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PAN AMERICAN HEALTH ORGANIZATION
Pan American Sanitary Bureau, Regional Office of the
WORLD HEALTH ORGANIZATION

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INTER-AMERICAN INVESTIGATION OF MORTALITY IN CHILDHOOD

Report for Six Months, October 1, 1967-March 31, 1968

During the six-month period preliminary analyses were prepared from questionnaires completed in the first part of the period of pilot testing and a small Working Group met in December 1967 in order to agree on questionnaires and procedures for the Investigation if funds became available. After signing of the document in the Agency for International Development approving the research program on January 30, 1968 the Planning Conference of Principal Collaborators was scheduled and held from March 25-29, 1968, in Cali, Colombia. A Draft Manual of Procedures for the program was reviewed at that time. Also a meeting of medical interviewers was held in Ribeirão Prêto, Brazil from April 3-9, 1968. The activities in these fields are given in summary in this report. Documents are available for reference in each of these fields.

Pilot Testing

Five areas in Latin America were used for pilot testing of the questionnaires and procedures of the Investigation in Recife and Ribeirão Prêto, Brazil, in Jamaica, Colombia and Guatemala. The field work in pilot testing began early in 1967 and will be continued in four of these areas until the large program begins on June 1, 1968. Questionnaires received in the Central Office by September, 1967 were used for preliminary tabulation of results. A set of 23 tables served to indicate the quality of the data and the difficulties encountered. The data from the rural area in Guatemala were too incomplete to justify inclusion of such an area in the Investigation. The deaths investigated in Jamaica were only hospital deaths and lacked sufficient deaths in early life. The numbers of autopsies were too few in Colombia to provide sufficient diagnostic data. A summary of the findings in the pilot testing is given in Appendix 1. There are wide differences in the areas. Nutritional deficiency was the underlying or an associated cause of 19 to 56 per cent of the deaths of children of 1 month-4 years of age in five areas. The previous pregnancy losses of these mothers either before or after birth are large (42 per cent in one area).

Working Group, 4-8 December, 1967, Washington, D.C.

The meeting of a small Working Group was held on December 4-8, 1967 to review the questionnaire and the work in pilot testing areas, to revise the questionnaire and to prepare procedures for the Investigation to be undertaken when funds became available. Participants at the meeting represented three of the pilot testing programs in Latin America and one in the United States (North Carolina). (List of participants and agenda are attached as Appendix 2.) Since recommendations were needed for the pathological aspects of the program a consultant was obtained from the Hospital Infantil in Mexico to assist in recommendations for autopsies.

Planning Conference of Principal Collaborators, 25-29 March, 1968, Cali, Colombia.

On January 30, 1968 the document approving the proposed program was signed in the Office of the Administrator of the Agency for International Development of the Department of State of the United States. On March 11, the agreement for the extension of the program from the pilot testing phase to 15 months of field operations was signed by the Director of the Pan American Health Organization. Agreements have been prepared for signature for 12 field projects in Argentina, Bolivia, Brazil, Chile, Colombia, Jamaica and Mexico.

The meeting of the Planning Conference of Principal Collaborators was held from March 25-29, 1968 in the Faculty of Medicine of the University of Valle, Cali, Colombia. Dr. Guillermo Llanos of the Department of Preventive Medicine of that Faculty had been in charge of pilot testing and thus by holding the Conference in Cali, actual field operations were shown to the group. Also by holding the Conference in Colombia advantage was taken of the experience on the Study of Health Manpower and Medical Education in Colombia. This research project was a coordinated medical education and health program which included a national health survey of the type being undertaken in areas in this Investigation.

Of the 12 principal collaborators from Latin America selected to be in charge of projects 10 were present and two who were unable to be present were represented by medical interviewers. Although funds from AID are not available for projects in the U.S. two potential U.S. collaborators attended representing areas in North Carolina and California. Projects may be financed in these areas by the U.S. Children Bureau. An additional area in Central America may be obtained to replace Guatemala.

In addition to 10 principal collaborators nine medical interviewers from Bolivia, Colombia and Jamaica attended the meeting. The agenda and the Report of the Planning Conference are attached (Appendix 3).

Medical interviewers from the three projects in Brazil and two in Argentina attended a training session held in the Faculty of Medicine of the University of São Paulo at Ribeirão Prêto from April 3-9, 1968. The agenda and the list of participants is attached (Appendix 4). Thus principal collaborators and medical interviewers have had an opportunity to become acquainted with field procedures in the pilot testing areas in Colombia and Ribeirão Prêto, Brazil.

The principal collaborators and medical interviewers were greatly concerned with their responsibilities in conducting the research program. Both meetings proved to be very profitable serving to familiarize the staffs with the many objectives of the Investigation and the methods of conducting investigations of deaths, obtaining samples of living children and records of all births in the area.

One of the important decisions made at the Planning Conference was that the field work for the collection of data on deaths and of samples of living children should begin on July 1. Funds would be needed beginning June 1 for training of the local staff.* The months of April and May would be used for preparatory work. The consultant in sampling will visit nearly all of the areas in May and June. Also consultant services in other aspects of the work such as on establishing complete files of births and deaths will be provided.

Manual of Procedures

A draft Manual of Procedures was provided in English and Spanish for discussion and use at the meetings. Approximately 50 copies of the Manual were provided to participants. Recommendations were made for the revision of the questionnaire and instructions. Additional instructions will be provided on sampling and on assessment of nutritional status in the near future.

The Manual of Procedures as revised will be sent in early May to the collaborators and also to the zone and country representatives. The Director is asking the assistance of the staff of the Organization in this important continental project.

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* An exception was made in Jamaica because of unusual circumstances and the collection of deaths will begin on June 1 with training in May.

INTER-AMERICAN INVESTIGATION OF MORTALITY IN CHILDHOOD

II. PILOT TESTING

In 1967 pilot testing of the questionnaire was carried out in the five following areas:

Recife, Brazil, by Dr. Fernando Figueira, Faculty of Medicine, University of Recife.

Ribeirãc Prêto, Brazil, by Dr. José Romero Teruel, Department of Preventive Medicine and Hygiene, Faculty of Medicine of Ribeirão Prêto.

Colombia (Candelaria, Florida and Pradera*), by Dr. Guillermo Llanos and Dr. Jorge Escobar, Faculty of Medicine, University of Valle, Cali, Colombia.

