal disease and nutritional status and to operationally evaluate the feasibility and acceptability of home oral rehydration therapy.

METHODS AND APPROACHES

The study, to be carried-out in a community of about 900 families uses a prospective cohort design and follows all children under 5 years of age for one year. The core study will be an active surveillance system with evaluation of clinical, laboratory and epidemiological characteristics. Family summary questionnaires will be utilized to obtain baseline data and in attempts to identify risk factors.

RESULTS AND CONCLUSIONS

Study in progress.

OTHER DATA

<u>Investigator(s):</u>	Dr. José O. Mora and Dr. Jorge Suescun
<u>Institution:</u>	Escuela Colombiana de Medicina, and Instituto Nacional de Salud
<u>Country:</u>	Colombia
<u>Technical Program Responsible:</u>	Maternal and Child Health/Diarrheal Diseases
<u>Duration:</u>	1983 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO (1983-1985)	US\$ 59,134

PUBLICATIONS RESULTING FROM THE RESEARCH

None

Investigations of the Role of Traditional Medicine in the Home Management of Diarrheal Diseases

OBJECTIVES

To document existing folk descriptions, beliefs, practices and traditional leaders involved in the home management of diarrheal episodes.

To correlate popular disease etiologies with biomedical classifications of enteric disease in order to facilitate communication between traditional healers and physicians and to propose optimal management practices.

To assess the impact of the introduction of ORT administered by traditional healers on subsequent-in-home diarrhea management and identify major cultural barriers to its acceptance.

METHODS AND APPROACHES

Ten traditional healers will be interviewed in depth and observed directly while healing children. Five randomly selected children from each healer's case load (50 children) will be followed throughout their episode to establish remedies given, expenditure, therapeutic outcome and etiology assigned by the healer. To correlate folk and biomedical etiologies, 30 randomly selected children will be selected for the folk illness "quintura" from an outpatient clinic. Stool samples and folk medical histories will be obtained. Following training of traditional healers in administering ORS, in depth observation will yield qualitative data on the healer-mother interaction and outcome. Chi square statistical analysis and statistical frequencies will be calculated, as appropriate, on folk-biomedical correlations, cost of remedies used, mothers using ORS, healers consulted, etc..

RESULTS AND CONCLUSIONS

OTHER DATA

<u>Investigator(s):</u>	Dr. Marilyn Nations
<u>Institution:</u>	Division of Geographic Medicine, Medical School, University of Virginia, Va., USA
<u>Country:</u>	Brazil
<u>Technical Program Responsible:</u>	Maternal and Child Health/Diarrheal Diseases
<u>Duration:</u>	1984 - 1987

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 9,998

PUBLICATIONS RESULTING FROM THE RESEARCH

None

**Regional Differences in Industrial Development, Development of
Health Services and Early Childhood Mortality from Acute Respiratory and
Diarrheal Diseases in Venezuela**

OBJECTIVES

To determine the relationship between health - illness and industrial development in Venezuela; and to the design of policies and health plans, among economic variables that may serve to identify priority population groups.

METHODS AND APPROACHES

It is proposed to compare child mortality (0-4 years) rates from diarrheal and respiratory disease with health service development in the context of industrial economic development for the years 1975-1981. By reviewing specific indicators, simple correlations will be determined:

1. Between industrial development and the development of health services.
2. Between industrial development and diarrheal and respiratory mortality in children.
3. Between health services development and diarrheal and respiratory mortality in children.

RESULTS AND CONCLUSIONS

Study in progress.

OTHER DATA

<u>Investigator(s):</u>	Dr. Waldo Revello
<u>Institution:</u>	Universidad Central de Venezuela
<u>Country:</u>	Venezuela
<u>Technical Program Responsible:</u>	Maternal and Child Health/Diarrheal Diseases
<u>Duration:</u>	1985 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 2,600

PUBLICATIONS RESULTING FROM THE RESEARCH

None

**Malnutrition and Diarrheal Diseases:
An Epidemiologic Study of their Interaction and Risk Factors**

OBJECTIVES

The major objective of the project is to test the hypothesis that preexisting malnutrition and other risk factors influence the incidence and duration of diarrheal disease in children in a disadvantaged area of Mexico City.

METHODS AND APPROACHES

The study was conducted in an urban slum that surrounds Mexico City, in a population of approximately 35,000. The primary subjects of the study are children 0 to 36 months of age. The number of children needed for this study is estimated to be 200; 50 from each nutritional category (normal, mild, moderate, and severe malnutrition). All children will be measured and weighed quarterly. A food and diet questionnaire with a checklist of items will be applied along with anthropometric measurements to obtain an approximation of quantity and quality of foods consumed by the child.

A diarrheal disease surveillance system was established to ensure that every child will be visited once a week by a social worker-medical student team to determine if the child has had diarrhea within that week. Subsequently, for every diarrheal case, a matched control will also be identified.

To facilitate data analysis, a series of crude and multivariate analyses will be performed to test statistical differences between one of the nutritional categories considered and to determine the probability of diarrheal disease vis-a-vis nutritional status.

RESULTS AND CONCLUSIONS

The final results of this study support the hypothesis that malnutrition is a predisposing factor for diarrheal disease. Children with moderate malnutrition experience a risk of diarrhea at least 60% higher than children with normal nutritional status. The effect of moderate malnutrition is much more evident for recurring episodes than for single isolated episodes.

These results suggest that limiting the adverse effects of diarrhea (through oral rehydration and continued feeding) on the child's nutritional status may actually reduce the occurrence of subsequent episodes of diarrhea.

OTHER DATA

<u>Investigator(s):</u>	Dr. Jaime Sepúlveda
<u>Institution:</u>	Centro de Estudios en Atención Primaria de la Salud Facultad de Medicina
<u>Country:</u>	Mexico
<u>Technical Program Responsible:</u>	Maternal and Child Health/Diarrheal Diseases
<u>Duration:</u>	1983 - 1985

FUNDING

Agency

PAHO (1983-1984)

Amount

US\$ 45,150

PUBLICATIONS RESULTING FROM THE RESEARCH

In preparation.

Campylobacter and Rotavirus Enteritis in Children in Barbados

OBJECTIVES

To determine the frequency, clinical, laboratory features and natural history of bacteriologically proven cases of Campylobacter and rotavirus in a case-control hospital based study incorporating clinical observation and biomedical and microbiological laboratory investigations.

METHODS AND APPROACHES

The study population is confined to children less than five years of age, selected from the Queen Elizabeth Casualty Department, who are admitted with signs of acute diarrheal disease. Stool samples will be taken from 370 children and examined for Campylobacter and rotavirus. An equal number in the control group, matched for age and sex, will be selected and must fulfill the following criteria: 1) those who have not taken antibiotics within one month prior to admission, and 2) those who are totally free of gastrointestinal symptoms. Urine and blood samples will be taken only from inpatients when clinical symptoms of septicemia or meningitis are present. Specimens and controls will be cultured on Skirrow's Mediu for C. jejuni.

RESULTS AND CONCLUSIONS

In a pilot study analysis of 400 children aged 3 months to six years with gastroenteritis, studied between July 15, 1983 and July 14, 1984, rotavirus (11%) was the most frequently identified pathogen followed by Shigella in 7%, E. Coli in 4%, Salmonella sp in 3% and C. jejuni in 1% of the children; eight (2%) had multiple pathogens. Rotavirus and C. jejuni cases were analyzed in detail by age, sex, symptoms, treatment, laboratory abnormalities and epidemiological characteristics. Of the patients with C. jejuni, 66% presented with bloody diarrhea and fever, while 80% of the rotavirus cases had diarrhea, 70% vomiting and 43% upper respiratory symptoms. C. jejuni strains were uniformly sensitive to Erythromycin, Tetracycline, Chloramphenicol, Gentamicin and Nitrofurantoin. All patients had an uneventful recovery after their illness.

OTHER DATA

<u>Investigator(s):</u>	Dr. Margaret Anne St. John
<u>Institution:</u>	Queen Elizabeth Hospital
<u>Country:</u>	Barbados
<u>Technical Program Responsible:</u>	Maternal and Child Health/Diarrheal Diseases
<u>Duration:</u>	1983 - 1984

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 12,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None

Development of an Instrument for the Efficient Targeting of Households at High Risk for Childhood Diarrhea Related Morbidity

OBJECTIVES

To design and test risk assessment instruments from data already collected.

To develop a pilot training program for auxiliary health care workers in the use of this risk assessment tool. To deploy these trained workers to perform using the instrument, a baseline risk assessment of the child population; and, to initiate a prospective collection of health outcome data.

METHODS AND APPROACHES

Data already collected will be analyzed to identify combinations of readily observable risk factors which reliably predict childhood morbidity at the household level. Following the identification of these risk factors, statistical models will be constructed and tested both retrospectively and prospectively. Ultimately, a practical model will be selected based on ease of observation, recording and unobtrusiveness of risk factors. A pilot training program will be established for peripheral health or lay workers and the model will be deployed and tested in the field.

RESULTS AND CONCLUSIONS

Study in progress.

OTHER DATA

<u>Investigator(s):</u>	Dr. Norman F. White
<u>Institution:</u>	McMaster University
<u>Country:</u>	Grenada
<u>Technical Program Responsible:</u>	Maternal and Child Health/Diarrheal Diseases
<u>Duration:</u>	1985 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 24,700

PUBLICATIONS RESULTING FROM THE RESEARCH

None

Monitoring and Maintenance of Treated Water Quality in the San Juan Lagoons Supporting Aquaculture

OBJECTIVES

To conduct the necessary testing to evaluate the treated sewage quality in relation to established criteria for aquaculture;

To determine the necessary waste stabilization pond pretreatment levels needed in order to maintain required treated sewage quality in lagoons supporting aquaculture;

To manage, monitor and maintain adequate water quality in the pretreatment and aquaculture ponds.

Secondary objectives include assistance to national authorities in training researchers, especially through in-service training, and the dissemination of information on aquaculture with undiluted treated sewage.

METHODS AND APPROACHES

The study took place in the San Juan de Miraflores ponds low battery, in series (P1-S1-T1-C1), (P2-S2-T2-C2-Q2). For the purposes of the study, the primary ponds worked with organic discharges of 250 to 350 Kg of DBO/Ha-day. The primary, secondary and tertiary ponds were operated in continuous flow. The quaternary and quinary were batch operated receiving only the necessary flow to compensate for evaporation and infiltration. Flow measures, daily observations, diurnal water quality measures, primary productivity measures and laboratory measures were taken to obtain data on quality. Toxicological measures were taken on fish.

RESULTS AND CONCLUSIONS

The three waste stabilization ponds operated in the series of continuous flow with average loadings of 250-35 Kg-BOD₅/ha-day did not produce water of suitable quality for fish culture purposes in the tertiary continuous flow treatment ponds.

Advanced polishing ponds operated in batch mode (make-up water only) were suitable for fish culture purposes relative to water quality. However, the San Juan pond design, from an operational point of view, is inadequate for controlled fish culture experiments. Especially designed fishponds are recommended.

The key water quality parameter for fish growth and production appeared to be ammonia. For a maximum loading of 350 Kg₅/ha-day, it was possible to maintain a low ammonia concentration in batch operated polishing ponds for the pH, temperature and alkalinity conditions of the San Juan ponds. The following maximum ammonia concentrations are recommended: Total ammonia (NH₃g + NH₄) - 2.0 mg-N/l; Average un-ionized ammonia (NH₃g) - 0.5 mg-N/l; Short duration NH₃g diurnal peaks - 2.0 mg-N/l.

Under the above conditions, the dissolved oxygen concentration in the advanced fishponds did not present problems, even with normal diurnal variations and heavy benthic deposits. Detergents do not appear to present problems for fish at San Juan with fishpond values generally maintained below 1 mg-MBAS/l of ABS detergents.

Complete protozoa and helminth removal was achieved in the primary and secondary treatment ponds; human intestinal parasites presented no problem in fishponds. Fecal coliform concentrations in the advanced fishponds were effectively maintained below 10^4 MPN/100 ml, at which level no problems were manifested in the fish. Fecal coliforms appear to be an appropriate indicator bacteria for pathogens in fishponds.

Good treatment pond design practice is vital for pathogen removal. Among the factors to be considered are: the use of baffled outlet structures to prevent pathogen breakthrough with solids, and the proper positioning of inlet and outlet structures and pond shape to achieve adequate hydraulic retention times in tropical climates where ponds are subject to shortcircuiting due to thermal stratification.

While it is technically possible to manage water quality, the human element cannot be forgotten. Experimental fishpond sites need adequate protection from external manipulation by neighboring populations and other effluent users.

OTHER DATA

<u>Investigator(s):</u>	Carl R. Bartone, Maria Luisa Esparza, Carmen de Mayo, Olga Rojas, Tadeo Vitko
<u>Institution:</u>	Pan American Center for Sanitary Engineering and Environmental Services (CEPIS)
<u>Country:</u>	Peru
<u>Technical Program Responsible:</u>	Environmental Health Services/CEPIS
<u>Duration:</u>	1983 - 1984

FUNDING

<u>Agency</u>	<u>Amount</u>
UNDP/World Bank (Phase I: April 1983 - December 1983) GTZ (Phase II: March 1984 - August 1984)	

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Monitoring and Maintenance of Treated Water Quality in the San Juan Lagoons Supporting Aquaculture.
(UNDP/World Bank/GTZ Integrated Resource Recovery Project GLO/80/004) Final Report of Phases I-II

**Demonstration Project of Nonconventional Systems of Sanitation
Applied to Marginal Urban Areas**

OBJECTIVES

To improve the sanitary conditions of marginal urban areas, develop low cost appropriate technologies, and train Peruvian professionals.

METHODS AND APPROACHES

To establish a working group that implements a program for a) improvement of the bacteriological quality through chlorination and permanent control of the water; and b) construction of ventilated dry latrines and absorbent pits with reduced discharge toilets. The active participation of the community is considered in this work to attain self administration and a program of civic sanitary education of the population.

RESULTS AND CONCLUSIONS

None yet.

OTHER DATA

Investigator(s): Alberto Florez Muñoz, María Luisa C. de Esparza
Institution: Pan American Center for Sanitary Engineering and Environmental Services (CEPIS)
Country: Peru
Technical Program Responsible: Environmental Health Services/CEPIS
Duration: 1985 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO/CEPIS	US\$ 11,000 (per year)
Ministry of Health of Peru	US\$ 1,000
TOTAL	<hr/> US\$ 23,000

PUBLICATIONS RESULTING FROM THE RESEARCH

1. "Asistencia Técnica para una Construcción de Unidades de Demonstración de Saneamiento Básico para el Pueblo de Huaycán", by Eng. Ruy Gomes do Rego. Lima, July 1985.

Evaluation of the Efficiency and Operational Requirements of a Anaerobic Reactor with Rising Flow and Sludge Layer

OBJECTIVES

Departing from the hypothesis that an up flow anaerobic biological reactor (UABR) reactor is highly efficient in removal of BOD, the performance of a UABR constructed in San Juan de Miraflores, Lima, Peru, will be evaluated on a pilot scale (1-3L/sec). The removal of BOD, colifecals, and other parameters will be measured. The optimal form of operation of the reactor will be determined, chiefly in relation to the elimination of excess sludge. The advantages and disadvantages of the natural maturation of the reactor versus the use of inocula from other reactors will be evaluated.

METHODS AND APPROACHES

A bibliographical research will be made and meetings held with investigators having experience in this field. An experimental reactor will be constructed and a multidisciplinary team (two sanitary engineers, one chemist, one biochemist, and one electromechanical technician) in charge of developing the protocol and carrying out research constituted.

RESULTS AND CONCLUSIONS

The construction of the experimental reactor is being finished. Preliminary contacts have been made with persons responsible for carrying out the study.

OTHER DATA

<u>Investigator(s):</u>	Rodolfo Sáenz, Coordinator, María Luisa de Esparza, Ruddy Noriega, Mauricio Rico, Guido Canales
<u>Institution:</u>	Pan American Center for Sanitary Engineering and Environmental Science (CEPIS), Servicio Nacional de Agua Potable y Alcantarillado (SENAPA), SEDAPAL, ENTRONO ECOLOGICAL, ITINTEC
<u>Country:</u>	Peru
<u>Technical Program Responsible:</u>	Environmental Health Services/CEPIS
<u>Duration:</u>	1985 - 1987 (30 months)

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO/CEPIS	US\$ 40,500

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Mansur Aisse, Miguel. Tratamiento de desagües domésticos en reactores anaeróbicos de manto do lodos de flujo ascendente. CEPIS/PAHO/WHO. Lima, Peru, 1985. 71 p.

Diagnosis of Vesicular Diseases of Livestock

OBJECTIVES

In order to establish standardized diagnostic procedures on the South American Continent, a continuous research program has been directed towards adapting virological and serological techniques in order to develop practical tests for use by national diagnostic laboratories.

A vaccine made with one particular Foot-and-Mouth Disease (FMD) virus strain may be satisfactory for use in a certain area, but may not adequately protect livestock of other regions in the same country or in neighboring countries.

To ensure vaccine effectiveness, a well-functioning monitoring system is needed to examine a large number of field strains. Moreover, it is important to recognize epidemiologically important strains in order to determine if these emerging field strains are still covered by the immunogenic characteristics of the vaccine strains.

Close cooperation between the Member Countries and the Center has made it possible to identify the FMD virus subtypes present in the field, and to study their immunological relationship with the virus strains used in the production of vaccines.

FMD virus strains in South America have been identified precisely by using epidemiological information in combination with modern virological, serological and biochemical procedures. The focus of the study will be on the identification of new variants of strains of the virus that may appear in the field and a study of its behavior, evolution and fate. The study will allow a more precise characterization of FMD vaccine variants in the field in South America and combined with epidemiological, serological and biochemical studies, it may be possible to establish the origin of the field strains. A precise knowledge of the South American strains is of great importance in relation to outbreaks which may occur in other parts of the world.

METHODS AND APPROACHES

Field samples received at the Center are first examined by the CF and neutralization tests. If any doubt arises in regard to a possible lack of cross protection with the strains used for vaccine production, the mouse protection test is carried out using the Center's serum bank for reference.

Fingerprinting of the RNA genome is performed as described by La Torre *et al.* Briefly, the viral induced RNA produced during infection of BHK cells is labeled with P32 in the presence of Actinomycin D. The single stranded labeled-viral RNA is digested with T1 RNase and the resulting oligonucleotides are electrophoretically separated on one- or two-dimensional polyacrylamide gels. The samples are visualized by autoradiography of the gels.

For better identification of antigens and antibodies of vesicular diseases, the ELISA technique is employed. Appropriate antisera conjugates with peroxydase are prepared and different preparations of normal, purified and concentrated antigens are tested. For antibody determination the indirect ELISA test sandwich technique is tested.

RESULTS AND CONCLUSIONS

A study of an attenuated strain of FMD virus was completed. The 01 Campos FMD virus strain was modified by successive passages in chicken embryos; the object of the biochemical analysis was to determine the molecular mechanisms of attenuation.

The biochemical study analysed T1 RNase resistant fragments in one as well as two-dimensional (fingerprinting) gels. This allowed the localization of various differences at the genome level.

The study also included two-dimensional analysis for demonstrating that the viral polypeptide P100, precursor of the the viral polymerase, has a lower molecular weight in the modified virus. With this methodology, it was also possible to detect changes in other viral polypeptides as well as marked differences in the pI of the proteins of the purified virion.

A study of the variation in the size of the poly C tract of the FMD virus was also completed. The poly C sequence is localized at 400 nucleotides from the 5th end of the genome; the length varies between 80 and 200 nucleotides. The relevance of the modifications of the length to the biological functions are not known yet. For this purpose, the serological and biological properties of two C3 Resende (prototype Argentina) strains were studied. The only detectable difference is the length of the fragments of that poly C tract, the length of this fragment of the C3 virus was also analyzed from viruses isolated in the field or from other laboratories.

The results indicate that the poly C length is highly variable in certain closely related virus strains. These variations, therefore, are not related to virulence, at least in this case, as was previously stated by Harris and Brown.

Studies are continuing with field strains of epidemiological importance from South America through antigenic and biochemical characterization in order to detect correlations between antigenic changes and the molecular structure of the virus.

A field strain, A Sao Carlos/84 from the State of San Paulo, Brazil was studied for its serological relationship with the A vaccine strains A24 Cruzeiro and A Venceslau. This strain differs from these vaccine strains, but a revaccination with A24 Cruzeiro gives acceptable protection. The distribution of this strain in the field has been limited and it has not been identified after February 1985.

A new field strain A Sabana-Colombia/85 was compared antigenically with the A24 Cruzeiro vaccine strain. It differs from the vaccine strain, but sera from animals revaccinated with the A24 Cruzeiro strain indicated adequate protection.

Different preparations of hyperimmune sera obtained in guinea pigs through infection or infection by hyperimmunization with live virus and through immunization with inactivated and purified 140S antigen were compared for specificity. The serological tests indicate that the hyperimmune sera prepared with purified 140S antigen are more specific than the other sera.

The ELISA test was studied with several antigen preparation crude and purified by sucrose or cesium chloride density gradient. For FMD virus, the cesium chloride density gradient prepared antigen showed the least specificity. With the VS virus, the antigen can be pelleted by high speed centrifugation for one hour.

OTHER DATA

Investigator(s): Dr. Raúl Casas Olascoaga, Dr. Albino Alonso Fernandez, Dr. Magnus Stael Sondahl, Dr. Paulo Auge de Mello, Dr. Horacio Barahona, Dr. Ivo Gomes and Dr. Hans G. Bahnemann

Institution: Pan American Foot-and-Mouth Disease Center (PANAFTOSA)

Country: Regional

Technical Program Responsible: Veterinary Public Health/PANAFTOSA

Duration: Continuous

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	US\$ 62,000

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Costa Giomi M.P., I.E. Bergmann, E.A. Scodeller, P. Auge de Mello, I. Gomes, and J.L. La Torre. Heterogeneity of the Polyribocytidylic Acid Tract in Aphthovirus: Biochemical and Biological Studies of Viruses Carrying Polyribocytidylic Acid of Different Lengths. Journal of Virology, September 1984, p. 700-805.
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5. Fernandez, G., Mazzuca, G., Fernandez, E., Piñon, E., Alonso Fernandez, A. Estudios antigenicos e inmunogenicos de la cepa del virus C Argentina/84. Meeting Technical Committee, Europ. FMD Comm., FAO, Rio de Janeiro, 1985.

Foot and Mouth Disease Vaccine Production and Control

OBJECTIVES

To select Foot-and-Mouth Disease (FMD) virus strains that have a good immunizing spectrum against field strains and antigenic stability for vaccine preparation in South America.

To determine optimum conditions for FMD antigen production, inactivation, purification, concentration and stabilization of the antigen.

To produce, purify and concentrate the antigen for vaccine formulation under optimal conditions that least affect the stability and immunogenicity of the viral protein.

To continue the development of vaccine control procedures and vaccine production methods compatible with the infrastructure of the animal health services in South America, and in particular, with the national FMD control programs.

To develop standards for FMD vaccine control that assures the livestock industry the availability of vaccines that immunize a high percentage of vaccinated animals, and at the same time, protects vaccine producers from rejecting batches of effective vaccine.

To continue the development of vaccine potency control methods that do not require inoculation or exposure of large domestic animals to FMD virus.

To study the possible presence of oil residues or deposits in meat and organs of vaccinated cattle and swine.

METHODS AND APPROACHES

The Center's pilot plant annually produces 6,000,000 doses of trivalent oil adjuvanted vaccine to respond to the official requests from the countries. Even though the procedures used for production and control are standard and well known, it is possible to improve the methodology in accordance with the proposed objectives of the present project.

RESULTS AND CONCLUSIONS

In order to improve cell culture conditions and virus yields, the treatment of bovine serum for cell cultures with polyethylen glycol (PEG) was introduced on a pilot scale. Further improvements in filtration techniques for cell culture media with membrane filter cartridges resulted in increased antigen production.

The purification procedure using viral suspensions was improved through a micronization process, which gives a more intimate mixture of the viral suspension with chloroform. This enhances the removal of cellular lypoproteins and reduces the amount of undesirable proteins in the antigen preparation.

The production of better antigens with higher antigenic mass will allow the preparation of more potent vaccines without the need to concentrate antigens. This will also avoid problems with anaphylactic reactions after vaccination, which have been observed in vaccines with concentrated antigens.

Further studies on cell culture conditions, vaccine preparation procedures and process control are in progress.

Samples from the subtype C Argentina/84 epidemic were studied against sera from animals vaccinated with the standard vaccine strains C3 Rsende and C3 Indaial. This study indicated that there were antigenic differences and it was necessary to revaccinate the animals with the C Argentina/84 strain for adequate protection.

Likewise, samples from the A Sabana-Colombia/85 were studied against sera from animals vaccinated with the standard vaccine strain A24 Cruzeiro. Only sera from animals revaccinated with the A24 Cruzeiro vaccine indicated some moderate protection.

OTHER DATA

<u>Investigator(s):</u>	Dr. Raúl Casas Olascoaga, Dr. Hans G. Bahnemann, Dr. Julio Mesquita, Dr. Albino Alonso Fernandez, Dr. Magnus Stael Sondahl and Dr. Ivo Gomes
<u>Institution:</u>	Pan American Foot-and-Mouth Disease Center (PANAFTOSA)
<u>Country:</u>	Regional
<u>Technical Program Responsible:</u>	Veterinary Public Health/PANAFTOSA
<u>Duration:</u>	Continuous

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	US\$ 57,000

PUBLICATIONS RESULTING FROM THE RESEARCH

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2. Alonso Fernandez, Casas Olascoaga, R., et al. La producción y el control de calidad de la vacuna antiaftosa en America del Sur, Bull. CPFA (in Press).
3. Viana Filho, Y.L., Fernandez, G., Ravison, J.A., Durini, L., Alonso Fernandez, A. Correlation between 50% bovine protective dose (BPD50) and percentage protection against foot generalization (PG) in FMDV vaccine potency. Meeting Technical Committee, Europ. FMP Comm., FAO, Rio de Janeiro, 1985.

Geographical Regionalization of Foot-and-Mouth Disease

OBJECTIVES

To identify regional ecosystems according to the epidemiological characteristics of Foot-and-Mouth Disease (FMD).

To elaborate epidemiological models of vesicular diseases according to livestock production forms and ecological factors.

To characterize the risk of introduction of FMD into FMD free countries.

To select regional control strategies of FMD that account for the spatial behavior of the disease and results in more effective programs.

METHODS AND APPROACHES

The geographical pattern of a disease is usually graphically displayed on a map.

The statistical technique of cluster analysis is applied to find groupings of "n" areas into clusters (geographic aggregations). The clusters are determined by iterative methods, taking into account the geographical contiguity of the Omega endemism index.

In South America, the spatial distribution of FMD coincides with the distribution, management and trade of the livestock industry and with the identification of regional forms of livestock. Each production form has its own management production factors (natural resources, capital, work and technology), which, in turn, exert their influence on the trade in animals and in determining the behavior of FMD.

The basic methodologic criteria used to explain the behavior of FMD in different ecosystems implies the adequate selection and integration of indicators on the composition and dynamics of livestock production which permit the identification and characterization of extensive livestock production systems on the South American Continent. Geographical subdivisions with similar indicators are homogeneous grazing ecosystems. These concepts are applied in nearly all countries on the Continent. About 10 indicators are being considered in the application of multivariate statistical techniques using the PDP11/34 computer of the Center.

RESULTS AND CONCLUSIONS

A methodology was established for the characterization of the regional behavior and incidence of FMD and for types of agriculture and livestock management. Indicators that were proposed for some time, were perfected and successfully applied.

The application of statistical techniques using multivariate analysis to establish the limits of homogeneous regions, considering the relative weight of ecological and socio-economic factors of the agriculture and livestock organization were shown in detail. With the cooperation of the Center, all countries of South America have considered production factors in the regional characterization of FMD ecosystems.

OTHER DATA

<u>Investigator(s):</u>	Dr. Raúl Casas Olascoaga, Dr. Vicente M. Astudillo, Dr. Felix Rosenberg and Dr. Jaime Estupinan
<u>Institution:</u>	Pan American Foot-and-Mouth Disease Center (PANAFTOSA)
<u>Country:</u>	Regional
<u>Technical Program Responsible:</u>	Veterinary Public Health/PANAFTOSA
<u>Duration:</u>	Continuous

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 12,000

PUBLICATIONS RESULTING FROM THE RESEARCH

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3. Astudillo, V.M., Dias, L.E., Muzio, F., Figares, L., Sallua, S., Lyford-Pike, V.J., Da Silva, A.M., Geographic clusters of Foot-and-Mouth Disease (FMD), Presented at the III Intern. Symp. Veterinary Epidemiology and Economics. Arlington, Virginia, USA, 6-10 Sept. 1982.
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8. Rosenberg, F.J., Astudillo, V.M., Goic, R., Regional strategies for the control of FMD: An ecological outlook. Proc. Second In. Symp. Vet. Epid. Econ. Australian Bureau of Animal Health. Canberra: 587-596, 1979.

Operational Aspects of Foot-and-Mouth Disease Programs and their Impact

OBJECTIVES

Improve the effectiveness and efficiency of national Foot-and-Mouth Disease (FMD) programs.

To assess the physical losses caused by FMD in cattle and economic losses to the livestock property.

METHODS AND APPROACHES

Current economic conditions have indicated a need for the rationalization and evaluation of FMD programs in order to increase their efficiency and reduce operational costs.

With the exception of a rough estimation, little information for physical losses from by FMD is available. Several studies have been made with more or less theoretical models, but field data are used in this study which has characteristics similar to prospective epidemiological studies. Groups of cattle (cases) with FMD and groups of cattle without FMD (controls) were followed for 12 months. During this time, cattle production was systematically evaluated.

RESULTS AND CONCLUSIONS

Vaccination cost methodology has been developed and studies on vaccination unit costs carried out in Paraguay. Development of computing algorithms for the optimization of veterinary assistance and vaccination procedures in the field is in progress.

A study was carried out in FMD endemic areas of Brazil where the cattle population was systematically vaccinated to evaluate the losses from FMD. The susceptibility of cattle was not high in the areas selected for study: south of the State Rio Grande do Sul, east of the State of Sao Paulo, and a dairy area in the north of the State of Rio de Janeiro.

The sample of meat cattle in Rio Grande do Sul contained 28 herds with 644 animals, the sample in Sao Paulo, 21 herds with 597 animals, and the sample of dairy cattle in Rio de Janeiro, 36 herds with 1024 animals.

With regard to milk production, it was concluded that significant losses occur in diseased cows compared to similar healthy cows. The losses are most pronounced in cows up to the fourth lactation period, and less so in cattle after the 5th-7th calving. Within a lactation period, the losses were clearly higher during the first week but decreased towards the end of the lactation.

Significant losses in meat production or body weight loss were also observed in the FMD affected group of steers when compared with similar non-affected steers. Live weight loss was more pronounced in young animals, but decreased in adult animals. The estimated time needed for recovery of the weight loss was greater in the areas of the study with predominantly Zebu cattle than in those with European breeds.

OTHER DATA

Investigator(s): Dr. Raúl Casas Olascoaga, Dr. Felix Rosenberg,
Dr. Vicente M. Astudillo and Dr. Jaime Estupiñan

Institution: Pan American Foot-and-Mouth Disease Center
(PANAFTOSA)

Country: Regional

Technical Program
Responsible: Veterinary Public Health/PANAFTOSA

Duration: Continuous

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 8,000
Inter-American Development Bank	
Ministry of Agriculture, Brazil	

PUBLICATIONS RESULTING FROM THE RESEARCH

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4. Fontelles Thomas, A.C. & Negreiros G., F.J. Metodologia do sistema para analise de perda na producao de leite em rebanho bovino com febre aftosa. (Unpublished).
5. Machado, Jr., Malaga, H., Orlando, E.O., Barros, L., Freire de Faria, J. Perdas em producao e produtividade de gado bovino com febre aftosa no Brasil. Abstract. Presented at the First International Conference on the the Impact of Viral Diseases on the Development of Latin American Countries and the Caribbean Region, Rio de Janeiro, Brazil 21-26 March 1982. In: Anais/Abstracts, p. 35, 1982.
6. Negreiros, F., Gomes, A.C., Fontellos Thomaz, A.C. Loss in milk production due to Foot-and-Mouth Disease in a dairy herd. A statistical analysis. In: Third Intern. Symp. Veterinary Epidemiology and Economics, Arlington, Virginia, USA 6-10 Sept. 1982. pp. 206-209, 1983.

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A Survey on the Needs of Elderly Persons

OBJECTIVES

To know the socioeconomic and health characteristics of elderly persons. It is hoped that the study's results will constitute the basis for the establishment of policies, plans, and programs for elderly persons.

METHODS AND APPROACHES

The study (which also includes 11 other countries) employs a household survey of a sample of the population 60 years of age and older, urban or total, in accordance with the decision of each country.

RESULTS AND CONCLUSIONS

The study is in progress.

OTHER DATA

<u>Investigator(s):</u>	Dr. Elías Anzola Pérez
<u>Institution:</u>	National Institute of Geriatrics and Gerontology, Venezuela Ministry of Planning, Trinidad and Tobago
<u>Country:</u>	Venezuela and Trinidad and Tobago
<u>Technical Program Responsible:</u>	Adult Health Program
<u>Duration:</u>	1985 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	US\$ 32,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Nosocomial Infection (Control and Surveillance)

OBJECTIVES

To undertake prevalence and cost analysis studies of infections in hospital patients.

METHODS AND APPROACHES

Patients' notes are reviewed to identify infections and classify them on the basis of being community-acquired (those infections present on admission of patient) or hospital acquired, those infections acquired in hospital. Hospital-acquired infections are further subdivided into active i.e. those being treated at the time of the study, or inactive. Standard definitions of infections are used (based on material from the Centers for Disease Control in Atlanta, Georgia). Boarders or patients remaining in the hospital only for social reasons and admitted on the day of study are excluded. Data are also collected on surgical procedures, and on the use of intravenous, respiratory and bladder equipment on patients in order to identify any relationship with hospital-acquired infections.

RESULTS AND CONCLUSIONS

Study in progress.

OTHER DATA

<u>Investigator(s):</u>	Dr. Christopher Bartlet, Dr. Carol Boyd-Scobie, Dr. Mirta Roses, Nurse Sherlyn Monteil
<u>Institution:</u>	Caribbean Epidemiology Center (CAREC)
<u>Country:</u>	Trinidad, Jamaica, Antigua, St. Lucia
<u>Technical Program Responsible:</u>	Health Situation and Trend Assessment/CAREC
<u>Duration:</u>	1985 - 1987

FUNDING

<u>Agency</u>	<u>Amount</u>
U.S.A.I.D.	US\$ 290,430

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Cold Chain Testing Program

OBJECTIVES

To test refrigerators, freezers and cold boxes to determine if they are capable of storing vaccines at temperatures of +0°C to +8°C (refrigerators/cold boxes) and at -15°C to -20°C (for freezers) in ambient temperatures of +32°C and +43°C.

METHODS AND APPROACHES

Using a testing chamber whose temperature is set at +32°C or +43°C, all refrigerators, freezers, cold boxes, and ice makers are monitored to verify if the proper temperatures are obtained and maintained. Each testing cycle lasts an average of 60 days during which all equipment is submitted to the following performance tests:

- (a) The stable internal temperatures under normal operating conditions to include freezing of ice-packs.
- (b) The length of time the refrigerator/freezer can maintain internal temperatures below +10°C when the power supply is removed.
- (c) The ability of ice-pack freezers or freezing compartments of refrigerators to freeze cold packs within a 24-hour period.

In the case of ice-pack freezers, only the following tests are necessary:

- (a) The freezing capacity at +32°C and +43°C ambient.
- (b) Ice-loss measurement at +32°C and +43°C ambient, given time intervals of 6, 12 and 18 hours.
- (c) Chest freezers are tested only for their capability to maintain either vaccine or pre-frozen ice-packs at -15°C at ambient temperatures of +32°C and +43°C.

RESULTS AND CONCLUSIONS

All test results on equipment which passed the testing protocols are published in the WHO/UNICEF product information sheets and EPI/CCIS reports from WHO/Geneva. In addition, test results which have operational significance for field workers are published in the EPI Newsletter.

OTHER DATA

<u>Investigator(s):</u>	Mr. Peter Carrasco, Dr. Ciro de Quadros
<u>Institution:</u>	Universidad del Valle, Cali
<u>Country:</u>	Colombia
<u>Technical Program Responsible:</u>	Maternal and Child Health/Expanded Program on Immunization (EPI)
<u>Duration:</u>	1981 - present

FUNDING

Agency

WHO/Geneva

Amount

US\$ 130,000

PUBLICATIONS RESULTING FROM THE RESEARCH

WHO/UNICEF Product Information Sheets, SUPDIR 55 AMT5 1985, WHO/UNICEF.

Guidelines for the Process of Development of Physical Resources in Health

OBJECTIVES

In general, to provide an instrument for research and planning in a rational and coordinated form the development of physical resources in health in countries of the Region.

Specifically: to promote interdisciplinary participation among groups devoted to solving problems of physical resources in health; to rationalize decision making concerning investments in the health sector; to provide methodological guidelines to enable alternative solutions, without presenting finished models or numerical indicators; to provide a teaching and learning instrument for manpower training; to contribute to the selection of appropriate technologies so as to initiate a process of standardization at the level of the responsible institutions, and to focus on the development of physical resources both in new projects and in the adaptation of the installed existing physical capacity.

METHODS AND APPROACHES

Each participating center will prepare a detailed plan of work to develop guidelines for its assigned topics. Working groups will be established to prepare guidelines and observe the level of progress.

Each guideline will undergo a period of internal testing and evaluated at the international level for 6 months. A total of 24 guidelines will be developed -- CIRFS will prepare 6 guidelines and 7 others jointly; UNICAMP will prepare 4 guidelines and 4 others jointly; FNH will prepare 7 guidelines and two others jointly.

Working groups will advise and orient staff of health ministries and social security institutions in the planning of physical resources in health as needed.

RESULTS AND CONCLUSIONS

None yet.

OTHER DATA

<u>Investigator(s):</u>	Dr. Jorge Castellanos, Eng. Angel Viladegut
<u>Institution:</u>	Center for Research on the Planning of Physical Resources in Health (CIRFS), University of Buenos Aires, Argentina; Center for Bio-Physical Engineering, State University of Campinas (UNICAMP), Brazil; National Hospital Fund, Ministry of Health (FHN), Colombia
<u>Country:</u>	Argentina, Brazil, Colombia, and others
<u>Technical Program Responsible:</u>	Health Services Development
<u>Duration:</u>	1985 - 1987

FUNDING

Agency

Amount

PAHO/WHO

PUBLICATIONS RESULTING FROM THE RESEARCH

Forthcoming guidelines.

Study of the Characteristics of the Organization of Medical Care in Latin America

OBJECTIVES

To provide the Member Countries and the Secretariat of PAHO with an informative and up-to-date basis on which to determine priorities in technical cooperation and future studies of greater depth in specific aspects of the organization and delivery of medical services.

To identify areas and opportunities where the countries could mutually benefit from their experiences so that PAHO can promote and facilitate such an exchange.

METHODS AND APPROACHES

A working group met in Washington, D.C., in April 1984 and prepared guidelines to serve as a working document to orient the studies mentioned.

At the country level and with advisory services from the local PAHO offices, national groups were formed and made responsible for carrying out the case studies.

The comparative study, based on case studies, was begun in 1985 in Washington, D.C. and is expected to be completed in April 1986.

The study in the Caribbean would follow the same methodology, and include a questionnaire to ensure more uniformity of the case studies. These studies would be initiated in the English-speaking Caribbean and Haiti in 1986.

RESULTS AND CONCLUSIONS

The areas considered to be of interest and expected to become topics for the comparative analysis are: extension of medical care coverage; efficient use of resources for the delivery of services; and effectiveness of these services in relation to health needs at the level of the community and the home.

Two other topics of interest, which are closely interrelated, are the political, social, and economic context within which medical care is provided and the participation of the population in the identification and solution of its health care needs.

For the case studies, six areas of analysis were identified:

a) The organization of medical care; b) its administration; c) its financing; d) availability and distribution of human resources; e) availability and distribution of physical resources; and f) the technology utilized for the delivery of medical care.

OTHER DATA

Investigator(s): Dr. Jorge Castellanos, PAHO/WHO Country
Representatives

Institution: Health Ministries and Social Security Institutions

Country: Argentina, Bolivia, Brazil, Chile, Colombia, Cuba,
Costa Rica, Dominican Republic, Ecuador, El
Salvador, Guatemala, Honduras, Mexico, Nicaragua,
Paraguay, Peru, Uruguay

Technical Program
Responsible: Health Services Development

Duration: 1984 - 1987

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

None.

**Sub-Regional Project for Central America and Panama -
Strengthening and Development of the Engineering and Maintenance Services of
Health Establishments**

OBJECTIVES

To contribute to improving the levels of health of the population by strengthening and developing engineering and maintenance services with the purpose of ensuring safe operation and the effectiveness, functionality, and timeliness required by the health services.

The project will include programs for technical cooperation, training, recovery of equipment, studies and research, and technological exchange with an aim to improve the operating capacity of the health infrastructure. In addition, to revise and formulate strategic policies, plans, programs, systems, methods, standards, and budgets for maintenance; to reorganize the structure, organization, and utilization of resources; to develop programs for preventive and corrective maintenance, logistics, and administration; supervision and control of activities; to support and participate in operations research of the health services in order to reduce costs; to collaborate in the design for the construction and equipping of workshops, inventory of physical infrastructure, to train 280 technical instructors (40 for each country) through courses-workshops in different sub-specialties at the sub-regional level; to train 5,600 technicians (800 for each country) in areas that the countries identified as having priority; recovery, reconditioning, and replacement of equipment; to strengthen the mechanisms for communication and exchange of technical information; to carry out a comparative analysis of health institutions in local courses-workshops; research proposals and appropriate technology, and computerized data procedures.

METHODS AND APPROACHES

The Project is made up of national components, which are oriented toward the development and strengthening of engineering and maintenance programs and to operations research of the health services at the level of each country, and sub-regional components, which include activities of cooperation and common effort for the achievement of the proposed objectives.

The national components are the fields of priority action where the sub-regional project can act with an expectation of producing concrete results in a reasonable period of time, since it was designed on the basis of the national maintenance programs which it promotes, complements, and provides a contribution for research, organization, implementation, and coordination.

A Technical Meeting for the Maintenance of Health Establishments was held in November 1985 in Guatemala to establish a Plan of Work for the initiation of the sub-regional project; it was attended by authorities from the health ministries and social security institutes.

RESULTS AND CONCLUSIONS

Study in progress.

OTHER DATA

Investigator(s): Dr. Jorge Castellanos and Eng. Angel Viladegut

Institution: Health Ministries and Social Security Institutes of the countries of Central America and Panama

Country: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama

Technical Program Responsible: Health Services Development

Duration: 1985 - 1990

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	
Government of the Netherlands (Holland)	US\$ 3,300,000
Training of the maintenance staff in the area of bio-physical equipment: France and Spain	

PUBLICATIONS RESULTING FROM THE RESEARCH

Guidelines forthcoming.

**Study of the Consumption of Drugs in the Comparative
DDD (Daily Defined Dosage) System of Costa Rica in 1982, 1983, and 1984
in Areas with Similar Geographic, Ethnic, and Infrastructure Characteristics**

OBJECTIVES

To determine the consumption of drugs in the DDD system and to carry out studies comparing different areas of the country having similar characteristics.

METHODS AND APPROACHES

The DDD of selected pharmaceutical products on the Basic List of Drugs of the CCSS was determined. On the basis of the prescriptions dispatched by pharmacies of the institution, the number of milligrams of the product consumed was determined. With these data, consumption for the years 1982, 1983, and 1984 in the DDD System was estimated. Different geographical areas were chosen in order to observe behavior in consumption of the drugs.

RESULTS AND CONCLUSIONS

The increase or decrease in the consumption of drugs studied was sometimes explicable on the basis of recent incorporation into the Therapeutic Form or by restrictive prescription policies. Consumption of many of the products was stable during the study period. However, very important increases in consumption of certain drugs were noted without being sustained by epidemiological data. The information received will be of assistance in programs for pharmacological control since it makes it possible to detect the existence of high rates of consumption of drugs that expose patients to unnecessary risks. Additional studies are required in order to explain the large differences in consumption detected among areas with similar characteristics.

OTHER DATA

<u>Investigator(s):</u>	Dr. Albín Chávez Matamoros, Dr. Edgar Dompe Pineda, Mr. Guido Barrientos Alfaro, Mrs. Elizabeth Carvajal Céspedes
<u>Institution:</u>	Caja Costarricense de Seguridad Social (CCSS)
<u>Country:</u>	Costa Rica
<u>Technical Program Responsible:</u>	Health Policies Development/Essential Drugs and Vaccines
<u>Duration:</u>	1984

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 5,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Research on the System of Essential Radiology (SER)

OBJECTIVES

The project's objectives are:

To determine the number of radiological studies required at a regional or university hospital (having a radiology service) that can be served by the Basic System of Radiology or System of Essential Radiology (SER);

To determine the number of studies that can be made by the SER at a hospital that does not have a specialized radiologist;

To determine the number of suitable radiological diagnoses that can be made at a local hospital with the SER or at its first level of reference;

To establish how many patients who need emergency radiological service can be served with the SER;

To establish comparisons between the SER and traditional radio-diagnosis services at hospitals of equal level and similar characteristics in terms of number, cost, and quality of x-rays;

To analyze and quantify the accuracy of radiological diagnoses made by local medical personnel;

To quantify, through an analysis of the services provided, the contribution of the system of basic radiology in solving health problems at the primary care level; and

To develop, through operational analysis of the system, objective information referring to personnel needs.

METHODS AND APPROACHES

A comparison will be made between services having similar characteristics with regard to: a) existence of an SER, and b) existence of a traditional radiological service, with a technician but no specialized radiologist.

Four services with SER in operation in Amagá, Caramanta, Campamento, and at the Castilla Intermediate Hospital Unit in Medellín, Colombia were selected. For purposes of control and comparison among themselves, communities with radiology services were also selected in the department of Antioquia.

Each of the control units will apply a methodology identical to the one adopted for the follow-up of the units with an SER, including a stratified random sample of X-rays by type of radiological study.

Each of the communities will be the subject of a retrospective and prospective study for each year before and after the operation of the SER.

In addition, the project includes the study and critical analysis and evaluation of the operation of the SER on site.

RESULTS AND CONCLUSIONS

To be determined.

OTHER DATA

Investigator(s): Dr. Luis Fernando Duque and Dr. Gerald P. Hanson

Institution: Instituto Nacional de Salud,
Ministry of Health, Colombia

Country: Colombia

Technical Program
Responsible: Health Services Development

Duration: 1983 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO (1983-1986)	US\$ 25,000
Instituto Nacional de Salud	Colombian pesos 2,487,000

PUBLICATIONS RESULTING FROM THE RESEARCH

Forthcoming.

Ezeject Field Trial

OBJECTIVES

To compare a single-dose prefilled disposable syringe (Ezeject) with the conventional needle and syringe in the administration of measles vaccine in the hands of experienced and non-experienced vaccinators.

METHODS AND APPROACHES

The Ezeject and conventional needle and syringe will be compared in their ease of administration in terms of time, application and reconstitution. In addition, pre- and post-blood samples will be analyzed to determine seroconversion rates between children randomly assigned to receive measles vaccine administered either with Ezeject or conventional needle and syringe.

Questionnaires will be given to users to determine the acceptability of the Ezeject and to obtain information of perceived advantages and disadvantages with both technologies.

All experienced and non-experienced vaccinators will be trained in the use of Ezeject and the conventional needle and syringe.

RESULTS AND CONCLUSIONS

Not available yet.

OTHER DATA

<u>Investigator(s):</u>	Dr. Ciro de Quadros, Mr. Peter Carrasco
<u>Institution:</u>	National Institutes of Health (NIH), U.S.A.
<u>Country:</u>	Guatemala
<u>Technical Program Responsible:</u>	Maternal and Child Health/Expanded Program on Immunization (EPI)
<u>Duration:</u>	September 1985 - June 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
National Institutes of Health, U.S.A. (Grant)	US\$ 132,662

PUBLICATIONS RESULTING FROM THE RESEARCH

None

Prescribing Practices for Hypertension and Diabetes in Government and Private Clinics in Barbados

OBJECTIVES

This is a drug utilization study to compare anti-hypertensive and anti-diabetic prescribing in government and private settings.

METHODS AND APPROACHES

Randomly sampled prescription and patient data are studied to answer questions on drug use in relation to patient setting, diagnosis, patient age, drugs prescribed per patient, appropriateness of dose regime, cost of treatment, etc.

RESULTS AND CONCLUSIONS

The major differences in prescribing for hypertension were: lower use of beta-blockers in the hospital clinics (12 and 16%) than in private offices (33 and 28%); higher use of diuretics in hospital clinics (56 and 49%) than in private offices (39 and 47%) and surprisingly high use of menthyl dopa by "walk-in" clinic doctors (28%); higher use of vasodilators in hospital outpatients (11%) than in private clinics (5%); and higher use of all other drugs by private doctors.

The major differences in prescribing for diabetes were the very low use of insulin in private (4%) and "walk-in" clinic (2%) patients compared with hospital outpatients (22%) and benefit service patients (25%); high use of chlorpropamide by private doctors (54%); high use of glibenclamide in the "walk-in" clinic (33%) and higher metformin use at the hospital (32 and 27%) than in private clinics (21 and 20%).

There was a consistent trend for use of less drugs per patient in private offices, and there was a significantly lower age range of patients attending private offices, compared with hospital clinics and utilizing the Drug Benefit Service.

Prescription costs were not strikingly different, but private prescription costs appeared to be kept low by using fewer drugs of greater cost.

These data indicate the importance of education/intervention strategies for doctors in therapeutics to improve prescribing practices, particularly in private and "walk-in" type settings.

OTHER DATA

<u>Investigator(s):</u>	Henry S. Fraser, Lennox Prescod, and Ruthmary Jones
<u>Institution:</u>	Queen Elizabeth Hospital
<u>Country:</u>	Barbados
<u>Technical Program Responsible:</u>	Health Policies Development/Essential Drugs and Vaccines
<u>Duration:</u>	1984

FUNDING

Agency

PAHO

Amount

US\$ 15,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Health Care Systems for the Adolescent: A Comparative Analysis

OBJECTIVES

The overall objective is a comparative evaluation of the efficiency and effectiveness of different systems for adolescent health care in the eastern zone of the city of Santiago, Chile, in the neighborhoods of Peñañolen, La Reina, Providencia, and Los Condes.

Specifically:

To describe sociodemographic characteristics and the social support network for the adolescent population assigned to the health care centers.

To establish the level of information on the characteristics of the registered adolescent population.

To describe problems perceived by adolescents and compare them with the profile of morbidity at each center being studied.

To evaluate the impact of each kind of activity on previously defined problem areas, with special emphasis on alcohol and drugs.

METHODS AND APPROACHES

The study involves five centers for outpatient care in the eastern zone, each with different professional human resources and approaches to care:

- a) La Reina, has a center for comprehensive adolescent care, with psychiatrists, pediatricians, psychologists, a social worker, a family guidance counselor, an occupational therapist, and a recreation specialist.
- b) La Faena has basic specialists, general practitioners, and a fellowship holder who is a specialist in adolescents;
- c) Providencia has basic family-oriented specialists;
- d) Los Condes has general practitioners and basic specialists;
- e) Peñañolen has groups of professionals that follow the programming standards of the Ministry of Health.

The sample of adolescent populations (the main ones served by the centers) is made up of 100 females and 100 males at each center. Activities will include initial diagnosis of the patients, a survey of adolescents, family APGAR, a questionnaire on adolescent problems, and administering the Goldberg questionnaire. A random sample of controls will cover students from the seventh level of the basic cycle through the fourth level of the intermediate cycle, taken proportionately to the numbers in each neighborhood surveyed. Evaluations will be made at 6 and 12 months after the intervention for detected problems.

RESULTS AND CONCLUSIONS

In progress.

OTHER DATA

Investigator(s): Dr. Ramón Forezcano Urzúa, Matilde Magdaleno Herrera, Carlos Jorge Verdugo Martínez, and Isabel Ringeling Polanco

Institution: Facultad de Medicina, Area Oriente, Universidad de Chile, Area Oriente, Ministerio de Salud

Country: Chile

Technical Program Responsible: Maternal and Child Health

Duration: 18 months

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	US\$ 15,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Health Problems of Working Children

OBJECTIVES

The overall objective is to determine the magnitude and characteristics of health problems of working children.

Specifically:

a) To determine the magnitude and the socioeconomic and demographic characteristics of the population of working children and their distribution by region and by degree of urbanization;

b) To identify the areas of activity, occupational categories, occupations, and hours worked per day by children;

c) To identify the occupational risk factors to which children may be exposed based on the type of activity;

d) To identify areas of research for evaluation of specific major problems; and

e) To design and adjust models for solving the problems of working children.

METHODS AND APPROACHES

The study has three stages:

1) To analyze the available data at the Instituto Nacional de Salud and other national and regional sources in order to establish the demographic and socioeconomic characteristics and their possible relationship to morbidity in working children, and to compare the health conditions of working children with those who study and with those who neither work nor study.

2) To conduct a sample survey of the work centers that use child labor in areas of higher employment.

3) Design, test, and adjust models to minimize health risks in the three most frequently employed categories.

RESULTS AND CONCLUSIONS

Work is in the initial phase.

OTHER DATA

<u>Investigator(s):</u>	Dr. Enrique Guerrero Medina and Dr. Luis Carlos Gómez
<u>Institution:</u>	Instituto Nacional de Salud
<u>Country:</u>	Colombia
<u>Technical Program Responsible:</u>	Maternal and Child Health
<u>Duration:</u>	6 months

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/Research Grants Program	US\$ 13,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Research on the Organization of Health Services for Care of Noncommunicable Chronic Diseases

OBJECTIVES

The principal objective is to identify health service structures in order to provide care for these chronic diseases: cardiovascular disease and rheumatism, (Venezuela); diabetes mellitus (Costa Rica); and arterial hypertension and diabetes mellitus, (Brazil).

METHODS AND APPROACHES

Brazil

Population surveys were conducted along with surveys at the three levels of complexity of the services. The referential framework corresponded to the neurological entities of hypertension and diabetes mellitus.

The population survey is based on the premise that a population determined through this instrument can show its perception to the afflictions covered by the study and whether there is any need for health services.

A survey at the different levels of the health service network will identify, at the first level, how the professionals attend to or refer to these neurological entities. It will identify the demand for services (consultations) from these diseases and the operative power of this level.

The secondary care level will involve identifying the functioning of referrals and counter-referrals and identification of the operative character and the degree of complexity of the patients that present.

Costa Rica

The survey is expected to establish whether, for diabetes mellitus, the Administrative Technical Standards of the Program for the Control of Diabetes Mellitus and WHO Report 727 (Geneva 1985) are being observed.

The survey will be geared toward intensifying the early detection of diabetes, improving the current training of health teams, establishing the needs of staff in this activity, and identifying the operative and organizational capacity of the health services.

Venezuela

The study will focus on first-time patients at the medical care systems in a chosen chronological order, and systematizing the following variables: complexity of care, type of disease, use of services, impact of care, and organization of care.

Thus, an attempt will be made to identify the diagnostic and therapeutic process by levels based on pathologies.

RESULTS AND CONCLUSIONS

Study in progress.

OTHER DATA

Investigator(s): Dr. Ruy Laurenti, Dr. Edmur Pastorelo, Brazil
Dr. Erick Mova, Costa Rica
Dr. Bartolomé Finizola, Dr. Isaac Abadí, Venezuela

Institution: School of Public Health, San Paulo, Brazil
Departamento de Enfermedades Cardiovasculares de Barquisimientto, Venezuela
Instituto de Enfermedades Reumáticas de Corocis and Servicio Endocrinología de la Caja Costarricense del Seguro Social, Costa Rica

Country: Brazil, Costa Rica and Venezuela

Technical Program Responsible: Health of Adults/Health Services Development

Duration: 1985 - 1987

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	US\$ 47,720

PUBLICATIONS RESULTING FROM THE RESEARCH

None.

Methodology for Early Detection of Child Abandonment

OBJECTIVES

1. To identify biological, psychological, social, and ecological risk factors that, upon validation, will constitute a predictive instrument for child abandonment.
2. Early detection of children exposed to risk factors for abandonment.
3. To utilize the epidemiological approach in the various areas where the child may be exposed.
4. To offer various political levels an instrument that can be adapted to and applied in different situations and that makes it possible to adopt strategies for coverage, classification of family risk, community organization, and research on psychosocial aspects.

METHODS AND APPROACHES

This is a prospective case-control study which will enable the identification of risk factors and their assessment based on relative risk. The cases are 200 abandoned children, up to three years of age, who were hospitalized at the Dr. Noel H. Sbarra Hospital by order of 23 different courts for minors, in the Province of Buenos Aires or by the social services. The control group involves 400 children up to three years of age of the same socioeconomic level, from the peri-urban area treated at health units in greater La Plata. The information sources include clinical histories, court files, files of health units, household visits, and interviews. The data are subjected to constant quality control.

The analysis is based on measures of relative risk related to the conditions of abandonment. The analysis will be the basis for the predictive instrument, which, after validation, will be incorporated into care during pregnancy and care of the family and child. The study will involve a professional multidisciplinary team.

RESULTS AND CONCLUSIONS

In progress.

OTHER DATA

<u>Investigator(s):</u>	Dr. Roberto J.M. Mateos and Maria Cristina Alonso
<u>Institution:</u>	Dr. Noel H. Sbarra Hospital, La Plata
<u>Country:</u>	Argentina
<u>Technical Program Responsible:</u>	Maternal and Child Health
<u>Duration:</u>	1984 - 1986

FUNDING

Agency

PAHO

Amount

US\$ 10,300

PUBLICATIONS RESULTING FROM THE RESEARCH

None.

Adolescents in Mexico: A Psychosocial Study of Contraceptive Practices and Unwanted Pregnancies

OBJECTIVES

To compare sociopsychologic characteristics: family, groups of couples, relations with sexual partners, personal characteristics and attitudes, knowledge and behavior concerning use of contraceptives, and demographic variables in three groups of female adolescents: pregnant adolescents, adolescents showing improper use of contraceptives, and adolescents showing proper use of contraceptives.

METHODS AND APPROACHES

Several instruments or questionnaires that are suited to the Mexican population will be utilized for the three groups. For the group of pregnant adolescents, the initial interview is oriented toward identifying whether pregnancy was desired or not. It will be repeated at 9 and 18 months to record marital status, sexual relations, and use of contraceptives.

For the groups of users and nonusers of contraceptives, all the questionnaires will be used and repeated at 9 and 18 months to record marital status, sexual relations, and use of contraceptives.

The analyses will consist of measures of reliability, statistical description of variables, regression analyses on knowledge, attitudes and practices; discriminant analyses to differentiate psychosocial characteristics in these groups, and analysis of variance on earlier results to examine background variables.

RESULTS AND CONCLUSIONS

The study is an initial stage.

OTHER DATA

<u>Investigator(s):</u>	Susan Pick de Weis, Lucille C. Atkin, Anameli Monroy de Velazco, and Samuel Karchmer
<u>Institution:</u>	Instituto Nacional de Perinatología de México
<u>Country:</u>	Mexico
<u>Technical Program Responsible:</u>	Maternal and Child Health
<u>Duration:</u>	1985 - 1988

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	US\$ 8,000
United Nations Fund for Population Activities (UNFPA)	US\$ 39,306
	<hr/>
TOTAL	US\$ 47,306

PUBLICATIONS RESULTING FROM THE RESEARCH

None.

Creation of an Integrated System of Maintenance for Health Services in Costa Rica

OBJECTIVES

To improve the quality of preventive-curative services in Costa Rica and, consequently, the health of its population through the maintenance of the existing physical and technological infrastructure.

The project will set up the structure of an the Integrated System of Maintenance for health services. It will train the personnel that would integrate the new unit of maintenance service--2,900 staff members and 450 managers--at the Ministry of Health and the Costa Rican Social Security Fund in concepts of preventive maintenance and repairs, public health, sanitary prevention, and the structuring and articulation of health services.

METHODS AND APPROACHES

The project involves technical cooperation through PAHO, training of managerial, technical, and operational personnel, evaluation of equipment and installations, and the acquisition of equipment and tools which are geared to the development and strengthening of the structure of the Integrated System of Maintenance for Health Services.

The key to achieving these objectives is research, revision, and analysis of the organization, procedures, and methodologies used in maintenance activities, operation of the health institutions, detection of the factors that have affected their development, and in the search for alternatives compatible with the existing administrative and technical structure, evaluation of human resources, occupational profiles and the need for training, and a technical inventory of the installations and equipment.

A continuous internal evaluation of the project will be made in order to make any necessary adjustments and changes.

RESULTS AND CONCLUSIONS

None yet.

OTHER DATA

<u>Investigator(s):</u>	Eng. Angel Viladegut
<u>Institution:</u>	Ministry of Health - San José, Costa Rica Costa Rican Social Security Fund, University of Costa Rica, School of Industrial Engineering
<u>Country:</u>	Costa Rica
<u>Technical Program Responsible:</u>	Health Services Development
<u>Duration:</u>	1984 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	
International Development Bank (IDB)	US\$ 741,000
Costa Rica	US\$ 185,000
TOTAL	<u>US\$ 926,000</u>

PUBLICATIONS RESULTING FROM THE RESEARCH

None.

Care Levels of Acute Respiratory Infections in Children Under Five at the Siloe Health Center in Cali, Colombia

OBJECTIVES

To test standards for the classification of cases of ARI in accordance with a prognostic approach and the use of guidelines for the management of cases.

To determine the impact of health education on the knowledge, attitudes, and practices of parents and relatives of children with ARI, and handling of ARI in the home.

To observe ARI mortality trends as the Expanded Program of Immunization, oral rehydration therapy, and the educational component and control of ARI are strengthened.

To identify ARI risk factors that are specific to the community and control them through education and individual responsibility.

METHODS AND APPROACHES

This is a descriptive study whereby basic information will be collected and staff trained in the preoperational phase.

The operational phase will consist of a survey of morbidity and mortality, knowledge, attitudes and individual practices, and health service practices, activities and evaluation.

RESULTS AND CONCLUSIONS

In progress.