Guatemala (Chiquimula), by Dr. Miguel Guzman and Dr. Romero de León of the Institute of Nutrition of Central America and Panama.

Jamaica by Dr. Kenneth Standard, Department of Preventive Medicine of the University of the West Indies, Kingston.

The Faculty of the School of Public Health of the University of North Carolina expressed interest in participating in the project and interviewers of the National Health Survey tested the questionnaire in Wake and Durham Counties in North Carolina, U.S.A.

For the meeting of the small Working Group held in December 1967, preliminary tabulations were made from the questionnaires. The results were used principally to indicate areas where improvements were needed. The data from the tabulations prepared are preliminary and thus should be treated as such. In fact in Jamaica the deaths investigated thus far are not a true sample of deaths in Kingston.

In Guatemala and Pradera, Colombia, the quality of the work in rural areas did not seem satisfactory enough to justify their inclusion; diagnostic evidence and medical attention were lacking.

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* Tabulations have not been prepared from these questionnaires.

One of the methods of testing completeness of registration is from tabulation of deaths by age group. In Recife, of the 47 deaths in the first week of life 20 occurred during the first 24 hours; in Ribeirão Prêto, 29 of the 44 such deaths occurred on the first day of life. In the first group from Jamaica no death was included of an infant dying in the first 24 hours while in Guatemala only 2 out of 13 deaths in the first week occurred on the first day. In two communities in Colombia 17 of the 28 deaths in the first week were on the first day of life. Thus in certain areas deaths occurring soon after birth do not appear to be registered as live births and infant deaths. The need of systems of obtaining records of all deaths under 5 years of age is clear. The WHO definitions of live birth and fetal death are to be followed in this Investigation. The definition of a live birth is as follows:

> " Live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached; each product of such a birth is considered live born."

Tabulations were made according to place of birth and death. The following percentages were noted:

	Born in hospital	Died in hospital
Recife, Brazil	67	44
Ribeirão Prêto, Brazil	76	85
Candelaria, Colombia	23	28
Florida, Colombia	24	13
Chiquimula, Guatemala	7	9
Jamaica	80	92

Thus there are wide variations in the use of hospitals for deliveries and also for medical care of the seriously ill children in these areas.

Information was obtained regarding water supplies and toilet facilities in the home of the deceased. The percentages of homes with piped water (in or outside the house) and with flush toilets are as follows:

	Piped water	Flush toilet
Recife, Brazil	90	8
Ribeirão Prêto, Brazil	81	44
Candelaria, Colombia	36	30
Florida, Colombia	57	33
Chiquimula, Guatemala	14	-
Jamaica	74	51

Although in Recife, Ribeirão Prêto and Jamaica high proportions of these homes had piped water available, these supplies were usually not in the house.

On the whole the pregnancy histories were completed well. However, the previous pregnancy losses of these mothers either as an abortion, fetal death or death of the child born alive were large. In one city 42 per cent of the previous pregnancies resulted in death either before or after birth.

Birth weights were recorded for over three-fourths of the births of these children who died under 5 years of age in both Recife and Ribeirão Prêto, Brazil (78 and 79 per cent respectively). The data were not as complete for the other areas. Efforts will be made to establish weighing of babies as a routine practice in all hospitals as well as at home by midwives.

Data were provided regarding the length of breast feeding. For those babies who lived 6 months or longer the length of breast feeding has been analyzed. It was clear that in Recife breast feeding was discontinued frequently within the first three months (56 per cent) and in only 15 per cent was breast feeding continued as long as 6 months. In Jamaica in slightly more than half of the group breast feeding extended for 6 months or longer and in fact in only 14 per cent was breast feeding discontinued in the first three months of life. In several of the cities the information on this item was incomplete or unknown for over 10 per cent. Since nutritional assessment is an important aspect of this Investigation complete information regarding breast feeding and the introduction of other milk and food is essential.

In six areas the percentages of the babies dying at 6 months-4 years who were breast fed for 6 months or longer are as follows:

	Per cent
Recife, Brazil	15
Ribeirão Prêto, Brazil	23
Candelaria, Colombia	49
Florida, Colombia	49
Chiquimula, Guatemala	80
Jamaica	51

The patterns of breast feeding in the two areas of Colombia and Jamaica were similar as they also were in the two areas in Brazil. In Guatemala 80 per cent were reported to have been breast fed for 6 months or longer.

The proportion with autopsies were relatively high in three areas: Jamaica (48 per cent), Recife (36 per cent) and Ribeirão Prêto (40 per cent). Since percentages were low in the two areas of Colombia efforts are needed to have autopsies performed in those communities. The pilot project has indicated the importance not only of the improvement of the quality of pediatric pathology but also its provision to higher proportions of the deaths of infants and young children.

The degree of malnutrition is important information to be obtained as part of this Investigation and in Recife and Ribeirão Prêto, data were lacking on only one-fifth of the deaths. However, standard procedures had not been provided and thus the quality of the data can be improved with greater attention to assessment of nutritional status.

The underlying and associated causes of death were classified in accordance with the 1965 Revision of the International Classification of Diseases. Of deaths from 1 month through 4 years of age, nutritional deficiency was the underlying or associated cause of death from 19 to 56 per cent of the deaths in five areas. Thus the role of nutritional deficiency as a contributor to mortality in early childhood will become clear from this Investigation. In those areas with complete autopsies, congenital anomalies were found to contribute heavily to mortality.

The preliminary results of the pilot testing were useful for the revision of the questionnaire. On termination of the pilot testing phase of the Investigation an analysis will be made of results. The size of the group is being increased by completion of additional questionnaires in late 1967 and the first three months of 1968.

APPENDIX 2

PAN AMERICAN HEALTH ORGANIZATION
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IAIMC2/2
(Planned for meeti of Principal Colla borators.)

WORKING GROUP
INTER-AMERICAN INVESTIGATION OF MORTALITY IN CHILDHOOD

December 4-8, 1967, Washington, D. C.

Draft Agenda

December 4, 1967

I. Objectives and General Plan

II. Pilot Testing Program

A. Reports of Programs in Six Areas (15 minutes each)
Brazil, Recife
Brazil, Ribeirão Prêto
Colombia
Guatemala
Jamaica
North Carolina

B. Preliminary Tabulations and Analysis of Results
1. Questionnaire and code
2. Tabulations

III. Revision of Questionnaire and Code

IV. Procedures with Births and Deaths

A. WHO Definitions
B. Methods of Securing Records of All Deaths Under 5 Years
C. Methods of Obtaining Reports of Live Births, Fetal Deaths and Deaths
1. Monthly data
2. Annual data

V. History of Pregnancies, Pregnancy Loss and Deaths

VI. Breast Feeding

December 5, 1967

VII. Samples of Living Children

A. Method of Selection of Households and Children
B. Desirable Distribution of Samples by Age (-1, 1 year, 2 years, 3 years and 4 years of age)
C. Special Data on Children in Sample (household data and changes, page 3 of questionnaire)
D. Standard Procedures for Manual
E. Plans of Sampling in Each Area
F. Assistance Needed of Consultants in Sampling

December 6, 1967

VIII. Problems of Birth Weights and Nutritional Assessment

IX. Classification of Causes of Death

A. Concept of Underlying Cause of Death
B. Contributing Causes
C. Needed Instruction on Medical Certification

X. Standard Autopsy Protocols

XI. Training of Interviewers

A. Medical Interviewers in Charge
B. Nurse Interviewers in Charge
C. Pediatric Pathologists

XII. Development of Records and Assistance of Medical Record Librarians

XIII. Local Committees and Participation of Faculty of Medical Schools

XIV. Agreements and Financial Arrangements

XV. Manual of Procedures

XVI. References

December 7, 1967

Participants will devote day to work on committees, preparation of report and individual discussions on agreements.

December 8, 1967

Time Schedule of Operations
Report

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INTER-AMERICAN INVESTIGATION OF MORTALITY IN CHILDHOOD

List of Participants

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Dr. Darío Curiel, Medical Referee for Inter-American Investigation of Mortality in Childhood, Caracas, Venezuela

Mr. Martin R. Frankel, Sampling Section, Survey Research Center, Institute for Social Research, University of Michigan, Ann Arbor, Michigan

Dr. Carlos Fuentes Olando, Deputy Chief, Department of Pathology, Hospital Infantil, Mexico, D. F.

Dr. Robert Grove, Director, Division of Vital Statistics, National Center for Health Statistics, Washington, D. C.

Dr. Guillermo Llanos, Faculty of Medicine, University of Valle, Cali, Colombia

Dr. José Romero Teruel, Department of Hygiene and Preventive Medicine, Faculty of Medicine of Ribeirão Prêto, University of São Paulo, Ribeirão Prêto, Brazil

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Pan American Health Organization

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Miss Mary H. Burke
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Dr. Sylvia Plaza
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Dr. Abelardo Temoche
Miss Julia Ryther

University of Valle - School of Medicine
DEPARTMENT OF PREVENTIVE MEDICINE AND PUBLIC HEALTH
Section of Epidemiology and Biostatistics

PAN AMERICAN HEALTH ORGANIZATION

INTER-AMERICAN INVESTIGATION OF MORTALITY IN CHILDHOOD

Planning Conference of Principal Collaborators

Place: Department of Preventive Medicine
University of Valle
Cali, Colombia

Dates: March 25-29, 1968

Draft Agenda

Monday, March 25

8:30 Welcome - Dr. Pablo Medina

Plans for Investigation

Reports of Pilot Testings and Areas for Investigation (10 minutes each):

Brazil

Recife
Ribeirao Preto

Colombia

Cali

Jamaica

North Carolina

New Areas for Investigation (10 minutes each)

Argentina

Chaco
San Juan

Bolivia

Brazil

Sao Paulo

Chile

Colombia

Cartagena
Medellín

México

Monterrey

2:00 p.m. Concepts of the Underlying and Associated Causes of Death

Nutritional Assessment

Patterns of Urban Mortality, Inter-American Investigation of Mortality (of adults)

Tuesday, March 26
8:30

Methods of Obtaining Records of All Deaths

Questionnaires and Instructions

Illustrative Case Histories

Pregnancy Histories

12:30 Demonstration of Pilot Testing Procedures in Cali

Field Visits with Medical Interviewers and Social Worker

4:30 Staff Review of Questionnaires

Wednesday, March 27
8:30

Sampling of Households and of Children under 5 Years of Age

Report of Household Survey in Colombia - Dr. Agualimpia

Plans for Household Survey in Investigation of Mortality - Mr. Martin Frankel

Measurement of Heights, Weights and Arm Circumference and Nutritional Assessment - Dr. John Kevany

Environmental Conditions

Vital Events in Past Year

Medical Attention in Past Year

Pregnancy History

Participation of Medical Schools
Examples in Colombian Study of Health Manpower and Medical Education, Dr. Agualimpia.

Thursday, March 28
8:30 a.m.

Sources of Information

Hospitals	Autopsies
Clinics	Physicians

Development of Clinic and Hospital Records

Collection and Processing of Birth Certificates

Estimated Populations of Areas of Investigation

2:30 p.m. <u>Pediatric Pathology</u> Dr. Pelayo Correa

1. Introduction. Relations between Pathology and Epidemiology
2. Comparison of Statistical data.
   a. DANE
   b. Autopsy survey
   c. Preliminary results of Cali
3. Autopsies in children.
   a. Most frequent errors
   b. Criteria for selected diagnoses (T.B.C., malnutrition)
   c. Associated causes
   d. Bacteriologic studies (meningitis, pneumonia)
4. Methods of increasing autopsies
   a. Medico-legal material
   b. Deaths without medical attention
   c. Use of residents in pathology
5. Training in pediatric pathology for this investigation.

Friday, March 29
8:30 a.m.

Administrative Procedures

Reports

Financial Arrangements

Methods of Coordination

Communications

Time Schedule

2:30 p.m. Final Report

NOTE. The medical interviewers will go to the field on these dates:

Tuesday afternoon
Thursday afternoon
Friday morning

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INTER-AMERICAN INVESTIGATION OF MORTALITY IN CHILDHOOD

REPORT
PLANNING CONFERENCE OF PRINCIPAL COLLABORATORS

Department of Preventive Medicine
University of Valle
Cali, Colombia

March 25-29, 1968

Report
Planning Conference of Principal Collaborators

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I. Introduction

Dr. Pablo Medina, Chief of the Department of Preventive Medicine of the School of Medicine of the University of Valle, welcomed the participants to the Planning Conference. He also described the organization of the Department, the activities of teaching and training of medical students and residents in preventive medicine.