OTHER DATA

<u>Investigator(s):</u>	Dr. Melba Franky de Borrero
<u>Institution:</u>	Centro de Salud de Siloe, Servicio Seccional de Salud. Valle del Cauca
<u>Country:</u>	Colombia
<u>Technical Program Responsible:</u>	Maternal and Child Health
<u>Duration:</u>	18 months

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 3,135

PUBLICATIONS RESULTING FROM THE RESEARCH

None.

Epidemiology of Acute Respiratory Infections in Pre-school Children from Marginal Urban Areas

OBJECTIVES

The general objectives are to determine the epidemiology of acute respiratory infections (ARI) among children living in a slum area of Guatemala and the etiologic agents associated with those infections.

The study will determine the incidence of ARI among children under five years of age and its association with seasonal changes; the duration and severity of episodes of ARI; and the etiology of ARI in the community. The risk factors associated with ARI infection by specific pathogens will also be studied. Some variables that will be explored are breast-feeding, nutritional status of the children, education of the parents, family size and age of the child.

METHODS AND APPROACHES

This project was initiated in December 1984, in Colonia "El Limón", Zone 18 of Guatemala City. Two hundred families with children under five years of age were kept under surveillance; one "indez" child per family participated in the etiologic studies. From December 1984 to December 1985, 1112 home visits were made; 658 children with acute respiratory infections had attended the project clinic (Table 1). Pharyngeal swabs were obtained for the isolation of bacteria from 438 children. Nasopharyngeal secretions were collected from 424 children for virologic studies. Bacteria were isolated from 209 (48%) and viruses from 306 (72%) of the samples (Table 2).

The field phase of the study will be completed in November 1986. To complement the information obtained in this community-based study, a study of those hospitalized will begin in 1986.

TABLE I

Children Attending the Clinic with ARI

Common cold	461
Pharyngotonsillitis	66
Otitis media	18
Laryngitis	17
Laryngotracheitis	2
Bronchitis	59
Bronchiolitis	1
Bronchopneumonia	35
Pneumonia	<u>0</u>
TOTAL	658

TABLE 2

Isolated Agents from Children with ARI

Enterovirus	202
Parainfluenza	6
Parainfluenza 3	8
Influenza A	14
Influenza B	7
Adenovirus	25
Respiratory syncytial	7
Rhinovirus	28
Cytomegalovirus	36
<u>Streptococcus pyogenes</u>	22
<u>Streptococcus pneumoniae</u>	65
<u>Haemophilus influenzae</u>	43
<u>Streptococcus non-A</u>	55
<u>Haemophilus parainfluenzae</u>	34
<u>Staphylococcus aureus</u>	3
Others	5

RESULTS AND CONCLUSIONS

Study in progress.

OTHER DATA

<u>Investigator(s):</u>	José Ramiro Cruz, America de Fernandez, Florian Peralta, Olga Torres and Floridalma Cano
<u>Institution:</u>	Institute of Nutrition for Central America and Panama (INCAP)
<u>Country:</u>	Guatemala
<u>Technical Program Responsible:</u>	Food and Nutrition/INCAP
<u>Duration:</u>	1984 - 1988

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	
National Academy of Sciences	
3/27/84 - 6/30/85	US\$ 64,205
7/1/85 - 6/30/86	US\$ 105,555
7/1/86 - 6/30/87	US\$ 122,195
7/1/87 - 6/30/88	US\$ 38,045
TOTAL	US\$ 330,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

**Study of the Antimicrobial Sensitivity of Strains of Streptococcus Pneumoniae
and Hemophilus Influenzae isolated in the Bacteriology Section of the
Instituto Adolfo Lutz**

OBJECTIVES

To determine the sensitivity of S. pneumoniae and H. influenzae isolated in routine examinations of patients at the Institute.

METHODS AND APPROACHES

a) Culture according to the Bauer and Kirby method in Mueller Hinton blood agar for S. pneumoniae and in Mueller Hinton agar with 1% VX supp. for H. influenzae;

b) Antibiotic solution disks;

c) Measure of minimum inhibitory concentration.

Activities b) and c) will be done in duplicate.

RESULTS AND CONCLUSIONS

Study in progress.

OTHER DATA

<u>Investigator(s):</u>	Dr. Margareth Dalcolmo
<u>Institution:</u>	Instituto Adolfo Lutz, Sao Paulo
<u>Country:</u>	Brazil
<u>Technical Program Responsible:</u>	Maternal and Child Health
<u>Duration:</u>	1 year

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 1,500

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

A Longitudinal Study on Acute Respiratory Infections (ARI) in Children Under Five in Belem, Para, Brazil

OBJECTIVES

1. To obtain data on morbidity and mortality from ARI among children under five years of age in two peripheral marginal areas and in the rural area of Pará.
2. To confirm standardized criteria of community health workers and staff at the health posts relative to the classification of mild, moderate, and serious cases.
3. To determine the effect of health education on the knowledge, attitudes, and practices of parents relative to ARI in children.
4. To observe trends in mortality from ARI in children after activities on Expanded Program of Immunization (EPI), Oral Rehydration Therapy (ORT), breast-feeding, growth and development, and ARI control have been performed and to carry out a health education program.
5. To detect the prevalence of the most common microbial agents in children under five and their resistance to penicillin benzathine and to re-evaluate, within two years, the effectiveness of the control measures.

METHODS AND APPROACHES

The study has three phases:

- a) Preoperational: Final drafting of the protocol; training of personnel; household visits for economic surveys, census of population, mortality, knowledge, attitudes and practices (KAP); retraining in ARI management; census analysis.
- b) Operational: Application of standards and procedures for cases of ARI, strengthening of EPI, breast-feeding, ORT, and growth and development; household visits for health education and updating of census; survey of mortality and KAP; prevalence of bacterial agents in children with ARI and resistance to penicillin B. Tabulation and analysis.
- c) Analysis: For objectives 1, 2, 3, and 5, the data will be treated descriptively. Analysis of objective 4 will use a test for statistical significance of differences between rates (before and after the proposed activities).

RESULTS AND CONCLUSIONS

The study is in an initial phase.

OTHER DATA

Investigator(s): Dr. Maria de Graca Cruz Vieira, Dr. Zildomar J. Alves, Nurse Maria da C. Souza Oliveira and Nurse Ivone Lima Dantas

Institution: Ministry of Public Health, State of Pará

Country: Brazil

Technical Program Responsible: Maternal and Child Health

Duration: 2 years

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 25,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None.

Comparative Study of Cases of Pneumonia Among Children Under Five Years of Age Treated with Penicillin Benzathine and Penicillin Procaine

OBJECTIVES

To define the effectiveness of penicillin benzathine compared to penicillin procaine in the treatment of pneumonia in children under five.

METHODS AND APPROACHES

In a sample of 400 children under five years of age with pneumonia, 200 will be treated with 600,000 u. of penicillin benzathine and 200 will receive penicillin procaine in daily injections for five days. Prior to treatment, chest X-rays will be taken. The first group will be seen twice, once for the injection and another time at home for evaluation 72 hours later. The second group will be seen five times for injections and evaluation. All of the patients will be asked to report on the sixth day for a clinical check-up and X-rays.

RESULTS AND CONCLUSIONS

Study in progress.

OTHER DATA

<u>Investigator(s):</u>	Dr. Maria de Graca Cruz Vieira
<u>Institution:</u>	Ministry of Public Health, Department of Special Actions, Pará
<u>Country:</u>	Brazil
<u>Technical Program Responsible:</u>	Maternal and Child Health
<u>Duration:</u>	6 months

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 5,083

PUBLICATIONS RESULTING FROM THE RESEARCH

None.

Evaluation of Etiological Agents Related to Lower Respiratory Infections in Children

OBJECTIVES

1. To determine the relative importance of viruses and bacteria as the cause of lower respiratory syndromes (pneumonia, tracheobronchitis, bronchiolitis).
2. To describe the clinical syndromes associated with each of the pathogens.
3. To compare the frequency of given pathogens in eutrophic and undernourished children of the population group under study.

METHODS AND APPROACHES

The study population consists of children under five years of age with lower respiratory infections, without diarrhea, at two institutions: Hospital Cayetano Heredia and the Instituto de Investigación en Nutrición de Lima -- 200 well-nourished children and 75-100 undernourished ones. The control group will also include undernourished children without respiratory infection. A complete set of clinical, bacteriological, virological, and serological examinations will be run. These include:

1. Complete clinical data, including chest X-ray at admission and discharge;
2. Collection of: blood (serum) samples at admission and discharge, blood for bacterial cultures, nasal washings, nasopharyngeal scrapings, and samples of urine and feces; and
3. Evaluation of results from all specimens taken and analyzed.

The studies to identify antigens and antibody response (IgM) will serve to determine the importance of the infections by specific agents. Serological data will be used to determine the prevalence of infection in the population measured by IgG antibodies.

RESULTS AND CONCLUSIONS

None yet available.

OTHER DATA

<u>Investigator(s):</u>	Dr. Herminio Hernández and Robert Yolken
<u>Institution:</u>	Universidad Peruana Cayetano Heredia; Johns Hopkins University, School of Medicine; Center for Vaccine Development, University of Maryland
<u>Country:</u>	Peru
<u>Technical Program Responsible:</u>	Maternal and Child Health
<u>Duration:</u>	February 1985 - February 1986

FUNDING

Agency

PAHO

Amount

US\$ 14,700

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Clinical and Microbiological Study of Lower Acute Respiratory Infections in Children under Five at Hospitals

OBJECTIVES

To study the etiology, frequency, clinical characteristics, and the predisposing factors of acute respiratory infections among hospitalized children under five.

METHODS AND APPROACHES

Cases are defined as children under five years of age who have lower respiratory infections and who have been hospitalized less than five days. The control group (equivalent to 10% of the cases) will consist of children hospitalized for surgery in that same age group. Conventional bacteriology and most of the rapid examinations will be done at the laboratory, while specialized tests (serotyping of isolated strains) and virology will be done at the Laboratorio Central de Salud Pública.

RESULTS AND CONCLUSIONS

Not yet available.

OTHER DATA

<u>Investigator(s):</u>	Dr. Maria Hortal de Peluffo
<u>Institution:</u>	Laboratorio Central de Salud Pública y Hospital Pereira Rossell, Ministerio de Salud Pública, Hospital de la Asociación Española
<u>Country:</u>	Uruguay
<u>Technical Program Responsible:</u>	Maternal and Child Health
<u>Duration:</u>	May 1984 - April 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 14,813

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Evaluation of the Effectiveness of BCG Vaccination in Buenos Aires Using the Case-control Method

OBJECTIVES

To determine the protection conferred by BCG vaccination administered shortly after birth, among children 0-5 years of age using a retrospective case-control study.

METHODS AND APPROACHES

The project was carried out in three hospitals located in the west greater Buenos Aires area. Vaccination coverage shortly after birth was approximately 70%.

Elements considered for the diagnosis of TB were bacteriology, histopathology, computerized tomography, Rx, clinical symptoms and signs and a proved source of infection.

Five controls were assigned to each case, selected from patients admitted to the same hospital as cases for reasons other than TB and matched with the cases by age, socioeconomic origin, nutritional state and place of residence. BCG vaccination status was determined independently.

The relative risk of tuberculosis, R, among those who received BCG vaccine compared to those who did not was estimated. The protective effect of BCG vaccine among those vaccinated was calculated by $100(1-R)\%$.

RESULTS AND CONCLUSIONS

The following results were obtained:

Disease	With BCG	Without BCG	Total
With TB (cases)	50	125	175
Without TB (controls)	519	356	875
TOTAL	569	481	1,050

The relative risk, based on the data, was estimated at 0.27 and the protective effect due to BCG vaccine was 73%, which can be considered as yielding very good protection for this vaccine.

OTHER DATA

Investigator(s): Dr. Isabel N. de Kantor

Institution: Pan American Zoonoses Center (CEPANZO), Posadas Hospital, Children's Hospital San Justo, and Vicente Lopez y Planes Hospital

Country: Argentina

Technical Program Responsible: Veterinary Public Health/CEPANZO

Duration: 1981-1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	US\$ 4,600

PUBLICATIONS RESULTING FROM THE RESEARCH

None.

Isoniazid (INH) Serum Concentrations in Children After Doses of 5 and 10 mg/Kg

OBJECTIVES

To determine whether differences in INH serum concentrations in adults and children would justify the use of a higher INH dosage in children.

METHODS AND APPROACHES

The method employed is that J. Grosset and G. Canetti, whereby INH serum concentrations are determined by measuring growth inhibition in *M. tuberculosis*, strain H₃₇R_v on Lowenstein Jensen medium and comparing the result to that obtained with standard INH dilutions.

Each patient received 5 and 10 mg/Kg INH orally at two day intervals; blood samples were collected 3 hours after each dose. No other drug was administered. Transaminases, creatinine and urea were tested in sera to discard hepatic or renal abnormalities.

RESULTS AND CONCLUSIONS

Results of INH concentrations in sera can be summarized by:

Group (ages)	No.	Dosage: 5 mg/Kg Conc. 1 ug/ml	Dosage: 10 mg/Kg Conc. 2 ug/ml
Adults (25-45)	16	14*	16
Children (7-14)	19	18	17
Children (0-6)	37	32	31

*Number of cases

Differences between the three groups were not statistically significant (Chi square).

According to these results, the use of a higher INH doses in children than in adults would not be justified.

OTHER DATA

<u>Investigator(s):</u>	Dr. Isabel Kantor
<u>Institution:</u>	Pan American Zoonoses Center (CEPANZO), Posadas Hospital, and Ministry of Public Health, Argentina
<u>Country:</u>	Argentina
<u>Technical Program Responsible:</u>	Veterinary Public Health/CEPANZO
<u>Duration:</u>	1985-1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	US\$ 500

PUBLICATIONS RESULTING FROM THE RESEARCH

To be presented as a communication to the XXVIth International Union against Tuberculosis World Conference, (Singapore, November 1986).

Non-tuberculous Mycobacteria and Mycobacterium bovis as a Cause of Human Disease in Argentina

OBJECTIVES

To date, no national survey on the frequency and distribution of isolates of mycobacteria, other than M. tuberculosis and associated diseases, has been carried out in Argentina. It was, therefore, considered of interest to conduct a study in different areas of the country to assess the epidemiological situation of this human health problem.

METHODS AND APPROACHES

Mycobacterial strains were isolated in 15 local public health laboratories from six regions of the country. These laboratories annually reported the number of positive cultures, the number of patients with positive cultures, the number of cultures other than M. tuberculosis, the number of patients with cultures different from M. tuberculosis, and the number of cases with mycobacteriosis or bovine tuberculosis. Typing of mycobacterial strains was performed by the reference laboratories of the study (NIM and CEPANZO).

Diseases due to non-tuberculosis mycobacteria were diagnosed on the basis of the following criteria: clinical evidence of disease; repeated isolation of the same strain from the patient's specimens; no isolation of M. tuberculosis; growth of more than 5 colonies in each isolate; and low response to standard antituberculosis chemotherapy regimens.

RESULTS AND CONCLUSIONS

A total of 13,544 mycobacterial cultures were obtained from 7,672 patients, during the three year period (1982-1984). Of the total cultures, 437 (3.22%) were non-tuberculosis mycobacteria and 49 (0.36%), M. bovis. The remaining cultures were identified as M. tuberculosis, which was the infectious agent in 7,609 patients (99.17%). M. bovis was isolated in 36 patients (0.47%), while non-tuberculosis mycobacteria was isolated in the remaining 27 patients (0.35%). This last group included 26 cases due to M. avium - intracellulare - scrofulaceum complex (MAIS) and one due to M. chelonae. All of these were cases in adults with pulmonary lesions except for one case diagnosed in a child with lymphadenitis.

According to these results, the frequency of bovine tuberculosis is low in Argentina with most cases found in rural and slaughterhouse workers. Non-tuberculosis mycobacteriosis is also of low frequency in the country.

OTHER DATA

<u>Investigator(s):</u>	Dr. Isabel N. de Kantor
<u>Institution:</u>	Pan American Zoonoses Center (CEPANZO), and National Institute of Microbiology (NIM), Argentina
<u>Country:</u>	Argentina
<u>Technical Program Responsible:</u>	Veterinary Public Health/CEPANZO
<u>Duration:</u>	1983-1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	US\$ 900

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Published in Abstracts of the International Symposium on Mycobacteria of clinical interest, Cordoba, Spain, Sept. 1985.
2. Under the same title in Spanish in Rev. Arg. Tub Enf. Resp. y Lab. Publ. (In press).

Epidemiological Study of Respiratory Diseases Associated with Viruses

OBJECTIVES

1. To carry out a clinical and etiological study of acute lower respiratory diseases (ARI) in children under one year of age in order to determine: a) the prevalence of mixed (virus-bacteria) and multiple (more than one virus) infections; b) the relationship of isolated agents with nutritional status, food intake, and clinical and nutritional impact; and c) epidemiology of ARI's, for the purpose of taking preventive measures.

METHODS AND APPROACHES

Twenty children per month with respiratory problems, including children under one year of age, will be recruited in Hospital de Niños in San José. Clinical and laboratory examinations (including virological, bacteriological, and serological tests) will be conducted before treatment. The viruses to be studied are: adenoviruses, syncytial respiratory viruses, and parainfluenza viruses. Serological tests including complement fixation tests will be run on blood samples taken during the acute phase and convalescent phase (4-6 weeks later).

The data will be entered on precoded forms for processing by computer.

RESULTS AND CONCLUSIONS

The relative frequency of the signs and symptoms is of no use in differentiating clinical syndromes in cases of ARI. Treatment should be based on the relative severity of the disease; dehydration is an important element of the clinical syndrome. The viral etiological agents were those expected to be found in a country with a temperate climate. It was difficult to evaluate bacterial etiology, because isolation showed the same pathogenic agents that exist normally in the oropharynx.

OTHER DATA

<u>Investigator(s):</u>	Dr. Leonardo Mata and Dr. Edgar Mohs
<u>Institution:</u>	Instituto de Investigaciones en Salud (INISA) y Hospital Nacional de Niños "Carlos Sáenz Herrera"
<u>Country:</u>	Costa Rica
<u>Technical Program Responsible:</u>	Maternal and Child Health
<u>Duration:</u>	October 1982 - December 1984

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/Research Grants Program	US\$ 15,000

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Chavarría, J.F. et al. Estudio sobre la infección respiratoria aguda en Costa Rica, 1982-1983.
2. Chavarría, J.F. et al. Epidemia de IRA: Observaciones hospitalarias. (In press) Rev. Med. Hosp. Nac. Niños, Costa Rica.
3. Mohs et al. Deshidratación en IRA.
4. Salas, P. et al. Estudio sobre IRA en Costa Rica: virus aislados al momento del internamiento.
5. Salas, P. et al. Estudio de agentes infecciosos en niños hospitalizados durante un brote de IRA. (In press) Rev. Med. Hosp. Nac. Niños, Costa Rica.
6. Matta, L. and P. Salas, Mucosal Infections and Malnutrition. Neonatal Infections (OGRA, P. ED), Chap. 18, Grune and Striton, pp. 299-313, 1984.

Longitudinal Study of Acute Respiratory Infections in Rio de Janeiro

OBJECTIVES

To obtain data through longitudinal and cross-sectional studies on the epidemiology and etiology of acute respiratory infections (ARI) in children under five years of age. This phase of a longitudinal study, initiated in 1979, is to provide more complete information in order to make recommendations for minimizing ARI hospitalization and mortality rates.

METHODS AND APPROACHES

Etiological studies are carried out on specimens from children with ARI, within the first seven days, who are being treated through outpatient or emergency services, or who are hospitalized. Bacteriological, virological, and serological examinations are run on the specimens, supplemented with studies of material from autopsies.

RESULTS AND CONCLUSIONS

Not yet available.

OTHER DATA

<u>Investigator(s):</u>	Dr. Jussara Pereira Nascimento
<u>Institution:</u>	Oswaldo Cruz Institute
<u>Country:</u>	Brazil
<u>Technical Program Responsible:</u>	Maternal and Child Health
<u>Duration:</u>	1983-1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 47,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None

Epidemiological and Clinical-Etiological Study of Cases of Acute Respiratory Infections (ARI) in Children at the Emergency Ward of the Centro Medico del Seguro Social, Panama

OBJECTIVES

ARI accounts for approximately one-third of all pediatric hospital admissions in the metropolitan area of Panama City, Panama. In order to describe the epidemiology of ARI a study was conducted on pediatric morbidity caused by ARI over a specified period. The objective was to define the etiological agents that cause the specific syndromes and to apply new methods of rapid diagnosis for certain pathogenic agents.

METHODS AND APPROACHES

A clinical and background study will be made on all children under 15 years of age with ARI of less than 5 days duration who were admitted to the pediatric emergency room observation ward or transferred to the general hospital pediatric ward. Serological studies on samples taken during acute and convalescent periods will be conducted. Examination of tracheal nasopharyngeal aspirate and smears for culture of viruses, chlamydiae, mycoplasmas, and bacteria will be performed.

RESULTS AND CONCLUSIONS

Between March and December 1983, 383 children were admitted to the emergency room with ARI and enrolled in the study; 340 (89%) had a primary clinical diagnosis of bronchiolitis, obstructive reversible bronchitis, pneumonia, or asthma.

Respiratory syncytial virus was the virus most frequently isolated. Mycoplasma, which was also found frequently, was isolated from approximately 11% of the asthma patients.

Etiologic agents were isolated at low levels.

OTHER DATA

<u>Investigator(s):</u>	Dr. William Reeves and Dr. Ludwig Dillman
<u>Institution:</u>	Laboratorio Conmemorativo Gorgas and Centro Médico de la Seguridad Social
<u>Country:</u>	Panama
<u>Technical Program Responsible:</u>	Maternal and Child Health
<u>Duration:</u>	March 1983 - December 1984

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	US\$ 15,000

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Reeves, W.C., Dillman, L., et. al. Epidemiology of Acute Respiratory Disease at the Pediatric Emergency Room of the Social Security Medical Center in Panama City, Panama. Bulletin of the Pan American Health Organization, 19(3), 221-234, 1985.
2. Also published in Spanish in Revista Médico de la Caja de Seguro Social 16:(3)373-3, 1984.

Hepatitis B Prevalence in St. Christopher-Nevis

OBJECTIVES

To provide baseline data for an intervention programme directed to interrupt HBV transmission.

METHODS AND APPROACHES

In a random sample of households, blood was drawn from everyone 6 months to 45 years of age who provided written consent. Serology studies included HBsAg, anti HBsAg, anti HBcAg, HBcAg. Weak positives were rechecked by the Centers for Disease Control, Atlanta, Georgia, United States.

RESULTS AND CONCLUSIONS

Of 392 sample obtained, 229 (58.4%) were positive to at least one hepatitis B marker. Further analysis is in progress.

OTHER DATA

<u>Investigator(s):</u>	Dr. Mirta Roses
<u>Institution:</u>	Caribbean Epidemiology Center (CAREC)
<u>Country:</u>	St. Christopher-Nevis
<u>Technical Program Responsible:</u>	Health Situation and Trend Assessment/CAREC
<u>Duration:</u>	1985

FUNDING

<u>Agency</u>	<u>Amount</u>
U.S. A.I.D.	US\$ 10,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Epidemiology of Acute Respiratory Infections (ARI) Among Children Under Five Years of Age in Marginal Areas of the Province of Buenos Aires

OBJECTIVES

1. To study etiological agents of ARIs in children under five years of age;
2. To correlate factors of seasonality and risk with the incidence of ARIs; and
3. To train staff in diagnostic techniques through the detection of antigens.

METHODS AND APPROACHES

Children living under low socioeconomic conditions, hospitalized patients (for an average of six months), and ambulatory patients were selected for study. Clinical tests, cultures for viral isolation, serology (seroconversion), and rapid diagnostic techniques for viral antigens will be performed. Cultures of nasopharyngeal discharge for bacteria and hemocultures in those with signs of lower ARIs for more than 48 hours will be made with rapid diagnostic techniques of coagglutination for H. influenzae, S. pneumoniae and streptococcus.

RESULTS AND CONCLUSIONS

The study has been completed and the analysis and final report are in preparation.

OTHER DATA

<u>Investigator(s):</u>	Dr. Mercedes C. Weissenbacher and Dr. Marcos Cusminsky
<u>Institution:</u>	Universidad de Buenos Aires, Departamento de Microbiología, Hospital Zonal Dr. Noel H. Sbarra, La Plata
<u>Country:</u>	Argentina
<u>Technical Program Responsible:</u>	Maternal and Child Health
<u>Duration:</u>	June 1984 - May 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	US\$ 20,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Factors Directly Affecting Fertility and Some of Their Implications to Health

OBJECTIVES

a) Long-term: To define the levels, trends, dissimilarities and determining factors of fertility so as to understand the reproductive process in the Uruguayan population over the last 20 years.

b) Short-term: To provide information for the design of health policies, especially for maternal and child health programs, and to orient other new programs which will contribute to improving health indicators through measures aimed at stopping the trend of illegitimacy and abortion. This information will be related to:

- . Level of knowledge on different contraceptive methods.
- . Attitudes on contraceptive methods and abortion.
- . Attitudes on family size and time between births.
- . Past and current practices on limitation of births.
- . Study of dissimilarities in regard to knowledge, attitudes, and practices based on social differentiation.
- . Evaluation of unwanted pregnancies relative to maternal and child care.
- . Evaluation of the importance of the principal intervening variables on the level of fertility.

METHODS AND APPROACHES

A sample survey of homes and the female population of reproductive age will be performed. The research will be carried out in two stages: first, in the Department of Montevideo (40% of the population of the country)--this stage is in progress, and second, in the rest of the country--this phase is under preparation.

RESULTS AND CONCLUSIONS

The study is in progress.

OTHER DATA

<u>Investigator(s)</u> :	Dr. Carlos Miguez Barón, Director General de Salud
<u>Institution</u> :	Ministry of Public Health
<u>Country</u> :	Uruguay
<u>Technical Program Responsible</u> :	Maternal and Child Health
<u>Duration</u> :	1984-1987

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 10,000
United Nations Fund for Population Activities (UNFPA)	US\$ 98,900
	<hr/>
TOTAL	US\$ 108,900

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Epidemiology of the Cesarean Section

OBJECTIVES

The study is based on the following:

The proportion of cesarean sections has been increasing in many institutions, varying from 8 to 80% at present.

The rates of maternal and perinatal morbidity and mortality have not varied proportionally with the increase in cesarean sections.

Some surgical indications derived from diagnostic procedures originating in developed countries have been incorporated without corresponding validation.

Recent results in the literature form the basis of changes in indications, introducing new ones and advising against some considered classical.

It is possible through research that changes can be produced in the indications and procedures aimed at diminishing the risks and the financial and social cost of the operation, as well as extending the possible benefits and increasing the efficiency and effectiveness of care.

Given the frequency with which cesarean sections are performed in the maternity centers, any increase in efficiency will mean better use of resources, facilitating the expansion of coverage of institutional childbirth and improving perinatal results.

The final objective of the study is to contribute criteria based on the scientific method to standardize the principal indications and stages of the cesarean procedure in order to regulate the frequency of cesarean sections (elective and intrapartum), optimizing the overall perinatal and maternal results and minimizing the attributable social cost and morbidity.

METHODS AND APPROACHES

The proposal utilizes characteristics of multicenter collaborative studies and includes three successive stages of different complexity.

The first stage is an institutional diagnosis centralizing information from many maternity centers in the countries; the second stage corresponds to a detailed diagnosis in selected institutions, on the basis of the prospective collection of variables related to the procedure; and the third stage is an operational investigation introducing a normative package and a scheme of supervision. In the first stage, it is hoped that in a very brief period and with low cost, a great volume of data will be brought together which makes it possible to estimate the size of the problem and, in addition, to select interested institutions to collaborate in the second stage. This phase of the research produces a report that consolidates the collected information, citing the collaborating institutions and those responsible in them. In the second stage, a special form (front and back) sent by mail will yield some characteristics of the institutions and their latest results.

RESULTS AND CONCLUSIONS

The proposal for the study has had broad acceptance by countries and institutions and information is being received. The first report will be published in September 1986, when the second stage of the study will begin.

OTHER DATA

Investigator(s): Belitzky, R.
Institution: Latin American Center for Perinatology and Human Development (CLAP)
Country: Uruguay
Technical Program Responsible: Maternal and Child Health/CLAP
Duration: 1985 and thereafter

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Epidemiología de la Cesárea: Estudio Colaborativo Multicéntrico. Belitzky, R. Doc. Int. CLAP - 1//6.

Patterns of Spontaneous Uterine Contractions During Pregnancy: A Longitudinal Study

OBJECTIVES

To determine, biweekly from week 26 of amenorrhea to the end of gestation, the frequency of uterine contractions.

To determine the average and dispersion of the duration of the contractions over the same period of time.

METHODS AND APPROACHES

Biweekly, from week 26 to the date of delivery, the following will be recorded:

- a) Number of contractions in one hour, in the morning and in the afternoon, observed by the patient (previous training will be provided to her).
- b) Frequency and duration of the contractions during the recording period.
- c) Number of contractions observed by the patient during the recording period.
- d) Basal fetal heartbeat.
- e) Position, softening, length, and expansion of the cervix.
- f) At delivery, the form of its beginning and termination, the duration of the expulsive period, and the time from the rupture of the membranes to completion.
- g) In the newborn, the following will be determined:
 - Birthweight
 - Gestational age in weeks and days, by physical examination.
 - Apgar score at the first and fifth minutes.
 - Pathologies such as jaundice, infections and caput succedaneum.

RESULTS AND CONCLUSIONS

In 120 pregnant women, without known maternal or fetal pathology, 450 external and clinical recordings were made of spontaneous uterine contractions (and of fetal cardiac frequency) at rest for two hours, from 26 weeks to the termination of the pregnancy. During the first hour of observation the mother remained in left lateral decubitus, and during the following hour, in a seated position. This order was alternated in successive controls. In addition to the obstetrical variables, self-medication and the number of contractions observed by the mother during the day and during control through electronic clinical recording were unified.

In pregnant women with full term delivery the following were found: 1) between 26 and 30 weeks the contractile frequency increased progressively; 2) the 90th percentile at different gestational ages is shown and the significance of the differences found studied.

Decubitus

left lateral. 1 3 5 7 8 8 8 8 9 9 9 9 9 (P₉₀)

Seated 6 9 11 13 15 16 16 16 16 16 16 16 (P₉₀)

26 27 28 29 30 31 32 33 34 35 36 37 38 (gestational age-weeks)

3) These values (contractile freq./hour for P₉₀) are not associated with preterm delivery; 4) in order to establish safety limits, (gray area) the pattern of pregnancies terminated with a preterm delivery is being studied.

OTHER DATA

Investigator(s): Fescina, R., Ballasts, L., Left, A., Schwarcz, R.
Institution: Latin American Center for Perinatology and Human Development (CLAP)
Country: Uruguay
Technical Program Responsible: Maternal and Child Health/CLAP
Duration: 1984 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Fescina, R.H., Lastra, L., Buendía, J., Schwarcz, R. "Patrones de la contractilidad uterina espontánea en mujeres embarazadas normales. Estudio longitudinal a lo largo de la gestación". In: Melo, A., Hardy, E. and Dotaviano, E. (eds.), Investigaciones en Reproducción Humana, IX Reuniao de Associaçao Latinoamericana de Investigaçoes em Reproduçao Humana, Campinas, ALIRH, October 1984, p. 96.

Patterns of Blood Pressure in Normal Pregnancy and Their Relation to Maternal and Fetal Variables

OBJECTIVES

To analyze the variation of arterial tension during normal pregnancy.

To analyze modifications of blood pressure with age, parity, and maternal weight gain.

To study the correlation between arterial diastolic pressure in the last quarter of pregnancy with the weight of the newborn.

METHODS AND APPROACHES

A total of 1,595 blood pressure measurements were obtained during the prenatal care of 249 pregnant women. These pregnant women were caucasian, middle class and met the following requirements: known date of last menstruation, existence of a single, live fetus confirmed by sonography, early initiation of prenatal care, absence of maternal-fetal pathology, delivery at term of neonate without malformations and with weight corresponding to its gestational age. None of the women smoked during pregnancy and all had a pregravidic habitual weight in accordance with their size and no restrictive diets were indicated.

Blood pressure was taken from the pregnant women in a sitting position after 15 minutes of rest, in a quiet environment, without outside noises. A mercury sphygmomanometer was used and the zero level controlled each time the pressure was taken. The auscultatory method was used to determine the minimum and maximum pressures.

The systolic pressure was indicated by the commencement of Korotkoff's sounds and the diastolic when they ceased to be heard. The values obtained were grouped according to the number of weeks of amenorrhea and the averages, standard deviations and 5th, 10th, 25th, 50th, 75th, 90th and 95th percentiles calculated for each week.

Linear correlations were made between amenorrhea and the diastolic and systolic arterial tensions, respectively, and also between weight gain during gestation and maternal age.

RESULTS AND CONCLUSIONS

The correlations between weight gain and blood pressure, although statistically significant, do not have great clinical significance, and with normal weight gain during gestation (16 kg), the increase in the systolic pressure was 6 mm Hg and the diastolic 4 mm Hg.

With respect to the correlation between systolic and diastolic pressures and age of the pregnant woman, the first is not significant. The diastolic pressure increases with the age of the pregnant woman by 0.25 mm Hg per year of age. This increase, although statistically significant, lacks clinical importance because the increase in diastolic pressure would be approximately 5 mm Hg between 18 and 37 years of age, when 90% of the pregnancies occur.

The systolic and diastolic blood pressures remained in the central percentiles from weeks 10 to 34 when a discrete increase was observed up to the end of gestation. The maximum amplitude of these changes is approximately 10 mm Hg. for systolic pressure and 5 mm Hg for diastolic.

The linear correlations between amenorrhea and the pressures yielded the following results: systolic pressure versus amenorrhea: $r = 0.02$; $b = 0.03$; $N = 249$; diastolic pressure versus gestational age: $r = 0.07$; $b = 0.08$; $N = 249$. These results led to the rejection of the hypothesis of the variability of the pressures in relation to gestational age. Single estimators of position and dispersion for the 249 pregnant women that were considered applicable during the whole pregnancy were: systolic pressure, $P_5 = 95$ mm Hg, $P_{95} = 135$ mm Hg and diastolic, $P_5 = 55$ mm Hg, $P_{95} = 90$ mm Hg.

OTHER DATA

<u>Investigator(s):</u>	Margulies, M., Vote, L., Fescina, R., Ballasts, L., Lapidus, A., Schwarcz, R.
<u>Institution:</u>	Latin American Center for Perinatology and Human Development (CLAP)
<u>Country:</u>	Uruguay, Argentina
<u>Technical Program Responsible:</u>	Maternal and Child Health/CLAP
<u>Duration:</u>	1984 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

In preparation.

Influence of Glucocorticoids and Betamimetic Therapy on the Concentration of Secretary IGA in Milk Produced by Mothers with Preterm Deliveries

OBJECTIVES

To study the influence of glucocorticoid medications and betamimetic therapy on the concentration of secretary IgA in milk of mothers with preterm deliveries.

METHODS AND APPROACHES

For this study three groups of mothers were considered:

a) 11 mothers with preterm deliveries (27 to 36 weeks) that did not receive medication; b) 10 mothers whose deliveries occurred between 27 and 36 weeks of gestation and who received betamimetic and betamethasone medication; c) 11 mothers with deliveries between the 38 and 40 weeks of gestation. The latter group was taken as the control group. All the mothers were between 18 and 32 years of age, enjoyed good health, good nutritional status, and were without signs of mammary inflammation. All of them broke their membranes 20 hours or less before delivery. The determination of the secretary IgA was carried out through immunoradial diffusion.

RESULTS AND CONCLUSIONS

Significant differences were not found between the groups with and without drugs. The concentration of secretary IgA was not significantly different in full-term mothers than in preterm mothers with and without medication. The concentrations of secretary IgA in the colostric and transitional periods were statistically significant in the three groups of mothers. No differences were found during the transitional period in any of the three groups.

OTHER DATA

<u>Investigator(s):</u>	Martell, M., Oheninger, C., Scotti, L., Martinez, M., Korc, I.
<u>Institution:</u>	Latin American Center for Perinatology and Human Development (CLAP)
<u>Country:</u>	Uruguay
<u>Technical Program Responsible:</u>	Maternal and Child Health/CLAP
<u>Duration:</u>	1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

1. J. Perinat. Med. 13 (1985)61.

Distribution of Betamimetics in Different Parts of the Gravida and the Fetus

OBJECTIVES

To study the qualitative and quantitative distribution of betamimetics in the maternal viscera, amniotic fluid, and the fetus, in order to determine if fetal side effects are due to prenatal passage of the drugs or are the indirect results of metabolic effects in the mother. It is, therefore, of interest to determine if prenatal passage of betamimetics occurs.

METHODS AND APPROACHES

Radioactive trimethoquinol (Inolin^R Tanabe Seiyaku Japan) in the form of a preparation of 11.3 mCi of ³H-trimethoquinol (³H-TMQ) with a specific activity of 17.18 mCi/mM was used. White rats, divided into four groups of 10 animals each, were utilized. The estrous cycle was followed daily through colposcopy with an aim to determine as precisely as possible the day of conception of each animal. At 19 days of gestation and under anesthesia with phenobarbital, a dose of the radiodrug was injected intravenously at the rate of 4.3 microcuries/kg of weight. Each group was sacrificed 5, 15, 30 and 60 minutes after the injection of the radiodrug. The maternal and fetal organs were homogenized. Urine, amniotic fluid, and blood of the mother and fetus were collected. The radioactivity was read with a liquid scintillation counter.

RESULTS AND CONCLUSIONS

Radioactivity appears preferably in maternal organs among animals sacrificed in the 15 first minutes following injection. In the groups in which the radiodrug remained circulating longer, a greater concentration was noted in the liver, maternal and fetal kidneys, in the placenta and in the amniotic fluid. Sixty minutes after the injection, the maternal and fetal visceral radioactivity diminished, at the same time as radioactivity increased in the maternal urine and in the amniotic fluid.

One can deduce that the fetal side effects such as tachycardia caused by some betamimetics (sympathomimetic) administered to the mother are produced by direct action on the fetus and not through its mother.

OTHER DATA

<u>Investigator(s):</u>	Poseiro, Juan J., Ballejo, G., Estol, P.
<u>Institution:</u>	Latin American Center for Perinatology and Human Development (CLAP)
<u>Country:</u>	Uruguay
<u>Technical Program Responsible:</u>	Maternal and Child Health/CLAP
<u>Duration:</u>	1983 - 1985

FUNDING

Agency

Amount

PAHO/WHO

Pan American Health and Education Foundation (PAHEF)

Tanabe Seiyaku Laboratories, Japan

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Poseiro, J.J., Fielitz, W., Estol, P., Ballejo, G. "Pasaje transplacentario de betamiméticos". CLAP Scientific Publication No. 1063, 1985., Obst. & Gin. Lat. Amer. (O.G.L.A.) (accepted for publication).

Hypertensive Disorders of Pregnancy (HDP): An Epidemiological Study

OBJECTIVES

To determine, the incidence of HDP in rural and urban centers and in all the deliveries occurring consecutively in a specified area.

To study the influence of HDP on maternal and perinatal mortality in the area under study.

To study the influence of HDP on the incidence of low birth weight.

To study the association of the different factors associated with the incidence of HDP in order to define the group of women at greater risk to HDP.

METHODS AND APPROACHES

A form (Precoded Clinical History) was used in Cerro Largo, one of the departments farthest from the capital. The data collected on the form, which covered all 2,630 deliveries in the area between July 1981 and December 1982, were analyzed retrospectively. Special emphasis was placed on the variables classically associated with HDP although all the possible variables were studied.

RESULTS AND CONCLUSIONS

There was no maternal mortality or eclampsia in our study.

Pregnant women with higher risk of HDP could be defined from our data as those: a) 35 years of age and over; b) multiparous (4 or more deliveries); c) obese (weight greater than 70 kg., independent of height); d) had deficient education (the cutoff point was six years); e) poor obstetrical history, including perinatal deaths and premature deliveries; and f) smoked during pregnancy.

Unfortunately, reliable histories of HDP in previous pregnancies were lacking.

It should be noted that pregnancy in adolescents under 15 years of age and under 18 years (between 15 and 17) was not associated with a greater incidence nor severity of the problem. Neither was the instability of the couple, so common in adolescent pregnant women.

The study has made it possible to construct a group at special risk to HDP. The risk attributable to each factor as well as the risk attributable to the factor in the population are currently being studied with a view to eliminating interfering factors.

OTHER DATA

Investigator(s): Poseiro, Juan J.
Institution: Latin American Center for Perinatology and Human Development (CLAP)
Country: Uruguay
Technical Program Responsible: Maternal and Child Health/CLAP
Duration: 1982 - 1984

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Poseiro, J.J. Some local aspects of HDP. Presented at a WHO Interregional Collaborative Study on the Epidemiology of Hypertensive Disorders of Pregnancy (HDP). Kendan Kardang Kerbau Hospital for Women, Singapore, 26-30 Sept. 1983.
2. Poseiro, J.J., Tenzer, S.M., Nieto, F. Desórdenes hipertensivos del Embarazo (DHE). Estudio epidemiológico. CLAP Scientific Publication-1047, 1985.

Specific Receptors for Trimethoquinol in the Uterus

OBJECTIVES

Some sympathomimetic drugs have a chemical structure different than that of the natural and synthetic catecholamines. The objective is to determine if their action is performed directly on the smooth uterine muscle cell or on specific receptors for these betamimetics that are powerful uterine inhibitors.

METHODS AND APPROACHES

Radioactive betamimetic. Radioactive trimethoquinol (Inolin^R Tanabe-Seiyaku Japan) was used under the form of a preparation of 11.3 mCi of ³H-trimethoquinol (³H-TMQ) with a specific activity of 17.18 mCi/mM.

Experimental animals. There consisted of group of 40 white rats that were sacrificed on the 19th day of gestation by cervical dislocation under general anesthesia with sodium pentobarbital. Samples of uterus, placenta, kidney, liver, and skeletal muscle (which is not affected by the sympathomimetics) were extracted. The organs extracted from each animal were homogenized, weighed (error 10⁻⁴) and divided into four portions of 50 g. each. To test binding, Tyrode solution was used.

Duplicate samples of each tissue were incubated in Tyrode solution with ³H-TMQ with an excess of unlabeled trimethoquinol (TMQ).

The separation of the bound ³H-TMQ from the free ³H-TMQ was carried out by centrifugation at 5,000 rpm. The radioactivity was read in a liquid scintillation counter.

RESULTS AND CONCLUSIONS

The binding index of the aforementioned organs was measured. The differences between the uterus and the other organs were not significant.

It was not possible to affirm specific binding by the pregnant uterus.

OTHER DATA

<u>Investigator(s):</u>	Poseiro, Juan J., Estol, P., Ballejo, G.
<u>Institution:</u>	Latin American Center for Perinatology and Human Development (CLAP)
<u>Country:</u>	Uruguay
<u>Technical Program Responsible:</u>	Maternal and Child Health/CLAP
<u>Duration:</u>	1983 - 1984

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	
Pan American Health and Education Foundation (PAHEF)	
Tanabe-Seiyaku Laboratories, Japan	

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Poseiro, J.J., Fielitz, W., Ballejo, G., Estol, P. "Receptores específicos para Trimetoquinol". CLAP Scientific Publication -1064, 1985.
2. Poseiro, J.J., Fielitz, W., Estol, P., Ballejo, G. "Receptores específicos para Trimetoquinol". Obst. & Gin. Lat. Amer. (O.G.L.A.) 43, No. 7-8, p. 217-220, 1985.

Research on Maternal Mortality

OBJECTIVES

- 1) To measure the level of maternal mortality in selected areas of participating countries.
- 2) To characterize the causes and factors responsible for excessive mortality in order to recommend actions.

METHODS AND APPROACHES

This study follows two approaches. The first is based on the community and measures the magnitude of the problem through exploration of all possible sources of information on maternal deaths over the last two years within that community. Jamaica uses the method of a confidential report by mail. This information is checked against the bureau of vital statistics.

The second is based on intra-service evaluation and analyzes all deaths of women of reproductive age to establish how many and which deaths have been classified and certified as maternal deaths. Based on this, investigation into the causes and the ecological and social factors, with special emphasis on accessibility and the timeliness and quality of services will be conducted. The lack of family planning services may be decisive factor regarding deaths from abortion.

RESULTS AND CONCLUSIONS

None yet.

OTHER DATA

<u>Investigator(s):</u>	Dr. Jaime Rodriguez, Colombia; Dr. Ubaldo Farnot-Cardoso, Cuba; Drs. G.A. Walker, D. Ashley, A. McCaw, and W. Bernard, Jamaica; Dr. Malaguías López Cervantes, Mexico; and Dr. Rosa María Zamora, Peru
<u>Institution:</u>	Universidad del Valle, Cali, Colombia Ministry of Public Health and University of Havana, Cuba School of Hygiene and Tropical Medicine, London Ministry of Public Health, Jamaica School of Public Health, Mexico Ministry of Public Health, Peru
<u>Country:</u>	Colombia, Cuba, Jamaica, Mexico and Peru
<u>Technical Program Responsible:</u>	Maternal and Child Health
<u>Duration:</u>	One year

FUNDING

Agency

PAHO/WHO

Amount

US\$ 55,500

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Women's Work, Social Support Resources and Infant Feeding Practices

OBJECTIVES

To examine the combined effects of women's work and social support systems on infant feeding practices.

METHODS AND APPROACHES

There has been much concern about the influence of breastfeeding on the nutritional status of infants. A number of factors, biomedical, social and economic have been given considerable attention. There has been much discussion centering around the belief that women's work is not compatible with infant care, thus providing a possible explanation for early termination of breastfeeding and inappropriate weaning practices among some women. In this study, women's work is one of the primary independent variables examined relative to its effects on breastfeeding and weaning, the dependent variables.

With respect to weaning, the WHO standards of infant feeding recommend "Breastfeeding exclusively up to the fourth to sixth month, gradual introduction of complementary foods from locally available products while continuing to breastfeed, feeding the child on a frequent basis thereafter with small quantities, and feeding with a spoon." To what extent do Jamaican women adhere to or deviate from WHO standards and what are the influencing factors?

Infant nutritional status will be assessed by anthropometric measurements, including height and weight of the target child. Women's work status will be defined broadly to include working in jobs as well as in types of informal activities in which women earn their livelihood.

Social support systems refer to agencies or persons which serve as resources on which women can draw in order to remove or reduce any conflict which exists between their work and their child feeding responsibilities.

A sample of 150 post partum women were selected at two hospitals - the Victoria Jubilee Hospital in Kingston and the Spanish Town Hospital in St. Catherine. The rationale for using the above hospitals was to ensure that a) an adequate number of women would be resident in the Kingston-St. Andrew and St. Catherine areas and b) the opportunity to select economically marginal women. Sample selection was initiated on July 1, 1985 continuing to July 22, 1985.

Criteria for sample eligibility were as follows:

- Mother must have experienced a normal delivery of target child.
- Birthweight of target child must be 5 lbs. 8 oz. and over.
- Mother must have at least one more child in addition to the target child. This child must be 5 years or younger.
- Mother must have been involved in some form of income-earning activity for a period after the third month of pregnancy with target child.
- Mother must mainly be responsible financially for the household or for children living away from home.
- Mother must be a resident in either the parish of Kingston and St. Andrew or St. Catherine.

RESULTS AND CONCLUSIONS

The sample of mothers and babies has been visited on four occasions in relation to baby's age - at six weeks, three months, six months and nine months of age. On each visit, a structured interview was conducted with the family and anthropometric measures (height and weight) taken for the infants.

Of the sample of 150 post-partum mothers, 122 have been successfully followed up. A subset of the study sample comprised 40 mothers. The weight by age for the infants of 20 of these mothers has fallen below expected standards. These were compared to infants of 20 women who were thriving satisfactorily. Initial study of the growth charts show that 73.5% of the babies were considered normal having growth curves in conformity with the standard level. Some 9.9% were considered at-risk, falling below the 50th centile, and 16.5% greatly at-risk, falling approximately to 80% of the 50th centile. The at risk babies have been referred to the appropriate health authorities. The case studies represent anthropometric measurements at 6 weeks and at 6 months of age.

Overall, the field phase has been quite successful. Mothers and other members of their households have been very cooperative. The interviewers have proved very reliable and have persevered even under adverse conditions.

OTHER DATA

<u>Investigator(s):</u>	M. Buvinic, J. Leslie, I. Nieves, D. Powell
<u>Institution:</u>	Internal Center for Research on Women (ICRW), the University of the West Indies, Caribbean Food and Nutrition Institute (CFNI)
<u>Country:</u>	Jamaica
<u>Technical Program Responsible:</u>	Food and Nutrition/CFNI
<u>Duration:</u>	1985 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 41,390
ICRW	

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Health and Nutrition of Women Engaged in Marketing Agricultural Produce in Parochial Markets: Phase I

OBJECTIVES

The contribution of women to the development process through food marketing activities within the formal and informal sectors has been recognized at the local, regional and international levels. The market woman is an important link in the process of food production, export and local consumption.

This study focuses on the health and nutritional status of women who market agricultural produce in parochial markets in Jamaica. It seeks to identify elements which hamper or are needed to improve the institution of food marketing so that the women involved and their families may enjoy a better quality of life. Areas to be addressed include the demographic, economic and sociological bases of the women and their families; their basic dietary practices, food distribution in health and disease, health status, accommodation of child bearing, marketing skills, and support systems which are in place or needed to facilitate their task and protect their own and their families' health. Health is defined as a state of well-being which allows them to lead a socially and economically productive life.

The study will investigate the following hypotheses:

1. Marketing of agricultural produce by women in parochial markets is an institution which, if improved, would lead to improved health and nutritional status of the women and their families.
2. Food marketing is an effective, income-generating activity for unskilled women in both urban and rural communities in Jamaica.
3. A considerable proportion of the food handled by women who market agricultural produce is channelled into their families' food supply, resulting in adequate to excessive nutrient intake.
4. Children of women who market agricultural produce spend a considerable proportion of their time assisting their parents in this activity as well as in household activities which results in low school attendance and academic performance.
5. Strengthening the non-formal educational base of market women in food, nutrition, public health and marketing will help them to achieve a better quality of life.

METHODS AND APPROACHES

The study will be carried out in Jamaica on a phased basis over a three-year period and will involve a random sample of 300 market women (150 urban and 150 rural) and a sub-sample of 50 of their families.

Phase I was conducted in the summer of 1984. It comprised a pilot study of a sample of 25 randomly selected women. Of these, 10 women were from the Coronation Market in metropolitan Kingston, and five each from the Papine (St. Andrew), Linstead (St. Catherine) and Morant Bay (St. Thomas) Markets. In this sample, two urban and two rural markets were represented. By interview/observation home visits, physical examination, and the completion of three draft questionnaires, seven field workers collected data over a four-week period from these women and selected members of their families.

Interviews were carried out in the market place, in homes and at the nearest health facility. In general, the activities the women perform were followed throughout their normal course of work over a one week period with special emphasis on weekends when their marketing activities were intense. Their families were visited, at their convenience, and the women were checked medically by a nurse practitioner at the health facility nearest to the market. Fasting blood samples were analyzed by the Haematology and Chemical Pathology sections of the Department of Pathology, University of the West Indies Hospital. Forty-four percent (44%) of the women were obese, that is, above 120% weight for height. Haemoglobin levels ranged from 8.1 g/dl - 15 g/dl, with 92% above 11.0 g/dl. Serum iron levels showed that 4% of the women were anemic. Above normal values of triglycerides, fasting blood sugar and cholesterol were seen in 37.5%, 16.6% and 12.5% of the women, respectively.

RESULTS AND CONCLUSIONS

Based on this phase of study, parameters for the development of the methodology of the major study were derived. Funds are now being sought for its implementation.

OTHER DATA

<u>Investigator(s):</u>	Mrs. Versada Campbell
<u>Institution:</u>	Caribbean Food and Nutrition Institute (CFNI)
<u>Country:</u>	Jamaica
<u>Technical Program Responsible:</u>	Food and Nutrition/CFNI
<u>Duration:</u>	1984

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO (Pilot Phase I)	US\$ 1,500

PUBLICATIONS RESULTING FROM THE RESEARCH

None

**Effect of Breastfeeding on Diarrheal Morbidity:
Epidemiological and Immunological Studies**

OBJECTIVES

To determine, in general, whether breast-feeding protects against diarrheal disease. The study seeks to determine the incidence and severity of diarrhea among children 2-6 months old living in marginal urban areas of Guatemala and their relationship to breast-feeding status.

To assess the importance of the main etiologic agents responsible for diarrhea in this population: Shigella, Salmonella, EPEC, ETEC, Campylobacter, Rotavirus and Yersinia.

METHODS AND APPROACHES

In order to determine if breastfeeding protects the breast-fed infant against diarrheal diseases and the role that milk specific antibodies may play in that protection, a study in Colonia "El Limón", in Guatemala City was initiated. From June to December 1985, 113 children under 9 months of age were kept under surveillance. The incidence rate of diarrhea during the first semester of the study was 7.8/100 child-weeks of observation. Statistical comparisons at this point would not be meaningful. Stool samples are obtained from sick and control children for isolation and/or identification of enteric pathogens.

The preliminary findings are summarized in Table 1. The milk samples were kept frozen for future analysis.

TABLE 1

Isolation of Enteropathogens from Fecal Samples

<u>Organism</u>	<u>Percent of Positive samples</u>	
	<u>Cases</u>	<u>Controls</u>
Enteropathogenic <u>E. coli</u>	12	22
Enterotoxigenic <u>E. coli</u>		
LT	10	1
ST	2	3
<u>Salmonella</u>	5	2
<u>Campylobacter jejuni</u>	5	0.3
<u>Shigella</u>	2	0.3
<u>Aeromonas</u>	0	1
<u>Plesiomonas</u>	0	0.3
<u>Cryptosporidium</u>	0	0.2
<u>Giardia</u>	5	0
TOTAL	41	30

RESULTS AND CONCLUSIONS

Study in progress.

OTHER DATA

Investigator(s): José Ramiro Cruz, America de Fernandez, Francisco Chew, Olga Torres and Florindalma Cano

Institution: Institute of Nutrition for Central America and Panama (INCAP)

Country: Guatemala

Technical Program Responsible: Food and Nutrition/INCAP

Duration: 1985 - 1986

FUNDING

<u>Agency</u>		<u>Amount</u>
World Health Organization/ Diarrheal Diseases Program	(1985)	US\$ 17,936
	(1986)	US\$ 18,519
		<hr/>
TOTAL		US\$ 36,445

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Studies to Determine the Persistence of I_gA Antibodies in Human Milk

OBJECTIVES

To determine during the first four months post-partum:

The behaviour of milk SI_gA antibodies against the most common pathogens associated with diarrhea in rural Guatemala; and,

The relationship of changes in SI_gA antibody levels, if they exist, with milk content of SI_gA.

METHODS AND APPROACHES

Twenty lactating mothers from Santa María Cangué were recruited and asked to provide milk samples on days 5, 9 and 11 post-partum and weekly thereafter for 16 additional weeks. Total secretory I_gA and I_gA specific antibodies against E. coli LT, Shigella B6 somatic antigen and rotavirus were determined on all milk samples by the standard enzyme-linked immunosorbent assays, (ELISA). A two-way analysis of variance was applied to determine significant changes in concentration and dependency of antibody levels.

RESULTS AND CONCLUSIONS

The changes in concentration of milk I_gA in relation to time post-partum followed the pattern described in the literature. The levels of specific I_gA antibodies fluctuated with no predictable pattern. In general, there was no association between specific antibody titers of the specific antibodies against the three antigens tested.

OTHER DATA

<u>Investigator(s):</u>	Dr. José Ramiro Cruz
<u>Institution:</u>	Institute of Nutrition of Central America and Panama (INCAP)
<u>Country:</u>	Guatemala
<u>Technical Program Responsible:</u>	Maternal and Child Health/Diarrheal Diseases
<u>Duration:</u>	1983 - 1984

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 15,000

PUBLICATIONS RESULTING FROM THE RESEARCH

Forthcoming.

The Utilization of Beans

OBJECTIVES

In general, to develop methods for assessing consumer acceptability of beans in Guatemala for use as criteria in research programs aimed at increasing the availability and consumption of beans, and increasing their utilization and nutritive value through improved small scale industrial processing.

In particular:

To define the specific characteristics of bean acceptability in Guatemala using consumer survey techniques.

To establish a uniform, reliable and adequate laboratory methodology to quantify the physical, chemical and sensory characteristics of bean quality as defined by Guatemalan consumers; and to correlate these laboratory methods with consumer panel data; and to identify the minimum number of tests which define consumer acceptability.

To evaluate the development of hardness in bulk storage and under farm conditions.

To develop procedures for the utilization in local foods of hard-to-cook beans.

To evaluate the effect of processing methods on protein digestibility and nutritive value.

METHODS AND APPROACHES

In order to develop the consumer survey questionnaire, interviews with groups of Guatemalan consumers will provide information on the criteria used in the selection of black beans, the characteristics of good cooking and eating quality, as well as, storage and cooking methods in homes. The households surveyed will be stratified according to socioeconomic, cultural, urban and rural groups.

Bean samples will be assessed by a trained sensory panel on those parameters identified as important by Guatemalan consumers. Physical and chemical parameters will be correlated with sensory panel data.

Hardness will be assessed in bulk and in farm storage in three regions of Guatemala with six participating farmers in each region. Three approaches will be studied: use of inorganic salts, extrusion cooking and dehulling.

Biological assays will be used to assess the effect of processing on the nutritional value of bean preparation.

RESULTS AND CONCLUSIONS

Criteria and methods of bean acceptability used by housewives were based on texture (resistance of the grain to bite, or to the pressure made by the fingernail), and physical appearance (grain should be clean, intact with a deep black color and soft). Criteria to assess cooking time was based on texture reflecting hardness and different types of texture. The cooking broth also included a color evaluation. Hardness development data obtained from farm storage, in general, indicated that cooking time increased with storage time. Biodeterioration, due to insect infestation and fungi, also contributed to increase postharvest losses. The use of inorganic salts provided a beneficial effect of Na and K ions to decrease

cooking time in both fresh and hardened beans. Optimum ion concentrations needed to achieve the best cooking time were also determined. Nutritional evaluation indicated a change in the protein quality of the salt treated bean preparations.

OTHER DATA

<u>Investigator(s):</u>	Dr. Luis G. Elias and R. R. Bressani
<u>Institution:</u>	Institute of Nutrition of Central America and Panama (INCAP)
<u>Country:</u>	Guatemala
<u>Technical Program Responsible:</u>	Food and Nutrition/INCAP
<u>Duration:</u>	1984 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
International Development Research Council (IDRC)/University of Manitoba, Canada	US\$ 8,373 (1984)
	US\$ 97,970 (1985)
TOTAL	US\$ 106,343

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Preliminary study on consumer acceptability of beans in Guatemala. L. G. Elaias, B. Rios, H. Ramirez, A. Garcia, R. Diamant, B. Watts, M. Vaisey-Genser, R. Gomez-Brenes and R. Bressani. Presented at the Canadian Institute of Food Science and Technology (CIFST). June 23-30, 1985. Toronto, Ontario, Canada.
2. Metodologias de seleccion y criterios de aceptabilidad de frijol a nivel de consumidor en Guatemala. A. Garcia, B. Rios, L. G. Elias y R. Bressani. Presented at the XXXII Programa Cooperativo Centroamericano para el Mejoramiento de Cultivos Alimenticios (PCCMCA). 17-21 March, 1986. San Salvador, El Salvador, C.A.
3. Estudio preliminar sobre perdidas postcosecha de frijol en la region de Peten, Guatemala, A. Garcia, L. Sosa, L.G. Elias y R. Bressani. Presented at the XXXII Programa Cooperativo Centroamericano para el Mejoramiento de Cultivos Alimenticios (PCCMCA). 17-21 March, 1986. San Salvador, El Salvador, C. A.
4. Una tecnologia economica para disminuir el tiempo de coccion del frijol comun. L. de Leon, L. G. Elias y R. Bressani. Presented at the XXXII Programa Cooperativo Centroamericano para el Mejoramiento de Cultivos Alimenticios (PCCMCA). 17-21 March, 1986. San Salvador, El Salvador, C.A.
5. Metodos fisicos, quimicos y nutricionales para establecer la calidad tecnologica y nutricional del frijol. L. G. Elias, A. Garcia y R. Bressani. Presented at the XXXII Programa Cooperativo Centroamericano para el Mejoramiento de Cultivos Alimenticios (PCCMCA). 17-21 March, 1986. San Salvador, El Salvador, C.A.

National Analysis of the Dietary, Nutritional, and Health Situation of the Ecuadorian Population

OBJECTIVES

To describe the type and magnitude of the problems related to the consumption of food and nutrition/health by socioeconomic categories at the national and regional levels.

To identify the degree of relationship of the principal ecological, cultural, and socioeconomic factors associated with the above problems, particularly in the maternal and child group.

To utilize the results for the formulation of policies, planning of programs, and evaluation of actions concerning feeding, nutrition, and health.

To provide the bases for establishment of a continuous system of multisectoral information that makes it possible to optimize nutritional epidemiological surveillance.

To analyze and interpret the health-disease and feeding-nutrition phenomena, in light of the attitudes and practices of the population and the response of the existing services.

To establish a permanent mechanism of communication and intersectoral work in order to increase the effectiveness of the national programs that affect the feeding, nutrition, and health of the population.

METHODS AND APPROACHES

The project is developed in three defined stages:

1 - Documented analysis:

Review and analysis of existing information in the country:

- a) ecological, productive, social, and cultural characteristics of the population, in relation to its location and distribution (urban/rural, age groups, etc.);
- b) report of communicable diseases and registration of mortality from specific causes;
- c) prevalence of malnutrition and specific deficiencies, availability and consumption of foods;
- d) feeding, nutrition, and health programs and services and the degree of utilization.

2 - Field study (Survey):

Collection, analysis, and dissemination of data obtained in a national probability sample, regionalized, and stratified by conglomerates, through:

- a) home interviews (socioeconomic data and data on consumption of foods, housing, health, and utilization of services, etc.);
- b) direct study in children under five (anthropometry and biochemical determinations) to establish the prevalence of protein-energy malnutrition and deficiencies of iron, vitamin A, iodine, and other nutrients.

3 - Food and nutrition surveillance:

Based on the preceding stages, groups and regions at greater risk to malnutrition will be identified in order to establish a continuous system of nutritional epidemiological surveillance ("Sentinal areas/sites"). This will make it possible to act on a timely basis at the individual/family level, to increase the efficiency of the programs, and to contribute to their monitoring and evaluation.