For the Pan American Health Organization, Dr. Puffer welcomed the participants and referred to the Inter-American Investigation of Mortality (of adults). The report of the Investigation which has already been published demonstrated the great value of such coordinated research. The principal collaborators who participated in that program recommended the development of similar research of mortality in childhood. In accordance with this objective a proposal was designed in which the goal was not only to obtain death rates by causes as complete and accurate as possible, but also to study the associated causes as well as the underlying causes and the interrelationships of diseases and contributing nutritional and social factors. The project includes the investigation of deaths of children under 5 years of age through visits to families, hospitals, health centers and physicians and also an investigation of living children under 5 years of age through a probability sample of households and children.

On receipt of financial support from the Agency for International Development for the planning phases, the Organization made arrangements for pilot studies beginning on January 1, 1967, in Recife and Ribeirão Prêto, Brazil, in Colombia, Guatemala and Jamaica. The School of Public Health of the University of North Carolina conducted pilot testing using interviewers from the U.S. National Morbidity Survey. On January 30, 1968, the document was signed for provision of funds for the Investigation by the Agency for International Development. The Investigation should be initiated by July 1 with training of field personnel before that date.

Dr. Puffer pointed out that there were two characteristics which should always be kept in mind for success of the Investigation. First it is important to have the collaboration and participation of specialists in several fields such as pediatrics, nutrition, pathology, preventive medicine, epidemiology and statistics, for the important relationships and benefits in medical education and health programs. The second is the need for collection of data as complete and accurate as possible, for the success of the Investigation depends on the establishment and maintenance of very high standards.

II. Characteristics of Urban Mortality

Some of the important findings from the Inter-American Investigation of Mortality of adults from 15-74 years of age were given to indicate the value of coordinated international research. Deaths were studied from 10 cities of Latin America - Mexico City, Guatemala City, Cali and Bogotá in Colombia, Lima, Santiago, La Plata in Argentina, São Paulo and Ribeirão Prêto in Brazil, Caracas - San Francisco in USA, and Bristol in England. This Investigation showed real differences in the characteristics of mortality for each city had its own specific pattern. The high death rates from cardiovascular diseases, especially coronary heart disease, in Bristol and San Francisco were mentioned. Attention was called to the excessive death rate from cancer of the lung in La Plata. The death rate from cancer of the stomach was very high in Bogotá and of the cervix in Lima and Cali. Diabetes was a very important cause of mortality in Mexico City. The additional information obtained in the Investigation increased the maternal death rates in the Latin American cities, and the high proportion of these deaths due to abortion in Santiago was pointed out. The infectious diseases contributed notably to mortality in Latin American cities with Chagas' disease a major contributor in Ribeirão Prêto and tuberculosis in the other cities especially in Lima and Santiago. Cirrhosis of the liver with alcoholism caused high rates in Santiago, Mexico and San Francisco. The proportion of deaths due to accidents was greater in young adults. The Investigation of Mortality has shown the richness of products and subproducts which are too extensive to enumerate. To give only one, the present Investigation of Mortality in Childhood probably would not have been feasible without the experience gained in the previous Investigation.

III. Areas of Pilot Testing and Additional Areas for the Investigation

The principal collaborators of the five areas in pilot studies (Recife and Ribeirão Prêto, Brazil; Colombia; Jamaica; North Carolina, USA) gave a brief summary of the experience which is synthesized in the following points:

1. The need for the design of procedures for improvement of the registration of births and deaths in view of observed deficiencies.

2. The absence or poor quality of clinical histories.

3. After procedures for the selection of the control group had been tried out the conclusion was reached that samples of the population should be used.

4. The advantages were pointed out of discussion by a group of professionals on the final assignment of the underlying causes and especially of the associated causes.

5. A deficiency in the deaths under 24 hours was observed in a few areas which suggested under-registration in that group.

6. The study of hospital records including autopsy reports enables measurement of congenital malformation as a principal or associated cause of death which is not always clear from the medical certificates of death.

7. This Investigation shows in some areas irregular practices in the completion of medical certificates of death.

The principal collaborators of eight new areas (Chaco and San Juan, Argentina; Bolivia; São Paulo, Brazil; Chile; Cartagena and Medellín, Colombia; and Monterrey, Mexico) to be included in the Investigation explained the geographic, demographic and ecologic conditions and characteristics of each area. They pointed out deficiencies in registration and problems of collection of data as well as the significance that the Investigation will have for epidemiological and programming objectives.

The 12 areas which usually include an urban and rural area already scheduled for the Investigation are as follows:

Argentina	Chile
Chaco	Santiago
San Juan	Colombia
Bolivia	Cali
La Paz	Cartagena
Brazil	Medellín
Recife	Jamaica
Ribeirão Prêto	Mexico
São Paulo	Monterrey

One additional area in Central America may be added in order to include an area from each section of the Region. Also two areas in the United States are under consideration, in North Carolina and California, for projects financed by other funds.

In order to acquaint the group with the procedures followed in the pilot testing program the group visited the Health Center in Florida, Colombia, an area where the pilot testing of the first questionnaire had been carried out in 1967 and of the revised questionnaire in the first three months of 1968.

The registrations of the deaths are obtained first from the local office of statistics; they are then compared with the registrations in the "Notaría" (Civil Register office). Weekly a list is prepared of the deaths of children under 5 years of age with additional information regarding each child. Also the list is compared with the list of those buried in the local cemetery to find out whether any deaths of children under 5 years of age had failed to be included in the two registers.

A pediatric resident assigned for six months to the Health Center cooperates in the project completing the medical portions of the questionnaire. The University of Valle is providing facilities for autopsies to solve various diagnostic problems. Surveys are being conducted to obtain the nutritional status of children under 5 years of age.

The social worker explained the procedures followed to complete the first three pages of the questionnaire. The answers are obtained readily and easily. The questionnaires to be completed by the medical interviewers are grouped by zones and hospitals. The sections for the medical interview in the home are completed only when no information regarding medical attention in the last illness of the deceased is known or found. A comment was made regarding the good results obtained by the residents of preventive medicine who collaborated on this project.

Following the field visit a demonstration was given of the procedures followed in the weekly meeting of the team for review of the questionnaires from all the pilot testing areas. A pediatrician, an epidemiologist, a statistician, a pathologist, a social worker and residents in preventive medicine attended these meetings. The group analyzed and discussed the information collected for three deaths making recommendations for the assignment of the causes of death. The three examples studied illustrated several problems which occurred frequently, namely, lack of data regarding the weight of the child at birth, lack of a hospital record with medical data, etc. For two of the deaths the data were incomplete while for the third the assignment of the cause was clarified by the autopsy findings. In the discussion which followed there was agreement regarding the acceptance of the cause of death given by the

attending physician on the death certificate when no alternative evidence of greater value could be obtained. The review of the questionnaires already completed by the team indicated diagnostic problems.

In order to insure consistency in decisions and comparability of results it was agreed that a medical referee should review all the questionnaires and that the final assignment would be made in accordance with the 1965 Revision of the International Clasification of Diseases and with new international rules being developed for associated causes.

IV. Questionnaire for Collection of Data Regarding Each Death

The questionnaires for the collection of data regarding each death were revised in December 1967 as a result of the experience in the pilot studies. Thus at this meeting the questionnaire should not need substantial changes at the continental level. However, from the additional experience in pilot testing areas, certain changes could be incorporated principally in the instructions which should be as complete as possible for the benefit of the research teams and those who had not participated in the previous discussion. For specific local purposes the groups could incorporate an additional form. A subcommittee including those from pilot testing areas was appointed to review suggested changes. The most important of the changes were the following:

1. To eliminate the detailed questions of page 3 substituting several lines in which the interviewer could give a description of the illness recording the words of the mother.

2. To eliminate height, both for the living children and for the deaths.

3. To eliminate from the autopsy report several anthropometric measurements and to add arm circumference.

4. To add to the data of the page for medical interview in the homes a section for a description of the last illness leading to death.

In addition the subcommittee proposed certain changes in the order of the questions to give a logical sequence of events. The questionnaire and instructions will be revised and sent to the collaborators. The forms are to be printed locally; the name of the medical school or other appropriate agency should be added at the top of the first page to identify the local project.

V. Methods of Obtaining Records of All Deaths and All Births

Methods of obtaining data on all the deaths of children under 5 years of age and of all births in the areas of the study were discussed. The collaborator in Cali explained the actions and steps followed in order to have complete information of deaths from the different and possible sources of registration or from other sources. The following were mentioned:

a) Local statistical offices
b) Offices of civil registry, notaries and others
c) Religious records and baptisms
d) Cemeteries

It was recognized that in spite of the use of multiple sources of registration, clandestine burials could occur which would cause a sub-registration of varying size in the areas. Other pilot testing areas (Ribeirão Prêto and Recife) described other steps for obtaining the data regarding deaths. In these areas copies of the death certificates are obtained from (a) the hospital, (b) the office of statistics of the local health service, and (c) civil registry. From all of these sources combined the teams believe that they can obtain all the deaths registered. However, the problem of the non-registered deaths is present. The group from Jamaica suggested the use of health personnel in the field to search for such deaths and to record the information. These local personnel with full understanding of the Investigation can be good collaborators as they generally possess knowledge of the area and are accepted by the community. Among these the midwives both professional and untrained have special importance by their close contact with the families. It was suggested that contact with them should be established in the areas of the study to improve both the registration of births and neonatal deaths.

There was agreement that the situations which contribute most to the under-registration of the births and deaths are the following:

There is less interest in recording the birth of an infant who dies shortly after birth than of the child who survives. The deaths of new-born of low weight seem to be less often registered. The attention of the group was called to the lack of knowledge and use of the definition of a live birth of the World Health Organization. With correct application of this definition some of the fetal deaths should be neonatal deaths.

The World Health Organization and the Pan American Health Organization are collaborating on longitudinal studies of human reproduction in two areas of Latin America (São Paulo and Peru). It is possible that these studies will provide reliable estimates of size of fetal and neonatal rates in these areas.

Samples of forms (4x6 inches) for reports of births and deaths on which data could be recorded are given in the Manual of Procedures, Section VIII. Such cards or slips could be developed in accordance with local records and a file maintained. Separate files would be kept for births, deaths and fetal deaths.

The desirability of comparative studies of perinatal mortality was discussed. Reference was made to the publication of the National Center for Health Statistics International Comparisons of Perinatal and Infant Mortality which is one in a series on mortality statistics.

The following measures were suggested to obtain the maximum registration of births and deaths in each area:

1. To use the technical advice of zone and regional consultants of the Organization and to obtain the support of the authorities in charge of the registration and their active collaboration.

2. Some of the principal collaborators with greater experience and interest in the problem may be able to aid other teams to study the subregistration and its size at the local level.

3. Most of the procedures in this problem as well as in others have a general character common to all the teams. However, this does not dismiss the possibility of establishing local procedures related to specific problems in each area.

4. In addition to communication of the teams through the Department of Health Statistics of PASB in Washington it is suggested that the working teams communicate with each other in solving such problems.

It was recognized that all possible measures should be established and the greatest efforts of the investigators and collaborators be directed to avoid the dangers that the study would not cover all the deaths of children under 5 years of age and thus subject the Investigation to scientific criticism. One of the important objectives of the Investigation is to

measure the phenomenon. All of the efforts should be carried out and all the ideas placed in practice to obtain information for each one and all the deaths. A specific plan of the steps to be followed should be established in each area.

VI. Underlying and Associated Causes of Death

The World Health Organization in the Sixth Revision of the International Classification of Diseases introduced the concept of underlying cause of death which will be used for the classification of causes in this Investigation. The assignment of the underlying cause is facilitated by the use of the International Model of Medical Certificate of Cause of Death of WHO in nearly all the areas selected for this study. The assignments will be in accordance with the Eighth Revision of the International Classification of Diseases approved in 1965 and placed in use with deaths in January 1968. For the correct designation of the underlying cause it is necessary to obtain a medical history for the deceased which contains information not only on the underlying cause but also of the other pathological states which were present.

The analysis of mortality in childhood will not be limited to the underlying cause of death but will include also multiple causes. This type of study enables the collection of trustworthy data regarding the interrelations between nutritional deficiencies and infectious diseases. England, the United States and Sweden are developing rules for multiple causes which may be applied in this Investigation of Mortality in Childhood.