RESULTS AND CONCLUSIONS

The (Documented Analysis) stage of the study has made it possible to define a preliminary health profile and confirmed the lack of up-to-date, representative information on the food and nutrition situation of the Ecuadorian population.

Planning, organization, training of personnel, and a pilot test of the survey have been carried out. The collection of data at the national level was initiated in March 1986.

OTHER DATA

<u>Investigator(s):</u>	Dr. Wilma Freire, Dr. José Suárez
<u>Institution:</u>	Consejo Nacional de Desarrollo (CONADE) and Ministerio de Salud Pública, Ecuador
<u>Country:</u>	Ecuador
<u>Technical Program Responsible:</u>	Food and Nutrition
<u>Duration:</u>	January 1985 - December 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
CONADE/Ministerio de Salud Pública	US\$ 250,000
USAID	US\$ 400,000
Nestle Foundation	US\$ 350,000
PAHO	US\$ 20,000
TOTAL	US\$ 1,020,000

PUBLICATIONS RESULTING FROM THE RESEARCH

Forthcoming.

**Applicability of Vi Serology to Screen for Chronic Salmonella Typhi
Carriers in a Food Handlers' Health Control Program in Lima, Peru**

OBJECTIVES

To conduct a cost-benefit analysis of Vi serology as a screening assay to detect chronic Salmonella typhi as part of a health screening program in Lima, Peru.

METHODS AND APPROACHES

Serum samples will be obtained from food handlers upon renewal of their health card. Those individuals whose sera show a positive titer to the Vi antigen in the passive hemagglutination test will be requested to submit to 3 consecutive stool cultures and one duodenal-fluid culture (specimen obtained by the "string capsule technique"). Standard laboratory procedures for isolation of Salmonella typhi will be carried out. Positive reactors will be requested to participate in another study of an oral drug treatment trial or surgical-antibiotic treatment in attempts to eliminate the chronic infection.

RESULTS AND CONCLUSIONS

Study in progress.

OTHER DATA

<u>Investigator(s):</u>	Dr. Claudio F. Lanata
<u>Institution:</u>	Instituto de Medicina Tropical Alexander Von Humbolt Universidad Peruana Cayetano Heredia
<u>Country:</u>	Peru
<u>Technical Program Responsible:</u>	Maternal and Child Health/Diarrheal Diseases
<u>Duration:</u>	1985 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 9,975

PUBLICATIONS RESULTING FROM THE RESEARCH

None

Hematological Response to Vitamin A Supplementation in Anemic Children

OBJECTIVES

To determine if supplements of Vitamin A, with or without additional iron therapy, improve hematological and nutritional conditions in children with iron deficiency anemia.

METHODS AND APPROACHES

The study population was children between the ages of 1 and 8 from seven different day care centers of the Social Welfare Organization of the Secretariat of the Presidency of Guatemala. Another center that participated in the study was the Center for Nutritional Recovery of San Juan Sacatepéquez, which is supported by the Lions Club. The children were from families of low socioeconomic level.

Three of the centers are located in Guatemala City (Bethania, La Florida, and Presidenta) while the rest are located in the rural area, Zacapa, Progress, Escuintla, Cuilapa, and San Juan Sacatepéquez.

Screening of Anemic Children

Anemic children were identified by measuring the hematocrit levels of the total child population of each center. For this purpose, duplicate capillary blood samples were obtained from each child and were compared to the standard hematocrit values proposed by Viteri, et. al. for the Central American population. Children who presented levels of hematocrit below 1 1/2 standard deviations from the cutoff point were considered potentially anemic.

Experimental Design

The anemic children in each center were assigned at random to four different groups.

Group I: Twenty-five children supplemented with 10,000 IU of Vitamin A/day in a hydrosoluble form for a period of two months.

Group II: Thirty children supplemented with ferrous sulfate in syrup form at a dosage of 3 mg/kg/day. In order to avoid gastrointestinal problems, the dosage was divided into two parts and administered in mid-morning and mid-afternoon.

Group III: Twenty-four children supplemented with both Vitamin A and iron in the dosages indicated in Group I and II.

Group IV: Twenty children participated in the control group, which was given a placebo that resembled the iron preparation.

At the beginning of the study, after one month's time, and after two months' time, anthropometric measurements were taken of the children and they were given a clinical examination. Some children received the treatment for three months. This made it possible to evaluate the effect of the treatment for a longer period of time.

In order to evaluate the hematological changes resulting from the treatment, 5 ml of venous blood was taken from each child at the beginning and at the end (two months). The following parameters were determined in the blood samples:

1. Hemoglobin, hematocrit, red cell count, hematological indexes (MCV, MCH, MCHC), leukocyte count by the standard method, using automated cell counts (Royco-cell crit 920-TO).

2. Serum retinol by the ultra-gentian violet inactivation method proposed by IVACG.

3. Serum iron, total capacity to bind iron (TIBC) and percentage of saturation of transferrin (%TC) by the Ramsay method.

4. Serum ferritin by an immuno-enzymatic test using a commercial kit (tandem-e Fer, Hybritech, Inc., San Diego, Calif.)

5. Speed of erythrocytic sedimentation by the Wintrobe method.

At the end of the study, for ethical reasons, all the children of the control group were supplemented for two months with Vitamin A and iron.

RESULTS AND CONCLUSIONS

A clear-cut effect of time and Vitamin A treatment ($p=0.0245$) was found. A positive change was observed of 10 micrograms/dl. of retinol in both groups treated with Vitamin A.

Treatment with iron produced a significantly higher increase in the levels of this parameter ($p=0.0028$). The children supplemented with Vitamin A showed an elevation in hemoglobin, but this increase was quite small ($p=0.0594$).

The effect of treatment with Vitamin A on hemoglobin produced an average increase of 0.93 ± 0.56 g/dl. in the group supplemented with Vitamin A.

The levels of hemoglobin in the group treated only with Vitamin A for three months showed a slight reduction of 11.2 ± 0.8 to 10.9 ± 1.1 g/dl. between two and three months.

The group treated with Vitamin A and iron showed an increase in the levels of saturation of transferrin, and there was a slight reduction in the group that received the placebo. Interestingly, treatment with iron only did not have a significant effect on the percentage of saturation of transferrin by the end of the study ($p=0.03097$).

Treatment with Vitamin A produced an increase in the levels of serum iron ($p=0.0070$) with Group III showing the largest average increase.

The levels of TIBC diminished with Vitamin A treatment and, in particular, with the combined Vitamin A and iron treatment.

Only the treatment with iron (Group II) had a significant effect on the levels of serum ferritin ($p=0.0324$).

These data indicate that supplements of Vitamin A can influence the hematological condition and the metabolism of iron.

Those children who received Vitamin A for two months increased their hemoglobin by approximately 0.9 g/dl and increased their levels of circulating iron. The percentage of saturation of transferrin and the total capacity for binding iron diminished. All these data indicate that the greatest effect of Vitamin A is to maintain adequate levels in the plasma in order to supply the different tissues of the body. The elevation of serum iron was greatest when the children received Vitamin A and iron together.

OTHER DATA

Investigator(s): Dr. Luis Antonio Mejía and Dr. Fracisco Chew
Institution: Institute of Nutrition of Central America and Panama (INCAP)
Country: Guatemala
Technical Program Responsible: Food and Nutrition/INCAP
Duration: 1985

FUNDING

<u>Agency</u>	<u>Amount</u>
INCAP	US\$ 25,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None.

Microbiological Quality of Vegetables: Is it a Threat to Human Health?

OBJECTIVES

To determine the degree of contamination of different fresh vegetables through different methodologies to characterize external and internal contamination;

To determine the degree of contamination of samples of different fresh vegetables obtained from different rural, urban, and suburban areas of Guatemala;

To determine the relative efficiency of commonly used sanitary practices such as washing fresh vegetables in pure or iodinated water to obtain a product free of enteropathogenic bacteria.

METHODS AND APPROACHES

Samples of different fresh vegetables such as lettuce, cabbage, watercress, tomato, and parsley were obtained from rural, urban, and suburban areas for analysis. Ten samples of each vegetable were obtained from a random sample of families living in the above areas. The samples were analyzed immediately following purchase from local retail markets and after they were washed with iodinated water prior to being eaten. All vegetables were tested in duplicate on the same day utilizing washing and liquefying methods.

An analysis of variance (ANOVA) statistical technique on the collected data was used to study the variation among geographical areas and treatments. Standard techniques (biochemical tests and serology) were used for the identification of Shigella, Salmonella, Yersinia, and E. coli.

RESULTS AND CONCLUSIONS

On the basis of quantitative data of the study, it was concluded that fresh vegetables available in the common markets from sub-urban areas of Guatemala City present a higher internal and total coliform contamination than those available in supermarkets and rural markets from the producing areas.

Washing fresh vegetables thoroughly with tap water significantly reduced their contamination with total and fecal coliforms. Treatment of fresh vegetables with iodinated water (at the average concentration used by the housewife), did not significantly improved their sanitary quality over those washed with tap water alone.

In samples prepared using a homogenization technique, a significantly higher degree of contamination was detected. This suggests an internal contamination of the vegetable tissue which was demonstrated in lettuce, cabbage and celery. The degree of internal contamination was significantly higher in the samples obtained from markets from sub-urban areas of the city than those obtained from supermarkets or rural markets. This supports the hypothesis that the internal contamination occurs after harvesting through capillary suction from the cut base of the vegetable.

Thus, vegetables consumed fresh represent a health hazard primarily for the low medium class urban population which generally purchases them in sub-urban markets or as part of the typical dishes prepared by street food vendors or cafeterias.

OTHER DATA

Investigator(s): Dr. Mario Roberto Molina
Institution: Institute of Nutrition for Central America and Panama (INCAP)
Country: Guatemala
Technical Program Responsible: Maternal and Child Health/Diarrheal Diseases
Duration: 1983 - 1984

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 10,500

PUBLICATIONS RESULTING FROM THE RESEARCH

Two in preparation.

Action-oriented Research on Nutrition and Child Health as Part of Primary Health Care

OBJECTIVES

To study the determining cultural patterns of feeding practices and health care in children under 3 years of age.

To involve the community in the study and identification of its health and nutrition problems and in the formulation/execution of practical actions for their solution.

To carry out activities to improve the practices of infant feeding and health care, aimed at the prevention and control of malnutrition, acute infections, and diarrheal processes.

To develop, test, and enhance techniques of work for the execution of these actions, as part of the activities of the rural health promoter.

To apply this methodology extensively, after training the health team, including the community health workers.

METHODS AND APPROACHES

The project was developed in three phases: Research, Action and Evaluation.

The research phase (June 1981 - March 1982) was devoted to analysis of the health and nutrition of the community through the following activities:

- a) Selection of a rural community of approximately 5,000 inhabitants.
- b) Anthropologic study of the community through 27 case studies, including; a geographical and historical description, productive activities, demographic aspects, infrastructure of the region, forms of community organization and identification of leaders, a physical description of the home and its social characteristics, practices of infant feeding and child-rearing, sanitary conditions and hygienic habits, health patterns, personal and institutional influences, the role of the mother, and patterns of activity and behavior of consumers.
- c) A cross-sectional survey on feeding and health practices in all families with children less than 3 years of age. Data will be included on recent morbidity, immunizations, attitudes of the family and its behavior regarding health and illness in children, household sanitary conditions, type and quality of drinking water, systems for elimination of wastes, evaluation of the nutritional status of those less than 3 years of age (weight and size), and utilization of the health services.
- d) Analysis of the operation of the health services as part of the strategy of primary care, with emphasis on: mechanisms of coordination among the local, regional, and sectional levels; fulfillment of the standards in accordance with the levels of health care, systems of reference, and delegation of functions; administrative transactions (personnel, equipment, and supplies) supervision and degree of training of the rural health promoter and other personnel of the local team; development of educational activities (methodology, contents, and utilization of audiovisual aids); community participation in the activities of primary care; and degree of integration of the health team with the community and other local agencies.

The action phase (April, 1982 - June, 1984) involved the joint work of the personnel of the Health Service of Cundinamarca and representatives of the community. Actions and priority activities aimed at improving child health and nutrition were agreed upon. These included the effective participation of the community, technical and administrative support of the Health Service, comprehensive actions for prevention, cure and health promotion, retraining of the health community worker (rural promoters and nursing auxiliaries) in the following areas: knowledge of the community and its needs, how to teach and learn with the community, family feeding, nutrition of the mother, breast-feeding, infant feeding, control of the growth and nutritional status of the child, nutrition and infection, diarrhea and nutrition, more common nutritional deficiencies, environmental sanitation, organization and supervision of the work.

The following interventions were carried out: control of the growth and nutritional status of the child, dietary surveillance, nutritional education, control of diarrheal disease, promotion of immunizations, environmental sanitation, and support for community participation (visits to the homes, organization of a health committee and training of its members, etc.).

The project activities were evaluated during the Evaluation phase (April 1982 - June 1984) periodically from their initiation (preliminary diagnostic phase) through implementation and presentation and discussion of the results with the community and the health authorities. It was not possible to do an adequate evaluation of the impact of the project due to methodological and operational limitations. However, some evaluation indicators show evidence of the successful results of the project: significant increase in the coverage of activities of surveillance of child growth, immunizations, the number and quality of medical consultations, the level of self-care of health, the improvement of hygiene in the home and in the environment.

RESULTS AND CONCLUSIONS

Designed, tested in the country, and applied successfully in the project were work methodologies to improve the provision of services and correct some of the problems found, particularly in the following areas:

- Training of the health community worker in food and nutrition, through the testing, adaptation, and modification of the WHO Manual on the subject, which served as the last PAHO publication in Spanish.
- Organization of the work of the rural health promoter and other support personnel in the services, in accordance with levels of care, including guidelines for the supervision and monitoring of the activities at the local level.
- Appropriate technologies for diarrheal disease prevention and control, especially early oral rehydration in the home, and refeeding the child having diarrhea.
- Integration of activities of nutrition and health giving emphasis to nutritional and dietary surveillance, improvement of the feeding of the infant and the mother, oral rehydration, and immunizations.
- Educational methodology through teaching and learning techniques and the design and utilization of materials to improve the performance of the community worker as an educational agent.

- Effective participation of the community, through the stimulus and motivation of families, in order to achieve greater awareness and better decisions in the solution of its own problems.
- Periodical and regular technical and administrative support to the local health services, through intelligent supervision, continuous education, and improvement of the referral systems in accordance with the levels of care.

OTHER DATA

Investigator(s): José Obdulio Mora, Esperanza Salazar de Ramírez, Yolanda Ramírez Guarín, Soledad Niño de Pelaez, and Inés Betancourt de Arce

Institution: Pontificia Universidad Javeriana, Facultad de Estudios Interdisciplinarios, Programa de Alimentación y Nutrición, Servicio Seccional de Salud de Cundinamarca, Colombia

Country: Colombia

Technical Program Responsible: Food and Nutrition

Duration: July 1981 - June 1984

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 100,450
Nestle Foundation	US\$ 77,400
Javeriana University	US\$ 170,000
	<hr/>
TOTAL	US\$ 347,850

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Pan American Health Organization. Pautas para capacitar en nutrición al trabajador comunitario de salud. PAHO Scientific Publication No. 457, Washington, D.C., 1983.
2. Mora, J.O., E. Salazar de Ramírez, Y. Ramírez, S. Niño de Peláez, I.I. Betancourt de Arce. Informe Final del Proyecto de Investigación-Acción sobre Nutrición y Salud Infantil, como parte de la Atención Primaria de Salud, Guayabal de Siquima (Cundinamarca), Colombia, 1981-1984. Unijaveriana/FEI/PAN, November, 1984.
3. Daza, C.H. and J.O. Mora. La Investigación-Acción en Nutrición a través de la Atención Primaria de Salud. In: A. Lam-Sánchez and J.F. Durigán, (eds.), ANAIS, VII Congreso Latinoamericano de Nutrición, Brasilia, 26-29 November 1984, FUNEP, Jaboticabal, S.P. Brasil, 1985.

A Population Survey for the Assessment of Iron Nutritional Status in Grenada

OBJECTIVES

To determine the iron status of the population of Grenada.

To investigate the feasibility and potential effectiveness of the following interventions:

- Supplementation of at-risk groups of the population with iron therapy,
- Nutrition education focussing on increasing the consumption of iron-rich foods by the population,
- Environmental sanitation, and
- Fortification of appropriate foods with iron.

To determine the prevalence of anemia in the population for selected age groups and among those women pregnant or in lactation.

To obtain information that would guide decisions as to the interventions necessary to ameliorate the situation.

METHODS AND APPROACHES

A random sample was conducted of 377 households which included all parishes of not less than 100 persons in any age-sex category. The sample consisted of 1,536 people. In addition, 113 pre-natal women in the last trimester of pregnancy and 134 lactating women 6 weeks post-partum were chosen from randomly selected clinics. Demographic questionnaires were administered to heads of household by public health nurses. The following data were collected from each individual: food frequency information; blood samples for haemoglobin, haematocrit and plasma ferritin determinations; and stool specimens for quantitative estimations of enteric parasites.

Data analysis was performed at CFNI, Jamaica.

RESULTS AND CONCLUSIONS

The sample was mainly rural. Rural households were larger and more crowded, having poorer physical facilities and fewer possessions than urban households.

Most home-iron containing foods, wheat flour products and brown sugar were widely and frequently consumed. However, organ meats and dried fruits were poorly consumed items.

Anemia prevalence (as defined by WHO using Hb and PCV cutoffs) and iron deficiency (plasma ferritin < 12 ug/l) were highest among preschoolers (44-45% anemic, 60% iron deficient), pre-natal (49-63% anemic, 54% iron deficient) and post-natal (37-47% anemic, 62% iron deficient) women.

Since the analysis of stool specimens has not yet been completed, no firm conclusions can be drawn at this time.

OTHER DATA

Investigator(s): Dr. Adeline W. Patterson

Institution: Caribbean Food and Nutrition Institute (CFNI)
Government of Grenada
Caribbean Epidemiology Center (CAREC)

Country: Grenada

Technical Program
Responsible: Food and Nutrition/CFNI

Duration: 1985 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 8,000
USAID	US\$ 25,000
TOTAL	US\$ 33,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Factors Affecting Infant and Young Child Feeding and Rearing

OBJECTIVES

To obtain quantitative and qualitative data on the varieties of infant care/feeding practices in selected communities in Dominica and Saint Vincent, in order to find risk factors for health and nutrition.

METHODS AND APPROACHES

Three communities will be studied in Dominica and two in Saint Vincent. Exploratory interviews on infant care/feeding will be conducted in 20 to 25 families.

A second phase will be conducted in 50-60 households of each community where a structured interview will be held to obtain information that was found to be relevant in phase I. This will result in two groups "normal" and "at risk" which will be compared.

RESULTS AND CONCLUSIONS

None yet.

OTHER DATA

<u>Investigator(s):</u>	Dr. Adeline W. Patterson
<u>Institution:</u>	Caribbean Food and Nutrition Institute (CFNI)
<u>Country:</u>	Dominica, St. Vincent and the Grenadines
<u>Technical Program Responsible:</u>	Food and Nutrition/CFNI
<u>Duration:</u>	1985 - 1988

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

None

Monitoring Nutrition and Actions to Improve Children's Health - An Approach for the English-speaking Caribbean

OBJECTIVES

In English-speaking Caribbean countries malnutrition in children, although on the decline during the past decade or two, still remains a public health problem. The malnutrition that persists in these countries is not endemic, but appears to be located in specific geographic, economic, social and demographic pockets. In order to reduce malnutrition further and ultimately eliminate it completely, the population groups involved need to be continuously followed. Maintaining an effective surveillance system will enable appropriate and informed decisions to be made, both to develop programmes specifically targeted to these groups and to monitor their progress. Without directing efforts at specific target groups, national programmes to combat malnutrition aimed at the entire population may not produce desired results. Such groups need to be identified and their characteristics and attributes precisely defined.

The objectives of the project are: to establish and maintain a system of monitoring malnutrition at the community level on a continuous basis; and to utilize the disaggregated data on malnutrition collected in this system for decision-making and program planning to improve the nutritional status of children.

METHODS AND APPROACHES

Tools will have to be developed that precisely measure malnutrition and provide systematic and timely information.

A system of collecting disaggregated data on the pockets of malnutrition and some of its major attributes will have to be developed.

A system of monitoring malnutrition and, more importantly, enabling the utilization of the data to initiate action at different administrative levels of the health care system for improving the nutritional status of children will also have to be developed. The tools and the system will be field tested.

The tools and the system will have to be applied systematically and incrementally in the countries of the Caribbean.

RESULTS AND CONCLUSIONS

The following tools, systems and procedures for monitoring growth of children have been developed: a) Caribbean Growth Charts and Child Health Clinic Record; b) Take-home Growth Charts for parents; c) A system of monitoring nutritional status at the individual level and at the community level, including data management and utilization at the health centre level; and d) A Field Guide/Training Manual which explains in detail the tools and the system and step-by-step procedures to carry out these activities.

The tools, system and field guide have been field-tested and after due modifications, have now been applied in several countries. An orderly approach to initiate and maintain the system in each country has been implemented as follows:

STEP 1: Meeting or correspondence between CFNI and the country officials to establish the terms of reference for the work.

- STEP 2: Evaluation of the present system of monitoring growth in the country and collecting disaggregated data on nutritional status.
- STEP 3: A 3-day training and planning workshop of the health centre staff, their supervisors and various national staff in collaboration with CFNI in order to discuss the previous steps and the application and utilization of Caribbean Growth Charts for nutritional improvement, and the design of country specific systems.
- STEP 4: Implementation of the system as outlined in the plan of work.
- STEP 5: Monitoring and evaluation.
Further assistance by CFNI staff to the solution of problems arising during the implementation and institutionalization of the system if needed.
- STEP 6: Discussion with national officials to establish a multi-sectoral Food and Nutritional Surveillance System for the country.

Nine countries (Antigua, Grenada, St. Christopher-Nevis, British Virgin Islands, St. Vincent, Trinidad and Tobago, St. Lucia, Montserrat and Guyana) have so far initiated the new system of monitoring and improving nutritional status of children. They are at different stages of implementation.

OTHER DATA

<u>Investigator(s):</u>	Dinesh P. Sinha
<u>Institution:</u>	Caribbean Food and Nutrition Institute (CFNI)
<u>Country:</u>	Antigua, the British Virgin Islands, Grenada, St. Christopher Nevis, St. Vincent, Trinidad & Tobago and Saint Lucia
<u>Technical Program Responsible:</u>	Food and Nutrition/CFNI
<u>Duration:</u>	1984 - 1986

FUNDING

<u>Agency</u>		<u>Amount</u>
PAHO		US\$ 9,901
UNICEF	(1985)	US\$ 10,000
	(1986)	US\$ 10,000
TOTAL		<hr/> US\$ 29,901

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Sinha, D.P. Growth Charts for the Caribbean. CAJANUS 17:156, 1984.
2. Sinha, D.P. Monitoring Surveillance: Systematizing the Outcome Variables. CAJANUS 18:24, 1985.
3. Sinha, D.P. Monitoring Nutritional Status and Actions to Improve Children's Health - A field Guide for Health Workers in the Caribbean, 1986.
4. Sinha, D.P, Jutsum, P.J., Wallace, I. Patterns of Malnutrition in the Caribbean - A Case Study of Antigua. CFNI, 1985.
5. Sinha, D.P. and Francis-Delaney, D. Patterns of Malnutrition in the Caribbean - A Case Study of St. Christopher-Nevis. CFNI, under preparation.
6. Sinha, D.P. and Scatliffe, T. Patterns of Malnutrition in the Caribbean - A Case Study of the British Virgin Islands. CFNI, under preparation.
7. Sinha, D.P. Monitoring Nutrition and Health of Children - An Integrated Approach for the English-speaking Caribbean. CFNI-J-13-86, Kingston, Jamaica.

**PRECAVAS - Contribution of Dietary and Pharmacological Interventions
in the Prevention and Control of Chronic Cardiovascular Diseases**

OBJECTIVES

In general, to develop the knowledge and the technology necessary for the definition of strategies and actions in the fields of nutrition and health care directed towards the prevention and control of chronic cardiovascular diseases (CVD), considering the different conditions and human ecological characteristics existing in Latin America and the Caribbean, including their process of development.

The project is not intended to provide representative country or regional information, but rather to examine the relationships of the relevant variables within individuals in settings selected to maximize the range of such variables.

Specifically:

To develop common scientific and operational criteria and to select unified, valid and reliable methodology among collaborators in Latin America and the Caribbean in the planning and execution of the necessary studies to reach the general objective of the project.

To develop a descriptive epidemiologic base of cardiovascular risk factors with emphasis on dietary aspects as they have been related to CVD. This will be achieved by the study of selected population groups in the different countries participating in the project.

To test interventions on populations centered on food intake, nutritional status and community control of hypertension derived partly from the previous objective and directed towards inducing a favorable change in cardiovascular risk factors in general.

METHODS AND APPROACHES

Phase I. Development and testing of selected common methodology and operational aspects in pilot areas. This includes the determination of validity and reliability of procedures and the arrival at a scientific and operational consensus for further action (Phases II and III). The fieldwork for this phase was undertaken from 1983 to 1985.

Phase II. Description and analysis of the epidemiology of chronic CVD and of cardiovascular risk factors in selected populations of Latin America and the Caribbean. This involves two areas of action:

- (a) Analysis of the existing information on the epidemiology of chronic CVD and of cardiovascular risk factors with emphasis on the dietary characteristics and lifestyles which exist in the different populations of countries participating in the project.
- (b) Study of the epidemiology of cardiovascular risk factors and ideally that of indicators of cardiovascular pathology in selected population groups in specific countries of Latin America and the Caribbean. The population groups within each country will be chosen so as to achieve as large a range as possible in the dietary characteristics and intake patterns considered crucial in the project: total caloric intake; fat calories; polyunsaturated fatty acid intakes (absolute); polyunsaturated to saturated fatty acid intake ratio (P/S); and cholesterol intakes (absolute).

Participating countries will be selected so that the range of the above dietary characteristics among the countries is as large as possible. It is expected that these population groups will also vary in cardiovascular morbidity and mortality and in other cardiovascular risks and lifestyles, such as hereditary characteristics, sociocultural conditions, habits (alcohol intake and smoking), concomitant pathology (obesity, diabetes, etc.).

Phase III. Dietary and drug interventions to diminish the cardiovascular risk factors centered specifically on lowering LDL cholesterol and resting blood pressure, on diminishing thrombogenic tendency, and on controlling hypertensive subjects. The interventions will be based on results of Phase II and other collateral studies. The principal aim is to shift the severity of risk factors towards a lower level in the population as a whole (from school children to adults). The control of hypertensive subjects will be adjusted to the most current practices in community based programs. Treatment will be provided to subjects in whom additional pathology is detected (i.e. hyperlipidemias, diabetes, etc.).

RESULTS AND CONCLUSIONS

Field Sites

Although still too early to give definitive results from the pilot studies in the three field sites, a recent meeting of those involved was held to review the available data and to discuss operative details. In summary, the following can be stated:

- a) Instruments and procedures for data collection in the field are operational.
- b) Dietary data are the most difficult to obtain and some methods applicable to one site (i.e., monthly consumption tendency) can not be applied to others. It is clear that within a standardized general procedure, flexibility for its local application must exist. In depth data analysis of available information will provide variance estimates of three different methods tested.
- c) Sociocultural stress and coping data was obtained with confidence in the three sites with locally adapted questionnaires. Intraculturally meaningful results can be compared among the sites (interculturally).
- d) Blood pressure measuring studies in the field sites completely agree with those carried out at PAHO (see below).
- e) Difficulties were very evident in the determinations of erythrocyte fatty acids mainly due to unexpected laboratory equipment limitations in the two sites performing these analysis.
- f) Data management was a major stumbling block to carrying out the studies in all sites.
- g) Coordinating visits served to clarify and evaluate the procedures at the sites. A substantial portion of the work was judged compatible and satisfactory; the rest can be made to reach those conditions. Procedures were easily applicable in the three geographical-sociocultural sites and thus could be applicable to all sociocultural groups in the Western Hemisphere.

PAHO

At PAHO, the DINAMAP automatic blood pressure measuring instrument has been tested on 70 persons on two or three occasions with 20 measurements taken at one minute intervals each time, separated by a week or a year. This was experiment designed to measure the components of variance attributable to within-occasion and between-occasion blood pressure measurements. A draft paper prepared analyzing these data, concluded that:

- (i) Although the within-occasion variability of serial blood pressure measurements is high, the overall trend in measurements is to decrease during the first 10 minutes and to level out during the second 10 minutes.
- (ii) Based on the estimates of within-visit and between visit variability obtained from a random effects component of variance analysis, the requirement of multiple-occasions blood pressure measurement suggested by the literature could be reduced to one occasion if at least five measurements were obtained during the second 10 minutes of measuring.

DINAMAP measurements were compared to measurements taken with the auscultatory technique and to the Sphygmometrics machine in use at USDA/Beltsville. For each of eight persons, six sets of blood pressure measurements (each set consisting of DINAMAP, auscultatory, and Sphygmometrics systolic and diastolic readings taken as nearly simultaneously as the methods permit) yielded correlations among the methods of about 0.9.

A draft paper discussing the philosophy and principles of research data management for the project has been prepared and circulated among the collaborators for criticism and improvement.

A review of the statistical problems which result from intrinsic variability and error in dietary measurement was written, with the aim of spotlighting the fundamental issues so that the collaborators will have a common ground for improving dietary measurement techniques.

OTHER DATA

<u>Investigator(s):</u>	Dr. Fernando Viteri, Mr. Philip N. Gallagher Jr. - PAHO Dr. Adolfo Chávez, Mexico Dr. Geral A. C. Grell, Jamaica Dr. José Ernesto dos Santos, Brazil Dr. William W. Dressler, University of Alabama
<u>Institution:</u>	Instituto Nacional de Nutrición, Mexico; Faculdade de Medicina - Ribeirao Preto, Brazil; University of the West Indies School of Medicine, Jamaica
<u>Country:</u>	Mexico, Brazil, Jamaica
<u>Technical Program Responsible:</u>	Food and Nutrition
<u>Duration:</u>	February 1981 -

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 21,653
Pan American Health and Education Foundation (PAHEF)	US\$ 120,000
Georgetown University/U.S. Department of Agriculture	US\$ 80,000
Collaborating Countries (Brazil, Jamaica, Mexico)	US\$ 112,000
	<hr/>
TOTAL	US\$ 333,653

PUBLICATIONS RESULTING FROM THE RESEARCH

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2. Viteri, F. E., and P. N. Gallagher, A Protocol for the Measurement of Resting Blood Pressure, presented at National Conference on High Blood Pressure Control, Chicago, April 1985.
3. Dressler, William W., Alfonso Mata, Adolfo Chavez, Fernando E. Viteri and Phillip Gallagher. Social Support and Arterial Pressure in a Central Mexican Community. Psychosomatic Medicine, Vol. 48. No. 3 (March/April 1986).
4. Dressler, William W., Jose Ernesto Dos Santos and Fernando E. Viteri. Blood Pressure, Ethnicity, and Psychosocial Resources. Paper accepted for publication in Psychosomatic Medicine, Vol. 48, 1986.
5. Dressler, William W., Jose Ernesto Dos Santos and Fernando E. Viteri. Arterial Blood Pressure and Modernization in Brazil. Paper accepted for publication in American Anthropologist.
6. Dressler, William W., Alfonso Mata and Fernando E. Viteri. Arterial Blood Pressure and Individual Modernization in a Mexican Community. Short title: Blood Pressure and Modernization. Paper submitted for publication to Social Science and Medicine.
7. Dressler, William W., Modernization, Mobility and Hypertension. Paper presented in the symposium "Anthropological Perspectives on Hypertension and Its Correlates", 84th Annual Meeting, American Anthropological Association, D.C., December 4-8, 1985.

The Control of Chagas' Disease Through House Modification: The Infection by Trypanosomes of Triatomines Caught in Different Types of Houses and in Peridomiciles - An Initial Evaluation

OBJECTIVES

To determine the frequency distribution of *Trypanosoma* in triatomines found inside houses and in the peridomicile of different types of houses during an initial evaluation.

METHODS AND APPROACHES

In seven communities of Trujillo State and five communities in Portuguesa State, an initial entomological survey yielded *Rhodnius prolixus* infesting houses and *R. prolixus* and *Triatoma maculata* infesting the peridomicile. Each captured insect was checked for parasites in fecal extensions. Any parasite found was fixed, stained with Giemsa and identified. A comparison was made between the proportion of houses and peridomiciles with infected triatominae/total number of houses with triatominae (proportion of "infected houses") in regard to *T. cruzi* and *T. rangeli*. The proportion of "infected houses" and peridomiciles was also compared to the following categories of houses: palm houses (palm), and houses with a tin roof and walls of unplastered mud and cane (mud), or walls of plastered mud and cane (plastered mud) or cement block (block).

RESULTS AND CONCLUSIONS

Intradomicile:

In the Trujillo State area, 126/491 houses were found infested with *R. prolixus*. Of these, 13 showed the presence of *T. cruzi*-only, 19 the presence of *T. rangeli*-only, and 8 the presence of both parasites. There was no difference (Chi-square = 0.41) between the proportion of houses "infected" with *T. cruzi* (13+8/126) and the proportion "infected" with *T. rangeli* (19+8/126). The distribution of trypanosomes (*T. cruzi* + *T. rangeli*) by type of infested house was as follows: palm 9/21, mud 20/75, plastered mud 6/14, and block 5/16. There was no difference between the proportions of houses "infected" with trypanosomes in relation to the type of house (Chi-square = 2.8, 3 df, $p > 0.1$).

In the Portuguesa State area, 22/215 houses were found infested with *R. prolixus*. Of these, one showed the presence of *T. cruzi* only, one the presence of *T. rangeli* only, and four the presence of both parasites. The proportions of houses infested with *T. cruzi* and *T. rangeli* (1+4/22) were identical. The presence of trypanosomes was limited to 6/12 palm houses, while none were found in the 10 mud houses. No triatominae were found in the other types of houses. There was a significant difference between the proportion of palm and mud houses found "infected" (Fisher's exact test $p = 0.03$). There was no difference (Chi-square = 0.02) between the total proportion of houses "infected" with trypanosomes in the Trujillo State area (40/126), and in the Portuguesa State area (6/22).

Peridomicile:

In the Trujillo State area no trypanosomes were found in the 19 peridomiciles infested with *R. prolixus* nor in 6 peridomiciles infested with *T. maculata*. In the Portuguesa State area, 4/26 of the peridomiciles positive for *R. prolixus* were found with trypanosomes (*T. cruzi* (3), and *T. cruzi* and *T. rangeli* (1)). The one peridomicile with *T. maculata* was negative. No difference (Fisher's exact test $p = 0.1$) was found when comparing the proportions of "infected" peridomiciles with *R. prolixus* in the Trujillo and Portuguesa State areas or the "infected" peridomiciles with both *R. prolixus* and *T. maculata* (Fisher's exact $p = 0.09$).

There was no difference between the proportion of infected triatomines in all houses (6/22), and peridomiciles (4/26) in Portuguesa State (Fisher's exact test $p = 0.3$) or when considering palm or mud houses individually (Fisher's exact test $p = 0.1$ and $p = 0.06$, respectively). Of the nine houses which had triatomines both inside and outside the domicile, only one had trypanosomes present and these were limited to the peridomicile.

In the endemic area of Venezuela, the presence of T. cruzi and T. rangeli inside the house seems to be equally important and suggests the necessity for adequate parasitological diagnosis of material brought in from the field to validate the importance of T. rangeli in any epidemiological study on Chagas' disease.

It is not clear whether there is any relation between the type of house, once infested by triatomines, and the presence of trypanosoma inside the house, since the results were different in the two areas under study. Further research needs to be undertaken to clarify the dynamics of the circulation of the trypanosomes between the house and the peridomicile, and the role of T. maculata in the domestic and peridomestic cycle of Chagas' disease.

OTHER DATA

<u>Investigator(s):</u>	Rafael Cedillos, J. Velasco, R. Tonn, G. López
<u>Institution:</u>	Directorate of Malariology and Rural Endemics Ministry of Health and Social Assistance
<u>Country:</u>	Venezuela
<u>Technical Program Responsible:</u>	Tropical Diseases
<u>Duration:</u>	1977-1985

FUNDING

<u>Agency</u>	<u>Amount</u>
Ministry of Health and Social Assistance, Venezuela	
Edna McDonnell Clark Foundation	
- One of eight studies funded under a grant of \$1,000,000 for Chagas' Disease Research.	

PUBLICATIONS RESULTING FROM THE RESEARCH

Publications in preparation.

The Control of Chagas' Disease Through House Modification: I: Initial Housing Characteristics and Triatomine Infestation

OBJECTIVES

To determine the magnitude of triatomine infestation according to the type of housing in seven communities in the State of Trujillo and five communities in the State of Portuguesa.

METHODS AND APPROACHES

The study was undertaken in five communities of Portuguesa State where triatomines were susceptible to available insecticides and in seven communities of Trujillo State where insecticide resistance to Dieldrin and HCH had been detected. A housing census determined four different types of houses; those which had palm branches in their walls or roof (palm) and those with tin roofs having the following types of walls: unplastered mud and cane (mud), plastered mud and cane (plastered mud), and cement block (block). The houses were inspected for one man-hour to record the species and number of triatomines collected.

RESULTS AND CONCLUSIONS

Only Rhodnius prolixus was found inside the houses.

In the Trujillo State study area a different distribution of triatomines according to type of house was observed (Chi square = 58.8, 3 df, $p < 0.001$); palm houses had the highest infestation index (21/34). Plastered mud (14/97) and block houses (16/121) when taken together or individually, showed a significantly lower infestation index compared to either palm (21/34) or mud houses (75/134).

In the Portuguesa State study area, an initial significantly lower infestation index (10.2%) was observed (Chi square = 20.5, 1 df, $p < 0.001$) than in the Trujillo State study area (25.7%). The low infestation index and the few plastered mud and block houses did not permit a statistical comparison between house groups.

There was a significant difference ($z=3.0$, 124 df, $p < 0.01$) between the higher mean number of R. prolixus found in palm and mud houses and the lower number found in plastered mud and block houses in the Trujillo State study area. Comparing the mean number of triatomines in the four individual housing categories in the Trujillo State area with those in the palm and mud houses in the Portuguesa State area no significant differences were found ($F=2.3$, 123 df, $p > 0.1$, $t=0.05$, 20 df, $p > 0.1$, respectively).

The infestation indexes and the mean number of triatomines found in houses in the Trujillo State area, compared with the findings in Portuguesa State, support the hypothesis that palm houses are more likely to be infested by triatomines than any other type house, and that plastered mud and block houses are less apt to be infested by triatomines than palm and mud houses.

The high infestation of cement block houses in some communities, as well as in plastered mud houses, suggests that triatomine infestation in these houses is not solely determined by housing characteristics, but by other factors that have yet to be defined. The preliminary results of this survey determined the initiation of a longitudinal study aimed at investigating how house improvements or replacements would affect the presence of triatomines inside the house.

OTHER DATA

Investigator(s): Rafael Cedillos, J. Velasco, R. Tonn, G. López, M.L. Viloría

Institution: Directorate of Malariology and Environment Sanitation
Ministry of Health and Social Welfare - Venezuela

Country: Venezuela

Technical Program Responsible: Tropical Diseases

Duration: 1977-1985

FUNDING

<u>Agency</u>	<u>Amount</u>
Ministry of Health and Social Assistance, Venezuela Edna McDonnell Clark Foundation - One of eight studies funded under a grant of \$1,000,000 for Chagas' Disease Research.	

PUBLICATIONS RESULTING FROM THE RESEARCH

Publication in preparation.

**The Control of Chagas' Disease Through House Modification:
II: Short Term: Evaluation of Triatomine Infestation in Modified and
Unmodified Houses Before and After the Housing Modification Program**

OBJECTIVES

To determine how improvement to houses in the project affects the infestation of triatomines

METHODS AND APPROACHES

The study was carried out in four communities of Trujillo State where the National Rural Housing Program had determined that some houses could be improved by substituting palm leaf roofs for tin roofs, and plastering mud or cracked walls. Some houses, which were unacceptable for improvements would be substituted for a standard model block house with a tin roof. A reference or control area was established in five communities in Portuguesa State, where only regular spraying activities were undertaken.

An initial baseline survey determined triatomine infestation from one-man-hour per house inspections. Four housing categories were established; those with palm branches in the roof or walls (palm); those with tin roofs having the following type of walls: unplastered mud and cane (mud), plastered mud and cane (plastered mud), and cement block (block). An entomological survey was repeated once the National House Improvement Program had completed its activities two years later. Houses which were improved or substituted were classified as "modified", while those that remained the same were classified as "unmodified". The infestation index (i.e. the number of triatomines in positive houses/total number of houses) as compared in those houses which were evaluated in both surveys. For the purpose of this analysis, palm and mud houses where major modifications had occurred were grouped together, while plastered mud and block houses where only minor modifications had occurred formed another group.

RESULTS AND CONCLUSIONS

Only Rhodnius prolixus was found inside the houses. The infestation index of modified houses in Trujillo State dropped from 69/124 before modification to 4/124 after modification ($p < 0.001$). In unmodified houses, a significant reduction from 20 to 6 house infestations ($p < 0.01$) was also observed, but the persistence of infestation in the subgroup of unmodified palm and mud houses yielded non significant results. In the Portuguesa State study areas, a significant reduction in the infestation index from 19/173 to 1/173 ($p < 0.001$) was noted.

Modified houses were found to have a more marked reduction in R. prolixus than in unmodified houses of Trujillo State, especially in the palm and mud category. This suggests that housing modification is a viable alternative for achieving triatomine control in a community. The overall reduction of the infestation indexes in Trujillo State may be a reflection of the effect of housing modification on the population dynamics of the vector in the whole community, or possibly a reflection of the influence of the program on the awareness of the community to eliminate triatomines. In areas of Portuguesa State where insecticides are used, the influence of other environmental factors affecting triatomine populations must also be considered in evaluating the overall reduction of the infestation index. This study serves as a reference point in comparing the effectiveness of housing modifications in Trujillo State as an alternative to the use of insecticides in triatomine control and suggests the need for long term follow-up study.

OTHER DATA

Investigator(s): Rafael Cedillos, J. Velasco, R. Tonn, V. Pou Howley,
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Institution: Directorate of Malariology and Environment Sanitation
Ministry of Health and Social Welfare - Venezuela

Country: Venezuela

Technical Program
Responsible: Tropical Diseases

Duration: 1977-1985

FUNDING

<u>Agency</u>	<u>Amount</u>
Ministry of Health and Social Assistance, Venezuela	
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- One of eight studies funded under a grant of \$1,000,000 for Chagas' Disease Research.	

PUBLICATIONS RESULTING FROM THE RESEARCH

Publication in preparation.

**The Control of Chagas Disease Through House Modification:
III. A Five Year Longitudinal Entomological Study**

OBJECTIVES

To define the effect of two control methods on triatomine infestation in two Chagas' disease endemic areas: 1) house modification; and 2) regular residual insecticide spraying.

METHODS AND APPROACHES

Entomological surveys were undertaken in 12 communities in two different endemic areas of Chagas' disease in search for triatomines. The one-man-hour house inspections were initiated in 1977 and included 706 of 861 existing houses in both areas. The inspections were repeated every six months until the final evaluation in 1983. In seven communities in Trujillo State, the house modification, which consisted of substitution of palms for a tin roof, plastering of walls, and paving of the floors, or substitution for a block house, was undertaken in 373 of 491 houses ("house improvement area"). In five communities in Portuguesa State, the regular residual insecticide control method was carried out in all 215 houses ("sprayed area").

RESULTS AND CONCLUSIONS

In the "house improvement area", 382 of the 491 original houses were available for final longitudinal evaluation. Of the 382, 330 were improved in the project. In the "sprayed area", 154 of the 215 original houses were available for the final longitudinal evaluation.

In the "house improvement area" a drastic reduction ($p < 0.001$) was noted in intradomestic triatomine infestation from 126/491 observed before house improvements to 5/480 (including 98 new, non-project constructed houses) in the final evaluation. In contrast, the continuance of intradomestic triatomine infestation (Chi square = 0.39) in the "sprayed" area can be observed where 22/215 houses were positive in the initial evaluation and 19/235 houses (including 81 newly constructed houses) positive in the final evaluation. Exclusion of the new non-project constructed houses did not change the significance of the results. Triatomine infestation in peridomestic sites showed a reverse pattern. In the "house improvement area" the initial peridomestic infestation of 25/491 was not statistically different from the 12/480 observed in the final evaluation (Chi square = 3.7), while in the "sprayed area", a significant reduction in the peridomestic infestation ($p < 0.01$) from 27/215 in the initial evaluation to 11/235 in the final evaluation was observed.

In the initial evaluation, all domestic infestation was due to R. prolixus in both areas. In the final evaluation, all infestation in the "sprayed area" was due to R. prolixus, while in the "house improvement area" domestic infestation was due to R. prolixus in two houses and to either R. robustus, R. pictipes, or T. maculata in the remaining 3 houses. Infestation of the peridomicile was due mainly to R. prolixus.

OTHER DATA

Investigator(s): J. Velasco, Rafael Cedillos, G. López, P. Colmenares,
R. Tonn, R. d'A. Gusmao

Institution: Directorate of Malariology and Rural Endemias
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Country: Venezuela

Technical Program
Responsible: Tropical Diseases

Duration: 1977-1985

FUNDING

<u>Agency</u>	<u>Amount</u>
Ministry of Health and Social Assistance, Venezuela	
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- One of eight studies funded under a grant of \$1,000,000 for Chagas' Disease Research.	

PUBLICATIONS RESULTING FROM THE RESEARCH

Publication in preparation.

Triatomine Preference Location in Infested Houses in an Endemic Area of Chagas' Disease

OBJECTIVES

To define the harboring preference of triatomine bugs' location in different types of housing.

METHODS AND APPROACHES

The study was undertaken in Trujillo State. A housing survey determined four types of houses; those with palm branches in the walls or roofs and those with tin roofs and the following type of walls: unplastered mud and cane (mud), plastered mud and cane (plastered mud) and cement block (block). The houses were inspected for one-man-hour and the number of triatomines found in roofs, walls and domestic belongings, such as furniture and stored material were recorded.

RESULTS AND CONCLUSIONS

Only Rhodnius prolixus was found inside the houses. Seven houses, which were positive in both walls and belongings, were also positive in the roofs. The data on the roof collections was not included in the analysis, since routine survey work did not permit thorough inspection of this habitat.

In comparing the total number of houses with triatomines in the walls of (95/126), and in house belongings (88/126), the mean number of triatomines in the walls (4.2) and house belongings (4.3), was not statistically significant (McNemar Test = Chi-square=0.01, 1 df, $p > 0.1$, $z=1$, $p > 0.1$).

Furthermore, no statistically significant difference was found when comparing the number of houses where infestation was found in walls and house belongings with the number of triatomines found in each of these areas in the following housing categories: palm (Chi-square = 0.8, $t=0.82$, respectively); mud (Chi-square = 1.1, $z=0.4$, respectively); and plastered mud (Chi-square = 0.001, $t=0.96$, respectively); and cement block (Chi-square = 0.36, $t=1.2$, respectively).

House belongings are as important as walls in harboring triatomines in different types of houses. When house improvement is considered as an alternative method of triatomine control, consideration should be given to the elimination of suitable breeding and hiding places among house belongings.

OTHER DATA

<u>Investigator(s):</u>	Rafael Cedillos, J. Velasco, P. Colmenares, G. López, R. Tonn
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<u>Country:</u>	Venezuela
<u>Technical Program Responsible:</u>	Tropical Diseases
<u>Duration:</u>	1977-1985

FUNDING

Agency

Amount

Ministry of Health and Social Welfare, Venezuela

Edna McDonnell Clark Foundation

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PUBLICATIONS RESULTING FROM THE RESEARCH

Publication in preparation.

A Longitudinal Epidemiological Study of Chagas' Disease Transmission in two Areas Under Different Triatomine Control Methods

OBJECTIVES

To define the effect on prevalence and incidence of Chagas' disease in two areas under different triatomine control methods: (1) house-improvement (substitution of palm by tin roof, plastering of walls, and cement floors); (2) regular residual insecticide spraying.

METHODS AND APPROACHES

Twelve communities in an endemic area of Chagas' disease under two different triatomine control methods have been serologically surveyed in 1977-1978 by indirect haemagglutination assay (IHA) using the capillary tubefilter paper method. IHA was repeated in 1980-1981 and again at the final evaluation in 1983 with the addition of a second serological technique, indirect fluorescent antibody assay (IFA).

RESULTS AND CONCLUSIONS

In area (A) using the house-improvement control method, a drastic reduction ($p < 0.002$) of intradomestic triatomine infestation was observed. Of the original 1780 persons, 1072 were available for the final serological survey.

In area (B), using the regular residual insecticide spraying method, no significant (Chi square=0.39) reduction in intradomestic triatomine infestation was observed. Of the original 1063 persons, only 369 individuals were available for the final serological survey.

In the area using the house-improvement control method the following were observed:

Prevalence of T. cruzi seropositivity did not vary between initial 498/1655 and final 292/1071 evaluations (Chi square = 2.3);

Incidence in all age groups of T. cruzi seroconversion was significantly ($p < 0.002$) reduced from 15.1/1000 inh/year in 1980 to 7.3/1000 inh/year in 1983 (Chi square = 22.9, df=7);

Correlation between cases of T. cruzi seroconversion and triatomine infested dwellings found at any time after house modification showed no association between both variables (Chi square = 3.1).

In the area using the regular residual insecticide spraying the following was observed:

Prevalence of Trypanosoma cruzi seropositivity did not vary between initial 284/1063 and final 102/369 evaluations (Chi square = 0.07);

Incidence in all age groups of T. cruzi seroconversion was significantly increased ($p < 0.005$) from 5.8/1000 inh/year in 1980 to 19.4/1000 inh/year in 1983;

Correlation between cases of T. cruzi seroconversion and triatomine infested dwellings, found at any time during the whole study period showed a significant association between "anytime infested dwellings" and seroconversion cases detected. (Chi square = 5.6, $p < 0.02$).

We can conclude that:

1. The house improvement control method was effective in significantly reducing the incidence of anti-T. cruzi seroconversion of the study's area residents;
2. The regular residual insecticide spraying method allowed a significant increase in the anti-T. cruzi incidence of seroconversion;
3. Seroconversion using the house-improvement control method was not correlated with detection of intradomiciliary triatomine infestation, in contrast to the area under the residual insecticide spraying method, where seroconversion was significantly related with the detection of intradomiciliary triatomine infestation.

OTHER DATA

<u>Investigator(s):</u>	R. d'A. Gusmao, M.L. Vilorio, , J. Velasco, P. Comenares, R. Hubsh, R. Tonn, Rafael Cedillos
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<u>Country:</u>	Venezuela
<u>Technical Program Responsible:</u>	Tropical Diseases
<u>Duration:</u>	1977-1985

FUNDING

<u>Agency</u>	<u>Amount</u>
Ministry of Health and Social Assistance, Venezuela Edna McDonnell Clark Foundation	
- One of eight studies funded under a grant of \$1,000,000 for Chagas' Disease Research.	

PUBLICATIONS RESULTING FROM THE RESEARCH

Publications in preparation.

**Cross-sectional Epidemiological Study of Chagas' Disease Morbidity by
Electrocardiographic (ECG) Tracing**

OBJECTIVES

To define the effect of T. cruzi positive serology on the morbidity of ECG tracings in an endemic area of Chagas' disease.

METHODS AND APPROACHES

In 126 of 227 houses in five communities of Trujillo State, the endemic area for Chagas' disease, insecticide resistant triatomines and intradomestic infestation by R. prolixus were detected. A serological (IHA) survey was carried out in the total population of 981 individuals. Twelve lead electrocardiographic examinations were made on 881 individuals and read by two cardiologists in a double blind setting based on a set of previously agreed upon diagnostic codes.

RESULTS AND CONCLUSIONS

Analysis of odds-ratios for each group has shown a lack of association between presence of anti-T. cruzi antibodies and abnormal electrocardiographic tracing, up to 59 years of age. In the age group 60 years and over, a statistically significant association of 3.6 ($p < .02$) between abnormal ECG tracings and the anti-T. cruzi seropositive group was found. However, this age group presented an anti-T. cruzi seropositivity prevalence of 61/85 (71.8%).

This study confirms previous findings (Novoa, D., 1983), that chronic T. cruzi infection, measured by IHA serology is not related to ECG reading abnormalities.

The high level of ECG reading abnormalities in the study area, calls for further investigative probing, in order to establish a causal inference for it.

OTHER DATA

<u>Investigator(s):</u>	R. d'A. Gusmao, M.L. Viloría, R. Campaña, R. López N., J. Velasco, Rafael Cedillos
<u>Institution:</u>	Directorate of Malariology and Rural Endemias Ministry of Health and Social Assistance Centro Médico Docente La Trinidad
<u>Country:</u>	Venezuela
<u>Technical Program Responsible:</u>	Tropical Diseases
<u>Duration:</u>	1977-1985

FUNDING

Agency

Amount

Ministry of Health and Social Assistance, Venezuela
Edna McDonnell Clark Foundation

- One of eight studies funded under a grant of \$1,000,000 for Chagas' Disease Research.

PUBLICATIONS RESULTING FROM THE RESEARCH

Publication in preparation

**Anatomical Location of Trypanosoma cruzi and T. rangeli in Rhodnius prolixus
Infesting Rural Houses**

OBJECTIVES

To determine the location of trypanosomes in triatomines infesting rural houses.

METHODS AND APPROACHES

Rhodnius prolixus was captured in houses of four communities in Trujillo State, Venezuela and examined for the presence of trypanosomes. The feces, gut, haemolymph, and salivary glands of each individual bug were examined separately for the presence of trypanosomes. Parasites found were stained with Giemsa, identified and their location in the bug recorded.

RESULTS AND CONCLUSIONS

Of the 807 R. prolixus examined, 51 (6.3%) were infested with Trypanosoma cruzi (8) and/or T. rangeli (43). According to anatomical region of the bug, parasites were found in feces only (17.7%), feces and gut only (54.9%), feces, gut, haemolymph and salivary glands (3.9%), and gut only (23.5%). Of the 51 positive bugs, a sensitivity of 39/51 (76.5%) was obtained when only the fecal contents of the bug, as routinely practiced, is examined. However, 100% sensitivity could be obtained if the contents of the dissected gut 12/51 (23.5%) were also examined.

Routine laboratory procedures should include the dissection of the gut contents to increase the sensitivity of the parasitological diagnosis for triatomines brought to the laboratory from the field.

OTHER DATA

<u>Investigator(s):</u>	Rafael Cedillos, R. Tonn, G. Lopez, J. Velasco
<u>Institution:</u>	Directorate of Malariology and Environmental Sanitation, Ministry of Health and Social Welfare, Venezuela
<u>Country:</u>	Venezuela
<u>Technical Program Responsible:</u>	Tropical Diseases
<u>Duration:</u>	1977-1985

FUNDING

<u>Agency</u>	<u>Amount</u>
Ministry of Health and Social Assistance, Venezuela	
Edna McDonnell Clark Foundation	
- One of eight studies funded under a grant of \$1,000,000 for Chagas' Disease Research.	

PUBLICATIONS RESULTING FROM THE RESEARCH

Publication in preparation.

Biological Cycle of Paragonimiasis in the Ecuadorian Amazon Region

OBJECTIVES

Since 1973, more than 100 cases of paragonimiasis have been identified in the Ecuadorian Amazon Region. The geographical location of the human cases combined with the limited density of the human population suggests the consideration of this disease as a zoonosis. The search for jungle reservoirs was initiated in 1983 and Paragonimus spp. has been identified in peccaries.

So far, the first intermediary host of the disease has not been identified in Ecuador. The metacercaria of Paragonimus spp. along the Ecuadorian coast are not completely understood, and their taxonomic identification is not certain.

Consequently, the principal objectives of this project are:

- 1) Taxonomic identification of the species of Paragonimus prevalent in the Ecuadorian Amazon Region, and
- 2) Study of the relationship between the prevalence of the infection in animals and in humans.

METHODS AND APPROACHES

The study will be carried out in the Cantons Aguarico and Francisco of Orellana, Province of the Napo, Ecuadorian Amazon Region. The climate is warm and moist with a mean temperature of 25.2 °C, 89% average relative humidity, and 3,600 mm. of rain per year.

Stages of research:

Collection and morphological study of specimens of mollusks and shellfish.

Initial identification of the larval phases of trematodes (shipment to Collaborating Centers of PAHO for final identification).

Laboratory culture of species of mollusks and shellfish that have been found parasitized in order to continue studies of the biological cycle.

Study of the experimental cycle starting from metacercaria found in shellfish and introduced into cats to the development of Paragonimus adults and their morphological study.

Experimental study starting from human sputum from patients with paragonimiasis through successive introduction into mollusks, shellfish, and cats up to the development of Paragonimus adults. Morphological study of the various larval phases.

RESULTS AND CONCLUSIONS

Preliminary results as of December 1985 show:

Presence of Paragonimus spp. in lung cysts of peccaries ("Tayassu pecari") in 16.6% of the examined specimens. Other mammals such as badgers and otters have given negative results.

The study of shellfish and metacercaria in 25 gorges has made it possible to identify the prawn Macrobrachium brasiliense and the crabs Zilchiopsis ecuadoriensis, Trichodactylus maytai, and Trichactycus spp. (Collaboration of Dr. Alfred E. Smalley, Tulane University).

In the crab species Zilchiopsis ecuadoriensis 90% were found parasitized by metacercaria of Paragonimus. Parasitized prawns have not been found thus far.

The morphological study of the metacercaria has permitted initial identification of the species P. mexicanus or P. peruvianus as prevalent in the Region. However, additional corroborative studies are lacking.

White rats have been infected with metacercarias (pending results).

In the gorges there exist snails of the families Ampullari, Planorbidae, and Hydrobiidae. Abundant xifidiocercaria mecroceras not mistakable for Paragonimus in Aroapyrgus colombiensis have been located.

Eggs of Paragonimus from patients have successfully matured.

OTHER DATA

<u>Investigator(s):</u>	Dr. Manuel Amunarriz
<u>Institution:</u>	Hospital "Franklin Tello" - Nuevo Rocafuerte
<u>Country:</u>	Ecuador
<u>Technical Program Responsible:</u>	Tropical Diseases/Country Program Ecuador
<u>Duration:</u>	1984-1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 10,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None

The Evaluation of Bendiocarb and Deltametrin in the same Village and their Impact on Populations of Anopheles albimanus

OBJECTIVES

To determine the impact of two candidate insecticides on malaria vector populations with particular emphasis on their effects as related to vector behavior.

METHODS AND APPROACHES

Curtain collections involve encircling the exterior of a house from the ground to the roof with a nylon mosquito net. Since house walls in many parts of Latin America are commonly constructed with loose-fitting poles or bamboo and other materials, this technique permits the collection and evaluation of the behavior of mosquitoes that are naturally entering and leaving the house. Those parameters that can be measured are repellent effect, percent feeding and mortality.

Colored mosquito studies consist of coloring mosquitoes with a fluorescent powder while engorging on human-bait located inside a house. The mosquitoes are followed with an ultraviolet lamp for one hour during which time the number of landings, resting time, and type of resting surfaces are recorded. The parameters measured are repellent effect, mosquito behavior and mortality.

Human-bait collections are made in the early evening by one person seated inside the house. The parameters measured are densities of mosquitoes that bite inside, and their mortality (percent that had contact with the insecticide before biting).

Indoor resting mosquitoes are collected during the early morning. The parameters measured are mortality and the percent of mosquitoes that rest inside houses before and after treatments.

Wall bioassays are made following treatments. The parameter measured is the residual life of the insecticide when sprayed on different surfaces.

Resistance studies are carried out before and after the evaluation.

Trial Area:

Rancheria el Gancho (pop. 660) is a small village of 135 houses, located on the Pacific Coast about 2.5 Km north of the Mexico-Guatemala border. It is situated 2 Km. from the nearest banana plantation which makes use of extensive irrigation systems. These irrigation canals, along with fresh water lagoons near the evaluation site, are potential sources for An. albimanus. The houses are multiroom dwellings predominantly constructed of palm-thatch roofs with discontinuous walls made of palm poles. This construction is inexpensive and practical, allowing better ventilation, in an area that has a high relative humidity (61 to 95%) and an average annual rainfall of 2152 mm. Although the wet season extends from May to October, mosquito breeding occurs year-round.

Insecticide Treatment:

During the second week of August, two blocks of 10 houses were each given one application of insecticide using the Hudson X-Pert compression sprayer. One block was sprayed with bendiocarb at a target dosage of 0.4g ai/m^2 and the other block with deltametrin at a target dosage of 0.025g ai/m^2 . The interior walls, approximately two-thirds of roof surfaces, including exterior eaves and the underneath surfaces of all furniture were sprayed. Each block was sprayed within the same day by spraymen provided with protective clothing as suggested by WHO (1974).

RESULTS AND CONCLUSIONS

In general, the results indicate an initial irritant and /or repellent effect produced by both insecticides. Data from human-bait collections indicate that mosquitoes entering houses before feeding tended to avoid treated surfaces as shown by low mortality rates. By 9-12 weeks post-treatment, mortalities increased to greater than 80% indicating a reduction in irritability. Although data from bioassay studies confirm a strong insecticide residual activity by both insecticides, combined results from both the curtain and mark-release techniques indicate, that especially in bendiocarb treated houses immediately following treatments, fed mosquitoes tended to leave houses early. In general, mosquitoes enter houses treated with bendiocarb in higher densities, accompanied by decreased landing frequency, but maintaining sufficient contact with the insecticide to receive lethal intoxication yielding better than 70% mortality. In the case of deltamethrin, mosquitoes initially tended to enter houses at lower frequencies; those that did enter tended to have lower or sub-lethal levels of contact with the insecticide resulting in low mortality rates.

OTHER DATA

<u>Investigator(s):</u>	Dr. David N. Brown
<u>Institution:</u>	Centro de Investigación de Paludismo, Dirección de Lucha Contra el Paludismo de la Secretaría de Salubridad y Asistencia
<u>Country:</u>	Mexico (Chiapas)
<u>Technical Program Responsible:</u>	Tropical Diseases
<u>Duration:</u>	1984-1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

To be published under the same title.

Isolation and Classification of Strains of Leishmania in Yapacani, Bolivia

OBJECTIVES

To isolate strains of Leishmania in patients, wild reservoirs, and vectors in order to classify them in accordance with their morphological characteristics, biological behavior, and isoenzymatic characteristics.