Emphasis was placed on the need in the analysis of multiple causes of complete information and that the principal collaborators and medical interviewers should exert efforts to obtain information of high quality for all the deaths.

Recognizing the need that the principal collaborators should become familiar with the Eighth Revision of the International Classification of Diseases, acquire experience in the classification of the underlying cause in accordance with the rules and obtain precise information regarding the system to be followed for the analysis of multiple causes the Planning Conference recommended the organization of a seminar on the classification of the underlying cause of the Eighth Revision and of multiple causes with participation of the principal collaborators of the Investigation. This seminar is tentatively planned for September 1968.

VII. Sampling of Households and of Children Under 5 Years of Age

One of the reasons for holding the Planning Conference in Cali, Colombia (in addition to success of the adult study as an important part of the teaching program and also of the pilot study by the Department of Preventive Medicine) was the Study of Health Manpower and Medical Education conducted in Colombia which was a coordinated education and health program. One of its important phases was a National Health Survey of the same general type as planned of households and children under 5 years of age as a part of this Investigation. The participation of Dr. Agualimpia of the Ministry of Health had been requested so that the many uses of the results of similar data collected in that survey would be presented to the group.

A. Household Survey in Colombia

Dr. Carlos Agualimpia, a Director of the Colombian Study of Health Manpower and Medical Education, discussed the national morbidity survey, including the objectives, the characteristics, the sampling methodology, operational procedures and the completenes achieved. Morbidity from traditional sources (from reports of notifiable diseases, on hospital discharges, on outpatient consultations, and from research) is limited since the universe is usually not known and generally the information is for limited parts of the country or selected population groups. Such sources also provide information only on acute conditions, on principal causes of morbidity and usually do not involve sufficient variables. The quality of the information is often of questionable accuracy, based on inadequate record keeping which varies from area to area. The main objectives of the national morbidity survey were to obtain information on the population (structure and vital statistics), on health problems (their frequency, severity and causes), on the consequences of disease, on the medical attention received and to develop physical and diagnostic measurements of morbidity.

The morbidity survey consisted of two main parts, the home interview survey of a representative sample of the civilian, non-institutionalized population of Colombia and the clinical examination survey. Uniform and controlled procedures were applied with sufficient coverage for reliability.

The survey covered 98.7 per cent of the population of Colombia, excluding only "intendencias" and subdelegations which are sparsely settled areas. The primary sampling units, "municipios", were divided

into 40 strata on the basis of size of population, the urban proportion of the population and altitude. One primary sampling unit was selected from each of the 40 strata. From each primary sampling unit, 24 segments were selected randomly and in each segment about 10 houses were drawn. Thus for the country, 9,600 houses and 52,500 persons were included in the home interview sample. From these a subsample of 5,250 was selected for the clinical examinations (130 per primary sampling unit or approximately 5 per segment).

Procedures were developed for uniformity and included manuals, instructions as part of the forms, selection of personnel for whom training was provided both centrally and locally, supervision of personnel, selection of sample and processing of special examinations. Pilot testing produced modifications in study plans and modifications were in turn retested. A design was developed for processing clinical data to ensure comparability among examiners. Reliability of information was ensured through experimental study of methodology, adequate administrative organization, visits to primary units prior to surveying, establishment of a general and local calendar of operations, selection, training and supervision of personnel, development of methods for community collaboration.

Of the 8,920 households, 51,473 persons in 8,669 households or 97.2 per cent were interviewed. Of 5,258 selected for clinical examinations, 5,189 or 98.7 per cent were examined and 5,026 or 95.6 were reexamined. These data give evidence of the excellent response to the survey.

On most home visits complete information was obtained. For example with respect to health conditions for only 0.1 per cent of interviews were data lacking, on housing only 1 per cent, medical care 2 per cent, vital statistics 3 per cent, education 5 per cent and income 17 per cent. On the clinical examinations specific tests or measurements were missing on from 4 to 15 per cent. For some tests such as skin tests, a lack of response of 15 per cent was due to failure of the person to return for a skin reading. Other deficiencies were due to mechanical failures in electrocardiograms and X-rays.

The Health Manpower Study has been a pilot study for Latin America. Its success has demonstrated the usefulness and feasibility of employing sampling methods in Latin America and has given support to the sampling methodology recommended in the household survey for the present Investigation of Mortality in Childhood. It was possible to carry

out this broad survey and analysis at reduced costs through the participation of the Colombian medical schools. Interviewers in the household survey were medical students and resident physicians participated in the clinical examinations. A survey of the medical care institutions was made with medical and nursing students. A deep understanding of the purposes and objectives of the study has been acquired by the professional groups through their involvement. Analysis of the data are continuing and efforts will be directed to their utilization in planning and development of health services and medical education responsive to the needs of the country. Reports published on the Health Manpower Study are useful references for the present study including manuals of procedures and reports such as Hechos Demográficos and Estudios de Recursos Humanos para la Salud y Educación Médica en Colombia.

Data were also presented to the group from the morbidity survey and other parts of the Health Manpower Study which illustrated the use of information on occupation and income as well as the vital statistics data including fertility rates and completeness of birth and baptism registration. The household interviews in Colombia give a general picture of the country. Similarly it is expected that the data collected in household interviews in the new study will provide general pictures of the communities. Many of the same variables with similar classifications are to be included in this present study. Other related analyses presented from the Colombian Morbidity Survey considered medical attention to the populations, both in hospitals and as outpatient consultations and by urban and rural distributions. The objectives of the Health Manpower Study in relation to medical education were defined.

B. Plans for Household Surveys in Investigation of Mortality

Mr. Frankel, the consultant on sampling, reviewed the data contained in Section VI of the Manual of Procedures with particular emphasis on the steps enumerated which include the following:

1. Securing maps for study area
2. Field checking maps for accuracy
3. Drawing boundaries of study area on map
4. Securing estimates of number of households in each block of study area
5. Securing estimates of housing units and number of children under 5 years of age
6. Stratifying by socio-economic areas if desirable
7. Ordering the strata and numbering the blocks within each stratum
8. Listing estimated number of households of dwellings block by block

It was emphasized that certain parts of the sampling instructions must be rigorously followed. For example, once a household is selected, no substitutions are allowable. Stratification according to socio-economic status is an example of a situation which does not demand the same degree of precision. Careful field checking of maps was emphasized as a necessary prelude to sampling in each area.

VIII. Assessment of Nutritional Status

In appraising the dimensions of the problem of nutrition in Latin America it was pointed out that the production of food increases at a rate slightly less than the population which means that without importation of food to cover the deficit the nutrition problem would increase. Evaluation of nutrition is important for health planning. Malnutrition can limit growth and development, both physical and mental, and also the function, capacity and work of the adult. Present health planning is based on mortality statistics. Although nutritional deficiencies contribute to morbidity and mortality, this is not reflected in the official statistics. As an example, death from a terminal infection occurring in a child chronically malnourished is generally assigned to the infection.

However, at present ways to incorporate activities in nutrition within the methods of health planning are being sought. There are many techniques for evaluation of the state of nutrition; none have value alone and it is necessary to combine them. For this Investigation the use of dietary history and anthropometric data seems feasible. The dietary history will be studied with the aid of certain questions directed to the type of food of the child.

For the anthropometric measurements the exact age of the child must be determined and the anthropometric measurements expressed on the decimal metric system. The measurements proposed originally were: body weight, height and arm circumference for the deceased children. In the third the interpretation of the data should be made with care because of post mortem changes. (Later in the meeting the recommendation was made to delete height on collection of data on living children).

For these measurements standardization of equipment and procedures are necessary. The adoption of procedures indicated by D. B. Jelliffe in his book The Assessment of Nutritional Status of the Community is suggested. As standards for weight the standards of Harvard which appear in the Textbook of Pediatrics of Nelson are suggested. For arm

circumference the standards presented in Jelliffe's book (p.228) should be used. To classify the degree of malnutrition the scale proposed by Prof. Gomez of Mexico would be used and if these prove to be inadequate an adaptation would be studied. For standardization of equipment it would be necessary to make an adequate calibration of all the instruments as well as prepare instructions for the control of the security and permanence of the calibration.

To evaluate the contribution of malnutrition in the children the increase in the number of autopsies will be of positive value. Other special aspects in nutrition were discussed such as maternal malnutrition, protein malnutrition, the influence of prematurity, breast feeding, etc.

The global consideration of the combined information is important for evaluation of the contribution of malnutrition to mortality in childhood. As part of the collection of data on living children under 5 years of age, each child would be weighed and the arm circumference measured. The need for caution in obtaining measurements of weight and arm circumference was stressed for these measurements were not as simple as they might appear to be. The procedures and standards for obtaining the three measures of nutritional status are summarized as follows:

Body Weight

1. The preferred scale would be of beam balance type, that is without springs.

2. The equipment should be checked before weighing. The zero mark should be checked and the scale tested with standard weights.

3. The weight of each child in the household sample up to 5 years of age should be obtained. The child would be placed on the platform, standing if possible, with as few clothes as possible. If the weight of clothes is significant, it should be subtracted from the total weight to obtain the weight of the child.

4. The child who can not stand up may be put into a basket and weighed. The weight of the child may be determined by subtracting the weight of the basket from the weight of the child in the basket.

5. The weight of the child should be as exact as possible and the results recorded. Any rounding of weight would be done in the Central Office.

Arm Circumference

1. The left arm should hang loosely and be measured half way from the elbow to the top of arm.

2. Tissue should not be compressed

3. The measurement should be as accurate as possible and the measurement recorded exactly. Rounding would be done in the Central Office.

Dietary Intake

Questions should be asked in a general way and not indicate specific items. However, probing may be necessary to obtain the answers.

Kwashiorkor and marasmus were described and the clinical differences pointed out. The two references, to books by Jelliffe, provide accounts of these nutritional deficiency conditions.

IX. Pediatric Pathology

Dr. Pelayo Correa, Director of the Office of Biomedical Research of the Faculty of Medicine, who is a pathologist in charge of an international center for training of pathologists (of which the Pan American Health Organization is a sponsor) developed this session. He pointed out that although the pathologist suffers the consequences of large and increasing demands on tasks related to diagnoses, he has a definite role in programs such as teaching and epidemiological research to provide data of excellent quality which aid in the diagnosis of the true problems of the community.

The autopsy is a technical procedure and an indispensable objective in hospital practice and in the teaching function of the school of medicine. In some situations the autopsy is of legal nature and it is a logical part of those studies, epidemiological and statistical, for the analysis of the health problems of a community.

Objectives

The objectives of the autopsy are varied and important and have a very special place in the field of research.

a) To determine the cause of death and enable correlation of the clinical manifestations with the pathological findings and in this way to facilitate the bases for diagnosis and treatment of other cases.

b) To fill a very important function in the teaching of biological sciences especially in medicine.

c) To increase the clinical experience for knowledge of diseases.

d) To maintain the quality of medical attention.

e) To maintain law and justice in some cases.

f) To provide certainty in the statistical evaluation of mortality.

In the pediatric group diagnosis and evaluation of the magnitude of problems such as infectious diseases, congenital anomalies, tumors, etc. require indispensable pathologic collaboration. Also the diagnosis of malnutrition in cases in which sufficient information cannot be obtained can be made by the pathological service.

After the introduction by Dr. Pelayo Correa and Dr. Mercedes de Gaiter (Pediatric pathologist), the following subjects of importance were discussed:

1. Importance of the quality of death certificates

With illustrative examples based on the experience of review of autopsies in university hospitals and data from Cali, the serious problems inherent in the quality of death certificates were analyzed. The responsibilities in medical education were evident at all levels in preparation of a physician well organized to eliminate the deficiencies in the assignment of causes of death.

2. Importance of pathology in the study

There was common agreement of the need to include in this Investigation the largest possible number of autopsies. The limitations due to lack of coordination and scarcity of personnel were

noted. It was suggested when the number of autopsies desirable was too great, well completed macroscopic autopsies could be done which would clarify the cause of death in approximately 80 per cent. Also the possibility of sampling to select deaths for detailed complete autopsies was suggested. However, the pathologist and investigator considered that complete autopsies in those for which diagnostic information was most needed would be preferred.

3. Study of the situation in each area

An analysis of the situation in each local area is recommended to discover the problems in relation to autopsies and to seek adequate solutions.