METHODS AND APPROACHES

Samples of cutaneous lesions of patients were taken using a wooden applicator for direct examination. Biopsies of the lesions were inoculated into hamsters, and for those animals that presented lesions, a culture was attempted in Noguchi-Wenyon medium. Possible wild reservoirs were captured and homogenates of samples of skin, healthy and with lesions, of liver, and of spleen were inoculated into hamsters. The phlebotomines captured were dissected in order to establish whether they had flagellates. Those that were positive were inoculated into hamsters and into Noguchi-Wenyon medium.

RESULTS AND CONCLUSIONS

Of 156 suspected patients, 31 had positive parasitological examinations. Of 22 positive biopsies inoculated into hamsters, 12 strains were isolated.

A total of 85 wild animals were captured. Of the 17 processed, Leishmanias have not yet been isolated in the hamsters inoculated. Flagellates were isolated in only 3 of the 2901 Phlebotomines examined and these were inoculated into hamsters and the culture medium. To date, the first was negative while the second was contaminated. When a larger number of strains are isolated, immunoenzymatic, morphometric, and biological studies of them will be carried out to compare them with reference strains.

OTHER DATA

<u>Investigator(s):</u>	Dr. Rolando Urgel Dalence
<u>Institution:</u>	National Center of Tropical Diseases (CENETROP)
<u>Country:</u>	Bolivia
<u>Technical Program Responsible:</u>	Tropical Diseases
<u>Duration:</u>	1984-1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 8,750

PUBLICATIONS RESULTING FROM THE RESEARCH

None

Evaluation of Insecticides and Repellents, and Methods of Applying them, for the Prevention of Malaria among Amazonian Migratory Laborers Living in Huts without Walls

OBJECTIVES

In the Amazon Region of Brazil, about 80% of the malaria cases occur in areas of major socioeconomic development. The great majority of cases in these areas originate in situations where large numbers of migratory laborers and settlers from all over the country invade the jungles and live in precarious housing, most commonly huts without walls.

Due to the lack of walls, malaria transmission among these people can hardly be prevented by DDT-spraying. Space spraying, larviciding or source reduction would be very costly and impracticable in most instances, in view of the great extension of the areas involved, and the elusive migratory working patterns, particularly of the laborers. The laborers move frequently; and when they move, only the plastic sheet for the roof is re-utilized at the new site. Due to the hot climate and to economic reasons, laborers are unlikely to buy and use mosquito nets, or to apply repellents to the whole body every night.

The objective is to find effective and practical antivectorial measure(s) which ideally would be readily applicable to the plastic sheet, the framework or the surroundings of the hut, or to hammocks, and remain effective, either throughout the period of the laborers' stay, or long enough to render re-applications operationally feasible.

METHODS AND APPROACHES

Primary screening of insecticides was carried out in experimental huts without walls baited with a buffalo inside each hut. Surrounding each hut were hand made string curtains impregnated with candidate insecticides. Densities of invading anophelines were measured, by alternating all night captures with and without the curtains. Five insecticides (DDT, malathion, DDVP, propoxur, deltamethrin) and one repellent (MGK R-11) underwent screening from May 1981 - April 1982.

Further evaluation of selected chemicals (propoxur, malathion, DEET, DDT) have been made by depositing them on two types of substrata: a) fences around the hut made by piling branches of trees (July-October 1982); and, b) curtains of burlap. Burlap curtains were sprayed at 1 g/m^2 on both sides (13 September 1982), and the density of invading anophelines measured--with 5% unprotected space between horizontal beams and the roof, during September - October 1982 and then with 12% additional unprotected space consisting of front and rear entrances, from October 1982 - March 1984. The curtains were resprayed on 3 February 1983.

Field entomo-epidemiological evaluation was attempted for burlap curtains sprayed with malathion and DDT, respectively, at 1 g/m^2 on both sides, versus unsprayed curtains in a deforested area of farm land involving 466 laborers living in 132 huts (Santana do Araguaia, February - June 1983).

The second attempt to compare propoxur, malathion and DDT with no insecticide use was made during June 1984 - April 1985, in a gold mine area in Cumarú where the number of huts varied between 166 and 247, and the number of laborers from 878 to 2091.

Preparations are being made for further field evaluations, in relatively isolated gold mine areas of the State of Pará and the Territory of Amapá during 1986-1987.

RESULTS AND CONCLUSIONS

The primary screening with string curtains showed that propoxur was the most promising: reducing the invasion by more than 70% for five weeks, with a mean reduction rate of 82.7%; followed by malathion, with a mean reduction rate complemented by mortality among those invaded of 76.3%. The trial with fences was inconclusive, because only young branches could be cut from trees in the reserve forest and these compacted to a very low level.

With untreated burlap curtains surrounding the hut, the reduction rate was above 95% when there was 5% unprotected space, but the reduction rate dropped to about 80% when there was 17% unprotected space.

The curtains impregnated with propoxur or DEET maintained above 85% reduction for 56 weeks while those with malathion had reductions above 80% for 22 weeks with 17% unprotected space. The difference between DDT and untreated curtains was insignificant.

The two entomo-epidemiological evaluations attempted so far were unsuccessful. The first, primarily due to the late arrival of insecticides and the very short stay of the laborers thereafter, and the second, due to the declined anopheline density and to the frequent movement of the laborers from one mining area to another made it impossible to determine with certainty the origin of infection in the majority of cases.

Nevertheless, entomological findings showed that burlap curtains reduced anophelines biting inside the hut by more than 95%. There was no significant difference in effectiveness between those impregnated with DDT and malathion respectively, nor between these and untreated curtains. Results of observations on the nocturnal habit of laborers and anopheline mosquitoes indicated that surrounding the hut with burlap curtains would provide excellent protection against anopheline bites.

The simple field method, which was designed to screen effective residual antimosquito chemicals for huts without walls proved to be practical and sensitive, not only for that purpose, but also in detecting behavioral refractoriness of anophelines.

OTHER DATA

<u>Investigator(s):</u>	Paulo Edson, Waldemar Arouck, Su-Yung Liu, Paula Xavier
<u>Institution:</u>	Superintendencia Campanhas de Saúde Pública (SUCAM-MS)
<u>Country:</u>	Brazil
<u>Technical Program Responsible:</u>	Tropical Diseases
<u>Duration:</u>	1981-1987

FUNDING

<u>Agency</u>	<u>Amount</u>
SUCAM	

PUBLICATIONS RESULTING FROM THE RESEARCH

Forthcoming, under the same title.

An Estimate of the Malarial Vectorial Capacity for Anopheles albimanus in Rural Southern Chiapas, Mexico

OBJECTIVES

Anopheles albimanus has been described as being generally more zoophilic than anthropophilic, more exophagic than endophagic, not particularly long lived, and rarely found to be infected with malaria. The study attempts to try to quantify this vector's ability to transmit malaria by determining its vectorial capacity.

The vectorial capacity has been defined as "the average number of inoculations with a specified malaria originating from one case of malaria in a unit of time that the (vector) population would distribute to man if all the vector females biting the case became infected". The vectorial capacity is a measure of the force of infection or potential for transmission in a particular epidemiological situation and is expressed on a daily basis. For this reason, it is a valuable index in areas where the threat of malaria transmission occurs and can be used to evaluate the effect of house spraying with insecticides.

METHODS AND APPROACHES

The degree of man-vector contact for An. albimanus was determined by intradormiciliary and peridormiciliary human bait captures. Collections were made four days a week, between the hours of 18:00 and 24:00, by a minimum of 4 humans serving as bait in three regularly inhabited houses. A portion of the samples collected indoors and outdoors was returned to the laboratory where the samples were dissected to determine their gonotrophic status.

Freshly engorged mosquitoes were collected during 3 hour searches (7:00-10:00) inside houses and 3 hour searches (10:00-1:00) in natural resting sites. Between 15 and 28 houses were sampled every morning for indoor resting mosquitoes. None of the houses had been sprayed with insecticides since 1980. The natural resting sites were along the edges of a fresh water lagoon and within 200m of a cattle corral. The mosquitoes were squashed onto filter paper and later identified using an Ouchterlony double diffusion precipitin technique. Samples were collected during August and from November to May. The human blood index was calculated by taking an unweighted mean of the indoor and natural resting collections.

RESULTS AND CONCLUSIONS

A total of 63,300 mosquitoes were collected in the 6 hour human bait collections between February 1984 and January 1985. To determine the number of mosquitoes that would have been captured in 12 hours, the mean monthly 6 hour collections were multiplied by a correction factor calculated from previous 12 hour captures. The results of these collections indicate that An. albimanus had two peak population densities: the first during May, June and July, and the second, in October. When densities are compared with rainfall, it appears that the population is greatest at the beginning and end of the rainy season.

A combination of indoor and outdoor collections were used to determine the man biting rate (ma) of An. albimanus. Since the human population of El Gancho is active indoors and outdoors until 21:00, the hourly mosquito captures between 18:00 and 21:00 from indoor and outdoor captures were averaged. After 21:00, the majority of the population is indoors and sleeping and only the indoor biting captures were used in the calculation.

The man biting habit (a) is a function of two measurements, the frequency of biting or gonotrophic cycle and the proportion of bites taken on man. The gonotrophic cycle for An. albimanus was determined in the laboratory to be at least 2.7 days. The human blood index was calculated from the results of 2086 positive precipitin tests taken over a period of 8 months. The overall human blood index was determined to be 15.3%. The man biting habit is calculated by the formula $a = \text{HBI}/\text{gc}$, where HBI is the human blood index, and gc is the gonotrophic cycle. For this study, a was estimated to be 0.0566.

The monthly extrinsic incubation period (n) was calculated for P. vivax and P. falciparum using the Moshkovsky method. The mean monthly temperatures were found to be relatively constant throughout the year, ranging from a low of 27.4°C in September to a high of 29.2°C in April. The sporogony (n), as a result, ranged from 7.14-8.14 days for P. vivax and from 8.41-9.74 days for P. falciparum.

A total of 4552 mosquitoes were dissected from February to December to determine the number of gonotrophic cycles completed and the parous rates. The parous rates ranged from 35-55% but did not show any seasonal pattern. The daily survivorship (p) was determined using $p = \text{PR}^{1/\text{gc}}$, where PR is the parous rate and gc the gonotrophic cycle. Using the monthly mean p, the probability of surviving long enough to transmit malaria, (p^n) was calculated for each month. For transmission of P. vivax, the probability of An. albimanus surviving appears to peak in April (17%) and drops to 5.5% in September.

With a gonotrophic cycle of 2.7 days, one can assume that mosquitoes that have 3 dilatations had lived at least 8.1 days past their first blood meal and those with 4 dilatations had lived at least 10.8 days. The longest extrinsic incubation period for P. vivax was determined to be 8.14 days, and for P. falciparum, 9.74 days. This means that mosquitoes with 3 and 4 dilatations are old enough to transmit P. vivax and P. falciparum, respectively.

Determination of the percent of the mosquito population having 3 or more dilatations would indicate what proportion of the population is at an age that could possibly transmit P. vivax if the mosquito became infected during its first blood meal. No seasonal difference can be seen except for a 5% drop during August, September and December. When the indoor and outdoor captures are compared, it appears that from March to September a greater percentage of the indoor mosquitoes were old enough to transmit P. vivax. This pattern does not appear for P. falciparum.

When the percentage of the mosquito population old enough to transmit malaria is multiplied by the monthly man-biting rate, the result is the mean number of bites per man per night from mosquitoes old enough to transmit P. vivax. In May, June and July more than 40 bites per night were received and in October, the highest level, over 90 bites per night were received.

The vectorial capacity or the incidence of malaria inoculations, per infective case per day is affected by all of the factors discussed. It is expressed by the formula $ma^2p^n/(-\ln(p))$. Calculation of the mean vectorial capacity each month indicates a wide variation throughout the year, ranging from 0.75 in September to 5.5 in October for transmission of P. vivax. For transmission of P. falciparum, the vectorial capacity of An. albimanus ranged from 0.42 in September to 3.7 in October. The vectorial capacity is lowest during 2 months in the rainy season (August and September) and during the dry season (February). It is greatest during the transition periods from dry season to wet and from wet to dry.

The results indicate that An. albimanus is sufficiently anthropophilic, numerous and long-lived to transmit both P. vivax and P. falciparum. The estimates of vectorial capacity indicate that malaria can be transmitted year round. However, the months with highest vectorial capacity are during the transition from one season to another which correlates with the highest vector densities.

OTHER DATA

<u>Investigator(s):</u>	Chris Frederickson
<u>Institution:</u>	Centro de Investigación de Paludismo, Dirección de Lucha Contra el Paludismo de la Secretaría de Salubridad y Asistencia
<u>Country:</u>	Mexico (Chiapas)
<u>Technical Division Responsible:</u>	Tropical Diseases
<u>Duration:</u>	1984-1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

Forthcoming.

An Investigation of the Host Selection of Anopheles albimanus in Southern Chiapas, Mexico

OBJECTIVES

To determine the host selection and host preference of Anopheles albimanus in a malaria endemic area of southern Chiapas, Mexico.

METHODS AND APPROACHES

During August and November-December 1984, freshly engorged An. albimanus were collected in 3 hour (7:00-10:00) searches inside houses and from natural resting sites (10:00-13:00) in the small rural community of Rancheria El Gancho. The abdomens were squashed onto Whatman #1 filterpaper and taken to the laboratory where an Ouchterlony double diffusion precipitin technique was performed using human, bovine, porcine, horse, canine, and chicken antisera (IgG H&L chains from rabbits) to determine the source of blood.

Population censuses were conducted during August and November to register the number of humans, cattle, pigs, horses, dogs and chickens in the village. Mosquito densities were monitored by 6 hour (18:00-24:00) indoor and outdoor human bait captures. The feeding success of An. albimanus was determined using a 3 chambered hut that consisted of a small center room for liberating mosquitoes and two adjacent receiving rooms which contained a small calf in one, and two sleeping humans in the other. Once they had made a choice, mosquitoes were prevented from switching rooms by funnel shaped exits. In the morning mosquitoes were collected and the feeding success determined by dividing the number of bloodfed mosquitoes by the total number of mosquitoes in the room.

The Human Blood Index (HBI) was determined by taking the unweighted mean of the percent of the samples that were positive for human blood collected from inside houses and natural resting sites.

The Forage Ratio (FR) was based on the population census results to provide an indication of what hosts were available to An. albimanus. The Forage Ratio was defined as the percentage of mosquitoes that fed upon a particular host divided by the proportion that that host represented among the total population of hosts available in the area.

The Feeding Index (FI) was determined by taking into consideration host numbers, comparative host size, temporal and spatial concurrence between host and mosquito, and feeding success. The Feeding Index was defined as the proportion of feeds on one host with respect to another divided by the expected comparative proportion of feeds on those 2 hosts based on factors affecting feeding.

RESULTS AND CONCLUSIONS

During August, 703 samples were identified. Of these 29.8% of the blood meals obtained from inside houses and 3.9% from natural resting sites were from man. The major source of blood was from bovines, both indoors (40.4%) and outdoors (83.2%). An HBI of 16.9% was obtained for August. A bovine blood index (BBI), calculated in the same way indicated that 61.8% or 3.7 times more mosquitoes fed on bovines than humans.

Other available domestic hosts were of lesser importance. For indoor collections, by descending order of importance, were dog, horse, porcine and chicken. However, for the outdoor and overall collection, the order was horse, porcine, dog and chicken.

During November-December, 590 samples were identified. Of these, blood meals of human origin were identified in 21.1% of those taken from inside houses and in 18.3% from outdoor resting sites. The major source of blood was from bovines accounting for 52.5% of the indoor collections, and 70.5% of outdoor collections. The HBI was 19.7% and the BBI 61.4% or 3.1 times greater than that for humans. The other hosts from indoor and outdoor collections were, in descending order of importance, porcine, horse, dog and chicken. Multiple blood meals accounted for 3.4% of the samples during August and 11% in November-December.

The Forage Ratio suggests that An. albimanus does not have a preference for humans (0.33 to 0.36) but is attracted to larger hosts such as bovines and horses. The FR for bovines is significantly greater than 1.0 (6.87 in August and 7.58 in Nov.-Dec.). This can be explained because these hosts made up a small proportion of the total population and a comparatively large percentage of blood meals from them were positive. The FR indicates a strong zoophilic preference with the bovine FR being 21 times greater and the horse FR being 7.4 to 9.4 times greater than the Human FR.

The Feeding Index indicates that there is a preference for cattle over humans (0.50 in August; 0.48 in Nov.-Dec.).

The results show that at least 56.8% of An. albimanus collected in August in morning catches inside houses and 70.5% of those collected in Nov.-Dec. had definitely fed outside. This suggests that An. albimanus often uses houses as a resting site rather than as a source of blood.

The results also show that An. albimanus is more zoophilic than anthropophilic. However, the degree of zoophilia depends upon which calculations were used. The host preference remained relatively unchanged between the rainy season (August) and the dry season (November/December).

OTHER DATA

<u>Investigator(s):</u>	Chris Frederickson
<u>Institution:</u>	Centro de Investigación de Paludismo, Dirección de Lucha Contra el Paludismo de la Secretaría de Salubridad y Asistencia
<u>Country:</u>	Mexico (Chiapas)
<u>Technical Division Responsible:</u>	Tropical Diseases
<u>Duration:</u>	1984-1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

Forthcoming.

**Dispersion of Triatomas:
Their Epidemiological Importance in the Infestation of Housing.**

OBJECTIVES

To establish the possible active and passive ways of dispersion of triatomid vectors of Trypanosoma cruzi and to determine their possible importance in the infestation of dwellings.

METHODS AND APPROACHES

Ways of active and passive dispersion of triatomas were explored. One consisted of the autonomous dispersion of the triatomas in a populated area. Their presence was determined in the streets and in other public places of the localities of Moro Moro and Pucará by an active nocturnal search carried out by four persons for three to five hours on five occasions.

The dispersion of triatomas from chicken houses was determined by exposing mice with fluorescein in their blood to them. Subsequently, triatomas were sought in a radius of 200 meters and beyond.

The distance triatomas were transported was studied through an active search for triatomas in the garments and household effects of persons transferred to the localities of Pucará, Bello Naranjo, and Moro Moro. A total of 50 travelers were examined.

The dietary habits of some of the captured insects were established by the precipitin test.

RESULTS AND CONCLUSIONS

In the nocturnal searches of the localities of Moro Moro and Pucará, 130 triatomas were found. Eighteen were in the fifth stage, 110 were adults and 2 others were in the second and fourth stages. T. cruzi was found in the intestines of 46%. Of the captured insects 67.3% were females. In the 88 triatomas whose dietary habits were established through the precipitin test, it was established that 43 had ingested bird blood, 21 human blood, and 3 dog blood; in 11 the content was mixed. When triatomas were sought around the chicken houses, 13 were captured within the 200 meters and 1 beyond that distance.

A total of 20 triatomas were found in the household effects of individuals that were transferred to the localities of Pucará (9), Bello Naranjo (6), and Moro Moro (5). They were distributed in the following stages: first (4), second (7), third (4), fourth (3), fifth (1) and adult (1). They were found in garments, bedclothes, riding equipment, baskets with birds, and other types of goods. Four of the triatomas were infected with T. cruzi. The precipitin test was carried out on 6; 4 had ingested human blood, 1 bird blood, and the other human and dog blood.

These results reaffirm the importance of active and passive transport of the triatoma in the continuation of the endemic disease.

OTHER DATA

Investigator(s): Dr. Carlos Lafuente
Institution: National Center of Tropical Diseases (CENETROP)
Country: Bolivia
Technical Program Responsible: Tropical Diseases
Duration: 1984-1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 8,750

PUBLICATIONS RESULTING FROM THE RESEARCH

None

Testing and Standardization of the ELISA to Identify Malaria Vectors in Chiapas, Mexico

OBJECTIVES

To determine the feasibility of the ELISA as a technique and as a field adaptable method to identify vectors of malaria. To determine any modifications to the published method (Burkot *et. al.*, 1985) required for use in the Suchiate region. To standardize technique and chemicals used in the assay. To carry out a preliminary field trial in the Suchiate region. To apply the methods to vector identification studies now in progress.

METHODS AND APPROACHES

The ELISA utilizes species specific monoclonal antibodies to detect sporozoite specific plasmodial proteins in mosquito macerates. The assay carried out under a precise procedure in the laboratory uses a monoclonal antibody - enzyme conjugate to detect bound protein. If the protein is present, a substrate conversion reaction will be detectable by colorimetric change of the substrate (clear to green). This reaction can be measured by absorbance at 414 nm in a spectrophotometer.

RESULTS AND CONCLUSIONS

Several specific and nonspecific cross reacting proteins have been identified in natural mosquito populations which bind to the Plasmodium specific monoclonal antibodies (possibly Protein A from *S. aureus*). The methods have been modified to avoid these reacting and the assay can now be used to identify 5 sporozoites per well (from a sample of 1 ml. with 20 mosquitoes, 100 sporozoites). In addition, no pre-coating with monoclonal antibody is required for this sensitivity. The assay remains to be completely standardized as no titration curves have yet been completed.

OTHER DATA

<u>Investigator(s):</u>	J. M. Ramsey
<u>Institution:</u>	Centro de Investigación de Paludismo, Dirección de Lucha Contra el Paludismo de la Secretaría de Salubridad y Asistencia
<u>Country:</u>	Mexico (Chiapas)
<u>Technical Program Responsible:</u>	Tropical Diseases
<u>Duration:</u>	1985-1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

None as yet.

Rapid Diagnosis of Human Leishmaniasis by K-DNA Hybridization Methods

OBJECTIVES

To prepare specific kinetoplast DNA (k-DNA) probes for the rapid diagnosis of human cutaneous and mucocutaneous leishmaniasis.

To develop a sensitive non-radioactive DNA detection procedure for the rapid identification of Leishmania species and sub-species using DNA hybridization techniques.

METHODS AND APPROACHES

Leishmania were isolated from active cutaneous lesions of patients with diagnosis of uta or espundia seen at the Instituto de Medicina Tropical "Alexander Von Humboldt" or during field expeditions to Huayllacallan (Ancash, Peru) and various locations in the Cusco-Madre de Dios jungle. The parasites were isolated from biopsy tissue and cultured in biphasic rabbit blood-agar medium.

Kinetoplast DNA was purified by sedimentation procedures from the reference strains L. braziliensis braziliensis M2903, L. b. guyanensis M4147, L. mexicana amazonensis PH8 and L. m. mexicana L11. The k-DNA probes were prepared by nick translation of the purified k-DNA using [α -³²P] dATP and/or biotinylated dUTP, E. coli DNA polymerase and DNase. The nick translated probes were stored at -70° C until their use. The biotinylated dUTP was obtained from ENZO Biochemicals.

The parasites were collected after the second passage concentrated by centrifugation and resuspended at a cell density of 10⁵-10⁶ parasites/ml. Dot blots were prepared by direct application of the parasite suspension. Standard identification assays used 10⁴-10⁵ organisms/blot. The organisms were applied to nitrocellulose filters. After drying, the filters were treated with 0.5 N NaOH (2 minutes, twice), 1 M Tris-HCl pH 7.5 (5 minutes, twice) and 0.5 M Tris/0.5 M NaCl pH 7.5 (5 minutes, twice). The filters were then dried in air and baked at 60° C for 2 hours. The filters were hybridized with the corresponding k-DNA probes at 42° C in 50% formamide for 10-16 hours. The probes were denatured by a 5 minute incubation in boiling water and added to the hybridization solution at a final concentration of 20-100 ng/ml. After hybridization the filters were washed extensively at 56° C and dried in air. The blots were then developed by either exposure to x-ray film at -70° C or, by using one of several procedures tested for the detection of biotinylated material.

Reagents for the detection of biotinylated DNA were obtained either from commercial sources or prepared in our laboratory. Calf intestinal alkaline phosphatase was polymerized by incubation with disuccinimidyl suberate and labeled with -aminocaproyl-biotinyl-N-hydroxysuccinimide ester. Different blocking methods and development conditions were tested in order to obtain minimal backgrounds. These developmental conditions were essentially based on procedures described in the literature and modified by us throughout the study. Parallel identification of the parasites was carried out using isoenzyme electrophoresis (Alanine aminotransferase, aspartate aminotransferase, glucose phosphate isomerase and glucose-6-phosphate dehydrogenase) and monoclonal antibody binding.

RESULTS AND CONCLUSIONS

Twenty six isolates of Peruvian Leishmania were isolated during the reporting period. Two of these isolates were obtained from well documented mucocutaneous forms of the disease. Twelve of the isolates were of Andean origin; thirteen were obtained from cases originating in the Amazonian forest and one was isolated from a phlebotomine vector captured in the Rimac valley. Twenty five of the isolates were identified as L. braziliensis ssp, 23 of these being undistinguishable from the subspecies L. b. braziliensis according to the monoclonal antibody binding assays.

K-DNA hybridization analysis was shown to be highly species-specific, thus confirming previous reports. All Peruvian isolates were studied using probes prepared with k-DNA purified from the marker strains L. b. braziliensis M2398, L. b. guayanensis M4147, L. m. amazonensis PH8 and L. m. mexicana L11. None of the isolates tested positive with the L. mexicana probes. Twenty five of the 26 stocks were identified as members of the L. braziliensis complex according to their k-DNA hybridization patterns.

Biotinylted k-DNA detection studies were carried out in parallel. Most of the difficulties encountered were related to the rather high background levels of the detection procedure. The following procedures were tested to reduce the background of the samples: high ionic strength washing; alternative filter membrane blocking reagents, such as casein; preincubation of the blots in various reagents (such as 0.1% hydrogen peroxide when using peroxidase development procedures or 0.1 mg/ml proteinase K) prior to hybridization of the material to the specific probes; and others. In general, our results show that the major source of difficulties is the presence of a significant amount of endogenous enzymatic activity of the samples which interferes with the enzymatic assays (peroxidase and alkaline phosphatase) used in the detection of the biotinylated probe. These high backgrounds are also due, in part, to the presence of biotin and biotin binding proteins in cell and tissue extracts. The present sensitivity of the assay is currently comparable to that of radioactive phosphate detection procedures (less than 100 parasites or 10 pg of k-DNA) when using alkaline phosphatase detection and proteinase K treatment of the blots. The procedure is currently used routinely for DNA studies in our laboratory. Further work is directed to the identification of specific k-DNA fragments to distinguish among uta and espundia strains with adequate sensitivity and specificity.

OTHER DATA

<u>Investigator(s):</u>	Guillermo Romero, Ph.D.
<u>Institution:</u>	Instituto de Medicina "Alexander Von Humboldt"
<u>Country:</u>	Peru
<u>Technical Program Responsible:</u>	Tropical Diseases
<u>Duration:</u>	18 months

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 2,500
Tropical Diseases Research Program (TDR)	US\$ 15,000
U.S. AID (1985-1986)	US\$ 134,000
	<hr/>
TOTAL	US\$ 151,500

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Romero, Arana, Lopez, Montoya, Bohl, Campos, Arevalo and Llanos (1986). Characterization of Leishmania sp. from Peru. Accepted for publication in Transactions of the Royal Society of Tropical Medicine and Hygiene.
2. Lopez, Romero, Arana, Montoya Cruzalengui, Llanos and Arevalo. Identification of Peruvian Leishmania using non-radioactive DNA detection procedures. Submitted to the American Journal of Tropical Medicine and Hygiene.

Strain Differentiation of Malaria Parasites in Brazil

OBJECTIVES

The objectives of the study are:

1. Isolation of Plasmodium falciparum from infected patients for continuous culturing in vitro, cryopreservation of strains and enzyme typing by cellulose acetate electrophoresis.
2. Drug testing for 5 drugs, in vitro: chloroquine, mefloquine, amodiaquine, quinine and pyrimethamine.
3. Inoculation of nonhuman primates (Aotus, Saimiri and Calithrix monkeys) with Plasmodium falciparum from cultures.
4. Preparation of multispot slides for antigenic diversity studies.
5. Cloning by dilution of a few number of strains exhibiting a mixture of parasites (after electrophoresis).
6. Isolation of Plasmodium vivax from infected patients for continuous culturing in vitro and enzyme typing by cellulose acetate electrophoresis.
7. Isolation of Plasmodium brasilianum from naturally infected non human primates.
8. Studies on recrudescence patients with Plasmodium falciparum after different treatments.

METHODS AND APPROACHES

Patients with Plasmodium falciparum malaria were selected from different localities in the Amazonia Region according to initial parasitemia (not less than 0.1% red blood cells parasitized). Cultures were made in vitro, using the candle-jar method.

Other than human serum (types A and AB), calf serum plus neopeptone and rabbit serum were tested as alternatives.

Drug tests with five drugs (chloroquine, mefloquine, amodiaquine, quinine and pyrimethamine) were carried out by the micromethod in vitro for 24-36 hours. For pyrimethamine a 72 hour test for more accurate results was required.

Enzyme typing by cellulose acetate electrophoresis was carried out for five enzymes:

- Glucose-phosphato-isomerase, GPI (EC.5.3.1.9)
- Adenosine-deaminase, ADA (EC.3.5.4.4)
- Peptidase, PEP (EC.3.4.11)
- Lactate-dehydrogenase, LDH (EC.1.1.1.27)
- NADP-dependent glutamate-dehydrogenase, GDH (EC.1.4.1.4)
- Phosphate-gluconate-dehydrogenase, PGD (EC.1.1.1.44.3)

Studies on the adaptation of Plasmodium falciparum to monkeys (Aotus infulatus, Aotus triviragatus, Saimiri sciureus and Callithrix sp) have been carried out in vitro using RPMI 1640 (Gibco) + bicarbonate + Aotus Saimiri sera. Dilutions are made according to growth of parasites in the monkey red cell.

For culturing Plasmodium vivax, two samples with parasitemia of 0.5% were washed in normal RPMI 1640 (Gibco) + bicarbonate and cultivated in 12 different media, as follows:

1. CEM 2000 (Scott Labs) + SGF-3 (Scott Labs) + human serum 10% type A
2. MEM (supernatant of Vero+McCoy cells in culture collected at 48h.)
3. 1640 (supernatant of MRC 5 cells in culture, collected at 24h.)
4. HANK s (supernatant of HEP cells in culture, collected at 96h.)
5. RPMI 1640 (supernatant of Flow 2000 cells in culture, collected at 24h.)
6. RPMI 1640 (supernatant of MRC 5 cells in culture, collected at 24h.)
7. MEM (supernatant of Flow 2000 cells in culture, collected at 24h.)
8. MEM (supernatant of Flow 2000 cells in culture, collected at 96h.)
9. MEM
10. RPMI 1640 + bicarbonate + human serum 10% type A
11. CEM 2000 + SGF-3 (as in 1. above) + hypoxanthine + human serum 10% type A
12. RPMI 1640 (supernatant of Vero cells in culture, collected at 24h.)

For collecting Plasmodium brasilianum, 5 monkeys (Alouata belzeou) were maintained in confined surroundings and blood smears taken daily. Of these, three were positive and splenectomized in order to increase their parasitaemia. Samples were maintained in culture so as to obtain parasites in the schizont stage for enzyme typing by electrophoresis.

In collaboration with Hospital Barreto, where mefloquine trials were in progress, samples of parasites were obtained from patients not responding to specific treatments against malaria. Characterization of these parasites was carried out after in vitro culturing.

RESULTS AND CONCLUSIONS

Of 27 P. falciparum isolates characterized for enzymes, 52% were type GPI-1, 41% were GPI-2, and 7% were mixed populations of parasites of each type. Of these isolates, 19% were type ADA-1, 37% type ADA-2 and, due to technical difficulties, 44% of the gels unreadable. The 27 isolates were all type PEP-1, GDH-1, LDH-1 and PGD-1.

During this period of time, 47 samples were isolated and tested for drug response in vitro (See Table I). Of these, 14 were from Itaituba (PA), 2 from Acara (PA), 4 from Fucurui (PA), 4 from Ariquemes (RO), 3 from Macapa (AP), 5 from Maraba (PA) and 5 from Paragominas (PA)

In chloroquine tests, 16 samples were inhibited only at maximum dosages of $32 \times 10^{-8}M$, 14 at $16 \times 10^{-8}M$, 9 at $8 \times 10^{-8}M$, and 8 at $6 \times 10^{-8}M$. None were found sensitive at lower dosages such as 1.2 or $4 \times 10^{-8}M$.

In mefloquine tests, one isolate was inhibited at $6 \times 10^{-8}M$, 5 at $4 \times 10^{-8}M$, 14 at $2 \times 10^{-8}M$, 23 at $1 \times 10^{-8}M$ and 4 at a minimum dosage of $0.5 \times 10^{-8}M$. No isolates were found resisting dosages of 8 and $16 \times 10^{-8}M$.

In amodiaquine tests, 2 isolates were inhibited at a maximum dosage of $16 \times 10^{-8}M$, and 6 at $8 \times 10^{-8}M$, 19 at $4 \times 10^{-8}M$, 10 at $2 \times 10^{-8}M$, and 10 at $1 \times 10^{-8}M$. None were inhibited at two lower concentrations of 0.5 and $0.25 \times 10^{-8}M$.

In quinine tests, one isolate was inhibited at a maximum dosage of $250 \times 10^{-8} M$, 1 at $125 \times 10^{-8} M$, 16 at $62.5 \times 10^{-8} M$, 18 at $31.25 \times 10^{-8} M$, 11 at $15.6 \times 10^{-8} M$. None were inhibited at two lower dosages of 7.8 and $3.9 \times 10^{-8} M$. All isolates grew under maximum dosages of $1.6 \times 10^{-8} M$ and $1.6 \times 10^{-5} M$ of pyrimethamine.

TABLE I
In vitro susceptibility of P. falciparum isolates

Isolate/Clone	Minimum inhibition concentration ($\times 10^{-8} M$)				
	Chloroquine	Mefloquine	Amodiaquine	Quinine	Pyrimethamine
IEC 145/83	32	4	8	125	1.6
Cl.12	32	6	8	125	1.6
Cl.13	32	8	16	250	1.6
Cl.22	32	8	8	62.5	1.6
Cl.27	32	1	8	62.5	1.6
Cl.30	32	8	8	62.5	1.6
IEC 132/83	16	1	NT	NT	NT
Cl.C	8	0.5	NT	NT	NT
Cl.E	16	2	NT	NT	NT
Cl.F	32	2	NT	NT	NT

Note: for pyrimethamine ($1.6 \times 10^{-5} M$)
NT - not tested

The experimental research work on adaptation of Plasmodium falciparum parasites into red blood cells of non human primates - (Callithrix argentata, Callithrix jachus jachus, Callithrix humeraliter, Callithrix penicillata, Saguinus midas niger, Saimiri sciureus, Aotus azaral infulatus and Aotus trivirgatus) showed good results only in Saimiri sciureus and Aotus a. infulatus, which were infected *in vitro*. Inoculation of these cells into original blood donor monkeys, however, did not induce patient infection.

Cloning of two isolates of P. falciparum confirmed coexistence in the same patient of different types of parasites: from isolate IEC 145/83, original GPI 1/2, five clones were obtained which showed the same enzyme type (all GPI-1, ADA-2 and PEP-1) with different responses to mefloquine and quinine, and all clones equally resistant to both chloroquine and pyrimethamine. From isolate IEC 132/83, 3 clones were obtained with variable responses to chloroquine and mefloquine. These clones were also identical for their enzyme types: GPI-2, ADA-2 and PEP-1 (Table I).

Culturing of Plasmodium vivax showed encouraging results with culture media numbers 2, 5, 7, 11 and 12. (see methods above), with maturation into schizont stage parasites and reinvasion. Initial morphology and stage of growth of parasite population may be correlated with success on growth *in vitro*.

Plasmodium brasilianum in culture showed maturation into schizonts, thus allowing future work on differentiation studies, if necessary.

Studies on 3 patients who were recrudescant after drug treatment were carried out by comparing the original parasites prior to treatment with each recrudescence. Surprisingly, major changes in enzyme types were detected. For example, blood was collected prior to treatment with Quinine sulphate and Fansidar from one patient. This patient became recrudescant and again treated; this time with Fansidar alone. A second recrudescence occurred and treated with amodiaquine. A third recrudescence occurred and finally cured with Sulfametrol + Trimetropim. Enzyme typing of the first recrudescant parasites exhibited a GPI-2 and ADA-1 pattern, the second recrudescence showed a GPI-1 and ADA-3 pattern, while the third recrudescence was still different showing a GPI-2 and ADA-2 pattern. These dramatic changes in population dynamics within the same patient may require techniques other than electrophoresis in order to be better understood. However, it does confirm that mixed populations of parasites exist in a patient and that when submitted to different drug regimens the major populations present will vary.

This program has, for the first time, established in Brazil and in South America an evaluation on similarities and differences among strains within Brazil as well as a comparison with strains from other countries. Table II shows a minor sample of data on strain characterization in Brazil. For the markers used here, we have observed a major variation that would not allow us to distinguish and/or associate isolates through well defined patterns/geographical regions with the exception of some monoclonal antibodies which could differentiate isolates according to two specific groups (see Table II, McAbs 6.1, 7.3, 7.6 and 9.2, 9.7 10.3, which tended to react oppositely to each other.)

The strain characterization program included observations and comparisons of isolates from different regions, comparisons of clones within one single isolate and of parasite populations within one patient before and after treatment(s). Other lines of research were established, such as, attempts to produce an in vivo malaria model with a local non-human primate and culturing of P. vivax in vitro for future strain characterization.

Never before has such a large number of isolates been tested at one time in South America for so many markers. This work is still being continued at the same institute. Recently, similar work is being followed at SUCEN, Sao Paulo with the same objectives but with more emphasis on recrudescant parasites.

Since 1982, a total of 133 isolates have been collected in 31 different regions of the Amazonian Basin. These have been cryopreserved after characterization for further use. This material is available for studies by other interested scientists.

TABLE II
Strain characterization of P. falciparum in Brazil (Samples IEC/83)

Origin	Paragominas, PA		Itaituba, PA		Moju, PA	Jumas, AM
Strain	31	37	95	97	101	54
Drug Response*						
Chloroquine	8.0	16.0	32.0	32.0	6.0	6.0
Mefloquine	0.5	0.5	0.5	0.5	0.5	1.0
Enzymes GPI	1	2	2	2	2	1
ADA	1	2	NT	1	1	1
PEP	1	1	1	1	1	1
LDH	1	1	1	1	1	1
GDH	1	1	1	1	1	1
PGD	1	1	1	1	1	1
Antigens 7.5	+	+	NT	+-	+-	NT
6.1	-	-	-	+-	+-	NT
7.3	-	-	-	+-	-	-
7.6	-	-	-	+-	-	-
9.2	+	+	+	-	+	+
9.7	+	+	+	-	+	+
10.3	+	+	+	-	+	+
9.5	-	+	+-	-	+	+
12.2	-	-	-	-	-	-
12.1	+	+	+	+/-	-	-
5.1	-	-	-	-	-	-

(Monoclonal antibodies supplied by Jana McBride, Edinburgh University, UK)

+ represents positive reaction on IFA

- represents negative reaction on IFA

+/- represents mixed population of parasites

+- represents intermediate reaction

NT not listed

* - MIC in $\times 10^{-8}M$

OTHER DATA

Investigator(s): Virgilio E. do Rosário, Biomedical Research Institute, Rockville, MD, USA

Institution: Instituto Evandro Chagas, F SESP, Belem, Para

Country: Brazil

Technical Program Responsible: Tropical Diseases

Duration: 1984-85

FUNDING

Agency

Amount

PAHO/WHO

PUBLICATIONS RESULTING FROM THE RESEARCH

(Not included in Research in Progress. 1982-1983)

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6. Rosario, V.E, Vasconcellos, MA., oliveira, S., Couto, A. (In Press) - Caracterizacao de 15 amostras de Plasmodium falciparum de 8 areas da Bacia Amazonica Brasileira.
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ABSTRACTS:

8. In XXI Congresso da Sociedade Brasileira de Medicina Tropical (3-8 February 1985), S.Paulo, Brasil.
9. Caracterizacao de cepas de Plasmodium falciparum coletadas de pacientes recrudescentes.
10. Clonagem de cepas de Plasmodium coletadas na regio amazonica. In IX Congresso da Sociedade Brasileira de Parasitologia (30 July to 2 August 1985), Fortaleza, Brasil.
11. Desenvolvimento de normas eritrocitárias de P. brasilianum in vitro. In XXII Congresso da Sociedade Brasileira de Medicina Tropical (March 1986), Belo Horizonte, Brasil.
12. Cultivo de Plasmodium vivax in vitro.

A Multicenter Evaluation of the Indirect Immunoperoxidase Technique for the Serological Diagnosis of American Trypanosomiasis

OBJECTIVES

Serology is widely used for the diagnosis of human American trypanosomiasis to confirm a suspected clinical case, for seroepidemiological studies or as a preventive measure to avoid the transmission of the infection through blood transfusion. From the several techniques available, such as, the complement fixation (CF), indirect hemagglutination (IHA), indirect immunofluorescence (IIF) and ELISA, the IHA and IIF are the most commonly used. Antigens for them are commercially available. The latter has the disadvantage that the fluorescence microscope is not always available in the peripheral health services where most of the tests need to be done. Therefore, it would be helpful if a technique such as the immunoperoxidase (IIP) that uses a standard light microscope instead of the fluorescent one, could be made available to the health services for T. cruzi diagnosis, either for routine diagnosis or for quality control. The evaluation of this technique in comparison to the IHA and IIF was the purpose of this study.

METHODS AND APPROACHES

The IIP is to be carried out as previously reported (Ferreira, et al. Exp Parasit 37:131,1975) with all reagents prepared as shown in the publication of C. Guimaraes (PAHO PNSP/84-08). In brief, Trypanosoma cruzi antigens deposited on glass slides were exposed to positive and negative samples for T. cruzi. After washing, they were incubated with peroxidase labelled antihuman immunoglobulins. To reveal any reaction, the slides were then incubated with a solution of diaminobenzidine and oxygen peroxide. The test is observed with a standard light microscope under a 40X dry and a 100X oil immersion objective. Positive tests correspond to a brown staining of the epimastigote antigen.

At first, participating laboratories will familiarize themselves with the technique using 12 positive sera from chronic T. cruzi infections and negative control samples from their own serum bank. After that, the test will be applied blindly to positive sera containing different levels of antibodies to T. cruzi, and to negative samples and samples from individuals with other diseases sent by the WHO Collaborating Center for the serology of Chagas' disease, Leishmaniasis and Toxoplasmosis in Sao Paulo, Brasil. The results obtained by the IIP technique will be compared to those obtained by the IHA and IIF tests.

RESULTS AND CONCLUSIONS

Until now, the laboratory from Honduras had reported a total correlation (plus or minus one dilution) between the IIP and the IIF and IHA in positive and negative samples for T. cruzi stored at -70 °C, - 20 °C or at -20 °C with 50% glycerin.

OTHER DATA

Investigator(s): Dr. Elsa Segura, Argentina; Dr. Walter Ferreira, Dr. Mauro Peralta, Brazil; Dr. Felipe Ghul, Colombia; Dr. Carlos Ponce, Honduras; Dr. Rosa Hubsch, Venezuela.

Institution: Instituto de Diagnóstico y Tratamiento de la Enfermedad de Chagas, Argentina; Instituto de Medicina Tropical de Sao Paulo, Brazil; Instituto de Microbiología, Universidad Federal de Rio de Janeiro, Brazil; Departamento de Ciencias Biológicas, Universidad de los Andes, Colombia; Laboratorio Central, Ministerio de Salud, Honduras; and Departamento de Parasitología, Universidad de Carabobo, Venezuela.

Country: Argentina, Brazil, Colombia, Honduras and Venezuela.

Technical Program Responsible: Tropical Diseases

Duration: 1985-1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 4,800

PUBLICATIONS RESULTING FROM THE RESEARCH

None

Biological Control of Mosquito Vectors in Colombia

OBJECTIVES

To evaluate the commercial formulations of B. thuringensis H-14 (Bti) in small scale field trials against anopheline vectors of malaria in Colombia.

METHODS AND APPROACHES

Bti formulations were evaluated in natural breeding places in the piedmont area of the Department of Meta, Eastern Colombia. Breeding places had both still and moving water, and all were subject to abrupt changes in water levels due to rains, as is common throughout this region. Formulations tested were floating vermiculite granules, floating briquets, a water dispersable powder and two liquid suspensions. The breeding places were all positive for An. darlingi, but evaluation counts were made using all anophelines combined. Dosages used were those recommended by the manufacturer, or in some trials double that dosage. Evaluation was made by dipping, 10 dips per square meter of treated area, up to a maximum of 50 dips. Breeding places were sampled immediately before treatment and periodically after treatment, depending on the expected residual effect. Similar sampling was done in untreated control areas.

RESULTS AND CONCLUSIONS

All the formulations tested gave inconsistent results, but mortalities were lowest with the granules. The briquets, which were supposed to have a 30 day residual life, either dissolved or disappeared in 1 to 3 weeks. The powder and liquid formulations gave the best results, but these results were still highly variable. The control that was achieved generally lasted for only a few days, especially in those breeding places with moving water. It was concluded that none of the Bti formulations would be suitable for general operational use in this region.

OTHER DATA

<u>Investigator(s):</u>	Marco Fidel Suarez, Martha Lucia Quinones, Glenn Fleming
<u>Institution:</u>	Servicio Nacional de Erradicación de la Malaria (SNEM)
<u>Country:</u>	Colombia
<u>Technical Program Responsible:</u>	Tropical Diseases
<u>Duration:</u>	1984-1985

FUNDING

<u>Agency</u>	<u>Amount</u>
Tropical Diseases Research Program (TDR)	US\$ 7,500 (2 yrs.)
PAHO	US\$ 4,750 (2 yrs.)
TOTAL	US\$ 12,250

PUBLICATIONS RESULTING FROM THE RESEARCH

None

Genetics of Anopheles Albimanus in Relation to Ecology, Distribution and Possible Vector Competence

OBJECTIVES

To characterize the isozymes and polytene chromosomes of An. albimanus in relation to their ecology, geographic distribution and vector competence.

METHODS AND APPROACHES

Five widely separated geographic areas with varied ecology are visited 4 times per year. Observations are made on biting habits (indoor, outdoor, animals, etc.), and larval habitats (temperature, pH, salinity, various ions, etc.). Density indices are measured. Material from these collections are taken live and/or frozen to Bogota for cytogenetic examination of polytene chromosomes and biochemical analysis of isozymes with electrophoresis methods. Populations showing distinct differences will be colonized and crosses made between them, as well as with marker strains from the USDA Laboratory, Gainesville FL, which is cooperating in the project. Also, specimens are being examined for sporozoites using IMRA techniques with monoclonal antibodies at the University of Valle, Cali. It is hoped that analysis and correlation of results will show whether the An. albimanus populations are homogeneous; or if not, their differences and how such differences may be expressed in their ecology and relation to malaria transmission.

RESULTS AND CONCLUSIONS

Sufficient data are not yet available to reach any conclusions. However, data from the analysis of over 20 enzymes indicate the population in one of the five areas is different. No differences in chromosome banding patterns or inversions have been found.

OTHER DATA

<u>Investigator(s):</u>	Marco Fidel Suarez, Martha Lucia Quiñones, Cesar Monje, Glenn Fleming
<u>Institution:</u>	Servicio Nacional de Erradicación de la Malaria (SNEM)
<u>Country:</u>	Colombia
<u>Technical Program Responsible:</u>	Tropical Diseases
<u>Duration:</u>	1984-1987

FUNDING

<u>Agency</u>	<u>Amount</u>
National Academy of Sciences - BOSTID	US\$ 117,000 (3 years)
PAHO	US\$ 9,000 (per year)
TOTAL	US\$ 48,000 (per year)

PUBLICATIONS RESULTING FROM THE RESEARCH

Several under preparation.

Studies on the Biology of Toxorhynchites moctezuma

OBJECTIVES

To study the biology of Tx. moctezuma in relationship to its potential use as an Aedes aegypti control agent.

METHODS AND APPROACHES

In 1984, Tx. moctezuma specimens were followed individually from egg to adult to determine total development time. These predator larvae were fed a diet of a maximum of 10 prey per day, i.e. each container with its individual predator larva was checked daily to determine the number of prey consumed and the required number of prey replaced to a total of 10 larvae. In 1985, this observation was continued with two other groups of predators; in one group a maximum of 20 prey per day were offered, while in the other group, 50 prey/day were offered. The prey larvae were A. aegypti. The predator larvae were also mass-reared and fed over 100 prey per day.

RESULTS AND CONCLUSIONS

Data are available for only 5 predators in the 20 prey/day and for 4 predators in the 50 prey/day categories. The results of these are compared with the data obtained when the predators are fed a maximum of 10 prey/day.

In larval stages I and II the development times were not affected even though the mean number of larvae consumed by each predator increased by two and one half times to three times in the 10 prey/day group to the 50 prey/day group (i.e., from 15.1 to 60.5 larvae consumed in stage I, and from 24.1 to 64 in stage II). However, in both larval stages III and IV in the 10 prey/day to the 50 prey/day categories, development times decreased by one half, (i.e. from a mean of 17.2 days to 8.7 days in stage III and from 38.4 days to 19.5 days in stage IV). The total development times observed from egg hatching to adult was: 10 prey/day (65 individuals observed) - 62.7 days; 20 prey/day (5 individuals observed) - 48.2 days; 50 prey/day (4 individuals observed) - 33.9 days

When predator larvae were fed over 100 prey/day in a mass rearing exercise, development times were between 20-21 days.

OTHER DATA

<u>Investigator(s):</u>	Dr. E. Tikasingh
<u>Institution:</u>	Caribbean Epidemiology Center (CAREC)
<u>Country:</u>	Trinidad and Tobago
<u>Technical Program Responsible:</u>	Health Situation and Trend Assessment/CAREC
<u>Duration:</u>	1984 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/CAREC	

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

The Placenta in Habitual Abortions and in Neonatal Infections

OBJECTIVES

To determine the presence of causative agents of habitual abortions and fetal and neonatal infections in humans.

METHODS AND APPROACHES

Through use of peroxidase and immunofluorescence on placental tissue from those habitually aborting during the first quarter of pregnancy (with two previous abortions), as well as on fetal tissues when they are available, the following can be seen: herpesvirus, papillomavirus, cytomegalovirus, Toxoplasma, and Chlamydia trachomatis. The utilization of the proper kits and of the material retrospective and prospective of 1984 will make it possible to collect sufficient material for a preliminary study of the incidence of these agents for future studies in greater depth, in maternal serum as well as in that of the neonate.

RESULTS AND CONCLUSIONS

The first 48 cases have been processed using the above-named agents and the observations are still being analyzed.

OTHER DATA

<u>Investigator(s):</u>	Washington L. Benedetti
<u>Institution:</u>	Latin American Center for Perinatology and Human Development (CLAP)
<u>Country:</u>	Uruguay
<u>Technical Program Responsible:</u>	Maternal and Child Health/CLAP
<u>Duration:</u>	1984 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

None.

Placental Morphology and its Association with the Perinatal Pathology

OBJECTIVES

To describe the morphological and pathological associations of placentas relative to the newborn of low weight, both preterm and full-term.

To analyze the relationships found in placentas from mothers who developed hypertension during pregnancy.

To analyze the major perinatal indicators (morbidity and mortality), neonatal depression, perinatal infections, and development of hyaline membrane disease and their association with measurable placental parameters in the preceding objectives.

METHODS AND APPROACHES

The placentas with maternal, fetal, and neonatal pathology were studied with identical methodology in pathological groupings and in groupings of similar socioeconomic characteristics and parity. The data were processed and studied by the personnel of the perinatal health team, who were not directly associated with the work in placental morphology and pathology.

RESULTS AND CONCLUSIONS

The placentas of newborns of low weight (preterm or full-term) are not normal. A considerable portion of them weigh less and have less volume and development than the control group. The numbers of infarctions and calcifications of the basal plate (maternal face) and other signs of aging are not related to the state of the fetus or neonate. The microscopic characteristics of placentas in cases of retardation of intrauterine growth are associated with the dominant maternal pathology (for example, in cases of hypertension of pregnancy, serious diabetes with vascular complications, etc.). The placentas of pregnant woman with hypertensive disease of pregnancy suffer modifications in utero corresponding to inadequate uterine-placental irrigation, through lesion of the uterine arteries (spiral arteries that take the maternal blood directly to the intervillous space). Retardation of intrauterine growth of the placenta brings about a reduction in the area of the placental exchange membrane, and with this, a still greater reduction in the availability of nutrients to the fetus. Its effects on fetal and neonatal morbidity and mortality are known; the association between morphological and pathological changes in the placenta and the state of the fetus or neonate is very convincing.

OTHER DATA

<u>Investigator(s):</u>	Washington L. Benedetti
<u>Institution:</u>	Latin American Center for Perinatology and Human Development (CLAP)
<u>Country:</u>	Uruguay
<u>Technical Program Responsible:</u>	Maternal and Child Health/CLAP
<u>Duration:</u>	1984 - 1985

FUNDING

Agency

Amount

PAHO/WHO

PUBLICATIONS RESULTING FROM THE RESEARCH

1. W.L. Benedetti. "La placenta en Perinatología". CLAP Scientific Publication No 978, 1983, Perinatología (Asunción, Paraguay) 2:7-9, 1983.
2. Alvarez, H. and W.L. Benedetti. "La placenta humana" Chapter III. In: Obstetricia, A. Pérez Sánchez (editor), Publicaciones Técnicas Mediterráneo, Santiago de Chile, Chile, 1985.
3. Alvarez Santin, C. and W.L. Benedetti. "La placenta en los estados hipertensivos del embarazo". Clin. Ginecol. Obstet. Perinat. (Uruguay), 1: 389-397, 1984.
4. W.L. Benedetti. "La placenta del bajo peso al nacer". Clin. Ginecol. Obstet. Perinat. (Uruguay), 2: 41-51, 1985.

Measures to Reduce Risk Factors for Low Birthweight

OBJECTIVES

1. To reduce the incidence of low birthweight by taking action on the principal risk factors identified in a previous study: mothers under 18 years of age; maternal malnutrition; smoking; and a history of premature births;
2. To find a method that helps health personnel to work with the population in the solution of problems; and
3. To prove the effectiveness of health actions within the community.

METHODS AND APPROACHES

This research consists of evaluating the value of specific measures using relative risk in controlling major risk factors of low birthweight.

- a) For the under 18 age group risk-factor, it has been proposed that fertility be controlled through appropriate contraceptive measures and education;
- b) For smoking, health education and an ongoing role by the obstetrician will be employed;
- c) For malnutrition, "nutrition clinics" will be set up in maternity wards to treat pregnant women with malnutrition problems; and
- d) For mothers with a history of premature births, special attention will be provided, including prophylactic hospitalization.

After evaluation of the impact of these measures, adjustments will be made and applications will be expanded to the national level.

RESULTS AND CONCLUSIONS

The study is in a preparatory stage.

OTHER DATA

<u>Investigator(s):</u>	Dr. Ubaldo Farnot Cardoso
<u>Institution:</u>	Ministry of Public Health
<u>Country:</u>	Cuba
<u>Technical Program Responsible:</u>	Maternal and Child Health
<u>Duration:</u>	2 years

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO	US\$ 15,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None.

Latin American Collaborative Study on Birth Defects

OBJECTIVES

1. Mother's age: To establish the risk of Down's syndrome by mother's age group from samples of hospital births in South America, its major trends and relationship to the age of the father. Part of the analysis will refer to all diagnoses of registered defects.

2. Reproductive history. To analyze the periods between marriage and births in a sample of hospital births in South America, correlating values with isonimia (trisomy), parental consanguinity, ancestors who were immigrants, and with the occurrence of birth defects.

3. Multiple defects. To generate a diagnostic system for patients with multiple defects and apply it to real population data. To define the epidemiological profile of each group of multiple defect diagnoses proposed.

METHODS AND APPROACHES

All the information necessary for the study is available at the data bank of the Latin American Collaborative Study on Birth Defects, which has been obtaining data from 70 maternity wards in 37 cities in 10 countries of South America (excluding French Guiana) on more than one million births. The analyses are based on a case-control approach (for 50 risk factors) and involve 10 variables for cohort studies. To study the risk of Down's syndrome, maternal age groups will be established at intervals of one year. To study the reproductive history, the 1967-79 ECLAMC file will be used for data on maternal and paternal surnames, place and country of birth of the four grandfathers. For the multiple defects study, the 1967-84 file will be used, which includes 1.3 million births with some 20,000 defects. For variables such as maternal age, parental consanguinity, fetal presentation, metrorrhagia, use of drugs during the first trimester of gestation, and pre-natal environmental agents, which are necessary to obtain an epidemiological profile of patients with multiple defects, the usual statistical tests will be performed.

RESULTS AND CONCLUSIONS

The study is in progress with no results reported.

OTHER DATA

<u>Investigator(s)</u> :	Dr. Eduardo E. Castilla
<u>Institution</u> :	Instituto Multidisciplinario de Biología Celular (IMBICE) La Plata, Argentina
<u>Country</u> :	Argentina
<u>Technical Program Responsible</u> :	Maternal and Child Health
<u>Duration</u> :	1985-1988

FUNDING

Agency

PAHO

Amount

US\$ 15,000

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Determination of Lung Maturation in the Newborn Utilizing Gastric Aspirate at Birth

OBJECTIVES

To define the phospholipid pattern in the gastric aspirate at birth compatible with normal respiratory adaptation.

To determine lung maturation in recorded cases of hyaline membrane disease (HMD).

METHODS AND APPROACHES

The gastric aspirate at birth from 80 preterm newborns was studied through determination of the Lecithin-sphingomyelin (L/S) index and the presence of phosphatidylglycerol (PG), by one-dimensional thin-layer chromatography, comparing it with clinical and paraclinical evolution.

RESULTS AND CONCLUSIONS

In 53 cases in which no type of respiratory difficulty developed, the L/S index was always ≥ 2.0 , and PG was present in 52 cases. Accordingly, a mature pattern was defined as an L/S index ≥ 2.0 and PG present.

In 27 cases with a radiological clinical and/or anatomic-pathological diagnosis of HMD, 21 had an immature pattern and 6 cases a mature pattern.

The association of elements of perinatal infection and high mortality in these 6 cases suggests that they could correspond to a pathology other than that expressed in the clinical, radiological, and pathological anatomy in a form similar to that of HMD.

Knowledge of the existence of these different pathologies would permit the adoption of guidelines of treatment not envisaged in the conventional treatment of HMD.

OTHER DATA

<u>Investigator(s):</u>	Estol, P., Piriz, H.
<u>Institution:</u>	Latin American Center for Perinatology and Human Development (CLAP)
<u>Country:</u>	Uruguay
<u>Technical Program Responsible:</u>	Maternal and Child Health/CLAP
<u>Duration:</u>	1984 - 1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Estol, P., Piriz, H., Mañana, G., Pintos, O., Martell, M. "Enfermedad de Membrana Hialina en recién nacidos con pulmón bioquímicamente maduro", Rev. Latin. Amer. Perinat. (in press), 1986.

Study of Lung Mechanics in the Newborn without Respiratory Pathology

OBJECTIVES

To define normal values of lung mechanics in newborns without pathology through a spirometric method developed in our laboratory.

METHODS AND APPROACHES

A total of 48 newborn 24 hours to 21 days old with gestational ages from 30 to 41 weeks of amenorrhea and weighing from 1,200 to 4,100 g. were studied. An evaluation of the lung mechanics was performed through a grating pneumotachograph and simultaneous measure of esophageal pressure with a catheter. Pulmonary dynamics, total lung resistance, current volume, minute volume, total, elastic, and viscid respiratory work, (corrected for minute volume) were determined. For each parameter, the mean, standard deviation, and percentiles P₁₀ and P₉₀ were calculated.

RESULTS AND CONCLUSIONS

Parameter	No. of studies	Mean \pm s.d.	P ₁₀	P ₉₀
Current volume (ml/kg)	51	6.28 \pm 3.17	2.21	10.34
Minute volume (ml/kg/min.)	51	625.30 \pm 22.03	142.90	707.70
Pulmonary dynamics (ml/kg/cm/H ₂ O)	51	1.57 \pm 0.57	0.84	2.30
Total lung resistance (cm H ₂ O/l/s)	51	51.10 \pm 26.10	7.60	85.60
Total work (mw/l/kg/min)	40	8.65 \pm 3.59	4.05	13.25
Elastic work (mw/l/kg/min)	40	4.91 \pm 2.12	2.19	7.63
Viscid work (mw/l/kg/min)	40	6.11 \pm 2.82	2.49	9.73

These values are indispensable for interpretation of results of studies of pulmonary mechanics when the present methodology is utilized in newborns with respiratory pathology.

OTHER DATA

Investigator(s): Estol, P., Piriz, H., Simini, F.
Institution: Latin American Center for Perinatology and Human Development (CLAP)
Country: Uruguay
Technical Program Responsible: Maternal and Child Health/CLAP
Duration: 1984 - 1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Piriz, H., Estol, P., Mañé, F., Ruggia, R. Mecánica Pulmonar en el Recién Nacido sin patología respiratoria. Anest. Analg. Reanim. (1985) 2: 17-23.
2. Estol, P., Piriz, H., Simini, F. Normal Range of Values for Pulmonary Dynamics in Full-term and Preterm Newborns (in preparation).

Birthweight and Perinatal Morbidity and Mortality

OBJECTIVES

In Institutions of the Region of the Americas:

To determine the distribution of birthweights and the current frequency of low weight and its association with early neonatal mortality and with some biological and social factors.

To compare the current figures of low birthweight and early neonatal mortality with those obtained in a previous study carried out by CLAP in order to determine their trends.

To compare the patterns of weight by gestational age from the different institutions whose mothers meet optimal requirements.

To construct a single pattern of weight in relation to gestational age in a sample that fulfills optimal conditions, expresses the full growth potential, and will be utilized in the health services.

To determine the influence of unfavorable factors on fetal growth such as, maternal pathology, different determinants of socioeconomic type, etc.

METHODS AND APPROACHES

The study requires a number of observations, sufficiently large, so that the parameters that are established have the desired precision.

If the groups studied are homogeneous, the participation of several groups will provide an adequate number of observations in a short period, thus strengthening the individual efforts through a common objective.

The population of interest is made up of those pregnant women with fetuses or live neonates with birthweights equal to or greater than 500 grams up to the time of their discharge or death.

Sampling size. Each institution will contribute a minimum of 1,500 consecutive protocols. This figure was calculated on the basis of statistical procedures accepting risks of a type I error of 0.05 and of a type II error of 0.1 for a null hypothesis of a difference in neonatal weight of 100 g. In accordance with the expected neonatal death rates, this sample size will make it possible to make comparisons of neonatal mortality by birthweight group.

RESULTS AND CONCLUSIONS

Forthcoming.

OTHER DATA

Investigator(s): Fescina, R., Schwarz, R.
Institution: Latin American Center for Perinatology and Human Development (CLAP)
Country: Uruguay
Technical Program Responsible: Maternal and Child Health/CLAP
Duration: 1985 - 1987

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Birthweight may not be an Indicator of Intrauterine Weight Early in Gestation

OBJECTIVES

To develop a method for predicting intrauterine weight.

To compare the estimated fetal intrauterine weight for a given gestational age with the patterns derived from birthweight for the same gestational age.

METHODS AND APPROACHES

From a group of 109 newborn whose mothers had been subjected three days before delivery to measurements, of uterine length (Ut. L.) and sonographic fetal measurement as follows: biparietal diameter (BPD), cranial circumference (Cr. Cir.), abdominal circumference (Ab. Cir.) and length of the femur (L. Fem.), formulas were developed to estimate the weight of the fetus in utero. Simple and multiple correlations were studied.

Once a formula was selected, weekly weights, from weeks 26 through 40, were estimated for another 40 fetuses that were born at term and whose birthweight was distributed in such a way that the observed frequency was equal to the expected, that is, 10% of the observations were below the 10th percentile and 10% above the 90th, etc..

RESULTS AND CONCLUSIONS

Of all the formulas tested, the best predictor of fetal weight considers fetal Ab. Cir., BPD and Ut. L. (fetal weight = $-4960 + 14.2 \times \text{Ab. Cir.} + 22.6 \times \text{BPD} + 3 \times \text{Ut. L.}$). The correlation coefficient was 0.93 and the 95% confidence interval $\pm 16\%$ of the actual weight.

When the weights in utero were calculated, it was observed that these were larger between 26 and 37 weeks of gestation than those described in the pattern derived from the birthweight.

OTHER DATA

<u>Investigator(s):</u>	Fescina, R., Molina, F., Ballasts, L., Martinez, G.
<u>Institution:</u>	Latin American Center for Perinatology and Human Development (CLAP)
<u>Country:</u>	Uruguay
<u>Technical Program Responsible:</u>	Maternal and Child Health/CLAP
<u>Duration:</u>	1985 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

In preparation.

Diagnosis of Retardation in Intrauterine Growth When the Gestational Age is not Known

OBJECTIVES

To determine the degree of sensitivity and specificity of the curves of the rate of growth in accordance with previous values of a measure given for the whole group of retardations and for symmetric and asymmetric types.

METHODS AND APPROACHES

Weekly observations of a group of high-risk pregnant women of unknown gestational age, in the third quarter will be made. In each exploration, measurements by ultrasonography will be taken of: biparietal diameter (BPD), cranial perimeter (Cr. Cir.), abdominal perimeter (Ab. Cir.) and an estimate of the quantity of amniotic fluid.

RESULTS AND CONCLUSIONS

Of the 77 newborn, there were 34 retardations in intrauterine growth; the sensitivity and specificity of the diagnostic methods were as follows: biparietal diameter, 50 and 81%; cranial circumference, 56 and 98% and for abdominal circumference, 76 and 86%. The Kappa index was 0.32 for the BPD, 0.56 for the Cr. Cir. and 0.67 for the Ab. Cir.

When the sample was divided into symmetric and asymmetric retardations, it was always easier to diagnose the symmetric than the asymmetric. The predictive values for the fetal Ab. Cir. were 81% when all retardations were considered (prevalence, 44%); 71% for symmetric retardations (prevalence, 27%); and 65% for asymmetric retardations (prevalence, 29%).

OTHER DATA

<u>Investigator(s):</u>	Fescina, R., Ballasts, L.
<u>Institution:</u>	Latin American Center for Perinatology and Human Development (CLAP)
<u>Country:</u>	Uruguay
<u>Technical Program Responsible:</u>	Maternal and Child Health/CLAP
<u>Duration:</u>	1985 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

In preparation.

Epidemiology of Hemorrhage in the Newborn Weighing 2,000 g.

OBJECTIVES

To determine the prevalence of intracranial hemorrhage in the newborn of low birthweight, globally and by type.

To determine the attendant factors that lead to the appearance of hemorrhage in the newborn.

METHODS AND APPROACHES

The population studied consisted of 185 newborn weighings 2,000 g. All were subjected to a sonographic exploration in the first 24 hours. A serial sonographic follow-up was carried out on all those presenting intracranial hemorrhage or any suspicion of it. An ultrasonic scanner ADR/ATL Model 4000 S/L, with transducers of 3.0 MHz, 13 mm and 5.5 MHz, 7 mm. was utilized. The procedure followed was the usual one for cerebral sonography: i.e., examination of the brain through the anterior and posterior fontanelles and the sutures. The brain was examined in three established ways, starting from the identification of the ventricular system. The following cuts were studied: coronal, sagittal and axial. The result of each exploration was expressed on a coded form previously designed for this study, which provides the personal history of the mother, her obstetrical background, the data on the delivery, and principal data on the pregnancy corresponding to this neonate, in addition to the most important neonatal data. The contents of each form were entered into a computer, by means of which the data were processed and the analyses of the most important variables studied.

RESULTS AND CONCLUSIONS

In the 185 newborns, 450 explorations (X 2.4) were carried out. Of these children, 129 were preterm and of adequate weight, 38 preterm and small for their gestational age, and 18 full-term and small for their gestational age. The prevalence of hemorrhage overall was 29.7%. In the preterm newborn the prevalence of hemorrhage was 33%. There was no hemorrhage in full-term newborns who were small for their gestational age. The most important risk factors were: presence of hyaline membrane disease, amenorrhea of 32 weeks and weight less than 1,500 g. (relative risk of 2.1, 1.8 and 1.7, respectively, with 95% confidence intervals between 1.6 and 9.4 for the hyaline membrane disease, 1.2 and 4.5 for amenorrhea of 32 weeks, and 1.2 and 4.2 for newborns weighing 1,500 g.).

In regard to other risk factors, such as vaginal delivery, the 95% confidence interval for the relative risk ranged between 0.6 and 2.5. Therefore, it was not a significant factor.

The risk of death in newborns with intracranial hemorrhage was double that of those without hemorrhage.

OTHER DATA

Investigator(s): Fescina, R., Díaz Rossello, J.L., Ruggia, R.
Institution: Latin American Center for Perinatology and Human Development (CLAP)
Country: Uruguay
Technical Program Responsible: Maternal and Child Health/CLAP
Duration: 1984 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

In preparation.

Evaluation of Different Methods for Estimating the Gestational Age

OBJECTIVES

To compare the utility for estimating the gestational age of: the biparietal diameter, the parameters of the amniotic fluid, and the neonatal physical examination, applied to the same group of individuals, with newborns of normal and subnormal weight.

To compare the results shown in the original research with that obtained through the health team in routine care.

METHODS AND APPROACHES

A total of 139 high-risk pregnant women with known date of last menstruation (DLM) were studied. They were subjected to sonography and amniocentesis simultaneously between 29 and 40 weeks of amenorrhea. The gestational ages of the newborn were estimated by physical examination. The gestational age was calculated from date of last menstruation and correlated with those estimated by: sonographic measure of the biparietal diameter (BPD), parameters of the amniotic fluid, and neonatal physical examination.

RESULTS AND CONCLUSIONS

In the newborn of normal weight the better estimator of gestational age was BPD ($r = 0.87$ with an error of 10 days). The results of the neonatal physical examination and amniotic fluid were $r = 0.80, 0.37$, and errors of estimate of 10 and 12 days, respectively.

Among newborn small for their gestational age (SGA), the correlation coefficients found between gestational age by DLM and by amniotic fluid and between gestational age found by DLM and by physical examination were $r = 0.42$ and $r = 0.67$, with errors of estimates of 10 and 13 days, respectively. The neonatal physical examination underestimated by almost 2 weeks the gestational age in the SGA group, which can lead to errors in the classification of the neonates by weight and gestational age if the date of amenorrhea used is that obtained through physical examination instead of that calculated from DLM.

OTHER DATA

<u>Investigator(s):</u>	Fescina, R., Ballasts, L., Schwarcz, R.
<u>Institution:</u>	Latin American Center for Perinatology and Human Development (CLAP)
<u>Country:</u>	Uruguay
<u>Technical Program Responsible:</u>	Maternal and Child Health/CLAP
<u>Duration:</u>	1983 - 1984

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Fescina, R., Lastra, L., Sugo, M., Parreño, J., García, A., Schwarcz, R. - "Evaluación de diferentes métodos para estimar la edad gestacional". Obstetricia y Ginecología Latinoamericana 42: 237-2/2, 1984.
2. Fescina, R., Lastra, L., Sugo, M., Parreño, J., García, A., Schwarcz, R. - "Precisión y replicabilidad de estimadores de la edad gestacional". In: Melo, A., Hardy, E., and Dotaviano, E. (2nd ed.) Investigacoes em Reproducao Humana. IX Reuniao da Associacao Latinoamericana de Investigacoes em Reproducao Humana, Campinas, ALIRH, October 1984, p. 94.

Relationship Between Placental and Lung Maturity by Sonography

OBJECTIVES

To recognize intrauterine placental characteristics and their relationship to the maturity of the fetal and neonatal lung.

METHODS AND APPROACHES

Sonographic explorations were carried out on 113 high-risk pregnant women in whom the degree of placental maturity, among other parameters, was determined prior to performing amniocentesis to ascertain the biochemical maturity of the fetal lung.

In the 71 cases where delivery occurred within 7 days of exploration and amniocentesis, the diagnostic effectiveness of placental maturity in predicting hyaline membrane disease in the newborn was studied.

RESULTS AND CONCLUSIONS

In 113 cases, 33 placentas were classified as mature, 66 as intermediate, and 14 as immature. All the pregnancies that presented mature placentas had positive biochemical indicators of lung maturity (Clements test positive, L/S ≥ 2 and phosphatidylglycerol present). This statistically significant association was maintained when the sample was analyzed for those less than 37 weeks and for those less than 35 weeks. Of the 71 cases in which delivery occurred within 7 days, 31 had mature placentas and 40 immature. The sensitivity of the procedure (placental maturity) in predicting hyaline membrane disease in the newborn was 100% and the specificity 47%. The predictive value of placental maturity in predicting absence of hyaline membrane disease was 100% (prevalence 7%).

OTHER DATA

<u>Investigator(s):</u>	Fescina, R., Buendía, J., Ortiz, I.
<u>Institution:</u>	Latin American Center for Perinatology and Human Development (CLAP)
<u>Country:</u>	Uruguay
<u>Technical Program Responsible:</u>	Maternal and Child Health/CLAP
<u>Duration:</u>	

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

In preparation.

Variation of the Flow of Maternal Milk During Lactation in Preterm Neonates

OBJECTIVES

To study the variation of ingestion of milk from lactation (from one breast and then the other) during a specified period in the preterm newborn of different gestational ages.

METHODS AND APPROACHES

The method consists of obtaining by means of double weighing, the volume of milk from a lactation ingested by neonates without pathology of 27 to 36 weeks gestational age.

RESULTS AND CONCLUSIONS

Data is being collected.

OTHER DATA

<u>Investigator(s):</u>	Martell, M., Díaz Rossello, J.L., Martinez, G.
<u>Institution:</u>	Latin American Center for Perinatology and Human Development (CLAP)
<u>Country:</u>	Uruguay
<u>Technical Program Responsible:</u>	Maternal and Child Health/CLAP
<u>Duration:</u>	1985 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Follow-up of Ventilation Mechanics in Children Receiving Respiratory Assistance in the Neonatal Stage

OBJECTIVES

To detect and describe the changes in the ventilation mechanics of children due to oxygen and/or ventilation therapy in the neonatal stage.

METHODS AND APPROACHES

A follow-up program of newborns released from the neonatal intensive care units of the university has been implemented. The children are examined periodically by a multidisciplinary team, as part of the follow-up of high-risk newborn.

After discharge, a routine spirometric study of all newborn that received oxygen or ventilation assistance was carried out at six months and one year of life and at other times, if required. Spirometric elements will be sought that facilitate the diagnosis and treatment of cases with resulting chronic bronchopneumopathies.

RESULTS AND CONCLUSIONS

The program has only been in operation six months with no results available.

OTHER DATA

<u>Investigator(s):</u>	Piriz, H., Estol, P., Coal Tar,, S., Saráchaga, M., Martínez, L.
<u>Institution:</u>	Latin American Center for Perinatology and Human Development (CLAP)
<u>Country:</u>	Uruguay
<u>Technical Program Responsible:</u>	Maternal and Child Health/CLAP
<u>Duration:</u>	1985 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

None

Respiratory Adaptation of the Newborn in Accordance with the Mode of Delivery

OBJECTIVES

To determine if cesarean section with general anesthesia modifies the respiratory adaptation of the full-term newborn without pathology.

METHODS AND APPROACHES

Of 20 full-term newborns without pathology studied, 10 were born by spontaneous vaginal delivery without medication and with cephalic presentation, and 10 by elective cesarean section without previous labor (e.g., repeated cesarean sections). All the cesarean sections were carried out under general anesthesia through administration of sodium thiopental. The lung mechanics and the respiratory centers of all the newborn were studied through spirometry and pressure of occlusion, respectively, after 2 and 24 hours of life.

RESULTS AND CONCLUSIONS

The children born by cesarean section presented, after 2 hours of life, pulmonary dynamics of $0.89 \text{ ml/kg/cm water} \pm 0.22$ (mean ± 2 standard deviations), significantly less than those born vaginally, $1.17 \pm 0.22 \text{ ml/kg/cm water}$ ($t = 1.76$, $p < 0.05$). Pulmonary dynamics in those born by cesarean section increased significantly by 24 hours of life ($t = 2.66$, $p < 0.01$). Differences in other ventilation parameters were not detected. The pressure of occlusion at 100 ms. at 2 hours of life was significantly greater in those born by cesarean section than in those born vaginally (Fisher $p = 0.029$), with those differences disappearing at 24 hours of life. These results suggest the possibility that in those born by cesarean section with general anesthesia, the alteration of the lung mechanics could act as a stimulus on the respiratory center, producing a greater response, manifested through a greater pressure of occlusion.

OTHER DATA

<u>Investigator(s):</u>	Piriz, H., Estol, P., Simini, F.
<u>Institution:</u>	Latin American Center for Perinatology and Human Development (CLAP)
<u>Country:</u>	Uruguay
<u>Technical Program Responsible:</u>	Maternal and Child Health/CLAP
<u>Duration:</u>	1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

Publication in preparation.

Variation of the Flow of Maternal Milk During Lactation

OBJECTIVES

To study the variations in flow (ingestion) of milk in a given period during lactation (one breast and then the other) of the newborn.

METHODS AND APPROACHES

A Sauter balance with an automatic scale and a precision of five grams was used. The sensitivity of the method was determined by double weighing, giving the newborn quantities of milk of known weight to ingest, with confirmation by the increase of the weight in the child. A total of 52 mother-child pairs were studied. The children were 0 to 28 days old and measurements were taken at 24 lactations. The mothers were healthy, had vaginal deliveries, and were receiving no medication. The newborn were full-term, of normal weight, without evident pathology, and were exclusively breastfed.

RESULTS AND CONCLUSIONS

The volume that the child ingests is greater as it increases in age. The greatest volume ingested during lactation corresponds, in the three periods (colostric, transitional, and mature), to the first breast (80 to 85% of the total volume). The rate of flow is not uniform. It is very rapid in the first three minutes (50% of the total) and then diminishes in the following minutes. It increases again upon the change of breast. The rates of flow in each breast are similar if they are calculated relative to the total ingested from each breast.

The results confirm the classical assertion that the child is fed more in the first minutes of lactation and that the model is the same during the colostric, transitional, and mature periods.

OTHER DATA

<u>Investigator(s):</u>	Pereira Roman, J., Martell, M., Martinez, G., Martinez, M., Delgado, L.
<u>Institution:</u>	Latin American Center for Perinatology and Human Development (CLAP)
<u>Country:</u>	Uruguay
<u>Technical Program Responsible:</u>	Maternal and Child Health/CLAP
<u>Duration:</u>	1984 - 1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

1. CLAP Scientific Publication No. 1066.

Clinical Diagnosis of the Gestational Age of the Newborn

OBJECTIVES

To determine the gestational age of the newborn using anthropometric measurements that are easy to obtain, have minimal error and good correlation with gestational ages of children of normal weight and of low weight for their gestational age.

METHODS AND APPROACHES

The method consists of the acquisition of a series of anthropometric measures in at least 10 neonates with gestational ages that vary from 28 to 40 weeks. The true gestational age will be taken as that obtained from the date of the last known menstruation. Finally, these variables will be analyzed to determine which has better correlation and less experimental error.

RESULTS AND CONCLUSIONS

Data is being collected.

OTHER DATA

<u>Investigator(s):</u>	Szwarcz, R., Fescina, R., Martell, M., Guemberena, L., Ballasts, L., Pais, T., and Marinho, E.
<u>Institution:</u>	Latin American Center for Perinatology and Human Development (CLAP)
<u>Country:</u>	Uruguay
<u>Technical Program Responsible:</u>	Maternal and Child Health/CLAP
<u>Duration:</u>	1985 - 1987

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Equipment for the Automatic Determination of Parameters of Neonatal Ventilation Mechanics

OBJECTIVES

To plan and build a computer system devoted to the determination of parameters of ventilation mechanics beginning with measures taken of spontaneous or assisted breathing.

METHODS AND APPROACHES

A detailed study of the functions that the equipment should fulfill in the clinical environment and in research was performed.

Possible technological solutions for the proposed objective were investigated. In particular, the transducers of air pressure that make it possible to deduce the signs of flow and differential pressure were considered. The behavior of the piezoresistant transducers, a new development in the detection of air pressures in the clinic, was investigated. The concept of mathematical models adapted to biological reality was used. In particular, models of resistance and capacitance and then of resistance, inductance, and capacitance based on the theory of analysis of circuits were applied. The options in regard to equipment for calculation and control were considered and it was decided to include in the equipment a standard personal computer.

This method of development seeks to concentrate efforts on the biomedical and physiological aspects and avoid a diversion to designs already available on the market, such as analog/digital converters, basic programming, etc.

The man-machine dialogue was considered such that the final product could be easily managed in a clinical environment. The programming follows guidelines of modularization and structuring in order to facilitate the evolution and maintenance of the programs.

RESULTS AND CONCLUSIONS

The working group formed includes an electronics engineer, a medical physiopathologist, and three advanced students of electronic engineering. The detailed project with all its component parts was carried out and purchases made. The circuits for protection of the patient, for management of the transducers, and for amplification and filtration of signals are being perfected. A study of the interaction between the equipment and the operator was made for purposes of specifying the programs for indicating the signals, making the necessary calculations, and sending results to the computer screen or to the printer.

OTHER DATA

<u>Investigator(s):</u>	Franco Simini, H. Piriz, S. Basalo, J. Deambrosi, C. Pravia
<u>Institution:</u>	Latin American Center for Perinatology and Human Development (CLAP)
<u>Country:</u>	Uruguay
<u>Technical Program Responsible:</u>	Maternal and Child Health/CLAP
<u>Duration:</u>	1985 - 1987

FUNDING

Agency

Amount

PAHO/WHO

PUBLICATIONS RESULTING FROM THE RESEARCH

None yet.

Perinatal Information System

OBJECTIVES

To produce a computer based information system for the receipt, update, and analysis of the data from the Simplified Perinatal Clinical History (SPCH) form, which is to be used within institutions of perinatal care.

METHODS AND APPROACHES

Using the data contained in the SPCH as a basis, the analysis of the information judged of interest for the conduct and evaluation of a perinatal institution was carried out. The reports to be issued and the content of the programs for computation were designed.

A low cost microcomputer, widely available and of high reliability, (IBM-PC) was selected. Programming was performed in BASIC under the DOS version 2.1 operating system.

The system was user friendly and accessible to any health professional without training in computers. Some details were modified in accordance with the experience gained from a year of use of the system.

The programming followed guidelines for modularization and structuring to facilitate the evolution and maintenance of the programs.

RESULTS AND CONCLUSIONS

An information system in support of the SPCH for processing up to 2,048 clinical histories on one diskette was developed.

An IBM microcomputer has been connected to a computer of greater capacity installed in CLAP. This connection provides for the accumulation of data from diskettes from Latin American institutions into a large data bank.

The system was introduced to medical specialists from several countries of the Region with great interest.

The system has been implemented in the perinatal care area of the Bureau of Social Security of Uruguay (8,000 annual deliveries). The first six months of application are currently under study.

The capacity of the system must be expanded from 2,048 to 30,000 histories to process the data of one institution. This task is planned for 1986.

OTHER DATA

Investigator(s): Franco Simini, Ricardo Schwarcz, Angel Gonzalo Díaz, Raquel López, Rubén Belitzky, Simón M. Tenzer, and Ricardo Fescina.

Institution: Latin American Center for Perinatology and Human Development (CLAP)

Country: Uruguay

Technical Program Responsible: Maternal and Child Health/CLAP

Duration: 1984 - 1986

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Simini, F., Schwarcz, R., Díaz, A.G., López, R., Belitzky, R., Tenzer, S.M. and Fescina, R. "Sistema Informático Perinatal - Manual de uso". CLAP Scientific Publication 1084, 1986.

Immunodiagnosis of Human Hydatidosis

OBJECTIVES

To evaluate the feasibility of implementing the test of electrosyneresis arc 5 in laboratories of the programs for control of hydatidosis and in laboratories of assistance centers located in endemic areas.

METHODS AND APPROACHES

The immunodiagnosis and the seroepidemiology of human hydatidosis caused by E. granulosus is based on the detection of antibodies against the antigenic determinants of arc 5. Using the double diffusion arc 5 (DD5) the result can be obtained in 4 to 5 days. The electrosyneresis arc 5 (ES5AC) requires stricter working conditions but makes it possible to obtain the same results in 5 hours, which in many cases facilitates the management of the patient, especially in rural areas. A comparison of the quality of the immunodiagnosis has been made when both procedures, DD5 and ES5AC, were used as routine methods in the reference laboratory.

RESULTS AND CONCLUSIONS

A total of 4,700 sera were processed from schoolchildren, rural populations, medical recognition of citizens from endemic areas, and spontaneous consultation at hospital centers in the endemic area. Of the 4,700 processed sera, 134 were positive for DD5 and 143 for ES5AC. The difference observed between the laboratories in regard to the detection of antibody against antigen 5 was 0.75% (1/134) for DD5 and 1.4% (2/143) for ES5AC.

The results show that despite requiring stricter working conditions and personnel with greater training, the ES5AC can be successfully implemented as a routine immunodiagnostic test in laboratories of medium sophistication. The choice of using DD5 and/or ES5AC would be determined by the needs and operational capabilities of the laboratories. Under prevailing working conditions, the ES5AC was shown to be slightly more sensitive than DD5 for detecting antibodies directed against the antigenic determinants of antigen 5.

OTHER DATA

<u>Investigator(s):</u>	Emillo A. Coltorti and Eduardo D. Fernandez
<u>Institution:</u>	Pan American Zoonoses Center (CEPANZO), Department of Control of Prevalent Pathologies, Health Department of the Prov. of Chubut, Argentina.
<u>Country:</u>	Argentina
<u>Technical Program Responsible:</u>	Veterinary Public Health/CEPANZO
<u>Duration:</u>	1984-1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Fernandez E.D., Coltorti E.A. - 1985 - Inmunodiagnóstico de la hidatidosis humana. Evaluación de la prueba de electrosinéresis. Boletín de la Oficina Sanitaria Panamericana (in press).

Seroepidemiology of Human Hydatidosis

OBJECTIVES

To standardize and evaluate an enzyme immunotest (EIT) to be used as a screening test in seroepidemiology of human hydatidosis.

METHODS AND APPROACHES

The tests, double diffusion arc 5 (DD5) and electrosyneresis arc 5 (ES5AC), employed in the immunodiagnosis of human hydatidosis are not adapted for seroepidemiological studies. An EIT is being standardized to detect total antihydatid antibodies and its capacity to select sera containing anti-antigen 5 antibodies susceptible of detection by DD5 is being evaluated. The proposed EIT will be evaluated in five groups that represent the different possible results obtainable with DD5; group I: 100 sera that in DD5 revealed arc 5 in DD5; groups II, III, and IV composed of 4, 14, and 28 sera that showed 3, 2, and 1 noncharacteristic precipitating systems, respectively, without arc 5; group V: 300 sera from the rural population that did not reveal arc 5 nor any other band of precipitation. All the sera were from inhabitants of the southern part of Argentina, an endemic area of hydatidosis by E. granulosus.

RESULTS AND CONCLUSIONS

The results show that under the proposed working conditions the EIT makes it possible to select with a high degree of efficiency the sera that should be studied by DD5 in search for anti-antigen 5 antibodies and excludes most of the sera whose DD5 results would not have had any diagnostic significance. The sera of groups I and II are clearly differentiated from those of group V. Most of the sera in group III and approximately 1/5 of those in group IV show values that overlap those of groups I and II, but these sera constitute a small percentage with respect to the total number of negative sera. It is evident that the use of this screening test permits a significant saving of materials and time. This is important when processing large numbers of sera as is the case in seroepidemiological studies or in the search for asymptomatic carriers.

OTHER DATA

<u>Investigator(s):</u>	Emillo A. Coltorti
<u>Institution:</u>	Pan American Zoonoses Center (CEPANZO)
<u>Country:</u>	Argentina
<u>Technical Program Responsible:</u>	Veterinary Public Health/CEPANZO
<u>Duration:</u>	1985

FUNDING

<u>Agency</u> PAHO/WHO	<u>Amount</u>
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PUBLICATIONS RESULTING FROM THE RESEARCH

1. Coltorti, E.A., Standardization and evaluation of an enzyme immunoassay as a screening test for the seroepidemiology of human hydatidosis. (submitted for publication).

Evaluation of the Counter Immunoelectrophoresis Test for the Detection of Serum Antibodies to Rabies Virus

OBJECTIVES

To evaluate the reproducibility of the counter immunoelectrophoresis (CIE) test for the detection of antibodies to rabies virus.

METHODS AND APPROACHES

The reagents, antigen and code sera, were prepared at CEPANZO and sent to five different laboratories.

The CIE test employed a beta propiolactone inactivated antigen prepared from the supernatant fluid of a centrifuge 40% suspension of suckling rabbit brain infected with CVS-virus.

An equine hyperimmune antirabies serum containing 200 IU/ml was used as an indicator serum for CIE antibody titration. Appropriate dilutions of both antigen and antiserum were determined by the CIE titration to select the optimal dilution that produced a well-defined precipitation band.

Equal volumes of antigen and serial two-fold dilutions of test serum were mixed and incubated for 60 minutes at 37 °C, then placed in the cathodal wells. Electrophoresis was carried out for 45 minutes at a potential difference of 10 V. The diluted equine indicator serum was placed in the anodal wells and electrophoresis continued for 120 minutes. The results were then read. The CIE titers were the final dilution of the test serum in the mixture of test serum and antigen which did not show a precipitin band with the indicator serum, thus indicating complete antigen antibody binding.

CEPANZO performed the CIE and the standard serum-neutralization test (SN) in mice with all the samples. The participating laboratories performed the CIE test.

RESULTS AND CONCLUSIONS

The results of this study confirmed the reproducibility of the CIE test. When the CIE data from the participating laboratories and the SN test from CEPANZO were subjected to statistical analysis, correlation coefficients ranged from 0.6 to 0.85. There was no statistically significant differences noted among the slopes of the linear regression lines obtained.

OTHER DATA

Investigator(s): Dr. Ana M.O. Diaz

Institution: Pan American Zoonoses Center (CEPANZO), Instituto Nacional de Higiene, Caracas, Venezuela, Centro de Diagnóstico Veterinario de Formosa, Argentina; Instituto Pasteur de Buenos Aires, Argentina; Instituto Nacional de Microbiología "Carlos G. Marbrán", Buenos Aires, Argentina

Country: Venezuela

Technical Program Responsible: Veterinary Public Health/CEPANZO

Duration: 1983-1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/CEPANZO	US\$ 1,500

PUBLICATIONS RESULTING FROM THE RESEARCH

1. A.M.O. Diaz, E. Arispe, C. Brunel; C. Cavandoli, N. Dellepiane and A. Miranda, La Técnica de Contrainmunolectroforesis en la determinación de anticuerpos antirrábicos. Boletín Oficina Sanitaria Panamericana, Vol. 101, No. 3, pp. 255-262, 1986.

Serologic and Immune Response to Rabies Virus During Different Human Treatments with Tissue Culture and Suckling Mouse Brain Vaccines

OBJECTIVES

To study the antibody response in man during the course of different rabies vaccine treatments.

METHODS AND APPROACHES

The antibody response to rabies virus was studied in twenty volunteers immunized with different schemes of suckling mouse brain (SMBV) vaccine and human diploid cell culture rabies (HDCV) vaccine. Sera were obtained from four groups of five previously unvaccinated volunteers who had been administered one of the following rabies immunization schemes; SMBV (14+2), 14 daily doses of SMBV plus two boosters, 10 and 20 days after the last inoculation; SMB (7+3), seven daily doses of the SMB followed by three boosters, 10, 20, and 90 days later; SMB-6, six doses on days 0, 3, 7, 14, 30, and 90; HDCV-6, 6 six doses of tissue culture vaccine.

All sera were examined by serum neutralization (SN) and indirect fluorescent antibody (IFA) tests. Immunoglobulin classes with antirabies activity were detected by IFA using antisera to Human Ig M, Ig G, and Ig A.

RESULTS AND CONCLUSIONS

Throughout the study period, titers in the SN and IFA tests and the classes of immunoglobulins with antirabies activity varied with treatment scheme and antigenic potency of the vaccine in different individuals. SN titers in sera from SMB (14+2) and SMB (7+3) vaccination schemes were comparable for 60 days after the initiation of treatment. However, the fact that SN antibody levels were higher at 90 and 180 days in the SMB (7+3) group suggests a more effective sensitization of the immune system by the SMB (7+3) than by the SMB (14+2) scheme. Maximal SN and IFA antibody titers were observed in HDCV-6 vaccinees but these titers were lower in the SMB-6 group throughout the study period.

The measurement of the Ig G class of antirabies antibodies and possibly Ig A as well, may be a more adequate criterion to assess the immunogenicity of rabies vaccines than the determination of SN titers alone.

OTHER DATA

<u>Investigator(s):</u>	A.M.O. Diaz and V.M. Varela Diaz
<u>Institution:</u>	Pan American Zoonoses Center (CEPANZO)
<u>Country:</u>	Argentina
<u>Technical Program Responsible:</u>	Veterinary Public Health/CEPANZO
<u>Duration:</u>	1983-1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/CEPANZO	US\$ 2,500

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Diaz, A.M.O. and Varela Diaz, V.M., Serologic and Immune Responses to Rabies Virus During Different Human Treatments with Tissue culture and Suckling Mouse Brain Vaccines. Zbl. Bakt. Hyg. A 260, 396-402 (1985).

Immune Response Against Brucellosis Related to Dosage and Age of Vaccination

OBJECTIVES

To determine the minimum dose of vaccine that provides serviceable immunity and negligible side effects relative to the age at vaccination.

METHODS AND APPROACHES

Female calves or heifers were randomly divided in groups. In each experiment, some groups received different doses of vaccine with a similar group kept as control. Their serological response after vaccination was studied monthly until challenged.

When pregnant heifers were between the fourth and fifth month of gestation, they were challenged with exposure to Brucella abortus strain 2308. The challenge was administered by dropping 0.06 ml. of B. abortus suspension into the conjunctival sac of each eye on each animal. The challenge dose was adjusted to 10⁷ colony forming units, which was determined by viability counts before and after cattle exposure.

Blood samples were collected at weekly intervals after challenge. At abortion or parturition, samples were collected for bacteriological studies.

RESULTS AND CONCLUSIONS

Twenty nine heifers 20 months old were vaccinated with 4 x 10⁸ viable cells of B. abortus strain 19; eighteen were kept as controls. A month after vaccination all heifers were mated. Between three and five months of pregnancy the heifers were challenged with 2 x 10⁷ cells of virulent B. abortus 2308.

Two months after abortion or parturition all cows were slaughtered. Lymph nodes, spleen, uterus, mammary gland and fetus were then cultured. Eighteen vaccinated cows were fully protected (62%), while 13 of 18 (72%) controls were infected.

OTHER DATA

<u>Investigator(s):</u>	Dr. Casimiro Garcia-Carrillo
<u>Institution:</u>	Pan American Zoonoses Center (CEPANZO)
<u>Country:</u>	Argentina
<u>Technical Program Responsible:</u>	Veterinary Public Health/CEPANZO
<u>Duration:</u>	1984-1990

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO Argentine Secretariat of Agriculture Instituto de Tecnologia Agropecuaria	

PUBLICATIONS RESULTING FROM THE RESEARCH

None.

Typing of Brucella Strains Isolated from Man and Animals in Latin America

OBJECTIVES

To contribute to a better epidemiological knowledge of brucellosis in Latin America and to assess, as far as possible, the occurrence of different biotypes of Brucella species in Latin America.

METHODS AND APPROACHES

Brucella strains isolated from both man and animals were collected from different laboratories throughout Latin America. They were subcultured and studied for dissociation, and colonies selected for typing.

Typing is performed by conventional biochemical methods and by monospecific sera, as recommended by the FAO/WHO Expert Committee on Brucellosis. Urease activity is studied by Bauer's method. All cultures are studied for phagolysis using 1 and 10^4 routine test dilutions (RTD) of Tbilisi (Tb) brucella phage and other phages recently isolated.

All cultures that show characteristics different from biotype 1 of each species will be studied by the oxidative metabolic method. The test of oxidative metabolism employs the technique described by Meyer and Cameron using a Warburg respirometer, model B, Braun V 85. The culture medium utilized is Brucella agar Albimi in Roux flasks. For propagating the strains B. ovis and B. abortus biotype 2, 10% rabbit serum is added to the base medium. The cultures are harvested with saline buffered at pH 7. The bacterial suspension is washed twice, centrifuged in a Sorvall centrifuge and the cellular concentration adjusted to 55% of optical transmission in a Coleman Jr. spectrophotometer.

The following substrates in buffered phosphate solution will be used: D-alanine, L-alanine, L-asparagine, L-glutamic acid, DL-ornithine, L-lisine, L-arginine, L-arabinose, D-galactose, D-ribose and L-erythrol.

To identify the cultures of Brucella ovis, other substrates will also be included, such as, D-glucose, D-adonitol, L-proline and DL-serine in substitution of ornithine, arabinose, galactose and ribose.

RESULTS AND CONCLUSIONS

A total of 1,283 strains of Brucella from 15 different countries have been typed. The distribution of Brucella and its biotypes in Latin America is as follows: Brucella abortus biotypes (1, 2, 4 and 6); Brucella suis biotypes (1 and some strains atypical); Brucella melitensis biotypes (1, 2 and 3); Brucella ovis and Brucella canis.

The present research provides new information on the Brucella species and their biotypes in Latin America. These data are very useful in epidemiological studies.

OTHER DATA

Investigator(s): Dr. Casimiro Garcia-Carrillo
Institution: Pan American Zoonoses Center (CEPANZO)
Country: Argentina
Technical Program Responsible: Veterinary Public Health/CEPANZO
Duration: 1970 and continuing

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/WHO	

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Garcia Carrillo, C.; Szyfres, B.; Gonzales Tome, J., Tipificación brucelas aisladas del hombre y los animales en America Latina. Lationame. Microbiol. 14: 117-125, 1972.
2. Garcia Carrillo, C., Aislamiento de Brucella abortus biotipos 1 y 4 en Nicaragua, Bol. Ofic. Sanit. Panamer. 87: 132-134, 1979.
3. Turovetzky, A.; Lucero, N.; Garcia Carrillo, C., Brucella abortus biotipo 2 aislada de un paciente de la Republica Argentina. Medicina (Bs.As). 39: 99-100, 1979.
4. Garcia Carrillo, C.; Pujol, E.; Abatisda, J., Aislamiento de Brucella en Honduras, Zoonosis. 20: 74-77, 1978.
5. Garcia Carrillo, C.; Truovetzky, A.; Lucero, N., Especies y biotipos de Brucella aislados del hombre en la Argentina: Comprobacion de la infeccion humana por B. abortus biotipo 4. Medicina (Bs.As.). 45: 20-21, 1985.

Cross Protection of Mice Against Different Rabies Virus Isolates

OBJECTIVES

To evaluate the possibility that rabies treatment failures could be due to antigenic differences between the fixed virus(es) in the vaccines and the street viruses prevailing in a given area.

METHODS AND APPROACHES

To identify "atypical" strains which could account for vaccination failures, 10 street, one intermediate (DR-19) and 4 fixed rabies virus isolates from men, cattle, dogs, cats, mongoose and vampire bats in five countries (Argentina, Brazil, Chile, Cuba and France) were studied by cross protection tests in mice. Two groups of 30 mice were each immunized on two consecutive weeks with suckling mouse brain vaccine (SMB) and with a tissue culture vaccine (PV-BHK) by intraperitoneal inoculation of 0.5 ml of vaccine. A third group of mice was not vaccinated.

One week after the second dose, 10 animals from each vaccinated group and 10 controls were challenged intracerebrally with each virus isolate at a dilution prepared to contain 1, 10 and 100 LD₁₀₀ per 0.03 ml. Any isolate that killed more than 20% of the vaccinated mice at any challenge virus dilution was arbitrarily considered "atypical".

RESULTS AND CONCLUSIONS

Only two isolates, vampire bat (DR-19) and human (91) acted as "atypical" in mice immunized with undiluted SMB vaccine (antigenic value 1.76), but not in those immunized with undiluted PV-BHK (antigenic value 3.68). The fact that these two isolates killed enough vaccinated mice to be considered "atypical" could be related to antigenic differences between these viruses and those in the vaccine. However, since this mortality was observed only in mice immunized with the vaccine of a lower antigenic value, differences could be attributed to biological characteristics of those strains.

OTHER DATA

<u>Investigator(s):</u>	O.P. Larghi and A.M.O. Díaz
<u>Institution:</u>	Pan American Zoonoses Center (CEPANZO)
<u>Country:</u>	Argentina
<u>Technical Program Responsible:</u>	Veterinary Public Health/CEPANZO
<u>Duration:</u>	1983-1985

FUNDING

<u>Agency</u>	<u>Amount</u>
PAHO/CEPANZO	US\$ 2,000

PUBLICATIONS RESULTING FROM THE RESEARCH

1. Larghi, O.P. and Diaz, A.M.O.; Cross Protection of mice against different rabies virus isolates. Zbl. Bakt. Hyg., 259: 268-274, 1985.

ANNEXES

REPORT ON ACTIVE PROJECTS IN THE RESEARCH GRANTS PROGRAM OF THE PAN AMERICAN HEALTH ORGANIZATION
BY PROGRAM PRIORITY AREA, AS OF 31 DECEMBER 1985

PRIORITY AREA / PROJECT TITLE	INVESTIGATOR / INSTITUTION	AMOUNT AWARDED (\$ US)	DURATION (MONTHS)
PRIORITY AREA: HEALTH PROFILES			
INVESTIGACION SOBRE PERFILES DE SALUD	DR. HEBE GIACOMINI MINISTERIO DE SALUD Y ACCION SOCIAL SECRETARIA DE SALUD BUENOS AIRES ARGENTINA	17,500	9
PERFIS DE SAUDE	DR. ROBERTO AUGUSTO BECKER MINISTERIO DA SAUDE BRASILIA BRAZIL	17,000	10
PERFILES DE SALUD	LIC. NORMA E. RIOS MASSABOT MINISTERIO DE SALUD PUBLICA LA HABANA CUBA	20,500	28
INVESTIGACION DE PERFILES DE SALUD	DR. JORGE A. RAMIREZ DIRECCION GENERAL DE EPIDEMIOLOGIA SECRETARIA DE SALUD MEXICO	14,431	6
PERFILES DE SALUD	DR. FIDEL MORENO GONZALEZ MINISTERIO DE SALUD PUBLICA Y BIENESTAR SOCIAL ASUNCION PARAGUAY	10,300	15
RESEARCH ON HEALTH PROFILES	DR. W. J. BAKKER MINISTRY OF HEALTH PARAMARIBO SURINAME	12,300	3
ANALISIS DE LA SITUACION DE SALUD EN VENEZUELA, CON BASE AL ESTUDIO DE LA MORTALIDAD POR CAUSAS DE DEFUNCION Y OTRAS CARACTERISTICAS DEMOGRAFICAS	DR. LUIS BLANCO ACEVEDO DIRECCION NACIONAL SECTORIAL DE SALUD, MINISTERIO DE SANIDAD Y ASISTENCIA SOCIAL CARACAS VENEZUELA	10,621	14

REPORT ON ACTIVE PROJECTS IN THE RESEARCH GRANTS PROGRAM OF THE PAN AMERICAN HEALTH ORGANIZATION
 BY PROGRAM PRIORITY AREA, AS OF 31 DECEMBER 1985

PRIORITY AREA / PROJECT TITLE	INVESTIGATOR / INSTITUTION	AMOUNT AWARDED (\$ US)	DURATION (MONTHS)
PRIORITY AREA: HEALTH POLICIES			
PROCESO POLITICO EN SALUD	DR. JUAN CARLOS VERONELLI SECRETARIA DE SALUD PUBLICA MUNICIPALIDAD DE BUENOS AIRES BUENOS AIRES ARGENTINA	20,000	24
PRIORITY AREA: LABOR MARKET			
EL MERCADO DE TRABAJO MEDICO Y LOS PROFESIONALES DE RECIENTE GRADUACION	CARLOS BLOCH ASOCIACION MEDICA DE ROSARIO, CENTRO DE ESTUDIOS SANITARIOS Y SOCIALES ARGENTINA	14,878	24
DINAMICA DO EMPREGO EM SAUDE NO BRASIL (UNIVERSIDAD FEDERAL DE MINAS GERAIS)	SABADO GIRARDI UNIVERSIDAD FEDERAL DE MINAS GERAIS BRAZIL	15,000	8
DINAMICA DO EMPREGO EM SAUDE NO BRASIL	MARIO SAYEG ESCOLA NACIONAL DE SAUDE PUBLICA RIO DE JANEIRO BRAZIL	25,000	8
PROYECTO DE INVESTIGACION FORMACION Y PRACTICA DE ENFERMERIA	GLADYS PEREZ SUAREZ MINISTERIO DE SALUD PUBLICA LA HABANA CUBA	19,000	24
ANALISIS DE TENDENCIAS DE OFERTA Y DEMANDA, ORIENTACIONES Y EXPECTATIVAS DE LAS INSTITUCIONES Y TRABAJADORES SOBRE MERCADO DE TRABAJO EN SALUD	DR. CESAR HERMIDA INSTITUTO JUAN CESAR GARCIA EDIFICIO VALDIVIA DEPT. NO. 801 QUITO ECUADOR	19,109	12
ESTUDIO COMPARATIVO DE MERCADO DE TRABAJO EN SALUD EN LOS PAISES DE CENTROAMERICA Y PANAMA	DRA. FRANCISCA DE CANALES CENTRO DE REFERENCIA FACULTAD DE MEDICINA UNIVERSIDAD NACIONAL DE HONDURAS TEGUCIGALPA HONDURAS	30,000	17

REPORT ON ACTIVE PROJECTS IN THE RESEARCH GRANTS PROGRAM OF THE PAN AMERICAN HEALTH ORGANIZATION
BY PROGRAM PRIORITY AREA, AS OF 31 DECEMBER 1985

PRIORITY AREA / PROJECT TITLE	INVESTIGATOR / INSTITUTION	AMOUNT AWARDED (\$ US)	DURATION (MONTHS)
PRIORITY AREA: LABOR MARKET			
PATRONES DE EMPLEO MEDICO EN LAS AREAS URBANAS DE MEXICO	JULIO M. FRENK SECRETARIA DE SALUD SUBSECRETARIA DE INVESTIGACION Y DESARROLLO CENTRO DE INVESTIGACIONES DE SALUD PUBLICA MEXICO, D.F. MEXICO	13,050	23
MODELO ALTERNATIVO DE EDUCACION PARA LA SALUD GENERADOR DE UNA PRACTICA TRANSFORMADORA DE SERVICIOS DE SALUD	DORA CARDACI UNIVERSIDAD AUTONOMIA DE MEXICO UNIDAD XOCHIMILCO DESARROLLO CENTRO DE INVESTIGACIONES DE SALUD PUBLICA XOCHIMILCO MEXICO	16,900	15
ANALISIS OCUPACIONAL DE LA ENFERMERA GENERAL EN EL SISTEMA DE SALUD	DR. GUILLERMO GONZALEZ MINISTERIO DE SALUD MANAGUA NICARAGUA	10,000	3
ESTUDIO DEL MERCADO DE TRABAJO EN EL URUGUAY	DR. RICARDO MEERHOFF OFICINA DE PLANEAMIENTO Y PRESUPUESTO DE LA PRESIDENCIA DE LA REPUBLICA DEL URUGUAY MONTEVIDEO URUGUAY	7,400	5
LA FUERZA DE TRABAJO EN SALUD. EL CASO EN VENEZUELA	DRA. MARTHA RODRIGUEZ DE GONZALEZ ASOCIACION VENEZOLANA PARA EL DESARROLLO DE LA INVESTIGACION EN SALUD LDS CHAGUARAMOS VENEZUELA	14,425	12
PRIORITY AREA: SANITATION SERVICES			
INVESTIGACION SOBRE UTILIZACION, UTILIDADE E EFICIENCIA DOS SERVICIOS DE AGUA E ESGOTOS. RIO DE JANEIRO	FROYLAN HORTA DE SOUZA MOITTA FUNDACAO SERVICOS DE SAUDE PUBLICA RIO DE JANEIRO BRAZIL	12,000	12

REPORT ON ACTIVE PROJECTS IN THE RESEARCH GRANTS PROGRAM OF THE PAN AMERICAN HEALTH ORGANIZATION
BY PROGRAM PRIORITY AREA, AS OF 31 DECEMBER 1985

PRIORITY AREA / PROJECT TITLE	INVESTIGATOR / INSTITUTION	AMOUNT AWARDED (\$ US)	DURATION (MONTHS)
PRIORITY AREA: SANITATION SERVICES			
INFRA-ESTRUCTURA SANITARIA E DE SAUDE PUBLICA NA FAVELA DE VILA PINTO	NICOLAU LEOPOLDO OBLADEN INSTITUTO DE SANEAMENTO AMBIENTAL UNIVERSIDADE CATOLICA DO PARANA CURITIBA BRAZIL	25,000	12
INVESTIGACION SOBRE UTILIZACION, ACCESIBILIDAD, EFICIENCIA Y EFICACIA DE LOS SERVICIOS DE SANEAMIENTO AMBIENTAL	JOSEFA FERNANDEZ TORRES MINISTERIO DE SALUD PUBLICA LA HABANA CUBA	30,000	16
UTILIZATION, ACCESSIBILITY, EFFICIENCY AND EFFECTIVENESS OF HEALTH SANITATION SERVICES. (OBJECTIVE A)	PETER ESPEVT CARIBBEAN INSTITUTE OF SANITATION AND SAFETY CSO KINGSTON JAMAICA	10,000	12
UTILIZATION, ACCESSIBILITY, EFFICIENCY AND EFFECTIVENESS OF HEALTH SANITATION SERVICES. (OBJECTIVE B)	PETER ESPEVT CARIBBEAN INSTITUTE OF SANITATION AND SAFETY CSO KINGSTON JAMAICA	10,000	12
ESTUDIO DE LA CALIDAD MICROBIOLOGICA DE AGUAS RESIDUALES CRUDAS CON FINES AGRICOLAS	ANA MARIA VILLEGAS CONTRERAS SECRETARIA DE AGRICULTURA Y RECURSOS HIDRAULICOS MEXICO, D.F. MEXICO	25,000	24
EVALUACION DE LA EFECTIVIDAD DE TECNOLOGIAS DE CONSERVACION DE AGUA EN UN PUEBLO JOVEN EN LIMA	FORTUNATO LARI SERVICIO DE AGUA POTABLE Y ALCANTARILLADO DE LIMA LIMA PERU	26,000	20
INVESTIGACION SOBRE LA TRATABILIDAD DE EFLUENTES INDUSTRIALES DE LAVEDEROS DE LANA Y CURTIENTES DE CUEROS VACUNOS	LUIS ALBERTO MEDINA NOVOA MINISTERIO DE TRANSPORTE Y OBRAS PUBLICAS MONTEVIDEO URUGUAY	8,000	-

REPORT ON ACTIVE PROJECTS IN THE RESEARCH GRANTS PROGRAM OF THE PAN AMERICAN HEALTH ORGANIZATION
 BY PROGRAM PRIORITY AREA, AS OF 31 DECEMBER 1985

PRIORITY AREA / PROJECT TITLE	INVESTIGATOR / INSTITUTION	AMOUNT AWARDED (\$ US)	DURATION (MONTHS)
PRIORITY AREA: FINANCING OF THE SECTOR			
ANALISIS DEL FINANCIAMIENTO DEL SECTOR SALUD	LUIS VERA OCAMPO UNIVERSIDADE DE BUENOS AIRES BUENOS AIRES ARGENTINA	15,000	10
ANALISE DE POLITICAS ALTERNATIVAS PARA O FINANCIAMENTO DO SECTOR SAUDE NO BRASIL	ADOLFO CHORNY FUNDACAO OSWALDO CRUZ RIO DE JANEIRO BRAZIL	18,700	12
PRIORITY AREA: HEALTH SERVICES			
PROYECTO COLABORATIVO DE DESARROLLO DE METODOLOGIA PARA LA PROGRAMACION LOCAL DE SERVICIOS DE SALUD	DR. MARLOW KWIJKO SECRETARIA DE SALUD DEL ESTADO DE SANTA CATARINA BRAZIL	15,000	12
PROYECTO COLABORATIVO DE DESARROLLO DE METODOLOGIA PARA LA PROGRAMACION LOCAL DE SERVICIOS DE SALUD	DR. GERMAN GONZALES FACULTAD NACIONAL DE SALUD PUBLICA MEDELLIN COLOMBIA	15,000	12
ECUESTA NACIONAL DE UTILIZACION DE SERVICIOS DE SALUD EN COSTA RICA	DR. HERMAN VARGAS CAJA COSTARRICENSE DEL SEGURO SOCIAL SECCION DE INVESTIGACION DE SERVICIOS DE SALUD COSTA RICA	23,900	4
PROGRAMA DE DESARROLLO DE LA INVESTIGACION DE SERVICIOS DE SALUD COMO APOYO A LA ESTRATEGIA DE ATENCION PRIMARIA EN CUBA	ELIO GARRIDO ALVAREZ MINISTERIO DE SALUD PUBLICA LA HABANA CUBA	24,000	28
IMPACTO DE LA PROGRAMACION LOCAL DE SERVICIOS EN EL NIVEL DE SALUD EN AREAS DE SALUD	DR. NILRDA VILLACRES MINISTERIO DE SALUD MANAGUA NICARAGUA	15,000	18
INVESTIGACION SOBRE LOS ESTABLECIMIENTOS AMBULATORIOS DE SALUD EN VENEZUELA: ORGANIZACION, FUNCIONAMIENTO Y SITUACION ACTUAL	MARIA HELENA JAEN DE IZQUIERDO ASOCIACION VENEZOLANA PARA EL DESARROLLO DE INVESTIGACION EN SALUD SAN BERNARDINO VENEZUELA	11,470	12

REPORT ON ACTIVE PROJECTS IN THE RESEARCH GRANTS PROGRAM OF THE PAN AMERICAN HEALTH ORGANIZATION
 BY PROGRAM PRIORITY AREA, AS OF 31 DECEMBER 1985

PRIORITY AREA / PROJECT TITLE	INVESTIGATOR / INSTITUTION	AMOUNT AWARDED (\$ US)	DURATION (MONTHS)
PRIORITY AREA: CHILD SURVIVAL			
ESTUDIO COLABORATIVO LATINOAMERICANO DE MALFORMACIONES CONGENITAS	EDUARDO ENRIQUE CASTILLA INSTITUTO MULTIDISCIPLINARIO DE BIOLOGIA CELULAR CASILLA 403 LA PLATA ARGENTINA	15,000	36
ELABORACION DE UN INSTRUMENTO PARA LA DETECCION PRECOZ DE FACTORES DE RIESGO DE ABANDONO DEL NIÑO	DR. MARCOS CUSMINSKY ASOCIACION COOPERADORA HOSPITAL ZONAL ESP. "DR. NOEL H. IBARRA" BUENOS AIRES ARGENTINA	10,300	24
ESTUDO DE SENSIBILIDADE A ANTIMICROBIANOS DE CEPAS DE STREPTOCOCCUS PNEUMONIAE E HAEMOPHILUS INFLUENZAE ISOLADAS NA SECAO DE BACTERIOLOGIA DO INSTITUTO ADOLFO LUTZ	MARGARETH DALCOLMO RIO INSTITUTO ADOLFO LUTZ SAO PAULO BRAZIL	1,500	12
INVESTIGACAO LONGITUDINAL EM INFECCOES RESPIRATORIAS AGUDAS EM CRIANCAS DE 5 ANOS	MARIA DA GRACA CRUZ VIEIRA SECRETARIA DE ESTADO DE SAUDE PUBLICA DE PARA BELEM BRAZIL	25,000	24
SISTEMA DE ATENCION DEL ADOLESCENTE: ANALISIS COMPARATIVO	RAMON FLORENZANO URZUA UNIVERSIDAD DE CHILE CHILE	15,000	18
NIVELES DE ATENCION DE INFECCIONES RESPIRATORIAS AGUDAS EN MENORES DE 5 ANOS - SILOE CALI	MELBA FRANKY DE BORRERO CENTRO SALUD SILOE CALI COLOMBIA	3,135	16
INTEVENCION SOBRE FACTORES DE RIESGO DE BAJO PESO AL NACER	UBALDO A. FARNOT CARDOSO MINISTERIO DE SALUD PUBLICA DEPARTAMENTO MATERNO-INFANTIL LA HABANA CUBA	15,000	24

REPORT ON ACTIVE PROJECTS IN THE RESEARCH GRANTS PROGRAM OF THE PAN AMERICAN HEALTH ORGANIZATION
BY PROGRAM PRIORITY AREA, AS OF 31 DECEMBER 1985

PRIORITY AREA / PROJECT TITLE	INVESTIGATOR / INSTITUTION	AMOUNT AWARDED (\$ US)	DURATION (MONTHS)
PRIORITY AREA: HEALTH PROBLEMS OF WORKERS			
VIGILANCIA EPIDEMIOLOGICA EM TOXICOLOGIA DE PRAGUICIDAS	PEDRO ELIAS MAKARON FUNDACAO DE SEGURACA E MEDICINA DO TRABALHO SAO PAULO BRAZIL	5,000	12
ESTUDIO ERGONOMICO DE ALGUNOS PUESTOS DE TRABAJO REALIZADOS POR MUJERES EN INDUSTRIAS DE ALIMENTOS D E LA V, VII Y X REGIONES DE CHILE	LEONARDO CARBONE CAMPS INSTITUTO DE SEGURIDAD DEL TRABAJO SANTIAGO CHILE	5,000	27
SALUD OCUPACIONAL EN LA INDUSTRIA MANUFACTURERA AFILIADA AL S.S.S. CHILE	DR. JUAN ALCAINO MINISTERIO DE SALUD INSTITUTO DE SALUD PUBLICA DE CHILE SANTIAGO CHILE	5,000	12
PROBLEMAS DE SALUD RELACIONADOS CON EL TRABAJO EN MENORES DE EDAD	ORLANDO MONCADA INSTITUTO NACIONAL DE SALUD DIVISION DE INVESTIGACIONES ESPECIALES BOGOTA COLOMBIA	13,000	5
ESTUDIO EPIDEMIOLOGICO DE INTOXICACIONES LABORALES CON PLAGUICIDAS	CATHERINA WESSELING ESCUELA DE CIENCIAS AMBIENTALES UNIVERSIDAD NACIONAL DE COSTA RICA HEREDIA COSTA RICA	14,700	18
EVALUACION DEL AMBIENTE LABORAL Y DE LA SALUD DE LOS TRABAJADORES EXPUESTOS AL POLVO	JOSEFA FERNANDEZ MINISTERIO DE SALUD PUBLICA LA HABANA CUBA	5,000	24
MEJOR CONOCIMIENTO DE LOS MODELOS OPERATIVOS, PARA UN PROGRAMA DE SALUD OCUPACIONAL, ADOPTADOS POR EL MINISTERIO DE SANIDAD Y ASISTENCIA SOCIAL	XIOMARA LOPEZ P. MINISTERIO DE SANIDAD Y ASISTENCIA SOCIAL EDIFICIO SUR CENTRO SIMON BOLIVAR CARACAS VENEZUELA	5,500	12

REPORT ON ACTIVE PROJECTS IN THE RESEARCH GRANTS PROGRAM OF THE PAN AMERICAN HEALTH ORGANIZATION
 BY PROGRAM PRIORITY AREA, AS OF 31 DECEMBER 1985

PRIORITY AREA / PROJECT TITLE	INVESTIGATOR / INSTITUTION	AMOUNT AWARDED (\$ US)	DURATION (MONTHS)
PRIORITY AREA: CHRONIC DISEASES OF ADULTS			
ESTUDIO DE FACTORES DE RISCO PARA DOENCAS CRONICAS MAO TRANSMISSIVEIS	DR. LUIS ROBERTO RAMOS SECRETARIA DE ESTADO DA SAUDE SAO PAULO BRAZIL	15,000	12
ESTUDIO DE FACTORES DE RISCO DO RIO GRANDE DO SUL	ALOYZIO ACHUTTI SECRETARIA DE ESTADO DA SAUDE RIO GRANDE DO SUL PORTO ALEGRE BRAZIL	15,000	12
ESTUDIO DE FACTORES DE RIESGO INDIVIDUALES Y POBLACIONALES SUSCEPTIBLES DE INTERVENCION	CECILIA SEPULVEDA MINISTERIO DE SALUD SANTIAGO CHILE	15,000	9
ESTUDIO DE FACTORES DE RIESGO INDIVIDUALES Y POBLACIONALES SUSCEPTIBLES DE INTERVENCION	ROBERTO SOLLET MINISTEIRO DE SALUD PUBLICA LA HABANA CUBA	15,000	8
INVESTIGACION SOBRE FACTORES DE RIESGO INDIVIDUALES Y POBLACIONALES SUSCEPTIBLES DE INTERVENCION (US/MB)	DR. OSCAR MORENO SECRETARIA DE SALUD MEXICO	14,500	9
ENFERMEDADES CRONICAD DEL ADULTO	DR. MANUEL ADRIANZA MINISTERIO DE SANIDAD Y ASISTENCIA SOCIAL CARACAS VENEZUELA	15,000	18
PRIORITY AREA: HEALTH PROBLEMS OF THE AGED			
PREVALENCIA DE TRASTORNOS DEMENCIALES EN PERSONAS DE EDAD AVANZADA	DR. JORGE CORDO INSTITUTO DE SERVICIOS SOCIALES PARA JUBILADOS Y PENSIONADOS BUENOS AIRES ARGENTINA	15,000	12
INVESTIGACION SOBRE CUADROS DEMENCIALES EN LAS PERSONAS DE EDAD AVANZADA	OSCAR DOMINGUEZ FACULTAD DE MEDICINA UNIVERSIDAD DE CHILE SANTIAGO CHILE	15,000	12

REPORT ON ACTIVE PROJECTS IN THE RESEARCH GRANTS PROGRAM OF THE PAN AMERICAN HEALTH ORGANIZATION
 BY PROGRAM PRIORITY AREA, AS OF 31 DECEMBER 1985

PRIORITY AREA / PROJECT TITLE	INVESTIGATOR / INSTITUTION	AMOUNT AWARDED (\$ US)	DURATION (MONTHS)
PRIORITY AREA: HEALTH PROBLEMS OF THE AGED CUADROS DEMENCIALES EN LAS PERSONAS DE EDAD AVANZADA	DR. G. BARRIENTOS DEL LLANO MINISTERIO DE SALUD PUBLICA LA HABANA CUBA	15,000	17

WHO CLASSIFIED LIST OF PROGRAMS APPEARING IN THE ANNEX

ACCIDENT PREVENTION

ACUTE RESPIRATORY INFECTIONS

BLINDNESS

CANCER

CONTROL OF ENVIRONMENTAL HEALTH HAZARDS

CONTROL OF ENVIRONMENTAL HEALTH HAZARDS (CHEMICAL SAFETY)

DISEASE VECTOR CONTROL

ENVIRONMENTAL HEALTH IN RURAL AND URBAN DEVELOPMENT AND HOUSING

ESSENTIAL DRUGS AND VACCINES

HEALTH MANPOWER

LEPROSY

MALARIA

MATERNAL AND CHILD HEALTH (FAMILY HEALTH)

MATERNAL AND CHILD HEALTH, INCLUDING FAMILY PLANNING

NUTRITION

ORGANIZATION OF HEALTH SYSTEMS BASED ON PRIMARY HEALTH CARE

OTHER COMMUNICABLE DISEASE PREVENTION AND CONTROL ACTIVITIES

OTHER COMMUNICABLE DISEASE PREVENTION AND CONTROL ACTIVITIES (IMMUNOLOGY)

OTHER COMMUNICABLE DISEASE PREVENTION AND CONTROL ACTIVITIES (SAFETY MEASURES IN MICROBIOLOGY)

OTHER COMMUNICABLE DISEASE PREVENTION AND CONTROL ACTIVITIES (VIRUS DISEASES)

OTHER NONCOMMUNICABLE DISEASE PREVENTION AND CONTROL ACTIVITIES (HUMAN GENETICS)

OTHER NONCOMMUNICABLE DISEASE PREVENTION AND CONTROL ACTIVITIES (SMOKING AND HEALTH)

PARASITIC DISEASES

PARASITIC DISEASES (SCHISTOSOMIASIS AND OTHER HELMINTHIC INFECTIONS)

PARASITIC DISEASES (TRYPANOSOMIASIS AND LEISHMANIASIS)

PREVENTION AND CONTROL OF ALCOHOL AND DRUG ABUSE

PREVENTION AND TREATMENT OF MENTAL AND NEUROLOGICAL DISORDERS

PROTECTION AND PROMOTION OF MENTAL HEALTH

PUBLIC INFORMATION AND EDUCATION FOR HEALTH (HEALTH EDUCATION SERVICE)

SEXUALLY TRANSMITTED DISEASES

SMALLPOX ERADICATION SURVEILLANCE

TUBERCULOSIS

WORKERS' HEALTH

ZOOSES

REPORT ON INSTITUTIONALLY BASED RESEARCH RELATED ACTIVITIES IN THE AMERICAN REGION, 1984-1985

SUPPORTED BY WHO THROUGH TECHNICAL SERVICES AGREEMENTS
(ALL FIGURES EXPRESSED IN US DOLLARS)

WHO PROGRAM / PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
PROGRAM: ACCIDENT PREVENTION					
COORDINATED RESEARCH ON CHILD SAFETY	PROFESSOR B. J. SCHMIDT ESCOLA PAULISTA DE MEDICINA SAO PAULO BRAZIL	-	-	5,000	5,000
STUDY ON POISONING PREVENTION AND IMPLICATIONS FOR ORGANIZATION OF RELATED SERVICE	DR M. BERNARDES MARQUES NATIONAL SCHOOL OF PUBLIC HEALTH RIO DE JANEIRO BRAZIL	-	-	2,000	2,000
PROGRAM: ACUTE RESPIRATORY INFECTIONS					
RESEARCH ON ACUTE RESPIRATORY INFECTIONS	MRS DR MANUELA VICENTE INSTITUTE OF PUBLIC HEALTH SANTIAGO CHILE	5,600	6,000	-	6,000
PROGRAM: BLINDNESS					
ANALYSIS OF OBSERVER VARIATION IN TRACHOMA GRADING	DR HUGH R. TAYLOR THE WILMER INSTITUTE JOHNS HOPKINS HOSPITAL BALTIMORE UNITED STATES OF AMERICA	-	-	1,500	1,500
BLINDING EYE DISEASE IN PATIENTS WITH LEPROSY	DR CHANDLER R. DAWSON FRANCIS I PROCTOR FOUNDATION FOR RESEARCH IN OPHTHALMOLOGY SAN FRANCISCO UNITED STATES OF AMERICA	-	-	12,000	12,000
CLINICAL AND EPIDEMIOLOGICAL INVESTIGATION OF OCULAR MORBIDITY AND VISUAL LOSS IN AN URBAN POPULATION	DR FRANCISCO CONTRERAS LATIN AMERICA COMMITTEE INTERNATIONAL AGENCY FOR PREVENTION OF BLINDNESS LIMA PERU	10,000	-	2,000	2,000

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WHO PROGRAM / PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
PROGRAM: BLINDNESS					
EPIDEMIOLOGICAL STUDY OF TRACHOMA IN MEXICO	DR HUGH R. TAYLOR THE WILMER INSTITUTE JOHNS HOPKINS HOSPITAL BALTIMORE UNITED STATES OF AMERICA	15,000	-	9,700	9,700
EVALUATION OF EYE CARE AS PART OF PHC IN THE STATE OF SAO PAULO, BRAZIL	DR OSVALDO MONTEIRO DE BARROS SERVICE OF SANITARY OPHTHALMOLOGY INSTITUTE OF HEALTH SECRETARY OF STATE FOR HEALTH SAO PAULO BRAZIL	-	-	2,000	2,000
LABORATORY DIAGNOSIS OF OCULAR CHLAMYDIAL INFECTIONS	DR CHANDLER R. DAWSON FRANCIS I PROCTOR FOUNDATION FOR RESEARCH IN OPHTHALMOLOGY SAN FRANCISCO UNITED STATES OF AMERICA	13,000	-	6,000	6,000
MICROBIOLOGICAL VALIDATION OF SIMPLIFIED CLINICAL DIAGNOSIS OF TRACHOMA	DR CHANDLER R. DAWSON FRANCIS I PROCTOR FOUNDATION FOR RESEARCH IN OPHTHALMOLOGY SAN FRANCISCO UNITED STATES OF AMERICA	-	-	300	300
RESEARCH ON NUTRITIONAL BLINDNESS	DR ALFRED SOMMER THE INTERNAT. CENTRE FOR EPIDEMIOLOGIC & PREVENTIVE OPHTHALMOLOGY; THE WILMER INST; JOHNS HOPKINS HOSPITAL BALTIMORE UNITED STATES OF AMERICA	8,000	-	10,000	10,000
STUDY ON DATA NEEDS FOR EFFECTIVE PLANNING, MANAGEMENT AND EVAL. OF NATIONAL AND GLOBAL BLINDNESS PREVENT. PROGRAMMES	DR JAMES M. LEPKOWSKI INSTITUTE FOR SOCIAL RESEARCH SURVEY RESEARCH CENTER UNIVERSITY OF MICHIGAN ANN ARBOR UNITED STATES OF AMERICA	-	25,000	-	25,000

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PROGRAM: BLINDNESS					
TRACHOMA CHEMOTHERAPY TRIALS	DR CHANDLER R. DAWSON FRANCIS I PROCTOR FOUNDATION FOR RESEARCH IN OPHTHALMOLOGY SAN FRANCISCO UNITED STATES OF AMERICA	-	-	6,000	6,000
PROGRAM: CANCER					
BREAST SELF-EXAMINATION IN BREAST CANCER EARLY DETECTION PROGRAMME	DR A.B. MILLER EPIDEMIOLOGY UNIT NATIONAL CANCER INSTITUTE OF CANADA UNIVERSITY OF TORONTO TORONTO CANADA	-	-	1,000	1,000
PROGRAM: CONTROL OF ENVIRONMENTAL HEALTH HAZARDS					
HUMAN EXPOSURE ASSESSMENT LOCATION PROJECT	DR C. RIORDAN OFFICE OF MONITORING SYSTEMS AND QUALITY ASSURANCE US ENVIRONMENTAL PROTECTION AGENCY WASHINGTON UNITED STATES OF AMERICA	-	-	5,000	5,000
UNEP PROJECT ON GLOBAL WATER QUALITY MONITORING SYSTEM	DR JAIR SARMENTO DA SILVA DIVISION OF HUMAN ECOLOGY MINISTRY OF HEALTH BRASILIA BRAZIL	-	-	12,000	12,000
WHO GLOBAL ENVIRONMENT MONITORING SYSTEM (GEMS) AIR MONITORING PROJECT	DR S. BARABAS CANADA CENTRE FOR INLAND WATERS BURLINGTON CANADA	140,000	20,000	60,000	80,000
	MR P.G. CHRISTICH DIV. OF MULTILATERAL ORGANIZATIONS OFFICE OF INTERNATIONAL ACTIVITIES U.S. ENVIRONMENTAL PROTECTION AGENCY WASHINGTON	69,000	15,000	30,000	45,000

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WHO PROGRAM / PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
PROGRAM: CONTROL OF ENVIRONMENTAL HEALTH HAZARDS					
WHO/UNEP GLOBAL AIR MONITORING PROJECT	MR W. ZULAUF STATE COMPANY OF BASIC SANITATION TECHNOLOGY AND PROTECTION OF ENVIRONMENT SAG PAULO BRAZIL	.	.	15,000	15,000
PROGRAM: CONTROL OF ENVIRONMENTAL HEALTH HAZARDS (CHEMICAL SAFETY)					
SCIENTIFIC GROUP ON METHODOLOGIES FOR THE SAFETY EVALUATION OF CHEMICALS	PROFESSOR NORTON NELSON INSTITUTE OF ENVIRONMENTAL MEDICINE NEW YORK MEDICAL CENTER NEW YORK UNITED STATES OF AMERICA	141,000	120,000	46,000	166,000
PROGRAM: DISEASE VECTOR CONTROL					
ANALYSIS OF PESTICIDE SAMPLES FOR PUBLIC HEALTH PROGRAMMES	DR FREDERICK C. CHURCHILL VECTOR BIOLOGY AND CONTROL DIVISION BUREAU OF TROPICAL DISEASES CENTERS FOR DISEASE CONTROL ATLANTA UNITED STATES OF AMERICA	7,500	.	6,000	6,000
COMPARISON OF EFFICACY AND COST OF GROUND ULV AND THERMAL FOG TREATMENTS AGAINST CULEX AND AEDES MOSQUITOS	DR DONALD A. ELIASON DIV. OF VECTOR-BORNE VIRAL DISEASES CENTERS FOR DISEASE CONTROL U.S. PUBLIC HEALTH SERVICE FORT COLLINS UNITED STATES OF AMERICA	.	.	8,000	8,000
DEVELOPMENT OF NEW FIELD KIT FOR DETECTION OF RESISTANCE OF INSECTS TO PESTICIDES	PROFESSOR GEORGE PAUL GEORGHIOU UNIVERSITY OF CALIFORNIA COLLEGE OF NATURAL & AGRIC. SCIENCES RIVERSIDE UNITED STATES OF AMERICA	.	.	5,000	5,000

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WHO PROGRAM / PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
PROGRAM: DISEASE VECTOR CONTROL					
DEVELOPMENT OF NEW FIELD KIT FOR DETECTION OF RESISTANCE OF INSECTS TO PESTICIDES	DR WILLIAM G. BROGDON MALARIA BRANCH CENTRE FOR INFECTIOUS DISEASES ATLANTA UNITED STATES OF AMERICA	-	-	10,000	10,000
DEVELOPMENT OF SUITABLE INSECTICIDES AND TECHNIQUES FOR AIRCRAFT DISINFECTION	DR DORA K. HAYES BELTSVILLE AGRICULTURAL RESEARCH CENTRE U.S. DEPARTMENT OF AGRICULTURE BELTSVILLE UNITED STATES OF AMERICA	4,000	2,000	2,000	4,000
DRAFTING OF DATA SHEETS ON CHEMICAL PESTICIDES	DR L. RITTER PESTICIDES DIVISION ENVIRONMENTAL HEALTH DIRECTORATE DEPT OF NATIONAL HEALTH AND WELFARE OTTAWA CANADA	30,000	15,000	15,000	30,000
EVALUATION AND DEVELOPMENT OF EQUIPMENT FOR THE CONTROL OF DISEASE VECTORS	ENG. VICTOR VELANDIA SERVICIO DE ERRADICACION DE LA MALARIA BOGOTA COLOMBIA	8,000	5,000	-	5,000
EVALUATION OF NEW INSECTICIDES OR NEW FORMULATIONS ON CHAGAS DISEASE VECTORS	DR A.M. OLIVEIRA FILHO NUCLEO DE PESQUISAS DE PRODUTOS NATURAIS, CENTER OF HEALTH SCIENCES FEDERAL UNIVERSITY OF RIO DE JANEIRO RIO DE JANEIRO BRAZIL	-	-	5,000	5,000
RESEARCH ON CHEMICAL ANALYSIS, ON PHYSICAL PROPERTIES AND ON SPECIFICATIONS OF PESTICIDES AND THEIR FORMULATION	DR FREDERICK C. CHURCHILL VECTOR BIOLOGY AND CONTROL DIVISION BUREAU OF TROPICAL DISEASES CENTERS FOR DISEASE CONTROL ATLANTA UNITED STATES OF AMERICA	15,000	5,000	5,000	10,000

REPORT ON INSTITUTIONALLY BASED RESEARCH RELATED ACTIVITIES IN THE AMERICAN REGION, 1984-1985

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WHO PROGRAM / PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
PROGRAM: DISEASE VECTOR CONTROL					
RODENT ECTOPARASITE IDENTIFICATIONS	PROFESSOR R. TRAUB UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE BALTIMORE UNITED STATES OF AMERICA	2,000	1,500	1,500	3,000
RODENT-BORNE DISEASE STUDIES	PROFESSOR C.L. WISSEMAN DEPARTMENT OF MICROBIOLOGY SCHOOL OF MEDICINE UNIVERSITY OF MARYLAND BALTIMORE UNITED STATES OF AMERICA	12,750	-	5,000	5,000
STUD.ON INSECTICIDE RESIST. IN MOSQUITOS FROM AMERICAS INCL. DETERM.OF CROSS-RESIST.SPECTR. AS BASIS FOR SELECT.PESTICIDES	PROFESSOR GEORGE PAUL GEORGHIOU UNIVERSITY OF CALIFORNIA COLLEGE OF NATURAL & AGRIC. SCIENCES RIVERSIDE UNITED STATES OF AMERICA	21,000	4,000	4,000	8,000
STUDY OF THE EFFECTIVENESS OF ENVIRONMENTAL MANAGEMENT FOR INSECT AND RODENT CONTROL IN THE URBAN ENVIRONMENT	MR M. FEVRIER DEPARTMENT OF ENVIRONMENTAL HEALTH MINISTRY OF HEALTH HOUSING AND LOCAL GOVERNMENT CASTRIES SAINT LUCIA	-	-	10,000	10,000
THE EVALUATION OF INSECTICIDES FOR THE CONTROL OF COCKROACHES	PROFESSOR D.G. COCHRAN DEPARTMENT OF ENTOMOLOGY COLL. OF AGRICULTURE & LIFE SCIENCES VIRGINIA POLYTECHNIC INSTITUTE BLACKSBURG UNITED STATES OF AMERICA	-	-	3,000	3,000
TRANSLATION INTO SPANISH OF THE FAO/WHO DATA SHEETS ON PESTICIDES	DR LILIA ALBERT INSTITUTO NACIONAL DE INVESTIGACION DE RECURSOS BIOTICOS (INIREB) VERACRUZ MEXICO	-	-	5,000	5,000

REPORT ON INSTITUTIONALLY BASED RESEARCH RELATED ACTIVITIES IN THE AMERICAN REGION, 1984-1985

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WHO PROGRAM / PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
PROGRAM: DISEASE VECTOR CONTROL					
WORKSHOP ON MANPOWER DEVELOPMENT IN VECTOR BIOLOGY AND CONTROL IN THE AMERICAS	DR A. FOMAROFF FOGARTY INTERNATIONAL CENTER NATIONAL INSTITUTES OF HEALTH DEPT OF HEALTH AND HUMAN SERVICES BETHESDA UNITED STATES OF AMERICA	-	-	6,500	6,500
PROGRAM: ENVIRONMENTAL HEALTH IN RURAL AND URBAN DEVELOPMENT AND HOUSING					
COMMUNITY ACTION FOR ENVIRONMENTAL HEALTH NEEDS OF CHILDREN	MR JORGE HARDOY CENTER OF URBAN AND REGIONAL STUDIES (CEUR) BUENOS AIRES ARGENTINA	-	-	6,000	6,000
COMMUNITY INTERVENTION FOR INSECT AND RODENT CONTROL	DR HAROLD COHEN DEPARTMENT OF DESIGN STUDIES SCHOOL OF ARCHITECTURE AND ENVIRONMENTAL DESIGN BUFFALO UNITED STATES OF AMERICA	-	-	39,000	39,000
PROGRAM: ESSENTIAL DRUGS AND VACCINES					
RESEARCHING, DEVELOPING, TESTING AND EVALUATING EDUCATIONAL MATERIAL FOR PATIENTS	MRS M. ZIMMERMAN PROGRAM FOR APPROPRIATE TECHNOLOGY IN HEALTH (PATH) SEATTLE UNITED STATES OF AMERICA	-	-	30,000	30,000
PROGRAM: HEALTH MANPOWER					
SEMINAR ON CONTINUING EDUCATION FOR HEALTH WORKERS	DR J.M. BORGOGNO MINISTRY OF HEALTH SANTIAGO CHILE	-	2,000	-	2,000

REPORT ON INSTITUTIONALLY BASED RESEARCH RELATED ACTIVITIES IN THE AMERICAN REGION, 1984-1985

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WHO PROGRAM / PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
PROGRAM: LEPROSY					
RESEARCH ON MYCOBACTERIUM LEPRAE	DR T. IMAEDA DEPARTMENT OF MICROBIOLOGY, COLLEGE OF MEDICINE AND DENTISTRY OF NEW JERSEY, NEW JERSEY MEDICAL SCHOOL NEWARK UNITED STATES OF AMERICA	6,000	2,000	-	2,000
	PROFESSOR LANE BARKSDALE LEPROSY RESEARCH GROUP, DEPT OF MICROBIOLOGY, SCHOOL OF MEDICINE NEW YORK UNIVERSITY MEDICAL CENTRE NEW YORK UNITED STATES OF AMERICA	24,000	5,000	-	5,000
STUDY ON EARLY INDETERMINATE LEPROSY CASES	DR C. LOMBARDI DIVISION OF LEPROSY AND SANITARY DERMATOLOGY, INSTITUTE OF HEALTH SECRETARY OF STATE FOR HEALTH SAO PAULO BRAZIL	-	-	2,550	2,550
PROGRAM: MALARIA					
FURTHER DEVELOPMENT OF DNA PROBES FOR THE DIAGNOSIS OF HUMAN MALARIA	DR DYANN F. WIRTH DEPARTMENT OF TROPICAL PUBLIC HEALTH HARVARD SCHOOL OF PUBLIC HEALTH BOSTON UNITED STATES OF AMERICA	-	-	39,100	39,100
PROGRAM: MATERNAL AND CHILD HEALTH (FAMILY HEALTH)					
THE SPONSORING OF SELECTED PILOT PROJECTS, ORGANIZATION OF STUDY MISSIONS FOR PARLIAMENTARIANS	DR A. MATSUMURA GLOBAL COMMITTEE OF PARLIAMENTARIANS ON POPULATION AND DEVELOPMENT NEW YORK UNITED STATES OF AMERICA	-	-	15,000	15,000

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PROGRAM: MATERNAL AND CHILD HEALTH, INCLUDING FAMILY PLANNING					
EVALUATION OF SCALES AND RELATED TECHNIQUES FOR WEIGHING NEWBORNS	DR MICHAEL FREE PROGRAM FOR APPROPRIATE TECHNOLOGY IN HEALTH (PATH) SEATTLE UNITED STATES OF AMERICA	-	-	3,613	3,613
HOME-BASED MOTHER'S RECORD	DR M. CUMINSKY HOSPITAL ZONAL "NOEL H. SBARRA" LA PLATA ARGENTINA	-	-	3,500	3,500
INFLUENCE OF FEEDING PRACTICES ON INFANT MORTALITY	DR CESAR G. VICTORA FACULTY OF MEDICINE FEDERAL UNIVERSITY OF PELOTAS PELOTAS BRAZIL	-	6,700	-	6,700
MCH EDUCATIONAL SUPPORT MATERIALS FOR LOW LITERATE POPULATIONS	DR M.L. ZIMMERMAN PROGRAM FOR APPROPRIATE TECHNOLOGY IN HEALTH (PATH) WASHINGTON UNITED STATES OF AMERICA	-	-	15,130	15,130
PREPARATION OF AN INTEGRATED PACKAGE FOR PROGRAMME MANAGEMENT OF MCH/FP	DR W.E. BERTRAND SCHOOL OF PUBLIC HEALTH AND TROPICAL MEDICINE TULANE UNIVERSITY NEW ORLEANS UNITED STATES OF AMERICA	-	-	10,000	10,000
TRAINING ACTIVITIES IN HEALTH SERVICES RESEARCH IN MATERNAL AND CHILD HEALTH INCLUDING FAMILY PLANNING	DR MARK WOLFF SCHOOL OF HYGIENE AND PUBLIC HEALTH JOHNS HOPKINS UNIVERSITY BALTIMORE UNITED STATES OF AMERICA	-	-	45,472	45,472

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PROGRAM: NUTRITION					
JOINT WHO/UNICEF NUTRITION SUPPORT PROGRAMME LEARNING PACKAGES	DR. A. PATTERSON THE CARIBBEAN FOOD AND NUTRITION INSTITUTE (CFNI) JAMAICA CENTRE KINGSTON JAMAICA	-	-	1,500	1,500
PROGRAM: ORGANIZATION OF HEALTH SYSTEMS BASED ON PRIMARY HEALTH CARE					
PREPARATION OF A PAPER ON "COMMUNITY FINANCING, THE COLOMBIAN EXPERIENCE"	DR. ANTONIO MADER MADER HOSPITAL UNIVERSITARIO DE CALDAS FACULTAD DE MEDICINA UNIVERSIDAD DE CALDAS MANIZALES COLOMBIA	-	500	-	500
PROGRAM: OTHER COMMUNICABLE DISEASE PREVENTION AND CONTROL ACTIVITIES					
BASIC RESEARCH ON THE DEVELOPMENT OF PEPTIDE VACCINES	PROFESSOR ECKARD WIMMER DEPARTMENT OF MICROBIOLOGY SCHOOL OF MEDICINE STATE UNIVERSITY OF NEW YORK STONY BROOK UNITED STATES OF AMERICA	-	-	23,000	23,000
EVALUATION OF COMMERCIAL KITS FOR THE DETECTION OF LAV/HTLV III ANTIBODIES	DR. H.M. MEYER CENTER FOR DRUGS AND BIOLOGICS FOOD AND DRUG ADMINISTRATION DEPT OF HEALTH & HUMAN SERVICES BETHESDA UNITED STATES OF AMERICA	-	-	3,000	3,000
	DR. WALTER R. DOMOLE CENTER FOR INFECTIOUS DISEASES CENTERS FOR DISEASE CONTROL US PUBLIC HEALTH SERVICE ATLANTA UNITED STATES OF AMERICA	-	-	7,500	7,500

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PROGRAM: OTHER COMMUNICABLE DISEASE PREVENTION AND CONTROL ACTIVITIES (IMMUNOLOGY)					
ANALYSIS OF SEQUENCE HOMOLOGY & ANTIGENIC CROSS REACTIVITY OF THE NS3 PROTEINS PRODUCED BY DENGUE 1, -2, -3 & -4 VIRUSES	DR MARGO ANN BRINTON THE WISTAR INSTITUTE OF ANATOMY AND BIOLOGY PHILADELPHIA UNITED STATES OF AMERICA	-	-	38,345	38,345
ANALYSIS OF THE CELL SURFACE OF ENCAPSULATED MENINGOCOCCI WITH MONOCLONAL ANTIBODIES	DR MICHAEL A. APICELLA INFECTIOUS DISEASES DIVISION STATE UNIVERSITY OF NEW YORK AT BUFFALO BUFFALO UNITED STATES OF AMERICA	-	-	23,100	23,100
ANALYSIS OF THE EFFICACY AND SAFETY OF BCG VACCINATION VIA THE AEROGENIC ROUTE	DR FRANK M. COLLINS TRUDEAU INSTITUTE, INC. SARANAC LAKE UNITED STATES OF AMERICA	33,000	25,000	-	25,000
ANIMAL MODELS FOR STUDY OF VIRULENCE AND PROTECTIVE IMMUNITY	PROF. DONALD W. SMITH DEPT. OF MED. MICROBIOLOGY UNIVERSITY OF WISCONSIN MED. SCHOOL MADISON UNITED STATES OF AMERICA	-	20,000	24,000	44,000
ANTIGENIC & MOLECULAR CHARACTERIZATION OF THE GLYCOPROTEINS OF RESP. SYNCYTIAL VIRUS & ANTIBODY-RESISTANT VARIANTS	DR KATHLEEN LOUISE COELINGH RESPIRATORY VIRUSES SECTION NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES BETHESDA UNITED STATES OF AMERICA	-	-	20,000	20,000
ANTIGENIC VARIATION IN RESPIRATORY SYNCYTIAL VIRUS	DR KENNETH MCINTOSH DIVISION OF INFECTIOUS DISEASES CHILDREN'S HOSPITAL MEDICAL CENTRE BOSTON UNITED STATES OF AMERICA	-	-	25,000	25,000
CHARACTERIZATION OF EPITOPES WITHIN MENINGOCOCCAL CAPSULAR POLYSACCHARIDES OF SEROGROUPS A, B AND C	DR GEORGE L. KENYON BAY MEDICAL RESEARCH AND EDUCATION FOUNDATION INC. SAN FRANCISCO UNITED STATES OF AMERICA	-	-	47,800	47,800

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PROGRAM: OTHER COMMUNICABLE DISEASE PREVENTION AND CONTROL ACTIVITIES (IMMUNOLOGY)					
CHARACTERIZATION OF MAJOR NEUTRALIZATION EPITOPES OF HEPATITIS A VIRUS	DR STANLEY M. LEMON DIVISION OF INFECTIOUS DISEASES SCHOOL OF MEDICINE UNIVERSITY OF NORTH CAROLINA CHAPEL HILL UNITED STATES OF AMERICA	-	-	26,124	26,124
CLONING OF HUMAN PARA- INFLUENZA VIRUS 3 GLYCOPROTEIN GENES FOR VACCINE	DR C. YONG KANG DEPT OF MICROBIOLOGY & IMMUNOLOGY SCHOOL OF MEDICINE UNIVERSITY OF OTTAWA OTTAWA CANADA	-	-	30,000	30,000
COLLAB. STUDY ON T-CELL CLONES RESP. FOR PROTECT. AGAINST VIRUS DISEASES & ON EFFECT OF INTER- FERON AS MODULATOR OF IMMUNITY	DR FRANCIS A. ENNIS DEPARTMENT OF MEDICINE, MICROBIOLOGY AND MOLECULAR GENETICS UNIV. OF MASSACHUSETTS MED. SCHOOL WORCESTER UNITED STATES OF AMERICA	-	3,000	-	3,000
DEVELOP. & USE OF MONOCLONAL ANTIBODIES TO CHARACTERIZE THE NEUTRALIZ. EPITOPES OF WILD & CANDIDATE VACCINE DENGUE VIR.	DR DAVID MICHAEL MORENS DEPT OF TROPICAL MEDICINE & MEDICAL MICROBIOLOGY, SCHOOL OF MEDICINE UNIVERSITY OF HAWAII HONOLULU UNITED STATES OF AMERICA	-	-	30,000	30,000
DEVELOP. OF ATTENUATED VACCINE STRAINS & DETERMIN. THROUGH RDNA METHODS OF THE MOLECULAR BASIS OF ATTENUATION	DR ROBERT H. PURCELL LABORATORY OF INFECTIOUS DISEASES NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES BETHESDA UNITED STATES OF AMERICA	-	-	14,000	14,000
DEVELOPMENT OF AN ANTI- IDIOTYPE VACCINE FOR ENCAPSULATED MENINGOCOCCI	DR DAVID M. REKOSH DEPARTMENT OF BIOCHEMISTRY SCHOOL OF MEDICINE STATE UNIVERSITY OF NEW YORK BUFFALO UNITED STATES OF AMERICA	-	-	29,500	29,500

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PROGRAM: OTHER COMMUNICABLE DISEASE PREVENTION AND CONTROL ACTIVITIES (IMMUNOLOGY)					
DEVELOPMENT OF AN INTRANASAL VACCINE FOR PARAINFLUENZA VIRUS	DR. R.W. COMPANS DEPARTMENT OF MICROBIOLOGY MEDICAL COLLEGE UNIV. OF ALABAMA IN BIRMINGHAM BIRMINGHAM UNITED STATES OF AMERICA	-	-	12,600	12,600
EXPRESSION OF FLAVIVIRUS PROTEINS	DR. JAMES H. STRAUSS CALIFORNIA INSTITUTE OF TECHNOLOGY PASADENA UNITED STATES OF AMERICA	-	-	43,640	43,640
EXPRESSION OF GONOCOCCAL LIPOOLIGOSACCHARIDES IN NON- PATHOGENIC MICROORGANISMS	DR. D.C. STEIN DEPARTMENT OF MICROBIOLOGY UNIVERSITY OF MARYLAND COLLEGE PARK UNITED STATES OF AMERICA	-	-	15,525	15,525
EXPRESSION OF MYCOBACTERIAL GENES IN FOREIGN HOSTS	DR. R.A. YOUNG WHITEHEAD INSTITUTE CAMBRIDGE UNITED STATES OF AMERICA	-	-	56,000	56,000
GENETIC ANALYSIS OF INTRA- CELLULAR SURVIVAL OF MYCO- BACTERIA	DR. T.M. SHINNICK DEPARTMENT OF MOLECULAR BIOLOGY MB4 RESEARCH INSTITUTE OF SCRIPPS CLINIC SCRIPPS CLINIC & RESEARCH FOUNDATION LA JOLLA UNITED STATES OF AMERICA	-	-	30,000	30,000
GENOMIC ANAL. OF MYCOBACTERIUM TB. BCG, MYCOBACTERIUM BOVIS & MYCOBACTERIUM LEPRAE, BY DNA HYBRIDIZATION AND CLONING	PROFESSOR BARRY R. BLOOM DEPT. OF MICRO. AND IMMUNOLOGY ALBERT EINSTEIN COLLEGE YESHIVA UNIVERSITY BRONX UNITED STATES OF AMERICA	30,000	-	24,000	24,000
IDENT. OF THE CELLS IN HUMAN TUBERCULOIMMUNITY. PRODUCTION OF HUMAN T CELL CLONES SPECIF. FOR ANTIGENS OF M. TUBERCULOSIS	PROFESSOR ALFRED J. CROWLE DEPARTMENT OF MICROBIOLOGY AND IMMUNOLOGY UNIV. OF COLORADO MEDICAL CENTRE DENVER	25,000	25,000	20,000	45,000

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WHO PROGRAM / PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
PROGRAM: OTHER COMMUNICABLE DISEASE PREVENTION AND CONTROL ACTIVITIES (IMMUNOLOGY)					
IMMUNE RESPONSES TO HEPATITIS A VIRUS (HAV) INFECTION	DR FRANCIS A. ENNIS DEPARTMENT OF MEDICINE, MICROBIOLOGY AND MOLECULAR GENETICS UNIV. OF MASSACHUSETTS MED. SCHOOL WORCESTER UNITED STATES OF AMERICA	-	-	31,000	31,000
IMMUNOGENIC CHARACTERIZ. OF THE 17D YELLOW FEVER AND DENGUE VIRUS-SPECIFIED NONSTRUCTURAL GLYCOPROTEIN GP48 (NV3)	DR JACOB J. SCHLESINGER SCHOOL OF MEDICINE AND THE ROCHESTER GENERAL HOSPITAL UNIVERSITY OF ROCHESTER ROCHESTER UNITED STATES OF AMERICA	-	-	31,088	31,088
IMMUNOLOGY OF M. TUBERCULOSIS	PROFESSOR JOHN ROUBEN DAVID DEPARTMENT OF TROPICAL PUBLIC HEALTH HARVARD SCHOOL OF PUBLIC HEALTH BOSTON UNITED STATES OF AMERICA	45,500	-	27,892	27,892
ISOLATION AND CHARACTERIZATION OF T. LYMPHOCYTE CLONES FROM PATIENTS WITH TUBERCULOSIS	DR L.F. GARCIA CENTRO DE INVESTIGACIONES MEDICAS FACULTAD DE MEDICINA UNIVERSIDADE DE ANTOIOQUIA MEDELLIN COLOMBIA	-	-	20,000	20,000
MONOCLONAL ANTIBODIES TO MYCOBACTERIAL ANTIGENS	PROFESSOR T.M. DANIEL DEPARTMENT OF MEDICINE SCHOOL OF MEDICINE CASE WESTERN RESERVE UNIVERSITY CLEVELAND UNITED STATES OF AMERICA	8,000	-	8,000	8,000
POTENTIAL SUBUNIT VACCINE FOR RESPIRATORY SYNCYTIAL VIRUS	DR S. LEVINE DEPT OF IMMUNOLOGY & MICROBIOLOGY SCHOOL OF MEDICINE WAYNE STATE UNIVERSITY DETROIT UNITED STATES OF AMERICA	-	-	30,000	30,000

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PROGRAM: OTHER COMMUNICABLE DISEASE PREVENTION AND CONTROL ACTIVITIES (IMMUNOLOGY)					
PRODUCTION AND CHARACTERIZATION OF SPECIES-SPECIFIC ANTIBODIES TO MYCOBACTERIUM TUBERCULOSIS H37RV	DR T.M. BUCHANAN UNIVERSITY OF WASHINGTON U.S. PUBLIC HEALTH SERVICE HOSPITAL SEATTLE UNITED STATES OF AMERICA	12,000	12,000	24,000	36,000
RELATIONSHIP OF ANTIBODIES TO SPECIFIC SURFACE GLYCOPROTEINS OF PARAINFLUENZA TYPE 3 AND RS VIRUSES TO REINFECTION	DR JULIUS A. KASEL BAYLOR COLLEGE OF MEDICINE HOUSTON UNITED STATES OF AMERICA	-	-	18,550	18,550
SEQUENCE ANALYSIS AND EXPRESSION OF THE CLONED CDNAS OF THE RESPIRATORY SYNCYTIAL VIRUS GLYCOPROTEIN GENES	DR GAIL W. WERTZ DEPT OF MICROBIOLOGY & IMMUNOLOGY SCHOOL OF MEDICINE UNI. OF NORTH CAROLINA AT CHAPEL HILL CHAPEL HILL UNITED STATES OF AMERICA	-	-	27,500	27,500
STRUCTURE AND EXPRESSION OF THE GENOME AND GLYCOPROTEINS OF THE PARAINFLUENZA VIRUS SV5	DR ROBERT ANDREW LAMB DEPT OF BIOCHEMISTRY, MOLECULAR BIOLOGY AND CELL BIOLOGY MED. SCHOOL, NORTHWESTERN UNIVERSITY EVANSTON UNITED STATES OF AMERICA	-	-	25,000	25,000
STUDIES ON THE MOLECULAR BIOLOGY OF DENGUE VIRUS	DR EDWARD J. O'ROURKE DIVISION OF INFECTIOUS DISEASES CHILDREN'S HOSPITAL MEDICAL CENTRE BOSTON UNITED STATES OF AMERICA	-	-	35,927	35,927
VACCINE DEVELOPMENT, ENCAPSULATED BACTERIA, WITH EMPHASIS ON NEONATAL AND EPIDEMIC MENINGITIS	DR J. MCLEOD GRIFFISS DEPARTMENT OF MICROBIOLOGY VETERANS ADMINISTRATION MEDICAL CENTER, UNIVERSITY OF CALIFORNIA SAN FRANCISCO UNITED STATES OF AMERICA	300,000	-	1,150	1,150

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PROGRAM: OTHER COMMUNICABLE DISEASE PREVENTION AND CONTROL ACTIVITIES (SAFETY MEASURES IN MICROBIOLOGY)

BIOCONTAINMENT TECHNOLOGY	MRS M.E. KENNEDY DIVISION OF BIOSAFETY LABORATORY CENTRE FOR DISEASE CONTROL OTTAWA CANADA	-	-	4,000	4,000
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PROGRAM: OTHER COMMUNICABLE DISEASE PREVENTION AND CONTROL ACTIVITIES (VIRUS DISEASES)

PREPARATION AND TESTING OF REAGENTS	PROF. JOSEPH L. MELNICK DEPT OF VIROLOGY & EPIDEMIOLOGY BAYLOR COLLEGE OF MEDICINE HOUSTON UNITED STATES OF AMERICA	18,000	2,000	-	2,000
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PREPARATION AND TESTING OF ARBOVIRUS REAGENTS	DR ROBERT E. SHOPE YALE ARBOVIRUS RESEARCH UNIT YALE UNIVERSITY SCHOOL OF MEDICINE NEW HAVEN UNITED STATES OF AMERICA	14,000	3,500	-	3,500
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PREPARATION OF REAGENTS FOR INFLUENZA VIRUS IDENTIFICATION	DR ROSLYN Q. ROBINSON BUR. OF LABS DEPT OF HEALTH & HUMAN SERV. PHS - CENTERS FOR DISEASE CONTROL ATLANTA UNITED STATES OF AMERICA	26,900	6,725	6,725	13,450
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STUDIES ON LASSA FEVER	DR JOSEPH B. MCCORMICK VIROLOGY DIVISION CENTERS FOR DISEASE CONTROL U.S. PUBLIC HEALTH SERVICE ATLANTA UNITED STATES OF AMERICA	-	-	18,900	18,900
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PROGRAM: OTHER NONCOMMUNICABLE DISEASE PREVENTION AND CONTROL ACTIVITIES (HUMAN GENETICS)					
DEVELOPMENT AND EVALUATION OF A COMPREHENSIVE HEREDITARY DISEASES COMMUNITY CONTROL PROGRAMME	DR L. HEREDERO BOAT HUMAN GENETICS PROGRAMME MINISTRY OF PUBLIC HEALTH HABANA CUBA	-	2,000	-	2,000
INTERNATIONAL REGISTRY FOR ABNORMAL KARYOTYPES IN MAN	PROFESSOR D.S. BORGAONKAR WILMINGTON GENERAL DIVISION WILMINGTON MEDICAL CENTER WILMINGTON UNITED STATES OF AMERICA	4,000	1,000	-	1,000
	DR L.G. JACKSON DIVISION OF MEDICAL GENETICS JEFFERSON MEDICAL COLLEGE THOMAS JEFFERSON UNIVERSITY PHILADELPHIA UNITED STATES OF AMERICA	-	1,000	1,000	2,000
PROGRAM: OTHER NONCOMMUNICABLE DISEASE PREVENTION AND CONTROL ACTIVITIES (SMOKING AND HEALTH)					
ECONOMIC STUDIES OF THE COSTS AND BENEFITS ASSOCIATED WITH SMOKING	DR W.G. FORBES FACULTY OF MATHEMATICS UNIVERSITY OF WATERLOO WATERLOO CANADA	7,000	10,000	-	10,000
PROGRAM: PARASITIC DISEASES					
BIOCHEMICAL CYTOLOGY OF GIARDIA	PROFESSOR DONALD G. LINDMARK DEPARTMENT OF PREVENTIVE MEDICINE NEW YORK STATE COLLEGE OF VETERINARY MEDICINE, CORNELL UNIVERSITY ITHACA UNITED STATES OF AMERICA	-	3,000	3,000	6,000

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PROGRAM: PARASITIC DISEASES					
COMMUNITY PERCEPTION OF INTESTINAL HELMINTHIASES CONTROL IN ST. LUCIA	DR D.A.P. BUNDY ZOOLOGY DEPARTMENT UNIVERSITY OF THE WEST INDIES MONA, KINGSTON JAMAICA	-	-	2,500	2,500
LARGE SCALE TREATMENT OF ENDEMIC FOCUS OF TAENIASIS CYSTICERCOSIS	DR K. WILLMS INSTITUTO DE INVESTIGACIONES BIOMEDICAS, UNIVERSIDAD NACIONAL AUTONOMA DE MEXICO MEXICO MEXICO	-	-	20,000	20,000
LARGE-SCALE TREATMENT OF ENDEMIC FOCUS OF TAENIASIS- CYSTICERCOSIS	DR MARCELO E. CRUZ FUNDACION EUGENIO ESPEJO CENTER FOR RESEARCH AND TRAINING IN NEUROSCIENCES QUITO ECUADOR	-	-	20,000	20,000
QUANTITATIVE HOOKWORM DIAGNOSIS WITHOUT A MICROSCOPE	PROF. ALUIZIO PRATA DEPT OF TROPICAL DISEASES UNIVERSIDADE DE BRASILIA FACULDADE DE CIENCIAS DA SAUDE BRASILIA BRAZIL	-	-	20,000	20,000
TRIALS OF (DEC-C) & OF SURAMIN IN THE TREATMENT & PREVENTION OF OCULAR ONCHOCERCIASIS & FOR SUPPRESSION OF TRANSMISSION	PROFESSOR G.A. SCHAD UNIVERSITY OF PENNSYLVANIA SCHOOL OF VETERINARY MEDICINE PHILADELPHIA UNITED STATES OF AMERICA	-	4,000	2,500	6,500
	DR GUILLERMO ZEA-FLORES SERVICIO NACIONAL DE ERRADICACION DE LA MALARIA Y PROGRAMAS ADSCRITOS (SNEM) GUATEMALA GUATEMALA	7,000	-	5,000	5,000

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PROGRAM: PARASITIC DISEASES (SCHISTOSOMIASIS AND OTHER HELMINTHIC INFECTIONS)					
EXPERIMENTAL CHEMOTHERAPY AND CHEMOPROPHYLAXIS OF S. MANSONI IN ANIMAL MODELS	DR L.H. PEREIRA SCHISTOSOMIASIS RESEARCH UNIT INSTITUTE OF BIOLOGICAL SCIENCES FEDERAL UNIVERSITY OF MINAS GERAIS BELO HORIZONTE BRAZIL	10,000	1,000	-	1,000
FACTORS CONTRIBUTING EPIDEMIO- LOGY OF THE SCHISTOSOMIASIS AFTER CONTROL	DR KURT KLOETZEL FACULDADE DE MEDICINA UNIVERSIDADE FEDERAL DE PELotas PELOTAS BRAZIL	-	-	2,000	2,000
MECHANISMS OF CARCINOGENESIS IN SCHISTOSOMA INFECTIONS	PROFESSOR JAMES M. GENTILE DEPARTMENT OF BIOLOGY HOPE COLLEGE HOLLAND UNITED STATES OF AMERICA	-	2,000	3,000	5,000
RESEARCH AND TRAINING IN SCHISTOSOMIASIS	DR CARLOS MOREL FOUNDATION OSMALDO CRUZ RIO DE JANEIRO BRAZIL	-	-	2,000	2,000
	DR R. NINO INCANI DEPARTMENT OF PARASITOLOGY SCHISTOSOMIASIS RESEARCH GROUP UNIVERSITY OF CARABOBO VALENCIA VENEZUELA	-	-	2,000	2,000
STUDIES ON THE BIOLOGY OF SCHISTOSOMA	PROFESSOR A. LANE DE MELO DEPARTMENT OF PARASITOLOGY AND SCHISTOSOMIASIS RESEARCH UNIT INSTITUTE OF BIOLOGICAL SCIENCES BELO HORIZONTE BRAZIL	-	-	1,000	1,000

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PROGRAM: PARASITIC DISEASES (TRYPANOSOMIASES AND LEISHMANIASES)					
ECOLOGIE DE LA LEISHMANIOSE CUTANEE EN GUYANE FRANCAISE; INTER-RELATIONS PLEBOTONES - VEGETATION	DR J.-P. DEDET LABORATOIRE DE PARASITOLOGIE EXPERIMENTALE INSTITUT PASTEUR CAYENNE FRENCH GUIANA	-	-	3,750	3,750
STUDIES ON IMMUNOLOGY OF ANTIGENIC VARIATION	DR KENNETH D. STUART ISSAQUAH HEALTH RESEARCH INSTITUTE ISSAQUAH UNITED STATES OF AMERICA	8,000	-	5,000	5,000
STUDIES ON TRYPANOSOMAL PHOSPHOLIPASES	DR ALAN MELLORS UNIVERSITY OF GUELPH GUELPH CANADA	16,000	-	6,000	6,000
PROGRAM: PREVENTION AND CONTROL OF ALCOHOL AND DRUG ABUSE					
ALCOHOL EDUCATION AND YOUNG PEOPLE	DR RAMON FLORENZANO URZUA DEPARTMENT OF PSYCHIATRY AND MENTAL HEALTH UNIVERSITY OF CHILE SANTIAGO CHILE	-	-	3,000	3,000
DEVELOP. OF A MANUAL & GUIDE- LINES FOR TEACHING ON DRUG AND ALCOHOL-RELATED PROBLEMS FOR USE IN HEALTH INSTITUTIONS	DR J. WESTERMEYER DEPARTMENT OF PSYCHIATRY MEDICAL SCHOOL UNIVERSITY OF MINNESOTA MINNEAPOLIS UNITED STATES OF AMERICA	20,000	4,000	-	4,000
DEVELOPMENT OF A MANUAL AND GUIDELINES ON TECHNIQUES FOR THE MANAGEMENT OF ALCOHOL AND DRUG DEPENDENCE IN PHC	DR J. WESTERMEYER DEPARTMENT OF PSYCHIATRY MEDICAL SCHOOL UNIVERSITY OF MINNESOTA MINNEAPOLIS UNITED STATES OF AMERICA	-	9,250	-	9,250

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PROGRAM: PREVENTION AND CONTROL OF ALCOHOL AND DRUG ABUSE					
PREVENTION AND CONTROL OF ALCOHOL RELATED PROBLEMS	DR JUAN RAMON DE LA FUENTE INSTITUTO MEXICANO DE PSIQUIATRIA MEXICO MEXICO	-	-	3,000	3,000
TREATMENT AND MANAGEMENT OF PERSONS WITH HARMFUL ALCOHOL CONSUMPTION	DR ENRIQUE MADRIGAL INSTITUTO NACIONAL SOBRE ALCOHOLISMO SAN JOSE COSTA RICA	-	-	2,000	2,000
PROGRAM: PREVENTION AND TREATMENT OF MENTAL AND NEUROLOGICAL DISORDERS					
COMMUNITY CONTROL OF EPILEPSY	DR MARCELO E. CRUZ FUNDACION EUGENIO ESPEJO CENTER FOR RESEARCH AND TRAINING IN NEUROSCIENCES QUITO ECUADOR	-	-	5,000	5,000
FINALIZATION OF THE DOCUMENT ON THE SPECIAL ADAPTATION OF ICD-9 FOR NEUROLOGICAL DISORDERS, IN SPANISH	DR MARCELO E. CRUZ FUNDACION EUGENIO ESPEJO CENTER FOR RESEARCH AND TRAINING IN NEUROSCIENCES QUITO ECUADOR	-	1,000	-	1,000
FUTURE DEVELOPMENT OF THE NEUROSCIENCES PROGRAMME	DR DONALD W. BAXTER DEPT OF NEUROLOGY AND NEUROSURGERY MONTREAL NEUROLOGICAL INSTITUTE MCGILL UNIVERSITY MONTREAL CANADA	-	-	2,500	2,500
	DR MURRAY GOLDSTEIN NATIONAL INSTITUTE OF NEUROLOGICAL AND COMMUNICATIVE DISORDERS & STROKE NATIONAL INSTITUTES OF HEALTH BETHESDA UNITED STATES OF AMERICA	-	-	2,750	2,750

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PROGRAM: PROTECTION AND PROMOTION OF MENTAL HEALTH					
ASSESSMENT OF DEMANDS FOR SERVICES OF THE MENTALLY ILL	DR EUGENE M. LASKA STATISTICAL SCIENCES & EPIDEMIOLOGY DIVISION, NATHAN KLINE INSTITUTE FOR PSYCHIATRIC RESEARCH ORANGEBURG UNITED STATES OF AMERICA	-	-	4,000	4,000
INFORMATION TRANSFER FOR SUICIDE PREVENTION	MS KATHY BENTLEY SUICIDE INFORMATION AND EDUCATION CENTRE CALGARY CANADA	-	-	500	500
PROGRAM: PUBLIC INFORMATION AND EDUCATION FOR HEALTH (HEALTH EDUCATION SERVICE)					
DEVELOPMENT OF INDICATORS FOR PUBLIC INFORMATION AND EDUCATION FOR HEALTH PROGRAMME PROGRESS REVIEW	DR SHEKHOU KAR SCHOOL OF PUBLIC HEALTH UNIVERSITY OF CALIFORNIA AT LOS ANGELES LOS ANGELES UNITED STATES OF AMERICA	-	35,000	-	35,000
PROGRAM: SEXUALLY TRANSMITTED DISEASES					
ETIOLOGICAL STUDIES OF MALE URETHRITIS	DR KING K. HOLMES SCHOOL OF MEDICINE UNIVERSITY OF WASHINGTON SEATTLE UNITED STATES OF AMERICA	-	2,500	-	2,500
IMMUNITY IN TREPONEMATOSES	PROFESSOR RONALD F. SCHELL DEPT OF BACTERIOLOGY, STATE LAB. OF HYGIENE, UNIVERSITY OF WISCONSIN CENTER FOR HEALTH SCIENCES MADISON UNITED STATES OF AMERICA	-	-	3,000	3,000

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WHO PROGRAM / PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
PROGRAM: SEXUALLY TRANSMITTED DISEASES					
RECHERCHES CLINIQUES ET ETIOLOGIQUES DES ULCERES GENITAUX	DR Y. ROBIN PASTEUR INSTITUTE OF FRENCH GUYANA CAYENNE FRENCH GUYANA	-	2,000	-	2,000
RESEARCH ON THE IMMUNOGENIC COMPONENTS OF N. GONORRHEAE	DR EMIL C. GOTSCHLICH THE ROCKEFELLER UNIVERSITY NEW YORK UNITED STATES OF AMERICA	23,300	3,000	6,000	9,000
STUDIES ON IMMUNOGEN(S) OF TREPONEMA PALLIDUM	DR M.V. NORGARD DEPARTMENT OF MICROBIOLOGY SOUTHWESTERN MEDICAL SCHOOL UNIV.OF TEXAS HEALTH SCIENCE CENTRE DALLAS UNITED STATES OF AMERICA	21,000	6,000	6,000	12,000
TREPONEMAL IMMUNIZATION	PROFESSOR JAMES NATHANIEL MILLER DEPARTMENT OF M. AND J. (43-239 CHS) U.C.L.A. SCHOOL OF MEDICINE LOS ANGELES UNITED STATES OF AMERICA	13,000	4,000	19,000	23,000
PROGRAM: SMALLPOX ERADICATION SURVEILLANCE					
MONOGRAPH ENTITLED "SMALLPOX AND ITS ERADICATION"	DR D.A. HENDERSON SCHOOL OF HYGIENE AND PUBLIC HEALTH JOHNS HOPKINS UNIVERSITY BALTIMORE UNITED STATES OF AMERICA	120,000	-	35,000	35,000
PROGRAM: TUBERCULOSIS					
EFFECTIVENESS OF BCG VACCINATION	DR V. MUNSCH FILHO DEPARTMENT OF PREVENTIVE MEDICINE FACULTY OF MEDICINE UNIVERSITY OF SAO PAULO SAO PAULO BRAZIL	-	1,500	-	1,500

REPORT ON INSTITUTIONALLY BASED RESEARCH RELATED ACTIVITIES IN THE AMERICAN REGION, 1984-1985

SUPPORTED BY WHO THROUGH TECHNICAL SERVICES AGREEMENTS
(ALL FIGURES EXPRESSED IN US DOLLARS)

WHO PROGRAM / PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
PROGRAM: TUBERCULOSIS					
EVALUATION OF THE EFFECTIVENESS OF BCG VACCINATION	DR C. SALGADO DIVISION DE SALUD FACULTAD DE MEDICINA UNIVERSIDAD DEL VALLE CALI COLOMBIA	30,000	-	8,000	8,000
GLOBAL SURVEY OF DRUG RESISTANCE IN TUBERCULOSIS	DR I. N. KANTOR TUBERCULOSIS LABORATORY CEPANZO PAN AMERICAN ZOONOSIS CENTRE BUENOS AIRES ARGENTINA	-	3,000	-	3,000
PROGRAM: WORKERS' HEALTH					
FEASIBILITY STUDY ON EXTENDING PRIMARY HEALTH CARE TO UNDERSERVED WORKING POPULATION	MR R. N. BOWDEN INSTITUTE OF PUBLIC HEALTH DEPARTMENT OF OCCUPATIONAL HEALTH MINISTRY OF HEALTH SANTIAGO CHILE	-	-	5,000	5,000
HEALTH IN MINING	DR RAYMOND SELTZER GRADUATE SCHOOL OF PUBLIC HEALTH UNIVERSITY OF PITTSBURGH PITTSBURGH UNITED STATES OF AMERICA	5,500	-	5,000	5,000
STUDY OF SPECIAL RISK FACTORS OF CHILDREN AT WORK	DR HERNAN SANDOVAL ORELLANA SERVICIOS MEDICOS PREVENTIVOS HOSPITAL DEL TRABAJADOR ASOCIACION CHILENA DE SEGURIDAD SANTIAGO CHILE	-	3,000	-	3,000
TO UNDERTAKE FIELD INVESTIGATIONS OF HEALTH PROBLEMS IN THE SMALL SCALE INDUSTRIES AND TO DEVELOP A PROGRAMME OF PHC	DR SONIA CHAVES DE J DIVISION OF OCCUPATIONAL HEALTH MINISTRY OF HEALTH BOGOTA COLOMBIA	-	-	5,000	5,000

REPORT ON INSTITUTIONALLY BASED RESEARCH RELATED ACTIVITIES IN THE AMERICAN REGION, 1984-1985

SUPPORTED BY WHO THROUGH TECHNICAL SERVICES AGREEMENTS
(ALL FIGURES EXPRESSED IN US DOLLARS)

WHO PROGRAM / PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
PROGRAM: WORKERS' HEALTH					
TO UNDERTAKE FIELD INVESTIGATIONS OF WORK-RELATED DISEASES	DR ANTONIO GRANDA IBARRA INSTITUTE OF OCCUPATIONAL HEALTH MINISTRY OF HEALTH HABANA CUBA	-	-	5,000	5,000
PROGRAM: ZOOZOSES					
STUDIES ON MICROBIOLOGICAL SPECIFICATIONS FOR FOODS	DR F.L. BRYAN FIELD SERVICES BRANCH CENTERS FOR DISEASE CONTROL U.S. PUBLIC HEALTH SERVICE ATLANTA UNITED STATES OF AMERICA	3,000	3,000	2,500	5,500
WHO COORDINATED PROGRAMME ON DOG RABIES ELIMINATION	PROFESSOR GEORGE W. BERAN DEPT OF VETERINARY MICROBIOLOGY AND PREVENTIVE MEDICINE, COLLEGE OF VETERINARY MED., IOWA STATE UNIV. AMES UNITED STATES OF AMERICA	7,000	20,000	12,000	32,000

WHO PROGRAM FOR THE CONTROL OF DIARRHEAL DISEASES

SCIENTIFIC WORKING GROUP CODES:

AMR	American Region
BEI	Bacterial Enteric Infections
DDM	Drug Development And Management Of Acute Diarrhoeas
GGG	Global/Global Groups
GRG	Global/Regional Groups
PAR	Parasitic Diarrhoeas
VID	Viral Diarrhoeas

Figures shown in the Annex represent approved project budgets and are not necessarily identical to the figures for either legal obligations or actual disbursements as presented in the Program's financial statements.

NUMBER OF FUNDED PROJECTS IN THE AMERICAN REGION OF THE WHO PROGRAM FOR THE CONTROL OF DIARRHOEAL DISEASES,
 BY COUNTRY AND SCIENTIFIC WORKING GROUP (SWG), 1984-1985
 (BUDGET IN US DOLLARS)

COUNTRY	SWG	1984		1985		TOTAL		COUNTRY		1984		1985		TOTAL	
		NO.	BUDGET NO.	BUDGET NO.	BUDGET NO.	NO.	BUDGET	NO.	BUDGET	NO.	BUDGET NO.	BUDGET NO.	BUDGET	NO.	BUDGET
ARGENTINA	AMR	1	7,300	-	-	1	7,300	MEXICO	PAR	-	-	1	23,348	1	23,348
	DDM	1	29,855	-	-	1	29,855								
	VID	1	10,000	1	6,000	1	16,000	TOTAL	TOTAL	1	10,300	3	78,998	4	89,298
	TOTAL	3	47,155	1	6,000	3	53,155	PARAGUAY	AMR	1	9,000	-	-	1	9,000
BELIZE	AMR	1	5,000	-	-	1	5,000	PERU	BEI	2	22,500	-	-	2	22,500
	DDM	4	48,998	-	-	4	48,998	DDM	4	48,998	8	187,998	9	236,996	
BRAZIL	AMR	1	16,635	1	23,300	1	39,935	PAR	PAR	-	-	1	15,650	1	15,650
	BEI	1	1,000	1	5,000	2	6,000	VID	VID	1	31,500	3	95,857	3	127,357
	DDM	-	-	1	30,000	1	30,000	TOTAL	TOTAL	7	102,998	12	299,505	15	402,503
	VID	2	22,282	-	-	2	22,282								
TOTAL	4	39,917	3	58,300	6	98,217	SURINAME	AMR	1	12,000	-	-	1	12,000	
CANADA	BEI	2	30,100	1	15,000	2	45,100	UNITED STATES	AMR	1	25,134	-	-	1	25,134
	DDM	1	29,915	-	-	1	29,915	BEI	6	135,002	7	184,404	10	319,406	
	VID	1	6,000	-	-	1	6,000	DDM	1	23,500	6	39,271	7	62,771	
	TOTAL	4	66,015	1	15,000	4	81,015	GRG	1	25,000	1	43,390	1	68,390	
CHILE	VID	-	-	1	12,000	1	12,000	PAR	PAR	-	-	2	31,005	2	31,005
	AMR	1	5,000	-	-	1	5,000	VID	8	125,684	11	276,158	14	401,842	
COLOMBIA	AMR	1	5,000	-	-	1	5,000	TOTAL	TOTAL	17	334,320	27	574,228	35	908,548
	DDM	-	-	1	30,000,000	1	30,000,000	VENEZUELA	AMR	1	1,600	-	-	1	1,600
COSTA RICA	VID	1	10,000	-	-	1	10,000	DDM	DDM	-	-	1	20,567	1	20,567
	TOTAL	1	10,000	1	30,000	2	40,000	TOTAL	TOTAL	1	1,600	1	20,567	2	22,167
ECUADOR	AMR	1	5,000	-	-	1	5,000	AMR	10	104,669	1	23,300	10	127,969	
	BEI	1	31,455	-	-	1	31,455	BEI	13	230,357	10	229,404	19	459,761	
GUATEMALA	BEI	1	18,000	-	-	1	18,000	DDM	7	132,268	17	307,836	21	440,104	
	AMR	1	18,000	-	-	1	18,000	GGG	-	-	1	30,650	1	30,650	
HAITI	BEI	1	10,300	1	25,000	2	35,300	GRG	1	25,000	1	43,390	1	68,390	
	GGG	-	-	1	30,650	1	30,650	PAR	-	-	4	70,003	4	70,003	
MEXICO	BEI	1	10,300	1	25,000	2	35,300	VID	14	205,466	16	390,015	23	595,481	
	GGG	-	-	1	30,650	1	30,650	TOTAL	TOTAL	45	697,760	50	1,094,598	79	1,792,358

* - NUMBER OF UNIQUE PROJECTS

WHO PROGRAM FOR THE CONTROL OF DIARRHOEAL DISEASES

REPORT ON ALL FUNDED PROJECTS ACTIVE IN THE AMERICAN REGION DURING 1984-1985, BY SCIENTIFIC WORKING GROUP,
AS OF 31 DECEMBER 1985
(ALL FIGURES EXPRESSED IN US DOLLARS)

SCIENTIFIC WORKING GROUP (SWG) PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985

SWG: AMERICAN REGION					
COMMUNITY ACCEPTANCE OF ORAL REHYDRATION IN HAITI	DR JEANNINE COREIL DEPARTMENT OF PREVENTIVE MEDICINE AND COMMUNITY HEALTH UNIVERSITY OF TEXAS MEDICAL BRANCH GALVESTON UNITED STATES OF AMERICA	-	25,134	-	25,134
CREENCIAS, VALORES, PAUTAS CULTURALES POBLACION ARGENTINA EN RELACION CON DIARREA INFANTIL	DRA AIDA BARBATO DIRECCION NACIONAL MATERNIDAD E IN- FANCIA, MINISTERIO DE SALUD PUBLICA Y ACCION SOCIAL BUENOS AIRES ARGENTINA	-	7,300	-	7,300
DIFERENCIAS REGIONALES DEL DESARROLLO DE SERVICIOS DE SALUD Y MORTALIDAD TEMPRANA POR CED Y ARI	DR W. REVELLO EL CEMENTERIO LOS CASTANOS VENEZUELA	-	1,600	-	1,600
EPIDEMIOLOGICAL CHARACTERIS- TICS OF DIARRHOEAL DISEASES IN URBAN PERIPHERAL COMMUNITY IN RIO DE JANEIRO	DR M. DO CARMO LEAL DEPT OF EPIDEMIOLOGY NATIONAL SCHOOL OF PUBLIC HEALTH FUNDACAO OSWALDO CRUZ RIO DE JANEIRO BRAZIL	-	16,635	23,300	39,935
EPIDEMIOLOGY OF ROTAVIRUS, ETEC AND CAMPYLOBACTER JEJUNI IN SURINAME	DR S. HERMELIJN INSTITUTE OF BIOMEDICAL SCIENCES DEPT OF MICROBIOLOGY AND IMMUNOLOGY PARAMARIBO SURINAME	-	12,000	-	12,000
IMPACTO DE LA EDUCACION SANITARIA EN EL CONTROL DE DIARREA	DR D. BERSH COMITE DEPARTAMENTAL DE CAFETEROS DE QUINDIO ARMENIA COLOMBIA	-	5,000	-	5,000

WHO PROGRAM FOR THE CONTROL OF DIARRHOEAL DISEASES

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AS OF 31 DECEMBER 1985
(ALL FIGURES EXPRESSED IN US DOLLARS)

SCIENTIFIC WORKING GROUP (SWG) PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
SWG: AMERICAN REGION					
RESEARCH ON HEALTH BEHAVIOR: TRADITIONAL BELIEFS RELATED TO THE CONTROL OF DIARRHOEAL DISEASES IN BELIZE	DR J. J. HURTADO MINISTRY OF HEALTH BELIZE CITY BELIZE	-	5,000	-	5,000
TERAPIA REHIDRATACION ORAL EN LA FAMILIA Y LA COMUNIDAD	DR Q. G. DE GODOY DPTO. MATERNO INFANTIL MINISTERIO DE SALUD PUBLICA Y BIENESTAR SOCIAL ASUNCION PARAGUAY	-	9,000	-	9,000
TREATMENT OF CHILDHOOD DIARRHOEA IN RURAL AND URBAN HAITI	DR JAMES ALLMAN DIRECTION D'HYGIENE FAMILIALE ET DE NUTRITION PORT-AU-PRINCE HAITI	-	18,000	-	18,000
USAGE AND IMPACT OF ORAL REHYDRATION UNITS IN ECUADOR	DR L. SALVADOR PROGRAMA DE CONTROL DE ENFERMEDADES DIARREICAS MINISTERIO DE SALUD PUBLICA QUITO ECUADOR	-	5,000	-	5,000
SWG: BACTERIAL ENTERIC INFECTIONS					
COMPARISON OF THE EFFICACY OF 2, 3 OR 4 DOSES OF TY21A LIVE ORAL TYPHOID VACCINE GIVEN IN ENTERIC-COATED FORMULATIONS	DR MYRON MAX LEVINE CENTRE FOR VACCINE DEVELOPMENT SCHOOL OF MEDICINE UNIVERSITY OF MARYLAND BALTIMORE UNITED STATES OF AMERICA	-	34,560	50,298	84,858

WHO PROGRAM FOR THE CONTROL OF DIARRHOEAL DISEASES

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SCIENTIFIC WORKING GROUP (SWG) PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
SWG: BACTERIAL ENTERIC INFECTIONS					
DEVELOPMENT OF AN ANIMAL MODEL FOR THE ASSAY OF TYPHOID VACCINES	DR BENITO B. DIENA BUREAU OF BACTERIOLOGY LAB. CENTRE FOR DISEASE CONTROL TUNNEY'S PASTURE, HEALTH & WELFARE OTTAWA CANADA	10,250	12,100	-	12,100
DEVELOPMENT OF IMMUNOASSAYS FOR E. COLI HEAT-STABLE ENTEROTOXINS (STA)	PROFESSOR RALPH A. GIANNELLA DIVISION OF DIGESTIVE DISEASES COLLEGE OF MEDICINE UNIVERSITY OF CINCINNATI CINCINNATI UNITED STATES OF AMERICA	7,000	26,700	12,000	38,700
EFFECT OF BREASTFEEDING ON DIARRHOEAL DISEASE MORBIDITY: EPIDEMIOLOGICAL AND IMMUNO- LOGICAL STUDIES	DR JOSE RAMIRO CRUZ INSTITUTE OF NUTRITION OF CENTRAL AMERICA AND PANAMA GUATEMALA GUATEMALA	-	31,455	-	31,455
ENTEROTOXINS PRODUCED BY CAMPYLOBACTER JEJUNI	DR GUILLERMO M. RUIZ-PALACIOS INSTITUTO NACIONAL DE LA NUTRICION SALVADOR ZUBIRAN MEXICO MEXICO	15,000	-	25,000	25,000
EVALUATION STUDY OF A SLIDE AGGLUTINATION SEROTYPING SCHEME	DR HERMY LIOR BUREAU OF MICROBIOLOGY LAB. CENTRE FOR DISEASE CONTROL DEPT OF NATIONAL HEALTH AND WELFARE OTTAWA CANADA	2,000	18,000	15,000	33,000
FAMILY AND ENVIRONMENTAL STUDIES ON TRANSMISSION OF CAMPYLOBACTER JEJUNI	DR OSCAR GRADOS LABORATORIO NACIONAL DE REFERENCIA DE ENTEROBACTERIAS INSTITUTO DE SALUD PUBLICA LIMA PERU	26,755	12,500	-	12,500

WHO PROGRAM FOR THE CONTROL OF DIARRHOEAL DISEASES

REPORT ON ALL FUNDED PROJECTS ACTIVE IN THE AMERICAN REGION DURING 1984-1985, BY SCIENTIFIC WORKING GROUP,
AS OF 31 DECEMBER 1985
(ALL FIGURES EXPRESSED IN US DOLLARS)

SCIENTIFIC WORKING GROUP (SWG) PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
SWG: BACTERIAL ENTERIC INFECTIONS					
FIELD TRIALS OF THE EFFICACY OF TY21A ATTENUATED SALMONELLA TYPHI ORAL VACCINE IN SANTIAGO, CHILE	DR MYRON MAX LEVINE CENTRE FOR VACCINE DEVELOPMENT SCHOOL OF MEDICINE UNIVERSITY OF MARYLAND BALTIMORE UNITED STATES OF AMERICA	9,950	24,600	42,676	67,276
GENETICS AND TOXIN PRODUCTION IN SHIGELLA DYSENTERIAE	DR DANA H. BOYD TUFTS UNIVERSITY BOSTON UNITED STATES OF AMERICA	15,000	15,000	-	15,000
INTERLABORATORY TRIAL TO EVALUATE THE BIKEN TEST TO DETECT LT AND ST	PROFESSOR LUIZ R. TRABULSI DEPARTMENT OF MICROBIOLOGY ESCOLA PAULISTA DE MEDICINA SAO PAULO BRAZIL	3,000	1,000	-	1,000
ISOLATION & CHARACTERIZATION OF ENTEROADHERENT FACTOR OF ENTEROPATHOGENIC E.COLI & ITS RECEPTOR ON HUMAN EPITHELIUM	DR G.K. SCHOOLNIK DEPARTMENT OF MEDICAL MICROBIOLOGY SCHOOL OF MEDICINE STANFORD UNIVERSITY STANFORD UNITED STATES OF AMERICA	-	-	21,000	21,000
PREVALENCE OF ENTEROPATHOGENIC ESCHERICHIA COLI IN STOOLS OF URBAN CHILDREN, WITH AND WITHOUT DIARRHOEA	PROFESSOR LUIZ R. TRABULSI DEPARTMENT OF MICROBIOLOGY ESCOLA PAULISTA DE MEDICINA SAO PAULO BRAZIL	-	-	5,000	5,000
PROGNOSTIC CRITERIA FOR CARRIER STATE AND/OR RELAPSE IN TYPHOID FEVER PATIENTS	DR JORGE GUERRA INSTITUTO DE MEDICINA TROPICAL "ALEXANDER VON HUMBOLDT" UNIVERSIDAD PERUANA CAYETANO HEREDIA LIMA PERU	20,000	10,000	-	10,000

WHO PROGRAM FOR THE CONTROL OF DIARRHOEAL DISEASES

REPORT ON ALL FUNDED PROJECTS ACTIVE IN THE AMERICAN REGION DURING 1984-1985, BY SCIENTIFIC WORKING GROUP,
AS OF 31 DECEMBER 1985
(ALL FIGURES EXPRESSED IN US DOLLARS)

SCIENTIFIC WORKING GROUP (SWG) PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
SWG: BACTERIAL ENTERIC INFECTIONS					
PROTECTIVE EFFECT OF BREAST MILK ANTIBODIES AGAINST COLON- IZATION & DIARRHOEA BY E.COLI & ROTAVIRUS IN MEXICAN INFANTS	DR ALEJANDRO CRAVIOTO INSTIT. NACIONAL DE CIENCIAS TECNOL. DE LA SALUD DEL NINO DEL PROGRAMA DE DESARROLLO INTEGRAL DE LA FAMILIA MEXICO MEXICO	-	10,300	-	10,300
ROLE OF BREAST MILK IGA ANTIBODIES TO CAMPYLOBACTER JEJUNI IN A DEVELOPED AND A DEVELOPING COUNTRY	DR MARTIN J. BLASER DIVISION OF INFECTIOUS DISEASES UNIVERSITY OF COLORADO HEALTH SCIENCES CENTER DENVER UNITED STATES OF AMERICA	-	-	16,530	16,530
SAFETY, INFECTIVITY, IMMUNO- GENICITY AND TRANSMISSIBILITY OF ATTENUATED ARO, PUR S.TYPHI STRAINS 541TY AND 543TY	DR MYRON MAX LEVINE CENTRE FOR VACCINE DEVELOPMENT SCHOOL OF MEDICINE UNIVERSITY OF MARYLAND BALTIMORE UNITED STATES OF AMERICA	-	-	26,900	26,900
STUDY OF A NEW MECHANISM OF E. COLI DIARRHOEA	DR J.ROBERT CANTEY MEDICAL UNIVERSITY OF SOUTH CAROLINA CHARLESTON UNITED STATES OF AMERICA	15,632	14,626	-	14,626
STUDY ON THE IMMUNOGENICITY AND EFFICACY OF ORAL CHOLERA VACCINES	PROFESSOR ROBERT E. BLACK DEPARTMENT OF INTERNATIONAL HEALTH THE JOHNS HOPKINS UNIVERSITY SCHOOL OF HYGIENE AND PUBLIC HEALTH BALTIMORE UNITED STATES OF AMERICA	5,000	19,516	-	19,516
VIBRIO CHOLERAE AND RELATED VIBRIOS IN THE AQUATIC ENVIRONMENT	DR R.R. COLWELL DEPARTMENT OF MICROBIOLOGY SCHOOL OF MEDICINE UNIVERSITY OF MARYLAND COLLEGE PARK UNITED STATES OF AMERICA	52,200	-	15,000	15,000

WHO PROGRAM FOR THE CONTROL OF DIARRHOEAL DISEASES

REPORT ON ALL FUNDED PROJECTS ACTIVE IN THE AMERICAN REGION DURING 1984-1985, BY SCIENTIFIC WORKING GROUP,
AS OF 31 DECEMBER 1985

(ALL FIGURES EXPRESSED IN US DOLLARS)

SCIENTIFIC WORKING GROUP (SWG) PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
SWG: DRUG DEVELOPMENT AND MANAGEMENT OF ACUTE DIARRHOEAS					
BACTERIAL OVERGROWTH IN GIARDIASIS AND CHRONIC DIARRHOEA	DR P.L. BARUA FACULTAD DE MEDICINA UNIVERSIDAD PERUANA CAYETANO HEREDIA LIMA PERU	-	-	16,850	16,850
	DR ROBERT H. GILMAN DIVISION OF GEOGRAPHIC MEDICINE SCHOOL OF MEDICINE JOHNS HOPKINS UNIVERSITY BALTIMORE UNITED STATES OF AMERICA	-	-	6,200	6,200
CLINICAL TREATMENT OF DIARRHOEAL DISEASES	DR EDUARDO SALAZAR-LINDO UNIVERSIDAD PERUANA CAYETANO HEREDIA LIMA PERU	-	25,000	25,000	50,000
COMPARISON OF EFFICACY OF A GLUCOSE/GLYCINE/GLYCYL-GLYCINE ELECTROLYTE SOLUTION VERSUS THE STANDARD WHO-ORS	DR DANIEL PIZARRO SERVICIO DE EMERGENCIAS MEDICAS HOSPITAL NACIONAL DE NIÑOS "DR CARLOS SAENZ HERRERA" SAN JOSE COSTA RICA	-	-	30,000	30,000
CONTROLLED TRIAL COMPARING AMINO ACIDS AND MALTO-DEXTRINS IN THE NEW ORAL REHYDRATION FORMULA	DR HANS ROMER SERVICIO DE GASTROENTEROLOGIA HOSPITAL DE NIÑOS "J.M. DE LOS RIOS" CARACAS VENEZUELA	-	-	20,567	20,567
DEFINITIONS, EPIDEMIOLOGY, ETIOLOGY, IMPACT, AND PATHOGENESIS OF CHRONIC DIARRHOEA	DR RICHARD LITTLETON GUERRANT SCHOOL OF MEDICINE UNIVERSITY OF VIRGINIA CHARLOTTESVILLE UNITED STATES OF AMERICA	-	-	5,000	5,000

WHO PROGRAM FOR THE CONTROL OF DIARRHOEAL DISEASES
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 AS OF 31 DECEMBER 1985
 (ALL FIGURES EXPRESSED IN US DOLLARS)

SCIENTIFIC WORKING GROUP (SWG) PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
SWG: DRUG DEVELOPMENT AND MANAGEMENT OF ACUTE DIARRHOEAS					
DIETARY MANAGEMENT OF ACUTE CHILDHOOD DIARRHOEA USING COMMON LACTOSE-CONTAINING OR LACTOSE-LIMITED FOODS	DR KENNETH H. BROWN SCHOOL OF HYGIENE AND PUBLIC HEALTH JOHNS HOPKINS UNIVERSITY BALTIMORE UNITED STATES OF AMERICA	-	-	3,600	3,600
	DR A. GASTANADUY INSTITUTO DE INVESTIGACION NUTRICIONAL LIMA PERU	-	-	54,305	54,305
EPIDEMIOLOGY OF PROLONGED DIARRHOEA IN LIMA, PERU	DR CLAUDIO FRANCO LANATA INSTITUTO DE INVESTIGACION NUTRICIONAL LIMA PERU	-	-	29,000	29,000
	PROFESSOR ROBERT E. BLACK DEPARTMENT OF INTERNATIONAL HEALTH THE JOHNS HOPKINS UNIVERSITY SCHOOL OF HYGIENE AND PUBLIC HEALTH BALTIMORE UNITED STATES OF AMERICA	-	-	6,900	6,900
EVALUATION OF DIFFERENT DIETS IN MALNOURISHED CHILDREN WITH ACUTE DIARRHOEA	DR ALEJANDRO MARIO O'DONNELL CENTRO DE ESTUDIOS SOBRE NUTRICION INFANTIL (CESNI) BUENOS AIRES ARGENTINA	-	29,855	-	29,855
IMPACT OF MALNUTRITION ON SMALL INTESTINAL EPITHELIAL REPAIR AFTER ENTERIC INFECTION	DR J. RICHARD HAMILTON DIVISION OF GASTROENTEROLOGY RESEARCH INSTITUTE HOSPITAL FOR SICK CHILDREN TORONTO CANADA	25,139	29,915	-	29,915

WHO PROGRAM FOR THE CONTROL OF DIARRHOEAL DISEASES

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AS OF 31 DECEMBER 1985
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SCIENTIFIC WORKING GROUP (SWG) PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
SWG: DRUG DEVELOPMENT AND MANAGEMENT OF ACUTE DIARRHOEAS					
ORAL REHYDRATION THERAPY FOR SEVERELY MALNOURISHED MARASMIC CHILDREN	DR EDUARDO SALAZAR-LINDO UNIVERSIDAD PERUANA CAYETANO HEREDIA LIMA PERU	-	9,300	5,525	14,825
ORAL REHYDRATION THERAPY WITH GLYCINE-ORS IN INFANTILE DIARRHOEA: CONTROLLED CLINICAL TRIAL	DR EDUARDO SALAZAR-LINDO UNIVERSIDAD PERUANA CAYETANO HEREDIA LIMA PERU	-	8,360	4,200	12,560
PATHOGENESIS AND NUTRITIONAL CONSEQUENCES OF PROLONGED DIARRHOEA	DR GUILLERMO LOPEZ DE ROMANA INSTITUTO DE INVESTIGACION NUTRICIONAL LIMA PERU	-	-	31,118	31,118
PROSPECTIVE STUDY OF LOW GASTRIC ACID SECRETION AS A RISK FACTOR FOR CHILDHOOD DIARRHOEA IN LIMA	DR KENNETH H. BROWN SCHOOL OF HYGIENE AND PUBLIC HEALTH JOHNS HOPKINS UNIVERSITY BALTIMORE UNITED STATES OF AMERICA	-	-	4,411	4,411
STUDY ON DEVELOPMENT OF NUTRITIOUS, HYGIENIC WEANING FOODS TO REDUCE DIARRHOEA AND MALNUTRITION IN PERU	DR CLAUDIO FRANCO LANATA INSTITUTO DE INVESTIGACION NUTRICIONAL LIMA PERU	-	-	22,000	22,000
	PROFESSOR R. BRADLEY SACK GEOGRAPHIC MEDICINE DIVISION THE BALTIMORE CITY HOSPITALS BALTIMORE UNITED STATES OF AMERICA	-	-	13,160	13,160
	DR GUILLERMO LOPEZ DE ROMANA INSTITUTO DE INVESTIGACION NUTRICIONAL LIMA PERU	36,350	6,338	-	6,338

WHO PROGRAM FOR THE CONTROL OF DIARRHOEAL DISEASES

REPORT ON ALL FUNDED PROJECTS ACTIVE IN THE AMERICAN REGION DURING 1984-1985, BY SCIENTIFIC WORKING GROUP,
AS OF 31 DECEMBER 1985
(ALL FIGURES EXPRESSED IN US DOLLARS)

SCIENTIFIC WORKING GROUP (SWG) PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
SWG: DRUG DEVELOPMENT AND MANAGEMENT OF ACUTE DIARRHOEAS					
STUDY ON DEVELOPMENT OF NUTRITIOUS, HYGIENIC MEANING FOODS TO REDUCE DIARRHOEA AND MALNUTRITION IN PERU	PROFESSOR ROBERT E. BLACK DEPARTMENT OF INTERNATIONAL HEALTH THE JOHNS HOPKINS UNIVERSITY SCHOOL OF HYGIENE AND PUBLIC HEALTH BALTIMORE UNITED STATES OF AMERICA	23,650	23,500	-	23,500
STUDY ON INTER-RELATIONSHIPS BETWEEN FEEDING MOOE, MALNUTRITION & DIARRHOEA MORBIDITY IN EARLY INFANCY	DR JOSE CARLOS MARTINES DEPARTMENT OF SOCIAL MEDICINE FACULTY OF MEDICINE FEDERAL UNIVERSITY OF PELOTAS PELOTAS BRAZIL	-	-	30,000	30,000
SWG: GLOBAL/GLOBAL GROUPS					
MULTICENTRE HOSPITAL-BASED CONTROL STUDY OF THE AETIOLOGY OF DIARRHOEA IN THE FIRST THREE YEARS OF LIFE	DR JORGE OLARTE LAB. DE BACTERIOLOGIA INTESTINAL HOSPITAL INFANTIL DE MEXICO FEDERICO GOMEZ MEXICO MEXICO	27,300	-	30,650	30,650
SWG: GLOBAL/REGIONAL GROUPS					
STUDIES TO CONTROL ENDEMIC TYPHOID FEVER IN CHILE	DR MYRON MAX LEVINE CENTRE FOR VACCINE DEVELOPMENT SCHOOL OF MEDICINE UNIVERSITY OF MARYLAND BALTIMORE UNITED STATES OF AMERICA	102,600	25,000	43,390	68,390

WHO PROGRAM FOR THE CONTROL OF DIARRHOEAL DISEASES

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SCIENTIFIC WORKING GROUP (SWG) PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
SWG: VIRAL DIARRHOEAS					
A STUDY OF MEASLES ASSOCIATED DIARRHOEA	PROFESSOR R. BRADLEY SACK GEOGRAPHIC MEDICINE DIVISION THE BALTIMORE CITY HOSPITALS BALTIMORE UNITED STATES OF AMERICA	-	-	20,285	20,285
APPROACHING THE CONTROL OF ROTAVIRUS GASTROENTERITIS THROUGH THE USE OF CLONED ROTAVIRAL GENES	DR MARY KOLB ESTES DEPARTMENT OF VIROLOGY AND EPIDEMIOLOGY BAYLOR COLLEGE OF MEDICINE HOUSTON UNITED STATES OF AMERICA	-	15,000	15,000	30,000
CELLULAR IMMUNE RESPONSES TO ROTAVIRUS INFECTION	PROFESSOR NEIL RICHARD BLACKLOW DIVISION OF INFECTIOUS DISEASES, DEPT OF MEDICINE, UNIV. OF MASSACHUSETTS MEDICAL SCHOOL WORCESTER UNITED STATES OF AMERICA	-	20,000	21,200	41,200
EFFICACY OF THE RHESUS AND RIT 4237 ROTAVIRUS VACCINES IN LIMA	DR CLAUDIO FRANCO LANATA INSTITUTO DE INVESTIGACION NUTRICIONAL LIMA PERU	-	-	27,725	27,725
HUMAN ROTAVIRUSES IN DOMESTIC SEWAGE AND EFFLUENTS	PROFESSOR ROBERT E. BLACK DEPARTMENT OF INTERNATIONAL HEALTH THE JOHNS HOPKINS UNIVERSITY SCHOOL OF HYGIENE AND PUBLIC HEALTH BALTIMORE UNITED STATES OF AMERICA	-	-	32,275	32,275
	PROF. JOSEPH L. MELNICK DEPT OF VIROLOGY & EPIDEMIOLOGY BAYLOR COLLEGE OF MEDICINE HOUSTON UNITED STATES OF AMERICA	10,000	-	13,300	13,300

WHO PROGRAM FOR THE CONTROL OF DIARRHOEAL DISEASES

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SCIENTIFIC WORKING GROUP (SWG) PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
SWG: VIRAL DIARRHOEAS					
IMMUNE RESPONSE TO PURIFIED PROTEINS OF ROTAVIRUS: DEVELOPMENT AND EVALUATION OF A POTENTIAL VACCINE	DR LAURE AURELIAN DIVISION OF COMPARATIVE MEDICINE SCHOOL OF MEDICINE JOHNS HOPKINS UNIVERSITY BALTIMORE UNITED STATES OF AMERICA	48,156	14,784	-	14,784
IMMUNOLOGIC AND PATHOLOGIC ASPECTS OF GUT-ROTAVIRUS INTERACTION	DR MARIE RIEPENHOFF-TALTY DIVISION OF INFECTIOUS DISEASES AND VIROLOGY CHILDREN'S HOSPITAL BUFFALO UNITED STATES OF AMERICA	11,500	17,500	20,000	37,500
INTESTINAL IGA IMMUNE RESPONSE TO ROTAVIRUS INFECTIONS: EVALUATION OF ORAL ADJUVANTS	DR ALFONSO TORRES-MEDINA DIAGNOSTIC LABORATORY NEW YORK STATE COLLEGE OF VET. MED. CORNELL UNIVERSITY ITHACA UNITED STATES OF AMERICA	-	-	12,500	12,500
LONGITUDINAL STUDY OF ROTA- VIRUS INFECTION AMONG CHILDREN FROM BELEM	DR A. DA COSTA LINHARES VIROLOGY SECTION INSTITUTO EVANDRO CHAGAS BELEM BRAZIL	29,820	12,782	-	12,782
MURINE ROTAVIRUS MODEL: EVAL- OF POTENTIAL VACCINES; CELL- MEDIATED IMMUNOLOGICAL STUDIES OF EDIM GASTROENTERITIS	DR JOHN F. SHERIDAN DEPARTMENT OF HEMATOLOGY/ONCOLOGY OHIO STATE UNIVERSITY RESEARCH FOUNDATION COLUMBUS UNITED STATES OF AMERICA	-	15,000	-	15,000
PREPARATION OF POLYCLONAL MONOSPECIFIC ANTISERA TO THE NEUTRALIZABLE ANTIGEN(S) OF HUMAN AND ANIMAL ROTAVIRUSES	DR MARGARET ELIZABETH THOULESS DEPARTMENT OF PATHOBIOLOGY SCHOOL OF PUBLIC HEALTH UNIVERSITY OF WASHINGTON SEATTLE UNITED STATES OF AMERICA	10,000	10,000	-	10,000

WHO PROGRAM FOR THE CONTROL OF DIARRHOEAL DISEASES

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SCIENTIFIC WORKING GROUP (SWG) PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
SWG: VIRAL DIARRHOEAS					
PRODUCTION & CHARACTERIZATION OF SEROTYPE SPECIFIC MONO- CLONAL ANTIBODIES	DR HARRY B. GREENBERG THE BOARD OF TRUSTEES OF THE LELAND STANFORD JUNIOR UNIVERSITY SCHOOL OF MEDICINE STANFORD UNITED STATES OF AMERICA	26,192	-	25,000	25,000
PROTECTIVE EFFICACY OF LIVE, ATTENUATED ROTAVIRUS VACCINE RIT (4237) IN LIMA	DR CLAUDIO FRANCO LANATA INSTITUTO DE INVESTIGACION NUTRICIONAL LIMA PERU	-	31,500	53,650	85,150
RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED TRIAL OF ORAL ATTENUATED RHESUS ROTA- VIRUS STRAIN VACCINE MMU 18006	PROFESSOR ROBERT E. BLACK DEPARTMENT OF INTERNATIONAL HEALTH THE JOHNS HOPKINS UNIVERSITY SCHOOL OF HYGIENE AND PUBLIC HEALTH BALTIMORE UNITED STATES OF AMERICA	-	8,400	34,200	42,600
ROLE OF CELL-MEDIATED IMMUNITY IN AGE DEPENDENT RESISTANCE AND IMMUNITY AGAINST MURINE ROTAVIRUS	DR MARGARET B. RENNELS CENTRE FOR VACCINE DEVELOPMENT SCHOOL OF MEDICINE UNIVERSITY OF MARYLAND BALTIMORE UNITED STATES OF AMERICA	-	-	57,398	57,398
ROTAVIRUS NOSOCOMIAL INFECTION IN SANTIAGO, CHILE	DR ARNOST CEPICA FAC. OF VET. MED. ATLANTIC VETERINARY COLLEGE UNIV. OF PRINCE EDWARD ISLAND CHARLOTTETOWN CANADA	-	6,000	-	6,000
	DR LUIS FIDEL AVENDANO DEP. DE MICROB. Y PARASITOLOGIA FACULTAD DE MEDICINA D.C.M. NORTE UNIVERSIDAD DE CHILE SANTIAGO CHILE	-	-	12,000	12,000

WHO PROGRAM FOR THE CONTROL OF DIARRHOEAL DISEASES

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AS OF 31 DECEMBER 1985
(ALL FIGURES EXPRESSED IN US DOLLARS)

SCIENTIFIC WORKING GROUP (SWG) PROJECT	INVESTIGATOR(S) / INSTITUTION(S)	BUDGET 1980-1983	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985

SWG: VIRAL DIARRHOEAS					
ROTAVIRUS SEROGROUPS, SEROTYPES, GENOTYPES	DR ROBERT H. PARROTT LABORATORY OF INFECTIOUS DISEASES RESEARCH FOUNDATION OF CHILDREN'S HOSPITAL MEDICAL CENTER WASHINGTON UNITED STATES OF AMERICA	10,000	25,000	25,000	50,000
STUDIES OF THE ETIOLOGY OF VIRUS DIARRHOEA IN LOW-INCOME POPULATIONS IN RIO DE JANEIRO	DR H.G. SCHATZMAYR DEPARTMENT OF VIROLOGY FOUNDATION OSMALDO CRUZ RIO DE JANEIRO BRAZIL	35,000	9,500	-	9,500
STUDY ON ROTAVIRUS INTRA- FAMILY SPREAD	DR S. GRINSTEIN VIROLOGY-SEROLOGY LABORATORY RICARDO GUTIERREZ CHILDREN'S HOSPITAL BUENOS AIRES ARGENTINA	18,000	10,000	6,000	16,000
STUDY ON THE NATURAL HISTORY OF ROTAVIRUS INFECTION AMONG RURAL INFANTS BORN IN THE HOSPITAL ENVIRONMENT	DR LEONARDO MATA INSTITUTO DE INVESTIGACIONES EN SALUD (INISA) UNIVERSIDAD DE COSTA RICA SAN JOSE COSTA RICA	23,000	10,000	-	10,000

SPECIAL PROGRAMME FOR RESEARCH AND TRAINING IN TROPICAL DISEASES

PROGRAMME COMPONENT CODES:

BIO	Biomedical Sciences
CHA	Chagas' Disease
DIF	Director's Initiative Fund
EPD	Epidemiology
FIL	Filariasis
IST1	Small Grants
IST2	Grants for Short-term Support
IST3	Capital Grants
IST4	Grants for Long-term Support
LEI	Leishmaniasis
LEP	Leprosy
MAL	Malaria
SCH	Schistosomiasis
SER	Social and Economic Research
TRN1	Research Training Grants
TRN2	Visiting Scientist Grants
TRN3	Re-entry Grants
TRN4	Training Courses, Workshops, and Seminars
TRY	African Trypanosomiasis
VEC	Vector Biology and Control

Figures shown in the Annex represent approved project budgets and are not necessarily identical to the figures for either legal obligations or actual disbursements as presented in the Programme's financial statements.

NUMBER OF FUNDED PROJECTS IN THE REGION OF THE AMERICAS OF THE SPECIAL PROGRAMME FOR RESEARCH AND TRAINING IN TROPICAL DISEASES, BY PROGRAMME COMPONENT AND COUNTRY, 1984-1985 (BUDGET IN US DOLLARS)

COUNTRY	COMPO- NENT	1984		1985		TOTAL		COUNTRY	COMPO- NENT	1984		1985		TOTAL		
		NO.	BUDGET NO.	BUDGET NO.	BUDGET	BUDGET NO.*	BUDGET			NO.	BUDGET NO.	BUDGET NO.*	BUDGET			
ARGENTINA	CHA	10	114,400	10	141,244	13	255,644	HONDURAS	IST	-	-	1	94,300	1	94,300	
	DIF	-	-	1	5,200	1	5,200	TRN	TRN	2	7,054	-	-	2	7,054	
	IST	2	18,800	2	155,000	4	173,800	TOTAL	TOTAL	2	7,054	1	94,300	3	101,354	
	TRN	5	68,960	3	19,700	7	88,660									
	VEC	1	15,000	1	15,000	1	30,000									
TOTAL	18	217,160	17	336,144	26	553,304										
BOLIVIA	CHA	1	8,000	1	8,000	1	16,000	MEXICO	IST	1	80,500	1	23,000	1	103,500	
	IST	1	86,600	1	42,000	1	128,600	SER	SER	1	3,500	-	-	1	3,500	
	LEI	-	-	2	15,500	2	15,500	TRN	TRN	5	84,030	3	48,740	6	132,770	
	TRN	2	12,613	1	4,799	3	17,412	VEC	VEC	-	-	1	12,500	1	12,500	
	TOTAL	4	107,213	5	70,299	7	177,512	TOTAL	TOTAL	7	168,030	5	84,240	9	252,270	
BRAZIL	BIO	-	-	1	104,000	1	104,000	PANAMA	CHA	2	62,004	1	8,000	3	70,004	
	CHA	17	221,064	17	217,673	26	438,737	DIF	DIF	1	15,000	-	-	1	15,000	
	IST	1	15,000	1	65,000	2	80,000	IST	IST	1	79,000	1	63,600	1	142,600	
	LEI	-	-	6	97,129	6	97,129	TOTAL	TOTAL	4	156,004	2	71,600	5	227,604	
	MAL	3	121,444	3	101,671	5	223,115									
CANADA	SCH	2	117,455	2	80,016	4	197,471	PERU	DIF	1	15,000	-	-	1	15,000	
	SER	2	56,700	2	55,000	3	111,700	IST	IST	1	25,000	1	25,100	1	50,100	
	TRN	13	160,780	3	49,859	15	210,639	LEI	LEI	-	-	2	24,000	2	24,000	
	TOTAL	38	692,443	36	770,348	62	1,462,791	LEP	LEP	-	-	1	2,000	1	2,000	
								SER	SER	1	40,000	1	40,000	1	80,000	
CHILE	DIF	2	26,832	-	-	2	26,832	TRN	TRN	1	15,000	1	8,691	2	23,691	
	LEI	-	-	2	14,000	2	14,000	TOTAL	TOTAL	4	95,000	6	99,791	8	194,791	
	LEP	1	31,000	-	-	1	31,000									
	SCH	1	59,200	-	-	1	59,200	SURINAME	MAL	-	-	1	30,100	1	30,100	
	TRY	2	24,130	1	22,845	2	46,975	UNITED STATES	BIO	1	10,000	2	23,393	2	33,393	
COLOMBIA	TOTAL	6	141,162	3	36,845	8	178,007	CHA	CHA	6	83,601	6	86,610	10	170,211	
	CHA	1	7,000	1	7,000	1	14,000	DIF	DIF	4	36,865	2	6,316	6	43,181	
	IST	1	121,100	1	76,600	1	197,700	EPD	EPD	-	-	1	4,000	1	4,000	
	TRN	7	78,543	6	35,818	7	114,361	FIL	FIL	11	511,996	10	692,775	16	1,204,771	
	TOTAL	9	206,643	8	119,418	9	326,061	LEI	LEI	-	-	14	302,211	14	302,211	
COSTA RICA	BIO	-	-	1	58,000	1	58,000	LEP	LEP	21	716,386	22	818,279	28	1,534,665	
	CHA	1	5,156	-	-	1	5,156	MAL	MAL	26	941,336	31	1,580,602	40	2,521,938	
	DIF	-	-	1	10,000	1	10,000	SCH	SCH	10	300,803	7	230,172	14	530,975	
	EPD	2	49,020	-	-	2	49,020	SER	SER	1	3,500	-	-	1	3,500	
	IST	1	84,000	2	78,000	2	162,000	TRN	TRN	-	-	1	18,000	1	18,000	
CUBA	TRY	8	144,431	6	100,320	11	244,751	VEC	VEC	7	123,584	12	235,483	15	359,067	
	TOTAL	95	2,872,502	114	4,098,161	159	6,970,663	TOTAL	TOTAL	95	2,872,502	114	4,098,161	159	6,970,663	

NUMBER OF FUNDED PROJECTS IN THE REGION OF THE AMERICAS OF THE SPECIAL PROGRAMME FOR RESEARCH AND TRAINING IN TROPICAL DISEASES, BY PROGRAMME COMPONENT AND COUNTRY, 1984-1985 (BUDGET IN US DOLLARS)

COUNTRY	COMPO- NENT	1984		1985		TOTAL		COUNTRY	COMPO- NENT	1984		1985		TOTAL	
		NO.	BUDGET NO.	BUDGET NO.	BUDGET	BUDGET NO.*	BUDGET			NO.	BUDGET NO.	BUDGET NO.*	BUDGET	NO.	BUDGET NO.
COLOMBIA	SER	1	19,000	2	23,000	3	42,000	VENEZUELA	CHA	3	53,382	1	5,000	3	58,382
	TRN	10	148,838	5	90,770	11	239,608		EPD	-	-	1	40,000	1	40,000
	TOTAL	15	306,014	11	259,770	21	565,784		IST	-	-	1	100,000	1	100,000
COSTA RICA	IST	1	41,000	1	25,500	1	66,500		LEI	3	114,000	1	110,000	3	224,000
	SER	-	-	1	10,000	1	10,000		SER	-	-	2	44,500	2	44,500
	TOTAL	1	41,000	2	35,500	2	76,500		TRN	1	5,200	-	-	1	5,200
CUBA	IST	1	25,000	1	25,000	1	50,000	TOTAL	TOTAL	7	172,582	7	304,500	12	477,082
	LEP	4	32,500	1	5,000	4	37,500		BIO	1	10,000	4	185,393	4	195,393
	TRN	6	67,745	4	5,574	7	73,319		CHA	42	565,107	37	473,527	59	1,038,634
	VEC	1	21,202	3	71,367	3	92,569		DIF	8	93,697	4	21,516	12	115,213
	TOTAL	12	146,447	9	106,941	15	253,388		EPD	2	49,020	2	44,000	4	93,020
									FIL	11	511,996	10	692,775	16	1,204,771
									IST	11	576,000	14	773,100	17	1,349,100
DOMINICAN REPUBLIC	SER	-	-	1	45,000	1	45,000		LEI	-	-	27	457,840	27	457,840
	VEC	1	13,600	1	8,600	1	22,200		LEP	29	893,886	25	935,279	37	1,829,165
	TOTAL	1	13,600	2	53,600	2	67,200		MAL	30	1,120,315	36	1,727,998	48	2,848,313
									SCH	13	477,458	10	310,188	19	787,646
									SER	6	122,700	9	217,500	13	340,200
ECUADOR	CHA	1	10,500	-	-	1	10,500		TRN	55	673,793	28	310,501	65	984,294
									TRY	10	168,561	7	123,165	13	291,726
									VEC	10	173,386	18	342,950	21	516,336
GUATEMALA	MAL	1	57,535	1	15,625	2	73,160	TOTAL	TOTAL	228	5,435,919	231	6,615,732	355	12,051,651
	TRN	3	25,030	1	28,550	3	53,580								
	TOTAL	4	82,565	2	44,175	5	126,740								

* -NUMBER OF UNIQUE PROJECTS

UNDP/WORLD BANK/WHO - SPECIAL PROGRAMME FOR RESEARCH AND TRAINING IN TROPICAL DISEASES

REPORT ON ALL FUNDED PROJECTS ACTIVE IN THE AMERICAN REGION DURING 1984-1985, BY COUNTRY,
CITY AND INSTITUTION RECEIVING CONTRACTS OR GRANTS AS OF 31 DECEMBER 1985
(ALL FIGURES EXPRESSED IN US DOLLARS)

COUNTRY/INSTITUTION	PRINCIPAL INVESTIGATOR/ PROJECT	COMPO- NENT	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
ARGENTINA					
CENTRO DE ESTUDIOS FARMACOLOGICOS Y DE PRINCIPIOS NATURALES (CEFAPRIN) BUENOS AIRES	MS MIRTA ALICIA CARLOWAGNO ROSSETTI EFFECT OF MALNUTRITION ON IMMUNE RESPONSES TO T. CRUZI	TRN3	-	15,000	15,000
FUNDACION EINTHOVEN BUENOS AIRES	DR ROBERTO E.P. SICA PERIPHERAL SENSORY INVOLVEMENT IN CHRONIC CHAGAS' DISEASE	CHA	2,040	-	2,040
	DR ROBERTO E.P. SICA PERIPHERAL NERVOUS SYSTEM INVOLVEMENT IN CHRONIC CHAGAS' DISEASE	CHA	-	13,985	13,985
FUNDACION INSTITUTO DE NEUROBIOLOGIA UNIDAD PARA CRIA DE MONOS PEQUEÑOS BUENOS AIRES	DR ORESTES J. COLILLAS OUTDOOR COLONY OF CEBUS APPELLA	IST4	14,000	-	14,000
HOSPITAL RAMOS MEJIA DIVISION OF CARDIOLOGY BUENOS AIRES	DR JULIO LAZZARI SYMPATHETIC REACTIVITY LEVEL RELATIONSHIP WITH MAGNITUDE OF MYOCARDIAL LESION & PRESENCE OF ARRHYTHMIAS IN CHRONIC CHAGAS' DISEASE	CHA	-	42,004	42,004
INSTITUTO DE INVESTIGACIONES BIOQUI- MICAS - "FUNDACION CAMPOMAR" BUENOS AIRES	DR A. PARODI PROTEIN GLYCOSYLATION IN TRY- PANOSOMA CRUZI	CHA	17,000	17,500	34,500
	DR ALBERTO CARLOS CLEMENTE FRASCH ANALYSIS OF ISOLATE-SPECIFIC MINICIRCLES IN TRYPANOSOMA CRUZI	CHA	20,450	19,160	39,610
	MISS TERESA ANA SALZMAN PORPHYRIN BIOSYNTHESIS IN PA- RASITIC HEMOFLAGELLATES	TRN1	-	1,510	1,510

UNDP/WORLD BANK/WHO - SPECIAL PROGRAMME FOR RESEARCH AND TRAINING IN TROPICAL DISEASES

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(ALL FIGURES EXPRESSED IN US DOLLARS)

COUNTRY/INSTITUTION	PRINCIPAL INVESTIGATOR/ PROJECT	COMPO- NENT	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
INSTITUTO DE INVESTIGACIONES CIENTI- FICAS Y TECNICAS DE LAS F. ARMADAS BUENOS AIRES	DR E. N. ZERBA EXPERIMENTAL PROGRAMME FOR CHEMICAL CONTROL OF CHAGAS' DISEASE VECTORS WITH COMMUNITY PARTICIPATION	CHA	8,500	8,500	17,000
	DR E. N. ZERBA CHEMICAL CONTROL OF CHAGAS' DISEASE VECTORS	CHA	15,000	13,000	28,000
MINISTERIO DE LA SALUD Y MEDIO AMBI- ENTE, INDIETECH, DR. MARIO F. CHABEN BUENOS AIRES	DR AMALIA CRISTINA PEREZ MONOCLONAL ANTIBODIES	TRN1	19,400	-	19,400
	DR ELSA L. SEGURA PURIFICATION, CHARACTERIZATION & IMMUNOPROTECTIVE ACTIVITY OF ANTIGENS ISOLATED FROM T. CRUZI USING MONOCLONAL ANTIBODIES	CHA	16,000	2,500	18,500
	DR ELSA L. SEGURA LOCAL TRAINING FOR PH.D., ME- CHANISMS INVOLVED IN INFECTION OF VERTEBRATED CELLS BY T. CRU ZI (MRS P.S. DOYLE DE ENGEL)	IST1	4,800	-	4,800
	DR ELSA L. SEGURA INTEGRATED CONTROL OF CHAGAS' DISEASE & DIAGNOSIS OF MALARIA & LEISHMANIASIS	IST4	-	140,000	140,000
	DR ERNESTO DE TITTO CHAGAS RESEARCH	TRN1	3,190	3,190	6,380
	MR ANDRES MARIANO RUIZ CHAGAS' RESEARCH	TRN1	23,180	-	23,180
	MR JUAN CARLOS ENGEL BIOLOGICAL EFFECTS OF ANTI-TRY PANOSMA CRUZI MONOCLONAL & PO- LYCLONAL ANTIBODIES ON CELL PHYSIOLOGY	TRN3	20,000	-	20,000

UNDP/WORLD BANK/WHO - SPECIAL PROGRAMME FOR RESEARCH AND TRAINING IN TROPICAL DISEASES

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COUNTRY/INSTITUTION	PRINCIPAL INVESTIGATOR/ PROJECT	COMPO- NENT	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
UNIVERSIDAD DE BUENOS AIRES FAC. DE CIENCIAS EXACTAS Y NATURALES BUENOS AIRES	DR ROSA LEDERKREMER PURIFICATION & STRUCTURAL STUDIES OF GLYCOCONJUGATES FROM T. CRUZI	CHA	-	17,230	17,230
UNIVERSIDAD DE BUENOS AIRES FACULTAD DE MEDICINA BUENOS AIRES	DR STELLA MARIA GONZALEZ CAPP IN VITRO TRYPANOCIDAL COMPOUNDS	DIF	-	5,200	5,200
UNIVERSIDAD DEL SALVADOR - FACULTAD DE MEDICINA - I.L.A.I.M.U.S. BUENOS AIRES	DR VICTOR JORGE KATZIN PARASITE IMMUNOLOGY	TRN1	3,190	-	3,190
UNIVERSIDAD NACIONAL DE CORDOBA FACULTAD DE CIENCIAS MEDICAS CORDOBA	DR CARLOS A. FALASCA IN DOOR COLONY OF CEBUS AP- PELA FOR STUDY OF CHAGAS' DI- SEASE	IST4	-	15,000	15,000
UNIVERSIDAD DE LA PLATA - FACULTAD DE CIENCIAS NATURALES (C.E.P.A.V.E.) LA PLATA	DR DAVID ELADIO GORLA OPTIMISATION OF CONTROL TIMING AGAINST CHAGAS DISEASE VECTORS	CHA	16,910	3,865	20,775
UNIVERSIDAD DE LA PLATA - FACULTAD DE CIENCIAS NATURALES (C.E.P.A.V.E.) LA PLATA	DR ENRIQUE MONTAMAT CHARACTERIZATION OF ISOLATES & CLONES OF T. CRUZI FROM DIFFE- RENT AREAS OF ARGENTINA BY ELECTROPHORETIC ZYMOGRAMS	CHA	10,000	-	10,000
UNIVERSIDAD NACIONAL DE LA PLATA FACULTAD DE CIENCIAS MEDICAS LA PLATA	DR JUAN JOSE GARCIA FIELD SURVEYS FOR & BASIC STU- DIES ON PATHOGENS & PARASITES OF BLACKFLIES & MOSQUITOS IN ARGENTINA	VEC	15,000	15,000	30,000
UNIVERSIDAD NACIONAL DE LA PLATA FACULTAD DE CIENCIAS MEDICAS LA PLATA	DR RUBEN PEDRO LAGUENS EFFECT OF TRYPANOCIDAL & IMMU- NOSUPPRESSIVE DRUGS ON EVOLU- TION OF CHRONIC CHAGAS' DISEA- SE IN MOUSE	CHA	3,500	-	3,500
UNIVERSIDAD NACIONAL DE LA PLATA FACULTAD DE CIENCIAS MEDICAS LA PLATA	DR RUBEN PEDRO LAGUENS EVOLUTION OF REINFECTION IN CHRONIC CHAGAS' MICE TREATED WITH TRYPANOCIDAL DRUGS	CHA	5,000	3,500	8,500

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COUNTRY/INSTITUTION	PRINCIPAL INVESTIGATOR/ PROJECT	COMPO- NENT	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
BOLIVIA					
INSTITUTO BOLIVIANO DE BIOLOGIA DE ALTURA LA PAZ	DR PHILIPPE DESJEUX EVALUATION D'UN TEST SEROLOGI- QUE POUR LE DIAGNOSTIC SPECIFI- QUE DE LA MALADIE DE CHAGAS EN ZONE D'ENDEMENT MIXTE	CHA	8,000	8,000	16,000
	DR PHILIPPE DESJEUX ETUDE EPIDEMIOLOGIQUE DE DEUX FOYERS DE LEISHMANIOSE CUTANEE HUMAINE DANS LE DEPARTEMENT DE LA PAZ, BOLIVIE	LEI	-	7,500	7,500
	DR PHILIPPE DESJEUX POURSUITE DE L'ETUDE EPIDEMIO- LOGIQUE DE DEUX FOYERS DE LEISHMANIOSE CUTANEE ET D'UN FOYER DE LEISH VISCERALE	LEI	-	8,000	8,000
CENTRO NACIONAL DE ENFERMEDADES TROPICALES SANTA CRUZ DE LA SIERRA	DR BENJAMIN G. RIBERA TRAINING & RESEARCH IN CHAGAS' DISEASE, LEISHMANIASIS, LEPRO- SY	IST4	86,600	42,000	128,600
	DR DOLLY SONIA ANTUNEZ JUSTINIANO MOUSE-FOOT-PAD TECHNIQUES FOR MEASUREMENT OF DRUG RESISTANCE OF MYCOBACTERIUM LEPRAE	TRN1	-	4,799	4,799
	DR FANOR BALDERRAMA GONZALES M.SC. IN EPIDEMIOLOGY	TRN1	12,523	-	12,523
	DR HERNAN JOSE BERNUDEZ PAREDES ENTRAINEMENT EN CAPTURE ET TA- XONOMIE DES PHLEBOTOMES DANS LE CADRE DU PROJET	TRN1	90	-	90

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BRAZIL					
UNIVERSIDADE FEDERAL DE SERGIPE ARACAJU	DR EDIVALDO ROSAS DOS SANTOS BIO-ECOLOGY OF BIOMPHALARIA STRAMINEA	SCH	-	14,866	14,866
HOSPITAL BARROS BARRETO BELEM	MLLE HELENE ROULET TECHNICAL SUPPORT TO CHEMICAL PROJECT ON CLINICAL TRIALS OF MEFLOQUINE IN BRAZIL	MAL	45,958	58,521	104,479
CEDEPLAR BELO HORIZONTE	DRA DIANA OYA SAWYER MALARIA ON THE AMAZON FRONTIER ECONOMIC AND SOCIAL ASPECTS OF TRANSMISSION AND CONTROL	SER	40,000	35,000	75,000
CENTRO DE PESQUISAS "RENE RACHOU" BELO HORIZONTE	DR A. ROMANHA BIOCHEMISTRY OF PARASITES WITH PARTICULAR REFERENCE TO TRYPA- NOSOMA CRUZI	TRN1	7,100	-	7,100
	DR G. GAZZINELLI IMMUNE RESPONSES DURING HUMAN SCHISTOSOMIASIS MANSONI	SCH	67,290	54,675	121,965
	DR JOAO CARLOS PINTO DIAS LONGITUDINAL STUDIES ON HUMAN CHAGAS' DISEASE	CHA	3,250	6,050	9,300
	DR ZIGHAN BRENER TESTS WITH T. CRUZI FLAGELLAR ANTIGEN IN RABBITS	CHA	5,000	-	5,000
	DR ZIGHAN BRENER PROCESSING DATA FROM PROJECTS ON SCHISTOSOMIASIS AND CHAGAS' DISEASE	IST1	15,000	-	15,000
UNIV. CATOLICA DE MINAS GERAIS BELO HORIZONTE	MRS ROSINHA BORGES DIAS CHAGAS' DISEASE, POPULAR KNOW- LEDGE & NEW STRATEGIES OF CON- TROL	SER	16,700	-	16,700

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COUNTRY/INSTITUTION	PRINCIPAL INVESTIGATOR/ PROJECT	COMPO- MENT	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
UNIVERSIDADE FEDERAL DE MINAS GERAIS INSTITUTO DE CIENCIAS BIOLOGICAS BELO HORIZONTE	DR ANNA ROSA ROGLIOLO DE SIQUEIRA ZYMOMENES OF T. CRUZI	TRN3	17,225	-	17,225
	DR C.M. ANTUNES PREPARATION OF MULTICENTRE ANALYTICAL EPIDEMIOLOGICAL STUDIES ON CHAGAS' DISEASE	CHA	-	6,000	6,000
	DR CARLOS ALBERTO PEREIRA TAVARES PRODUCTION OF MONOCLONAL ANTI- BODIES AGAINST SCHISTOSOMA MANSONI	TRN3	20,000	-	20,000
	DR FRANKLIN DAVID RUMJANEK CHARACTERIZATION OF SERUM INDUCED SCHISTOSOME SURFACE PROTEINS INVOLVED IN LIPID UPTAKE	SCH	50,165	-	50,165
	DR MARIA SONIA MARTINS ISOLATION & PURIFICATION OF TRYPANOSOMA CRUZI ANTIGEN(S) DEFINED BY LYTIC PROTECTIVE ANTIBODIES	CHA	-	30,000	30,000
	DR RODRIGO CORREA DE OLIVEIRA IMMUNOLOGY OF PARASITIC DISEA- SES WITH PARTICULAR REFERENCE TO HUMAN IMMUNE RESPONSE IN SCHISTOSOMIASIS	TRN1	1,590	-	1,590
MINISTERIO DA SAUDE - SUPERINTEND. CAMPANHAS DE SAUDE PUBLICA (SUCAM) BRASILIA	DR MERCIA ELIANE DE ARRUDA FIELD TRIAL FOR DETECTION OF MALARIA INFECTED MOSQUITOS: AMAZON BASIN USING TWO-SITE IMMUNORADIOMETRIC ASSAY (IRMA)	MAL	40,648	-	40,648
UNIVERSIDADE DE BRASILIA FACULDADE DE CIENCIAS DA SAUDE BRASILIA	DR LUCIA TEIXEIRA CHARACTERIZATION OF T. CRUZI CLONES BASED ON SPECIFICITY OF HOST CELL SURFACE RECEPTORS	TRN1	2,220	-	2,220

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UNIVERSIDADE DE BRASILIA FACULDADE DE CIENCIAS DA SAUDE BRASILIA	PROFESSOR ALUIZIO ROSA PRATA PUBLICATION OF SCIENTIFIC ARTICLES ON T. CRUZI CLASSIFICATION	CHA	-	3,000	3,000
FUNDAÇÃO CEARENSE DE PESQUISA E CUL- TURA & NÚCLEO DE MEDICINA TROPICAL FORTALEZA	DR JOAQUIM EDUARDO DE ALENCAR EPIDEMIOLOGY OF LEISHMANIASIS IN NORTHEASTERN BRAZIL	LEI	-	28,000	28,000
ESCOLA DE MEDICINA UNIVERSIDADE CATOLICA DE PELOTAS PELOTAS	PROFESSOR ALCINO ALCANTARA FILHO LONGITUDINAL STUDY OF CHRONIC CHAGASIC MYOCARDIOPATHIES	CHA	-	3,300	3,300
FACULDADE DE CIENCIAS FARMACEUTICAS RIBETRAO PRETO	DR S. HOSHINO-SHIMIZU FURTHER DEVELOPMENT OF G-AGGLUTINATION REAGENT FOR CHAGAS' DISEASE	CHA	-	8,256	8,256
FUNDAÇÃO INSTITUTO OSWALDO CRUZ (FIOCRUZ) RIO DE JANEIRO	DR CARLOS MEDICIS MOREL USE OF NEW BIOTECHNOLOGY TOOLS IN STUDY OF RELEVANT GENES & ANTIGENS OF PARASITES	BIO	-	104,000	104,000
	DR CARLOS MEDICIS MOREL USE OF SYNTHETIC DNA PROBES & SCHIZODEME ANALYSIS IN DIAGNO- SIS OF CHAGAS' DISEASE IN CHA- RACTERIZATION OF T. CRUZI	CHA	30,313	26,000	56,313
	DR CARLOS MEDICIS MOREL ESTABLISHMENT OF REFERENCE CENTRE FOR T. CRUZI CLASSIFICATION	CHA	-	8,000	8,000
	DR CARLOS MEDICIS MOREL STUDIES ON INHIBITORY EFFECTS BETWEEN CO-CULTURED STRAINS OF LEISHMANIA	LEI	-	5,000	5,000
FUNDAÇÃO INSTITUTO OSWALDO CRUZ (FIOCRUZ) RIO DE JANEIRO	DR F.S. BARBOSA MSC COURSE ON EPIDEMIOLOGY	IST5	-	65,000	65,000

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FUNDACAO INSTITUTO OSWALDO CRUZ (FIOCRUZ) RIO DE JANEIRO	DR GABRIEL GRIMALDI CHARACTERIZATION & MAPPING OF BRAZILIAN LEISHMANIA ISOLATES	LEI	-	24,150	24,150
	DR HOOWAN MOMEN IDENTIFICATION OF LEISHMANIA PARASITES BY SCHIZODENE & ZYMO DEME ANALYSIS	LEI	-	24,600	24,600
	DR LAIN CARLOS PONTES DE CARVALHO T. CRUZI SPECIES STRAIN & STAGE-SPECIFIC MONOCLONAL ANTIBODIES	CHA	-	26,800	26,800
	DR LEONIDAS DE MELLO DEANE IMMUNORADIOMETRIC ASSAYS FOR STUDY OF VECTORS & IMMUNE STA- TUS OF INDIVIDUALS EXPOSED TO MALARIA: W. AMAZON REGION BRA.	MAL	-	29,090	29,090
	DR LEONOR LAURA PINTO LEON SPECIES SPECIFIC LEISHMANIA ANTIGENS: THEIR BIOLOGICAL FUNCTIONS	TRN1	3,170	-	3,170
	DR MARIA DE NAZARETH LEAL DE MEIRELLE INTERACTION OF TRYPANOSOMA CRUZI WITH CARDIAC & SKELETAL MUSCLE CELL IN VITRO	CHA	8,700	5,279	13,979
	DR MARIA IGNEZ ELSAS IMMUNOLOGY OF AMERICAN TRYPA- NOSOMIASIS	TRN1	5,100	-	5,100
	DR SAMUEL GOLDENBERG STRUCTURE & FUNCTION OF GENES INVOLVED IN T. CRUZI DIFFEREN- TIATION & TRYPOMASTIGOTE STAGE SPECIFIC SURFACE ANTIGENS	CHA	19,000	19,000	38,000

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COUNTRY/INSTITUTION	PRINCIPAL INVESTIGATOR/ PROJECT	COMPO- NENT	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
FUNDAÇÃO INSTITUTO OSWALDO CRUZ (FIOCRUZ) RIO DE JANEIRO	DR SERGIO COUTINHO FURTADO MENDONÇA EXAMINE WHETHER ANTI-IDIOTYPIC ANTIBODIES CAN ACTIVATE T. LYM PHOCYTES SPECIFIC FOR LEISH. & UPON INJECTION IN NORMAL MICE	TRN1	22,740	11,090	33,830
	DR SERGIO GOMES COUTINHO QUANTITATIVE ANALYSIS OF T. CELL RESPONSES IN HUMAN MUCO- CUTANEOUS (L. BRAZILIENSIS) & VISCERAL LEISHMANIASIS	LEI	-	10,379	10,379
	DR ULISSSES GAZOS LOPES CLONING & SEQUENCING OF MINI- CIRCLES OF LEISHMANIA	TRN1	2,960	-	2,960
	PROFESSOR ELOI DE SOUZA GARCIA MULTIPLICATION & DIFFERENTIA- TION OF DIFFERENT STRAINS & CLONES OF TRYPANOSOMA CRUZI WITHIN RHODNIUS PROLIXUS	CHA	7,865	-	7,865
UNIVERSIDADE FEDERAL DO RIO DE JANEIRO RIO DE JANEIRO	DR A.M. OLIVEIRA FILHO DEVELOPMENT OF ANTI-TRIATOMIC BUILDING MATERIALS FOR CONS- TRUCTION & MODIFICATION OF RURAL HOUSING	CHA	22,500	-	22,500
	DR A.M. OLIVEIRA FILHO SEARCH FOR NEW & SAFER TECHNIO- QUES OF CONTROLLING CHAGAS DIS- VECTORS, INCLUDING STUDIES ON RESISTANCE TO INSECTICIDES	CHA	-	16,000	16,000
	DR JOSE MAURO PERALTA STUDY OF CELL-MEDIATED IMMUNE RESPONSE IN VITRO IN CHRONIC CHAGAS' DISEASES	CHA	15,300	5,200	20,500
	DR PAULO A.S. MOURAO SULFATED GLYCOSAMINOGLYCANS SYNTHESIZED BY CELLS OF SCHISTOSOMA MANSONI GRANULOMA	SCH	-	10,475	10,475

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UNIVERSIDADE DO RIO DE JANEIRO RIO DE JANEIRO	DR ROBERTO DOCAMPO FURTHER INVESTIGATION ON FOR- MATION OF FREE RADICAL INTER- MEDIATES BY TRYPANOCIDAL DRUGS & PHAGOCYTTIC CELLS	CHA	12,000	-	12,000
UNIVERSIDADE FEDERAL DO RIO DE JANEIRO - INSTITUTO DE BIOFISICA RIO DE JANEIRO	DR JULIO SCHARFSTEIN SPECIFIC IMMUNE RESPONSE TO A T. CRUZI SURFACE ANTIGEN DEFINI- TED WITH HUMAN ANTIBODIES	CHA	6,600	-	6,600
	DR WANDA MARIA ALMEIDA VON KRUGER DRUG-RESISTANT TRYPANOSOMATID MUTANTS	TRN3	19,300	-	19,300
	DR WANDERLEY DE SOUZA CELL SURFACE OF TRYPANOSOMA CRUZI & ITS ROLE IN INTERACTI- ON OF PARASITE WITH HOST CELLS	CHA	24,600	-	24,600
UNIVERSIDADE FEDERAL DA BAHIA SALVADOR	DR MAURICIO LIMA BARRETO SPATIAL URBAN STRUCTURE & SCHISTOSOMIASIS MANSONI IN NORTHEASTERN BRAZIL	TRN3	19,400	-	19,400
	DR SEBASTIAO LOUREIRO USE OF SOCIAL SCIENCE RESEARCH IN IMPROVING EDUCATION FOR TROPICAL DISEASE CONTROL 3 - 8 AUGUST 1986 SALVADOR_BRA	SER	-	20,000	20,000
	DR SONIA GUMES ANDRADE CHEMOTHERAPY OF CHRONIC PHASE OF EXPERIMENTAL CHAGAS' DISEA- SE	CHA	11,000	-	11,000
	DR SONIA GUMES ANDRADE CHEMOTHERAPY & CURE CRITERIA IN MICE CHRONICALLY INFECTED WITH TRYPANOSOMA CRUZI	CHA	11,300	3,500	14,800

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ESCOLA PAULISTA DE MEDICINA (E.P.M.) DISCIPLINA DE PARASITOLOGIA SAO PAULO	DR SERGIO SCHEINKMAN INCORPORATION OF LAMBDA PROTEIN IN PLASMA MEMBRANE	TRN3	-	15,000	15,000
	MS CLARA L.B. MESTRINER ULTRASTRUCTURAL & PHYSIOLOGI- CAL ALTERATIONS IN MACROPHAGES INFECTED WITH L. MEXICANA AMAZONENSIS AMASTIGOTES	TRN3	19,975	-	19,975
UNIVERSIDADE DE SAO PAULO INSTITUTO DE CIENCIAS BIONOMICAS SAO PAULO	DR G.C. DE ARAUJO LIMA PATHOGENESIS OF MURINE CUTA- NEOUS LEISHMANIASIS	TRN3	20,000	-	20,000
	DR T.L. KIPNIS EFFECTOR MECHANISMS IN THE INFECTION WITH T. CRUZI: ROLE OF ANTIBODIES ON C ACTIVATION	CHA	9,564	-	9,564
UNIVERSIDADE DE SAO PAULO INSTITUTO DE MEDICINA TROPICAL SAO PAULO	DR ANTONIO WALTER FERREIRA EPIDEMIOLOGICAL STUDIES ON MA- LARIA IN BRAZIL THROUGH RADIO- IMMUNASSAY DETECTION OF SPO- ROZOITES INFECTED MOSQUITOS	MAL	-	14,060	14,060
	DR JUDITH K. KLOTZEL PLASMODIUM FALCIPARUM INFECTED ERYTHROCYTE CYTOADHERENCE TEST BRAZILIAN STRAINS & INHIBITION BY HUMAN SERA	MAL	34,838	-	34,838
	DR MARIA CAROLINA SOARES GUIMARAES SEROEPIDEMIOLOGY OF MUCOCUTANEOUS LEISHMANIASIS	LEI	-	5,000	5,000
	DR MARIO ENDESELDZ CAMARGO CONSTITUTION OF GROUP OF COL- LABORATING LABORATORIES FOR STANDARDIZATION OF CHAGAS' DISEASE SEROLOGY IN AMERICA	CHA	8,072	20,788	28,860

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UNIVERSIDADE DE SAO PAULO INSTITUTO DE QUIMICA SAO PAULO	DR NORMA WINDSOR ANDREWS IDENTIFICATION OF HEPATOCYTE RECEPTOR & LIGAND WHICH MEDIA- TE SPOOROZITE-HOST CELL INTER- ACTION	TRN1	-	23,769	23,769
	DR WALTER COLLI TRYPANOSOMA CRUZI: SURFACE COM- PONENTS IN HOST CELL-PARASITE INTERACTION	CHA	17,000	-	17,000
	DR WALTER COLLI TRYPANOSOMA CRUZI: SURFACE COMPONENTS IN HOST-CELL PARASITE INTERACTION	CHA	-	19,000	19,000
UNIVERSIDADE FEDERAL DE MINAS GERAIS FAC. DE MEDICINA TRIANGULO MINEIRO UBERABA	DR E.R. LOPES LATENT PHASE OF CHAGAS' DISEASE - PATHOLOGICAL ASPECTS	CHA	9,000	11,500	20,500
CANADA					
QUEEN'S UNIVERSITY MEDICAL SCHOOL KINGSTON	DR JOHN C. ROPER HUMAN MONOCLONAL ANTIBODIES AGAINST N. LEPAE	LEP	31,000	-	31,000
UNIVERSITY OF WESTERN ONTARIO LONDON	DR RON B. PODESTA MEMBRANE CHARACTERIZATION, TURNOVER & MODULATION IN SUR- FACE EPITHELIAL SYNCYTIUM OF SCRISTOSOMA MANSONI	SCH	59,200	-	59,200
MEMORIAL UNIVERSITY OF NEWFOUNDLAND ST JOHN'S	DR HALLIDAY A. IDIKIO RE-EXAMINATION OF IMMUNOCHEMI- CAL RELATEDNESS OF S. MANSONI & S. HENATOBIIUM	DIF	14,832	-	14,832

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ONTARIO CANCER INSTITUTE TORONTO	DR R. GORCZYNSKI ANALYSIS OF PROC. FOR ADOPTIVE IMMUNIZATION OF MICE AGAINST L. BRAZILIENSIS & L. TROPICA IMMUNO. OF INFECTED ANIMALS	LEI	-	9,000	9,000
	DR R. GORCZYNSKI VACCINATION STRATEGIES FOR L. BRAZILIENSIS IN MICE USING PURIFIED ANTIGENS &/OR ANTIGEN MIMICRY & ANALYSIS OF GENES	LEI	-	5,000	5,000
UNIVERSITY OF VICTORIA OFFICE OF RESEARCH ADMINISTRATION VICTORIA	DR ROBERT W. OLAFSON INVESTIGATION OF PRIMARY STRU- CTURE OF FUNCTIONALLY IMPOR- TANT LEISHMANIAL SURFACE MEM- BRANE PROTEIN	DIF	12,000	-	12,000
	DR TERRY W. PEARSON ESTABLISHMENT & OPERATION OF REFERENCE BANK FOR ANTITRYPA- NOSOME MONOCLONAL ANTIBODIES	TRY	500	-	500
	DR TERRY W. PEARSON IDENTIFICATION OF PARASITE OR HOST MOLECULES USEFUL FOR DIA- GNOSIS & MONITORING OF AFRICAN SLEEPING SICKNESS	TRY	23,630	22,845	46,475
CHILE					
UNIVERSIDAD DE ANTOFAGASTA FACULTAD DE CIENCIAS DE LA SALUD ANTOFAGASTA	DR ALEJANDRO FUENTES CASTILLO EPIDEMIOLOGY (M.SC)	TRN1	14,652	12,380	27,032
UNIVERSIDAD DE CHILE FACULTAD DE MEDICINA SANTIAGO	DR CECILIA V. ROJAS BAECHLER MOLECULAR BIOLOGY OF TRYPANO- SOMA CRUZI (PH.D.)	TRN1	8,125	10,870	18,995

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UNIVERSIDAD DE CHILE FACULTAD DE MEDICINA SANTIAGO	DR GUSTAVO HOECKER CLINICAL & BASIC BIOLOGY OF CHAGAS DISEASE	IST4	121,100	76,600	197,700
	DR HUGO SCHEWONE FERNANDEZ CONGENITAL CHAGAS' DISEASE (T.CRUZI) BIOCHEMICAL CHARACT- ERIZATION OF T.CRUZI STRAINS IN CHILE	CHA	7,000	7,000	14,000
	DR MARIA ALICIA MORDOJOVICH SOTO IMMUNOLOGY AND IMMUNOPATHOLOGY OF INFECTIOUS DISEASES	TRN1	7,152	168	7,320
	DR MARIA AMADA JURI VIGOUROUX FACTORS INVOLVED IN SUSCEPTI- BILITY TO T. CRUZI INFECTION IN WILD & DOMESTIC RODENTS (PH.D.)	TRN1	8,690	3,550	12,240
	DR MARTA KELLY GAJARDO IMMUNOGENETIC ANALYSIS OF SUS- CEPTIBILITY & RESISTANCE OF MICE TO DIFFERENT VARIANT FORM OF T. CRUZI (PH.D.)	TRN1	6,120	-	6,120
	DR ULISES JOSE VERGARA IMMUNOGENIC SURFACE PROTEINS OF PARASITES	TRN1	22,900	5,230	28,130
	MRS GABRIELA CECILIA TORO ACUNA GENETIC EXPRESSION OF HISTONES DURING PROLIFERATION & DIFFE- RENTIATION IN T. CRUZI (PH.D.)	TRN1	10,904	3,620	14,524
COLOMBIA					
CENTRO INTERNAC. DE ENTRENAMIENTO E INVESTIGACIONES MEDICAS (CIDEIM) CALI	DR NANCY GORE SARAVIA MOLECULAR BIOLOGIC & ANTIGENIC STUDIES OF L. BRAZILIENSIS SUBSPECIES & NATURAL VARIANTS	BIO	-	58,000	58,000

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CENTRO INTERNAC. DE ENTRENAMIENTO E INVESTIGACIONES MEDICAS (CIDEIM) CALI	DR WANCY GORE SARAVIA MULTIDISCIPLINARY INVESTIGA- TIONS OF TEGUMENTARY LEISHMA- NIASIS IN COLOMBIA	IST4	-	23,000	23,000
	MISS ANA FERNANDA HOLGUIN RESTRICTION ENDONUCLEASE MAP- PING OF KINETOPLAST DNA	TRN1	2,786	-	2,786
CENTRO INTERNACIONAL DE INV. MEDICAS TULANE UNIVERSITY - COLCIENCIAS CALI	PROFESSOR ANTONIO D'ALESSANDRO ADAPTATION OF ELISA FOR USE IN ZOO NOTIC SEROEPIDEMIOLOGY OF T. CRUZI AND T. RANGELI	CHA	5,156	-	5,156
HOSPITAL UNIVERSITARIO DEL VALLE CALI	DR MYRIAM AREVALO-RAMIREZ APPLICATION OF AG DETECTION TECHNIQUE FOR DIAGNOSIS OF MALARIA	DIF	-	10,000	10,000
UNIVERSIDAD DEL VALLE DIVISION DE SALUD CALI	DR ALBERTO ALZATE RESEARCH CAPABILITY STRENG- THENING - LONG-TERM SUPPORT GRANT - MALARIA FIELD RESEARCH	IST4	84,000	55,000	139,000
	DR ALBERTO ALZATE DATA COLLECTION FOR THESIS OF RESEARCH TRAINING GRANTEE DR C.I. PALMA	TRN1	-	5,650	5,650
	DR ALBERTO ALZATE M.SC. COURSE IN EPIDEMIOLOGY	TRN4	28,000	14,500	42,500
	DR ALBERTO ALZATE SANCHEZ COURSE ON EPIDEMIOLOGICAL METHODS FOR RESEARCH IN TROPICAL DISEASES OCTOBER 1984 CALI, COLOMBIA	EPD	37,000	-	37,000
	DR ELIAS SEVILLA-CASAS HUMAN ASPECTS OF SEASONALITY, MOBILITY & MALARIA IN NAYA RIVER BASIN OF COLOMBIA	SER	-	3,000	3,000

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UNIVERSIDAD DEL VALLE DIVISION DE SALUD CALI	DR ELIAS SEVILLA-CASAS HUMAN ASPECTS OF SEASONALITY MOBILITY & MALARIA IN MAYA RIVER BASIN OF COLOMBIA	SER	-	20,000	20,000
	DR ELIAS SEVILLA-CASAS SOCIOECONOMIC RESEARCH ASPECTS OF MALARIA, CHAGAS' DISEASE, SCHISTOSOMIASIS & ONCHOCERCIA- SIS	TRN2	3,976	-	3,976
	DR ENRIQUE GERARDO LOYOLA EPIDEMIOLOGY OF MUCOCUTANEOUS LEISHMANIASIS IN NATURAL FOCUS OF BAJO CALIMA, BUENAVENTURA, COLOMBIA	EPD	12,020	-	12,020
	DR HUGO HURTADO GUTIERREZ M.SC. IN BIO-STATISTICS	TRN1	16,268	-	16,268
	DR JOSE GABRIEL CARRASQUILLA PH.D. TROPICAL PUBLIC HEALTH	TRN1	32,040	24,510	56,550
	DR MAURICIO RAFAEL BARRETO MALARIA VECTORS IN COLOMBIA	TRN1	29,628	29,720	59,348
	DR SOCRATES HERRERA VALENCIA MALARIA IMMUNOLOGY	TRN1	6,110	-	6,110
	DRA. GLORIA I. PALMA CLINICAL PARASITOLOGY	TRN1	9,190	-	9,190
CORPORACION PARA INVESTIGACIONES BIOLOGICAS (C I B) MEDELLIN	DR OSCAR JESUS GALLO MASS PROD. OF ROMANERMIS CU- LICIVORAX IN LAB. FOR FURTHER USE IN FIELD TESTS AS BIOLOG. CONTROL OF MALARIA VECTORS	TRN1	9,032	-	9,032
UNIVERSIDAD DE ANTIOQUIA MEDELLIN	PROFESSOR SAUL ALONSO FRANCO AGUDELO MALARIA & ECONOMIC, SOCIAL & CULTURAL FACTORS: ITS EXPRES- SION ON HOUSING NECOCLI, CO- LOMBIA 1982	SER	19,000	-	19,000

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SISTEMA NACIONAL DE SALUD - SERVICIO SECCIONAL DE SALUD DEL CAUCA POPAYAN	DR DENETRIO GONGORA MS.C. IN TROPICAL MEDICINE	TRN1	11,808	16,390	28,198

COSTA RICA					
UNIVERSIDAD NACIONAL "CAMPUS OMAR - DENGO" HEREDIA	DR RODRIGO ZELEDON LEISHMANIASIS & CHAGAS' DISEA- SE	IST4	41,000	25,500	66,500
CENTRO DE INVESTIGACIONES SOCIALES (SOCIAL RESEARCH CENTRE) SAN JOSE	DR FRANCISCO ESCOBAR-ABARCA SOCIAL SCIENTIFIC ANALYSIS OF INTERVENING FACTORS WITHIN MALARIA DISEASE DYNAMICS (COSTA-RICAN CASE)	SER	-	10,000	10,000

CUBA					
INSTITUTO DE INVEST. EN MED. TPCAL. *PEDRO KOURI*/ MIN. SALUD PUBLICA HABANA	DR ANGEL BERTO GONZALEZ LABORATORY TECHNIQUES IN LEPROSY	TRN1	-	3,304	3,304
	DR ANGEL BERTO GONZALEZ SEGREDO LABORATORY STUDY OF POSSIBLE TREATMENT FAILURES IN CUBA	LEP	7,000	-	7,000
	DR ANGEL BERTO GONZALEZ SEGREDO SURVEY FOR PRIMARY DAPSONE RESISTANCE IN CUBA	LEP	4,500	-	4,500
	DR CARLOS MIGUEL FINLAY GLOFAZIMINE & THALIDOMIDE MODE OF ACTION	LEP	11,000	-	11,000

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INSTITUTO DE INVEST. EN MED. TPCAL. PEDRO KOURI*/MIN. SALUD PUBLICA HABANA	DR ELBA MARINA GONZALEZ-ABREU DETECTION OF ANTI-M. LEPRAE SPECIFIC ANTIBODIES BASED ON ELISA TEST USING SPECIFIC PHENOLIC GLYCOLIPID ANTIGEN	LEP	10,000	5,000	15,000
	DR ELBA MARINA GONZALEZ-ABREU STUDIES ON SERODIAGNOSIS OF LEPROSY	TRN1	7,230	-	7,230
	DR FERNANDO VIRGILIO DE LA CRUZ MONOCLONAL ANTIBODIES PRODUC- TION BY HYBRIDOMA TECHNIQUE	TRN1	18,229	1,430	19,659
	DR GIRALDO ISRAEL GARCIA AVILA ASSESSMENT OF LOCAL SPECIES OF LARVIVOROUS FISHES FOR STRUG- GLE AGAINST MOSQUITOS IN DIFFE- RENT CARIBBEAN AREAS	VEC	-	17,960	17,960
	DR GLORIA PERERA DE PUGA ECOLOGY OF HELISOMA DURYI AND TAREBIA GRANIFERA THEIR ROLE AS COMPETITORS OF PULMONATA	VEC	21,202	15,907	37,109
	DR JUAN ANDRES BISSET LAZCANO DYNAMICS OF APPARTITION OF RE- SISTANCE & GENETIC CONTROL	TRN1	2,810	240	3,050
	DR MARIA DEL C. MARQUETTI FERNANDEZ BIOECOLOGY AND BEHAVIOUR OF CULICIDAE TO ATTAIN MORE EF- FECTIVE CONTROL MEASURES	TRN1	22,560	600	23,160
	DR MARTA BOUZA MEDICAL PARASITOLOGY WITH EMPHASIS ON TAXONOMIC & BIOLOGICAL ASPECTS	TRN1	10,058	-	10,058
	LIC. GRISEL MONTERO LAGO B. THURINGIENSIS H-14 & B. SPHAERICUS PRODUCTION AT PILOT PLANT LEVEL. FORMULATION & DETERMINATION OF EFFECTIVENESS	VEC	-	37,500	37,500

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INSTITUTO DE INVEST. EN MED. TPCAL. 'PEDRO KOURI'/MIN. SALUD PUBLICA HABANA	PROFESSOR GUSTAVO X. KOURI NATIONAL CENTRE - LEPROSY AND PARASITIC DISEASES	IST4	25,000	25,000	50,000
	PROFESSOR GUSTAVO X. KOURI STRUCTURE & ORGANIZATION IN RE SEARCH CENTERS OF TROPICAL ME- DICINE IN AMERICA'S REGION ESTABLISHMENT OF LINKAGES	TRM1	6,858	-	6,858
DOMINICAN REPUBLIC					
SERVICIO NACIONAL DE ERRADICACION DE MALARIA SANTO DOMINGO	DR DELMIN CURY-SULSONA ECONOMIC & SOCIAL FACTORS RE- LATED WITH MALARIA IN DOMINI- CAN REPUBLIC	SER	-	45,000	45,000
UNIVERSIDAD AUTONOMA DE S. DOMINGO INSTITUTO DE INVEST. EN BILHARZIA SANTO DOMINGO	DR JOSE GOMEZ BIOLOGICAL CONTROL OF BIOMPHA- LARIA GLABRATA IN DOMINICAN REPUBLIC	VEC	13,600	8,600	22,200
ECUADOR					
MINISTERIO DE SALUD PUBLICA QUITO	DR A. REYES LTUMA STUDY OF EPIDEMIOLOGICAL PRE- VALENCE OF CHAGAS' DISEASE IN ECUADOR	CHA	10,500	-	10,500
GUATEMALA					
SERVICIO NACIONAL DE ERRADICACION DE LA MALARIA GUATEMALA	DR HECTOR A. GODOY STUDY OF DRUG DISTRIBUTION & SENTINEL VOLUNTEER COLLABORA- TOR POSTS FOR MAL. TREATMENT & SURVEILLANCE IN GUATEMALA	MAL	57,535	-	57,535

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UNIVERSIDAD DEL VALLE DE GUATEMALA GUATEMALA	DR RODOLFO ZEISSIG B. CHLOROQUINE ASSOCIATED PRURITUS IN GUATEMALA	MAL	-	15,625	15,625
	MR OMAR DARY PH. D. IN BIOCHEMISTRY	TRN1	22,550	28,550	51,100
	PROFESSOR RICARDO LUJAN STUDIES FOR A DOCTORATE DEGREE IN PARASITOLOGY (PH.D.)	TRN1	1,780	-	1,780
UNIVERSIDADE SAN CARLOS DE GUATEMALA DPTO. DE CITOLOGIA Y MORFOLOGIA GUATEMALA	DR VIVIAN LUCRECIA MATTA RIOS SEROLOGIC & DIAGNOSTIC TECHNI- QUES FOR TROPICAL DISEASES	TRN1	700	-	700
HONDURAS					
UNIVERSIDAD NACIONAL AUTONOMA DE HONDURAS TEGUCIGALPA	DR HUMBERTO COSENZA EPIDEMIOLOGY & IMMUNOPARASIT- OLOGY OF MALARIA & CHAGAS' DISEASE	IST4	-	94,300	94,300
	DR HUMBERTO COSENZA STANDARDIZED METHODOLOGY (IMMUNOFLOURESCENCE, COMPLE- MENT FIXATION & AGGLUTINATION) TO DIAGNOSE CHAGAS' DISEASE	TRN1	3,091	-	3,091
	DR RINA LISETTE KAMINSKY LEARN BIOLOGICAL ASPECTS & HANDLING OF T. CRUZI IN LABORATORIES	TRN1	3,963	-	3,963
MEXICO					
UNIVERSIDAD NACIONAL AUTONOMA DE MEXICO MEXICO	PROFESOR A. GOMEZ-POUYOU COURSE ON BIOLOGICAL MEMBRANES PRINCIPLES, TECHNIQUES & APPL. TO PARASITIC DISEASES, MEXICO CITY, 1986	TRN4	-	35,000	35,000

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CENTRO DE INVESTIGACIONES ECOLOGICAS DEL SURESTE SAN CRISTOBAL DE LAS CASAS	DR ALFREDO DOMINGUEZ VAZQUEZ MS.C. IN EPIDEMIOLOGY	TRN1	23,350	10,550	33,900
	DR ENRIQUE LOYOLA ELIZONDO TROPICAL DISEASES & NUTRITION	TRN1	6,010	-	6,010
	DR JOHN PATRICK EHRENBERG IMMUNE COMPLEXES IN HUMAN ONCHOCERCIASIS (PH.D.)	TRN1	31,220	3,190	34,410
	DR MANUEL BAYONA-CELIS EPIDEMIOLOGY OF VISUAL IMPAIR- MENT DUE TO ONCHOCERCIASIS	TRN1	19,880	-	19,880
	DR SERGIO QUESADA-ALDANA THE SEASONAL MIGRATION TO COF- FEE PLANTATIONS A POTENTIAL CASE OF RISK OF HEALTH	SER	3,500	-	3,500
	MR JOSE IGNACIO SANCHEZ-VAZQUEZ MASTER DEGREE IN MAMMALOGY	TRN1	3,570	-	3,570
	PROFESSOR DR RAUL N. ONDARZA ONCHOCERCIASIS & CHAGAS' DISE- ASE	IST4	80,500	23,000	103,500
UNIVERSIDAD AUTONOMA DE NUEVO LEON FACULTAD DE CIENCIAS BIOLÓGICAS SAN NICOLAS DE LOS GARZA	DR LUIS JESUS GALAN-WONG ISOLATION & CHARACTERIZATION OF B. THURING. STRAINS INDIGE- NOUS IN MEXICO & SCREENING FOR DIPTERA CONTROL POTENTIAL	VEC	-	12,500	12,500
PANAMA					
GORGAS MEMORIAL LABORATORY PANAMA	DR OCTAVIO E. SOUSA INFLUENCE OF DIFFERENT TRANS- MISSION CYCLES ON CHARACTERIS- TICS OF CHAGAS' DISEASE	CHA	30,000	-	30,000
	DR OCTAVIO E. SOUSA ESTABLISHMENT OF REFEREBCE CENTER FOR STANDARDISED PRODUCTION OF T. CRUZI STAINS	CHA	-	8,000	8,000

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GORGAS MEMORIAL LABORATORY PANAMA	DR ROLANDO ERNESTO SAENZ PILOT STUDY OF EFFICACY & SA- FETY OF ALLOPURINOL RIBOSIDE (BW 28U) IN TREATMENT OF CUTA- NEOUS LEISHMANIASIS	DIF	15,000	-	15,000
UNIVERSIDAD DE PANAMA FACULTY OF MEDICINE PANAMA	DR ABDIEL J. ADAMES MSC IN MEDICAL ENTOMOLOGY	IST4	79,000	63,600	142,600
	DR OCTAVIO E. SOUSA STANDARDISATION OF METHODS FOR T. CRUZI CLASSIFICATION, PANAMA, 28-31 JAN 1985	CHA	32,004	-	32,004
PERU					
CENTRO DE INVESTIGACION Y PROMOCION AMAZONICA LIMA	DR CARLOS MORA-BERNASCONI SOCIO-ECONOMIC, CULTURAL & E- COLOGICAL FACTORS THAT INFLU- ENCE HEALTH OF NATIVE COMMUNI- TIES & COLONISTS IN PERU	SER	40,000	40,000	80,000
UNIVERSIDAD PERUANA CAYETANO HEREDIA INSTITUTO "ALEXANDER VON HUMBOLDT" LIMA	DR JUAN CARLOS PALOMINO COMPARISON OF IN VITRO RAPID DRUG SCREENING SYSTEMS USING VARIOUS TECHNIQUES	LEP	-	2,000	2,000
	DR JUAN CARLOS PALOMINO BIOLUMINESCENCE DETECTION IN VITRO OF M. LEPPRAE DRUG RESISTANCE	TRN3	15,000	-	15,000
	MR J. ENRIQUE PEREZ BIOLOGY & LABORATORY REARING OF NEOTROPICAL PHLEBOTOMINAE (DIPTERA, PSYCHODIDAE)	TRN1	-	8,691	8,691
	PROFESSOR GUILLERMO ROMERO RAPID DIAGNOSIS OF HUMAN LEI- SHE IN BIOTINYLATED K.DNA PRO- TES IN DETECTION OF NEW WORLD LEISHMANIA SP.	DIF	15,000	-	15,000

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UNIVERSIDAD PERUANA CAYETANO HEREDIA INSTITUTO "ALEXANDER VON HUMBOLDT" LIMA	PROFESSOR GUILLERMO ROMERO CHARACTERIZATION OF LEISHMANIA SPP. FROM PERU	LEI	-	3,000	3,000
UNIVERSIDAD NACIONAL DE TRUJILLO TRUJILLO	PROFESSOR HUMBERTO GUERRA A. LEISHMANIASIS, LEPROSY, EPIDE- MIOLOGY	IST4	25,000	25,100	50,100
UNIVERSIDAD NACIONAL DE TRUJILLO TRUJILLO	DR LIZARDO CRUZADO EPIDEMIOLOGY OF ANDEAN LEISH- MANIASIS IN OTUZCO PROVINCE, PERU	LEI	-	21,000	21,000
SURINAME					
MEDICAL MISSION PARAMARIBO	DR JAN ARIE ROZENDAAL EFFECTIVITY OF PROTECTION OF POPULATION AGAINST MALARIA BY USE OF BEDNETS IMPREGNATED WITH PERMETHRIN	MAL	-	30,100	30,100
USA					
STATE UNIVERSITY OF NEW YORK RESEARCH FOUNDATION . ALBANY	DR JOSEF MICHL PROMASTIGOTE SURFACE ANTIGEN IN INFECTION & ITS PROSPECTIVE USE IN A VACCINIA RECOMBINANT VACCINE FOR CUTANEOUS LEISH.	LEI	-	20,000	20,000
UNIVERSITY OF MASSACHUSETTS AMHERST	DR STANLEY LEMESHOW ADEQUACY OF SAMPLE SIZE	EPD	-	4,000	4,000
UNIVERSITY OF MICHIGAN SCHOOL OF PUBLIC HEALTH ANN ARBOR	PROFESSOR GENE I. HIGASHI BIOCHEMICAL & IMMUNOLOGICAL CHARACTERIZATION OF LEISHMANIA ISOLATES FROM JORDAN	DIF	3,000	-	3,000
	PROFESSOR GENE I. HIGASHI IMMUNOPATHOLOGIC RESPONSE TO BRUGIA MALAYI IRRADIATED LAR- VAE	FIL	38,784	-	38,784

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UNIVERSITY OF MICHIGAN - DIVISION OF RES. DEVELOPMENT AND ADMINISTRATION ANN ARBOR	PROFESSOR LEROY B. TOMSEN LEAD-DIRECTED SYNTHESIS OF POTENTIAL FILARICIDES	FIL	77,000	-	77,000
	PROFESSOR LEROY B. TOMSEN LEAD-DIRECTED SYNTHESIS OF POTENTIAL FILARICIDES	FIL	-	274,870	274,870
UNIVERSITY OF GEORGIA RESEARCH FOUNDATION ATHENS	DR JOHN W. MCCALL EXPERIMENTAL CHEMOTHERAPY OF FILARIASIS & SCREENING OF FI- LARICIDES	FIL	99,500	95,000	194,500
UNIVERSITY OF GEORGIA RESEARCH FOUNDATION, INC. ATHENS	DR WILLIAM L. HANSON CHEMOTHERAPY OF TRYPANOSOMA CRUZI	CHA	30,641	19,313	49,954
	DR WILLIAM L. HANSON EXPERIMENTAL CHEMOTHERAPY OF LEISHMANIASIS & SCREENING OF ANTILEISHMANIAL COMPOUNDS	LEI	-	28,215	28,215
CENTERS FOR DISEASE CONTROL U.S. PUBLIC HEALTH SERVICE ATLANTA	DR JAMES SULLIVAN H. DURYI: CHARCT. OF HABITAT PREFERENCES & DETERMINATION OF HOST-PARASITE RELATIONS IN ITS NATURAL RANGE	VEC	-	3,462	3,462
	DR ROBERT C. GOOD VACCINATION OF ARMADILLOS WITH M. LEPRAE	LEP	6,920	-	6,920
	DR ROBERT C. GOOD MAINTENANCE OF A COLONY OF ARMADILLOS INFECTED WITH M. LEPRAE	LEP	22,368	10,000	32,368
	DR ROBERT C. GOOD STUDIES OF DRUGS FOR THEIR AC- TIVITY AGAINST M. LEPRAE IN MICE	LEP	50,066	50,946	101,012
EMORY UNIVERSITY SCHOOL OF MEDICINE ATLANTA	DR ROBERT C. GOOD MAINTENANCE OF A COLONY OF AR- MADILLOS INFECTED WITH M. LEPRAE	LEP	23,681	-	23,681

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EMORY UNIVERSITY SCHOOL OF MEDICINE ATLANTA	DR ROBERT C. GOOD VACCINATION OF ARMADILLOS WITH M. LEPRAE	LEP	18,507	18,507	37,014
	DR ROBERT C. GOOD STUDIES IN MICE OF VACCINES AGAINST M. LEPRAE	LEP	23,187	23,200	46,387
JOHNS HOPKINS UNIVERSITY SCHOOL OF HYGIENE & PUBLIC HEALTH BALTIMORE	DR MICHAEL GOTTLIEB SURFACE MEMBRANE ENZYMES OF LEISHMANIA	LEI	-	32,950	32,950
	DR THERESA SHAPIRO EFFECTS OF PROBENECID ON PHAR- MACOKINETICS OF ALLOPURINOL RIBOSIDE IN MAN	DIF	15,000	-	15,000
	DR THOMAS M. TRISCHMANN EARLY PARASITE PROLIFERATION IN BXH-2 MICE	CHA	7,833	8,617	16,450
	PROFESSOR N.R. ROSE INDIUM SLIDE IMMUNOASSAY: A TOOL FOR RAPID DETECTION OF ANTIGEN	DIF	15,000	-	15,000
JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE BALTIMORE	DR ROBERT G. HAMILTON IMMUNODIAGNOSIS OF FILARIAL PARASITIC INFECTIONS	FIL	29,000	-	29,000
WILMER OPHTHALMOLOGICAL INSTITUTE JOHNS HOPKINS UNIVERSITY HOSPITAL BALTIMORE	DR DAVID A. NEWSOME HUMORAL & CELLULAR IMMUNE RESPONSES TO RETINAL ANTIGENS IN PERSONS WITH ONCHOCERCIASIS	FIL	52,200	-	52,200
FOUNDATION FOR ADVANCED EDUCATION IN SCIENCES - NIH BETHESDA	DR L.H. MILLER ISOLATION & CHARACTERIZATION OF GENES CODING TARGET ANTIGENS OF P. FALCIPARUM TRANSMISSION BLOCKING IMMUNITY	NAL	-	40,100	40,100
FOUNDATION FOR ADVANCED EDUCATION IN THE SCIENCES INCORPORATED BETHESDA	DR FRANKLIN ALAN SHER MOLECULAR CLONING BY EXPRESSION OF GENES ENCODING POTENTIALLY PROTECTIVE SCHISTOSOME IMMUNOGENS	SCH	33,600	-	33,600

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COUNTRY/INSTITUTION	PRINCIPAL INVESTIGATOR/ PROJECT	COMPO- NENT	BUDGET 1984	BUDGET 1985	TOTAL 1984-1985
GORGAS MEMORIAL INSTITUTE OF TROPICAL AND PREVENTIVE MEDICINE INC BETHESDA	DR HOWARD A. CHRISTENSEN NEW WORLD REGIONAL REFERENCE CENTER FOR REDUVIIDAE HOST BLOODMEAL IDENTIFICATION	CHA	11,918	-	11,918
	DR ROLANDO ERNESTO SAENZ CLINICAL TRIAL FOR EVALUATION OF TWO REGIMENS OF GLUCANTIME & KETONAZOLE IN TREATMENT OF CUTANEOUS LEISHMANIASIS	LEI	-	19,000	19,000
NATIONAL INSTITUTES OF HEALTH ALLERGY AND INFECTIOUS DISEASES INST BETHESDA	DR RICHARD CARTER ISOLATION OF GENES CODING FOR TARGET ANTIGENS OF ANTI-GAMETE TRANSMISSION BLOCKING IMMUNITY IN P. FALCIPARUM MALARIA	MAL	28,600	31,460	60,060
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY BLACKSBURG	DR A.A. YOUSTEN FERMENTATION PARAMETERS AFFECTING GROWTH, SPORULATION & TOXIN SYNTHESIS BY BACILLUS SPHAERICUS 1593	VEC	-	51,530	51,530
BETH ISRAEL HOSPITAL HARVARD MEDICAL SCHOOL BOSTON	DR PETER F. WELLER DIETHYLCARBAMAZINE: THERAPEUTIC & ADVERSE EFFECTS DUE TO ACTIONS ON ARACHIDOMIC ACID METABOLISM OF MICROFILARIAE	FIL	47,995	33,500	81,495
BRIGHAM AND WOMEN'S HOSPITAL HARVARD MEDICAL SCHOOL BOSTON	DR DIANE MCKAHON-PRATT IMMUNODIAGNOSIS OF LEISHMANIA SPECIES EMPLOYING MONOCLONAL ANTIBODIES (2 PROJECTS)	LEI	-	34,253	34,253
HARVARD SCHOOL OF PUBLIC HEALTH BOSTON	DR DONALD HARN PROTECTIVE MONOCLONAL ANTIBODIES TO SCHISTOSOMULA MEMBRANE ANTIGENS	SCH	34,000	36,950	70,950
	PROFESSOR DYANN FERGUS WIRTH RAPID DIAGNOSIS OF LEISHMANIASIS BY NUCLEIC ACID HYBRIDIZATION OF KINETOPLAST DNA	LEI	-	29,000	29,000

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UNITED STATES DEPT. OF AGRICULTURE INSECT PATHOLOGY RESEARCH UNIT BROWNSVILLE	DR H. T. DULMAGE DEVELOPMENT OF PROCEDURES FOR PRODUCING AND RECOVERING FORMULATION OF BACILLUS SPHAE- RICUS ON A PILOT PLANT SCALE	VEC	12,500	-	12,500
UNIVERSITY OF VERMONT COLLEGE OF MEDICINE BURLINGTON	DR JULIAN JOSEPH JAFFE FOLATE METABOLISM OF FILARIAE	FIL	28,400	-	28,400
HARVARD COLLEGE CAMBRIDGE	DR M. JUNGERY PLASMODIUM FALCIPARUM INVASION OF HUMAN RED CELLS	MAL	10,000	-	10,000
	PROFESSOR DYANN FERGUS WIRTH DEVELOPMENT OF ASSAYS TO IDENTIFY ONCHOCERCA LARVAE IN VECTORS BY SPECIFIC DNA HYBRIDIZATION	FIL	-	42,000	42,000
	PROFESSOR DYANN FERGUS WIRTH DEVELOPMENT OF A RAPID DIAG- NOSTIC TEST FOR MALARIA USING SPECIFIC DNA HYBRIDIZATION	MAL	28,723	42,210	70,933
	PROFESSOR WILLY F. PIESSENS DEVELOPMENT OF ASSAYS TO IDEN- TIFY INFECTIVE LARVAE IN VEC- TORS BY SPECIFIC DNA HYBRIDI- ZATION	FIL	32,900	32,000	64,900
WHITEHEAD INSTITUTE FOR BIOMEDICAL RESEARCH CAMBRIDGE	DR RICHARD A. YOUNG WHO RECOMBINANT DNA BANK	LEP	-	37,000	37,000
HANSEN'S DISEASE FOUNDATION HEALTH AND HUMAN SERVICES CARVILLE	DR MELVYN J. MORALES FEASIBILITY OF INTERMITTENT CLOFAZIMINE THERAPY IN HAN- SEN'S DISEASE	LEP	13,366	-	13,366
NATIONAL HANSEN'S DISEASE CENTER CARVILLE	DR FENG ZU MEI DETECTION OF CIRCULATING ANTIGENS IN FILARIASIS	TRN3	-	18,000	18,000

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NATIONAL HANSEN'S DISEASE CENTER CARVILLE	DR MELVYN J. MORALES FEASIBILITY OF INTERMITTENT CLOFAZIMINE THERAPY IN HANSEN'S DISEASE	LEP	-	27,000	27,000
	DR R.C. HASTINGS SUPPLY OF M. LEPRAE	LEP	32,045	40,000	72,045
TINCONDEROGA FARMS INCORPORATED CHANTILLY	MR PETER J. KNOP PRODUCTION OF ARTEMISIA ANNUA	MAL	-	15,000	15,000
UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL CHAPEL HILL	DR J. BONDRE QUANTITATIVE ASSESSMENT OF AN- TIMALARIAL ACTIVITY IN VITRO BY A SEMIAUTOMATIC MICRODILU- TION TECHNIQUE	MAL	29,079	39,590	68,669
	DR ROBERT E. DESJARDINS QUALITY CONTROL EVALUATION OF MICROTEST KITS FOR DRUG SUSCEPTIBILITY	MAL	8,500	-	8,500
	DR ROBERT E. DESJARDINS CLONING & CHARACTERIZATION OF ISOLATES OF PLASMODIUM FALCI- PARUM FROM BRAZIL	MAL	79,337	-	79,337
	PROFESSOR JOHN R. SEED ALTERATION IN AROMATIC AMINO ACID CATABOLISM DURING TRYPA- NOSOME INFECTION IN MAN	TRY	23,000	-	23,000
MEDICAL UNIVERSITY OF SOUTH CAROLINA CHARLESTON	DR ARMAND B. GLASSMAN IMMUNIZATION AGAINST VISCERAL LEISHMANIASIS	LEI	-	5,000	5,000
	DR CLIVE J. SHIFF ROLE OF ECDYSTEROIDS IN MIRACIDIAL-SNAIL INTERACTIONS & PARASITIC CASTRATION OF SNAILS	SCH	-	12,540	12,540
	PROFESSOR THOMAS C. CHENG EPITHELIA OF SCHISTOSOME- TRANSMITTING SNAILS	SCH	22,070	-	22,070

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MEDICAL UNIVERSITY OF SOUTH CAROLINA DEPT. OF PHARMACEUTICAL SCIENCES CHARLESTON	DR JOHN B. HYNES SYNTHESIS OF NEW FOLATE ANTA- GONISTS AS POTENTIAL ANTILE- PROTIC AGENTS	LEP	22,319	20,000	42,319
RUSH-PRESBYTERIAN-ST. LUKE'S MEDICAL CENTER CHICAGO	DR H. FRISCHER TOXICOLOGY OF 8-AMINOQUINO- LINES & GENETIC FACTORS ASSO- CIATED WITH THEIR TOXICITY IN MAN	MAL	-	53,830	53,830
	DR H. FRISCHER BIOTRANSFORMATION OF 8-AMINO- QUINOLINES IN HUMAN CELLS WITH MULTIPOTENTIAL HEMATOPOIETIC GENETIC DIFFERENTIATION	MAL	-	45,800	45,800
UNIVERSITY OF CINCINNATI CINCINNATI	DR WARD E. BULLOCK KILLED M. LEPPRAE VACCINE SEN- SITIZATION TRIAL - NON-ENDEMIC AREA	LEP	38,532	-	38,532
CASE WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE CLEVELAND	DR ADEL A.F. MAHMOUD IMMUNOPATHOGENESIS OF SCHISTO- SOMA JAPONICUM	SCH	27,000	-	27,000
	DR LESLIE T. WEBSTER JR MOLECULAR MECHANISMS OF ANTISCHISTOSOMAL ACTIONS OF PRAZIQUANTEL	SCH	-	37,330	37,330
	PROFESSOR MASAMICHI AIKAWA DETERMINATION OF LOCALIZATION & DISTRIBUTION OF PROTECTIVE ANTIGENS IN MALARIA PARASITES	MAL	27,695	-	27,695
	PROFESSOR MASAMICHI AIKAWA DETERMINATION OF LOCALIZATION & DISTRIBUTION OF PROTECTIVE ANTIGENS IN MALARIA PARASITES	MAL	-	53,690	53,690
UNIVERSITY OF CALIFORNIA AT DAVIS DAVIS	DR R. K. WASHING FIELD ASSESSMENT OF LAGENIDIUM GIGANTEUM COUGH AS BIOLOGICAL CONTROL AGENT OF MOSQUITO POPULATION	VEC	-	25,000	25,000

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UNIVERSITY OF CALIFORNIA AT DAVIS DAVIS	DR R. K. WASHING ASSESSMENT OF OOSPORE STAGE OF LAGENIDIUM GIGANTEUM COUCH AS BIOLOGICAL CONTROL AGENT OF MOSQUITO LARVAE	VEC	15,000	-	15,000
UNIVERSITY OF COLORADO SCHOOL OF MEDICINE DENVER	DR J. JOSEPH MARR PILOT STUDY OF EFFICACY AND SAFETY OF ALLOPURINOL RIBOSIDE (BW 28U) IN THE TREATMENT OF CUTANEOUS LEISHMANIASIS	DIF	3,865	-	3,865
	DR J. JOSEPH MARR ANTILEISHMANIAL ACTION OF INOSINE ANALOGUES	LEI	-	58,500	58,500
	DR RANDOLPH LEE BERENS PURINE AND PURINE ANALOGUE ME- TABOLISM IN TRYPANOSOMA CRUZI	CHA	8,670	-	8,670
	DR RANDOLPH LEE BERENS INOSINE ANALOG METABOLISM IN TRYPANOSOMA CRUZI	CHA	-	8,800	8,800
	DR ROBERTO DOCAMPO METABOLISM & MODE OF ACTION OF DRUGS USED AGAINST TRANSMIS- SION OF CHAGAS' DISEASE BY BLOOD TRANSFUSION	CHA	-	11,380	11,380
INSECTS AFFECTING MAN RESEARCH LABORATORY (USDA/ARS) GAINESVILLE	DR ALBERT H. UNDEEN EVALUATION OF BACILLUS PATHO- GENS AGAINST MOSQUITOS UNDER FIELD & LABORATORY CONDITIONS	VEC	17,500	17,000	34,500
UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT HOUSTON HOUSTON	DR ROBERT G. HAMILTON IMMUNODIAGNOSIS OF FILARIAL PARASITIC INFECTIONS	FIL	26,668	27,965	54,633
BOYCE THOMPSON INSTITUTE FOR PLANT RESEARCH AT CORNELL UNIVERSITY ITHACA	DR DONALD WILSON ROBERTS BIOLOGY OF LAGENIDIUM GIGANTE- UM, FUNGAL PATHOGEN OF MOSQUITO TO	VEC	22,478	-	22,478

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CORNELL UNIVERSITY ITHACA	DR E.W. CUPP DEVELOPMENT OF KEY LABORATORY TECHNIQUES FOR COLONIZATION OF BLACK FLY VECTORS OF ONCHOCER- CA SPP	FIL	43,200	-	43,200
	DR E.W. CUPP DEVELOPMENT OF NOVEL IN VIVO & IN VITRO MODELS OF CUTANEOUS FILARIASIS	FIL	36,349	29,090	65,439
USDA/AGRICULTURAL RESEARCH SERVICE GULF COAST RESEARCH SERVICE LAKE CHARLES	MR T. FUKUDA MASS CULTURE OF ROMANONEMIS CULICIVORAX	VEC	12,000	12,000	24,000
UNIVERSITY OF KENTUCKY MDCAL. CENTER DEPARTMENT OF BIOCHEMISTRY LEXINGTON	DR BUDDY ULLMAN GENETIC ANALYSIS OF PURINE METABOLISM IN LEISHMANIA	LEI	-	16,253	16,253
	DR SALVATOR TURCO CHARACTERIZATION OF AN UNUSUAL COMPLEX CARBOHYDRATE OF LEISH- MANIA DONOVANI	LEI	-	41,500	41,500
LOMA LINDA UNIVERSITY SCHOOL OF MEDICINE LOMA LINDA	DR R.E. RYCKMAN BIBLIOGRAPHY TO CHAGAS' DISEASE & TRIATOMINAE & TRIATOMINAE BORNE TRYPANOSOMES OF SOUTH AMERICA	CHA	-	8,500	8,500
	PROFESSOR ALLEN STROTHER SYNTHESIS OF CERTAIN ANALOGUES AND PUTATIVE METABOLITES OF ANTIMALARIAL DRUG PRIMAQUINE	MAL	6,200	2,500	8,700
THE REGENTS OF THE UNIVERSITY OF CALIFORNIA LOS ANGELES	DR PAUL BAUMANN REGULATION OF BACILLUS SPHAERICUS LARVICIDE PRODUCTION	VEC	-	11,000	11,000
	MR LARRY SIMPSON CLASSIFICATION & DIAGNOSIS OF PATHOGENIC T. CRUZI & LEISHMA- NIA STRAINS & SPECIES BY MEANS OF SCHIZODEME ANALYSIS	CHA	10,000	-	10,000

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UNIVERSITY OF SOUTHERN CALIFORNIA HEALTH SCIENCE CAMPUS LOS ANGELES	DR ROBERT LAZARUS MODLIN IMMUNOREGULATION IN LEPROSY GRANULOMAS	LEP	-	35,000	35,000
	DR THOMAS H. REA IMMUNOREGULATION IN LEPROSY GRANULOMAS	LEP	-	20,000	20,000
UNIVERSITY OF LOWELL CENTER FOR TROPICAL DISEASES LOWELL	PROFESSOR JOHN IRVIN BRUCE SUPPLY OF SCHISTOSOMA MANSONI SOLUBLE EGG ANTIGEN (SEA) & LYOPHILIZED ADULT WORMS	SCH	20,500	-	20,500
UNIVERSITY OF WISCONSIN SYSTEM MADISON	DR ROBERT B. GRIEVE IMMUNOLOGIC DISCRIMINATION OF SAVANNA-FORM ONCHOCERCA VOLVULUS INFECTIVE LARVAE	FIL	-	23,000	23,000
MEDICAL RESEARCH INSTITUTE FLORIDA INSTITUTE OF TECHNOLOGY MELBOURNE	PROFESSOR ELEANOR E. STORRS SUPPLY OF M. LEPRAE: COLONY I & II	LEP	80,200	76,200	156,400
	PROFESSOR ELEANOR E. STORRS SUPPLY OF ARMADILLO TISSUES INFECTED WITH M. LEPRAE (COLO- NY III)	LEP	80,200	76,200	156,400
	PROFESSOR ELEANOR E. STORRS SUPPLY OF ARMADILLO TISSUES INFECTED WITH M. LEPRAE (COLONY IV)	LEP	-	76,200	76,200
STANFORD RESEARCH INSTITUTE INTERNATIONAL MENLO PARK	DR ROBERT C. HUMPHRES STUDY OF IMMUNOLOGICAL MECHANISMS RESPONSIBLE FOR M- LEPRAE INDUCED TOLERANCE IN THE LEWIS RAT	LEP	-	10,000	10,000
VANDERBILT UNIVERSITY NASHVILLE	DR BURTON J. BOGITSH PROTEASES IN SCHISTOSOMES	SCH	12,300	-	12,300
LOUISIANA STATE UNIVERSITY MEDICAL CENTER NEW ORLEANS	MRS THERESA KIMBENG NKUO CHARACTERIZATION STUDIES ON ANTIGENS OF PLASMODIUM FALCI- PARUM USING HYPERIMMUNE SERA	DIF	-	3,316	3,316

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TULANE UNIVERSITY SCHOOL OF MEDICINE NEW ORLEANS	DR LARRY MILLIKAN TESTING IN NON-ENDEMIC AREAS	LEP	35,100	-	35,100
ALBERT EINSTEIN COLLEGE OF MEDICINE NEW YORK	DR BARRY R. BLOOM COST OF ADMINISTRATIVE EXPEN- SES AS CHAIRMAN OF IMMLEP SC	LEP	15,250	11,640	26,890
MEMORIAL SLOAN-KETTERING CANCER CENTER NEW YORK	PROFESSOR DAVID L. ROSENSTREICH GENETIC CONTROL OF RESISTANCE TO TRYPANOSOMA RHODESIENSE	TRY	25,400	-	25,400
NEW YORK HOSPITAL CORNELL MEDICAL CENTER NEW YORK	DR JEFFREY VICTOR RAVETCH MOLECULAR BASIS FOR PROTEIN SECRETION BY PLASMODIUM: IDENTIFICATION OF GENETIC ELEMENTS	MAL	41,150	40,150	81,300
NEW YORK UNIVERSITY MEDICAL CENTER SCHOOL OF MEDICINE NEW YORK	DR STEVEN MESHNICK ACTIVATED OXYGEN GENERATORS AS ANTIMALARIAL AGENTS	MAL	-	41,543	41,543
	DR STEVEN MESHNICK ACTIVATED OXYGEN GENERATORS AS ANTIMALARIAL AGENTS	MAL	-	43,036	43,036
	DR STEVEN MESHNICK ANTITRYPANOSOMAL ACTIVITY OF IRON-SUPEROXIDE DISMUTASE INHIBITORS	TRY	21,538	20,000	41,538
	DR FIDEL P. ZAVALA PURCHASE OF ELISA READER FOR COURSE ON DETECTION & IDENTI- FICATION OF SPOROZOITES BASED ON USE OF MONOCLONAL ANTIBODIE	MAL	8,000	-	8,000
	DR G. NIGEL GODSON HIGH EXPRESSION OF SPOROZOITE SURFACE ANTIGENS IN PROCARYOTE CELLS	MAL	34,696	36,912	71,608
	DR NADIA NOGUEIRA CHARACTERIZATION OF MAJOR SURFACE ANTIGENS OF LEISHMANIA SPECIES	LEI	-	5,000	5,000

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NEW YORK UNIVERSITY SCHOOL OF MEDICINE NEW YORK	PROFESSOR JEROME VANDERBERG CHARACTERIZATION OF ERYTHRO- CYTE RECEPTOR FOR PLASMODIUM FALCIPARUM MEROZOITES	MAL	-	101,838	101,838
	PROFESSOR RUTH S. NUSSENZWEIG CLONING OF CIRCUMSPOROZOITE ANTIGENS OF HUMAN MALARIA PA- RASITES	MAL	85,432	64,402	149,834
	PROFESSOR RUTH S. NUSSENZWEIG IMMUNOLOGIC, METABOLIC & IN VITRO STUDIES OF SPOROGENIC & ASEXUAL STAGES OF PLASMODIA	MAL	-	91,320	91,320
	PROFESSOR VICTOR NUSSENZWEIG DEVELOPMENT OF A MALARIA VAC- CINE	MAL	53,603	-	53,603
	PROFESSOR VICTOR NUSSENZWEIG SYNTHESIS OF EPITOPES OF CS PROTEINS	MAL	48,366	52,675	101,041
PACE UNIVERSITY HASKINS LABORATORIES NEW YORK	DR C.-J. BACCHI POLYAMINE ANTAGONISTS IN CHEMOTHERAPY OF CENTRAL NERVOUS SYSTEM TRYPANOSOMIASIS	TRY	-	23,600	23,600
PUBLIC HEALTH RESEARCH INSTITUTE NEW YORK	DR ARAXIE KILEJIAN ISOLATION OF STRUCTURAL GENES OF HISTIDINE-RICH PROTEINS OF PLASMODIUM LOPHURAE & PLASMO- DIUM FALCIPARUM	MAL	33,000	35,208	68,208
ROCKEFELLER UNIVERSITY NEW YORK	DR ALAN FAIRLAMB DRUG STUDIES ON TRYPANOTHIONE METABOLISM	TRY	-	20,870	20,870
	DR ERNST A.H. FRIEDHEIM IMPROVED TREATMENT OF AFRICAN SLEEPING SICKNESS	TRY	29,940	5,000	34,940
	DR G.A.M. CROSS STRUCTURE & FUNCTION OF HISTI- DINE-RICH PROTEIN GENES IN PLASMODIUM FALCIPARUM	MAL	50,856	55,179	106,035

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ROCKEFELLER UNIVERSITY NEW YORK	DR G.A.M. CROSS CHARACTERIZATION OF PARASITE ANTIGENS IN P.FALCIPARUM INFECTED ERYTHROCYTE MEMBRANE	MAL	-	74,034	74,034
	DR M.R. RIFKIN MEMBRANE COMPOSITION OF HUMAN INFECTIVE & NON-INFECTIVE TRY- PANOSOMES	TRY	5,000	-	5,000
	DR MARGARET PERKINS PLASMODIUM FALCIPARUM; STRUC- TURAL DETERMINANTS OF MEROZOI- TE ERYTHROCYTE INTERACTION	MAL	-	137,338	137,338
	PROFESSOR ANTHONY CERAMI TRYPANOCIDAL AROMATIC BISQUANYLHYDRAZONES	TRY	28,400	25,850	54,250
	PROFESSOR WILLIAM TRAGER EFFECTS OF ANTIMALARIAL DRUGS ON GAMETOCYTOGENESIS IN VITRO OF CLONES OF P. FALCIPARUM	MAL	7,020	-	7,020
	PROFESSOR WILLIAM TRAGER EFFECTS OF GAMETOCYTOCIDAL DRUGS ON GAMETOCYTES OF P.FAL- CIPARUM IN VITRO WITH SPECIAL REF. TO THEIR MODE OF ACTION	MAL	37,260	35,160	72,420
UNIVERSITY OF HEALTH SCIENCES THE CHICAGO MEDICAL SCHOOL NORTH CHICAGO	DR CHANG KUANG POO VACCINATION & IMMUNODIAGNOSIS IN EXPERIMENTAL LEISH. USING SURFACE ANTIGEN PURIFIED BY MAB AFFINITY CHROMATOGRAPHY	LEI	-	6,190	6,190
PALO ALTO MEDICAL FOUNDATION RESEARCH INSTITUTE PALO ALTO	DR FAUSTO G. ARAUJO STUDIES ON ANTIGENS OF TRYPA- NOSOMA CRUZI	CHA	14,539	-	14,539
	DR FAUSTO G. ARAUJO STUDIES ON ANTIGENS OF TRYPANOSOMA CRUZI	CHA	-	30,000	30,000
HANNEHANN UNIVERSITY SCHOOL OF MEDICINE	DR CAROLE A. LONG IDIOTYPY & IMMUNITY TO MALARIA	MAL	19,890	23,000	42,890

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UNIVERSITY OF PENNSYLVANIA PHILADELPHIA	DR JAY P. FARRELL POTENTIAL USE OF AN L- DONOVANI ISOLATE FROM A DOG (WR503) FOR VACCINATION AGAINST VISCERAL LEISHMANIASIS	LEI	-	6,350	6,350
	DR JOHN J. DONNELLY OCULAR ANTIBODY RESPONSES IN EXPERIMENTAL ONCHOCERCA VOLVU- LUS INFECTION IN CHIMPANZEEES	DIF	-	3,000	3,000
	DR LEON P. WEISS HEMATOPOIETIC TISSUE IN MALARIA: AN ELECTRO- MICROSCOPIC, CYTOCHEMICAL- TISSUE CULTURE	MAL	32,385	43,305	75,690
BROWN UNIVERSITY PROVIDENCE	DR MAHMOUD H. EL KOUNI NUCLEOTIDE METABOLISM IN SCHISTOSOMES	SCH	-	51,218	51,218
	DR PAUL MARK KNOFF INDUCTION OF PROTECTIVE IMMU- NITY TO HUMAN SCHISTOSOMES THROUGH VACCINATION WITH PARA- SITE ANTIGEN PREPARATIONS	SCH	45,993	45,703	91,696
WASHINGTON STATE UNIVERSITY COLLEGE OF VETERINARY MEDICINE PULLMAN	PROFESSOR ANTHONY FRANCIS BARBET EPIOTOPE ANALYSIS OF VSGS FROM RELATED TRYPANOSOME POPULATION	TRY	6,153	-	6,153
NORTH CAROLINA STATE UNIVERSITY RALEIGH	DR B. HAMMERBERG CIRCULATING & TISSUE DEPOSITED LYMPHATIC FILARIAL ANTIGENS ASSOCIATED WITH FILARIASIS DI- SEASE MANIFESTATION IN DOG	FIL	-	64,240	64,240
UNIVERSITY OF CALIFORNIA AT RIVERSIDE RIVERSIDE	DR M.S. MULLA DEVELOPMENT & EVALUATION OF MICROBIAL CONTROL AGENTS	VEC	18,987	18,781	37,768
	DR M.S. MULLA SELECTIVE TOXICITY OF DEACTI- VATION OF BACILLUS SPRAERICUS TOXIN	VEC	-	28,800	28,800

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UNIVERSITY OF CALIFORNIA AT RIVERSIDE RIVERSIDE	DR S.N. THOMPSON HOST NUTRITION DURING GASTRO- POD INTERACTION	SCH	-	18,128	18,128
	DR SARJEET S. GILL MECHANISM OF TOXICITY OF BACI- LLUS THURINGIENSIS H-14 ENDO- TOXIN	VEC	-	15,900	15,900
	PROFESSOR IRWIN W. SHERMAN PURINE METABOLISM IN HUMAN MA- LARIA	MAL	25,704	-	25,704
	PROFESSOR IRWIN W. SHERMAN ERYTHROCYTE-ENDOTHELIAL INTERACTIONS IN MALARIA	MAL	60,497	-	60,497
BIOMEDICAL RESEARCH INSTITUTE ROCKVILLE	DR MICHAEL R. HOLLINGDALE IN VITRO TESTING OF ANTI-MALA- RIAL TISSUE SCHIZONITICIDES	MAL	29,659	53,230	82,889
UNIVERSITY OF CALIFORNIA AT SAN DIEGO	DR CHARLES EDWARD DAVIS HUMAN TRYPANOSOMIASIS : CONTROL OF DIFFERENTIATION	TRY	-	5,000	5,000
UNIVERSITY OF CALIFORNIA SAN FRANCISCO	DR CHING C. WANG PURINE METABOLISM IN SCHISTO- SOMA MANSONI	SCH	43,708	-	43,708
UNIVERSITY OF WASHINGTON SEATTLE	DR STEPHEN D. HAUSCHKA MOLECULAR CLONING & ANALYSIS OF GENES ENCODING GLYCOLYTIC ENZYMES OF TRYPANOSOMA BRUCEI	TRY	5,000	-	5,000
	DR T.M. BUCHANAN IDENTIFICATION, PURIFICATION & CHARACTERIZATION OF PROTEINS CONTAINING M. LEPRAE SPECIFIC EPITOPES	LEP	16,565	48,000	64,565
	DR T.M. BUCHANAN PRODUCTION & CHARACTERIZATION OF MONOCLONAL ANTIBODIES TO MYCOBACTERIUM LEPRAE	LEP	45,556	49,902	95,458

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UNIVERSITY OF WASHINGTON SEATTLE	DR T. M. BUCHANAN IDENTIFICATION OF SUBCLINICAL M. LEPRAE INFECTIONS THAT ARE LIKELY TO PROGRESS TO CLINICAL LEPROSY	LEP	-	45,254	45,254
	DR T. M. BUCHANAN ULTRA SENSITIVE IMMUNOLOGICAL & BIOCHEMICAL METHODS TO RAPI- DLY DETERMINE PRESENCE & VIA- BILITY OF M. LEPRAE IN TISSUES	LEP	20,000	20,000	40,000
	PROFESSOR HOWARD C. WHISLER IN VIVO CULTIVATION OF COELO- MYCETES INDICUS	VEC	25,119	15,000	40,119
WASHINGTON UNIVERSITY ST. LOUIS	DR ROY CURTISS III GENETIC ANALYSIS OF MYCOBACTE- RIUM LEPRAE	LEP	39,500	20,000	59,500
WASHINGTON UNIVERSITY DIVISION OF LABORATORY MEDICINE ST. LOUIS	DR ROY CURTISS III GENETIC ANALYSIS OF MYCOBACTE- RIUM LEPRAE	LEP	43,289	20,230	63,519
UNIVERSITY OF MINNESOTA OFFICE OF RESEARCH ADMINISTRATION ST. PAUL	DR E. JOHN STABA SESQUITERPENE PEROXIDE BIOSYN- THESIS BY ARTEMISIA ANNUA L. PLANTS & TISSUE CULTURES	MAL	45,020	45,810	90,830
STANFORD UNIVERSITY SCHOOL OF MEDICINE STANFORD	DR RICHARD A. YOUNG GENE CLONE BANK OF LAMDA GTLL RECOMBINANT PHASE USING M. LEPRAE DNA	LEP	6,600	-	6,600
UNIVERSITY OF CONNECTICUT COLLEGE OF LIBERAL ARTS & SCIENCES STORRS	MS RUHANI ANUSHA JAYEWARDENE RESETTLEMENT & IMPLICATION FOR MALARIA TRANSMISSION & CONTROL	SER	3,500	-	3,500
UNIVERSITY OF SOUTH FLORIDA MEDICAL CENTER TAMPA	DR ANN C. VICKERY BRUGIA MALAYI: STUDIES OF LYMPHATIC IMMUNOPATHOLOGY IN NUDE MICE	FIL	-	71,110	71,110
ARIZONA STATE UNIVERSITY TEMPE	DR E. W. DAVIDSON MODE OF ACTION & IMMUNOLOGICAL INVESTIGATIONS OF BACILLUS SPHAERICUS SPORE TOXIN	VEC	-	12,010	12,010

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ARIZONA STATE UNIVERSITY TEMPE	PROFESSOR WILLIAM F. BURKE JR GENETIC STUDIES OF INSECTI- CIDAL ACTIVITY IN BACILLUS SPHAERICUS	BIO	-	13,393	13,393
RENSELAER POLYTECHNIC INSTITUTE TROY	PROFESSOR S. ARCHER MODE OF ACTION OF SOME ANTI- SCHISTOSOMAL AGENTS	SCH	33,550	28,303	61,853
UNIVERSITY OF MISSISSIPPI SCHOOL OF PHARMACY UNIVERSITY	DR EDWARD M. CROOM JR PRODUCTION OF ARTEMISININE	MAL	-	153,260	153,260
	PROFESSOR JAMES DEWEY MCCHESENEY PRIMAQUINE: STUDIES OF MAMMA- LIAN METABOLISM	MAL	82,335	88,410	170,745
	PROFESSOR JAMES DEWEY MCCHESENEY SYNTHESIZE 10 GM OF CARBOXY METABOLITE OF PRIMAQUINE	MAL	-	1,750	1,750
PHARMACEUTICAL SYSTEMS INCORPORATED UPPER MARLBORO	DR C. J. CANFIELD TO REVIEW TOXICOLOGY DATA FOR THE CPH 86	MAL	-	8,500	8,500
UNIVERSITY OF ILLINOIS COLLEGE OF VETERINARY MEDICINE URBANA	DR JOHN A. SHADDUCK MAMMALIAN SAFETY OF LAGENIDIDIUM GIGANTEUM	VEC	-	25,000	25,000
ARMED FORCES INSTITUTE OF PATHOLOGY WASHINGTON	DR WAYNE M. MEYERS PRODUCTION & SUPPLY OF M. LE- PRAE FROM NINE-BANDED ARMADIL- LOS	LEP	83,135	83,000	166,135
HOWARD UNIVERSITY WASHINGTON	DR OLAKUNLE O. KASSIM BIOCHEMICAL PROPERTIES OF LYSOSOMAL HYDROLASES IN BIOM- PHALARIA GLABRATA & HELIOSOMA- DURYI: INDUCTION OF RESISTANCE	SCH	28,082	-	28,082
WALTER REED ARMY INSTITUTE OF RESEARCH WASHINGTON	MAJOR DR WILBUR MILHOUS IN VITRO ANTIMALARIAL SCREEN	MAL	28,329	30,362	58,691

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MARINE BIOLOGICAL LABORATORY WOODS HOLE	DR PAUL GROSS SUMMER COURSES ON BIOLOGY OF PARASITISM, JUNE - AUGUST 1983, 1984 AND 1985, WOODS HOLE, MASSACHUSETTS, USA	BIO	10,000	10,000	20,000
VENEZUELA					
UNIVERSIDAD CENTRO OCCIDENTAL "LISANDRO ALVARADO" BARQUISIMETO	DR RAFAEL ARMANDO BONFANTE-GARRIDO HOSTS & RESERVOIRS OF TEGMEN- TARY LEISHMANIASIS IN MACUTO FOREST, LARA STATE, VENEZUELA	LEI	-	5,000	5,000
AMAZONIAN INST. INVESTIGATION AND CONTROL OF TROPICAL DISEASES CARACAS	DR ROBERT B. ALLAN ECOLOGY & IMMUNOLOGY OF FILA- RIASIS, LEISHMANIASIS & MALA- RIA IN VENEZUELA	IST4	-	100,000	100,000
CENTRO MEDICO DOCENTE LA TRINIDAD, UN. DE INVESTIGACIONES CARACAS	DR ROMANO PIRAS STUDIES ON MECHANISM OF TRYPANOSOMA CRUZI PENETRATION INTO FIBROBLASTIC CELLS	CHA	26,882	-	26,882
INSTITUTO NACIONAL DE DERMATOLOGIA CEPIALET CARACAS	DR JACINTO CONVIT LEPROSY IMMUNOPROPHYLAXIS IN VENEZUELA	LEP	90,000	110,000	200,000
	DR JACINTO CONVIT IMMUNOLOGICAL MECHANISMS IN LEPROSY	LEP	12,000	-	12,000
	DR S. WALTER MOSCA EVALUATION OF LYMPHOCYTE POPU- LATION, BY SPECIFIC MONOCLONAL ANTIBODIES, OF PATIENTS WITH CHAGAS' DISEASE	TRM1	5,200	-	5,200
INSTITUTO NACIONAL DE HIGIENE CARACAS	DR JOSE M. PADILLA PRODUCTION OF 140 000 DOSES OF SOLUBLE ANTIGEN PREPARED FROM M. LEPRAE	LEP	12,000	-	12,000

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UNIVERSIDAD CENTRAL DE VENEZUELA FACULTAD DE CIENCIAS LOS CHAGUARAMOS	DR ROBERTO BRICENO-LEON EFFECT OF SOCIAL CONDITIONS & ATTITUDES ON COMMUNITY PARTICIPATION IN VIGILANCE & CONTROL OF CHAGAS' DISEASE	SER	-	3,000	3,000
	DR ROBERTO BRICENO-LEON EFFECT OF SOCIAL CONDITIONS & ATTITUDES ON COMMUNITY PARTICIPATION IN VIGILANCE & CONTROL OF CHAGAS' DISEASE	SER	-	41,500	41,500
UNIVERSIDAD DE CARABOBO NUCLEO ARAGUA MARACAY	DR RAFAEL RANGEL-ALDAO MOLECULAR MECHANISMS OF CON- TROL OF CELL DIVISION & DIFE- RENTIATION OF TRYPANOSOMA CRU- ZI	CHA	16,500	5,000	21,500
	DR ROSA MENDEZ DE HUBSCH EVALUATION IN LAB & IN FIELD OF 3 TECHNIQUES FOR DIAGNOSIS OF CHAGAS' DISEASE: AD, ELISA, TIA	CHA	10,000	-	10,000
UNIVERSIDAD DE LOS ANDES MERIDA	DR DARIO NOVOA-MONTERO PREVALENCE SURVEY OF CHAGAS' INFECTION & CHRONIC MYOCARDIO- PATHY, TRUJILLO STATE, VENEZUELA - SECOND PART	EPD	-	40,000	40,000