4. Importance of basic signs to make a diagnosis of nutritional deficiency by autopsy

Among the most important findings which would aid in the diagnosis of nutritional deficiency, in addition to the external and anthropometric characteristics, weight of the organs was mentioned, also liver changes and especially the morphological and histological alterations of the pancreas; loss of acinous structure, atrophy and loss of cytoplasm. Slides were shown illustrating these changes.

5. Importance of bacteriology

Special emphasis was placed on bacteriological study as an indispensable part of the complete autopsy. A study of the etiology of meningitis and bronchopneumonia and perinatal infections illustrated its value.

6. Pathology resources in the study areas

Each one of the principal collaborators stated the situation regarding pathology in his area and his appreciation with respect to the possibilities of complementing the deaths with autopsies in the study.

Argentina, Province of Chaco: difficult situation because of the scarcity of personnel and the large area included in the study.

Argentina, Province of San Juan: only two pathologists for the principal hospital with 700 beds. Also the families do not collaborate by permitting autopsies of children.

Bolivia: one pathologist, one anatomopathologist in the department of pediatrics, and one assistant for the department of pathology who is a student in Cali.

Brazil, Recife: one pediatric pathologist for study of pediatric cases of the Faculty and of the Investigation. A short course of orientation would be beneficial.

Brazil, Ribeirão Prêto: a good department of pathology with 9 pathologists and six residents in the Faculty of Medicine. The autopsies of children are made by general pathologists and are of good quality.

Brazil, São Paulo: approximately 12 centers in which autopsies are performed. The quality of pathologists is good. Only coordination is necessary.

Colombia, Cali: a pediatric pathologist in the department of pathology who is in charge of cases in the Investigation. Also the residents in the department participate under supervision.

Colombia, Cartagena: four pathologists within the department. No problems are foreseen.

Colombia, Medellín: departments of pathology in three of the seven principal hospital centers.

Chile, Santiago: the situation regarding pathology will be studied by the principal collaborator.

Jamaica, Kingston: a good department of pathology and no special problems. Most of the deaths occur in a hospital.

Mexico, Monterrey: the Investigation will have the participation of two pathologists and will benefit by a short course of orientation.

United States, California: the potential principal collaborator will determine the problem after transfer to the university.

United States, North Carolina: the Investigation will be carried out in 27 counties with several teaching hospitals. The situation cannot be changed.

The development of a short course of orientation such as for a few days will be decided after study of the local situations by the principal collaborators. Emphasis was placed on participation of residents in pathology in the study of autopsies in areas where there are such residents.

X. Other Sources of Information

The sources of information for births and deaths have been discussed in Section V and from autopsies in Section IX. The principal sources of important data are hospital and clinic records.

The situation regarding hospital records in Ribeirão Prêto in the pilot testing program was explained. Difficulties were encountered as some hospital records could not be located. To overcome the difficulties encountered it was necessary to organize a better system of hospital records. This was accomplished by the organization of a short course of one month (November 1967) in medical records and hospital statistics for personnel in charge of these records in the institutions of Ribeirão Prêto and of other adjacent cities. The program of this course and its characteristics were described. Other courses are being given in this field at the intermediate level (Argentina, Colombia, Costa Rica, Peru, etc.) and interest was expressed that persons already trained organize courses for auxiliaries in their countries.

The situation in Cali was also discussed and the courses for auxiliaries given in previous years and the one scheduled for April (April 2-21, 1968) were described. Also mentioned was the continued medical education program in respect to medical certification and improvement of hospital records as a solution of the present problem.

Whenever hospitals and clinics fail to have satisfactory records changes should be introduced in areas where the Investigation is to be undertaken. The importance of certificates of births, deaths, and fetal deaths within the program of hospital records was mentioned. The hospital is an excellent source of data for these vital events. Courses for auxiliary personnel can be used to develop a system of coordination with the local health service.

Plans are being made by a demographer of the Department of Preventive Medicine for the study of births, abortions and migration in an area of Cali by visits to all homes in one area at three month

intervals for one year. Thus a complete census will be taken and all changes in the population will be known for the year; every birth should be known. The results of this program should be checked with records of births and deaths for the area.

The medical record librarians of the Pan American Health Organization are rendering consultant services in these fields (for example in the courses in Ribeirão Prêto and Cali and will assist wherever possible.

XI. Methods of Coordination and Communications

Methods of coordination of the projects in the Investigation should be analyzed at local, national and continental levels.

Local level

The establishment of coordinating committees was recommended in each study area. Such committees are already in operation in the pilot testing areas in Jamaica, Cali, Recife and Ribeirão Prêto. It was suggested that each committee prepare reports on the local Investigation for the interested health agencies. So far these coordinating committees have been concerned with planning the program and now they will be involved with actual implementation. The committees should be informed of the entire continental program and the role of the local group in the program. The preliminary results and the progress should be reported to these committees.

National level

There is need of national coordination when there is more than one study area in a country such as in Argentina, Brazil and Colombia. In all the countries the coordination should involve the Ministry of Health. An agency such as the Association of Faculties of Medical Schools in Colombia can be of great value in bringing the program and later the results to the medical educators. Contact between the principal collaborators working in different areas within a country is advisable.

Continental level

The coordination at the continental level is one of the purposes of the first planning meeting and similarly of the present meeting. The personnel of the Pan American Health Organization will participate in this coordination. The Manual of Procedures serves in the coordinating

of activities. In certain specialties as pathology, coordination is also necessary. Other problems are expected to arise in the initial period of the study which require coordination, for example such as in the selection of samples.

A monthly report from the Central Office is suggested in which problems encountered and the steps taken to overcome them by the collaborators would be described. Periodic meetings of the principal collaborators to exchange experiences and to improve procedures are proposed. Personnel of the Pan American Health Organization specialized in different fields as pathology, pediatrics, nutrition, etc. should visit each area to advise on problems which arise. Short term consultants such as one on sampling would also make visits.

The Organization would like to receive the descriptions and maps of the areas included in the Investigation. Files will be established for each area. A periodic report to the principal collaborators is planned. Reports to the Organization should be sent through the country and zone representatives on administrative matters; on technical matters correspondence may be sent directly with copies to the country representative and zone offices. Correspondence on sampling should be sent to the Organization which will transmit them to the consultant. The completed questionnaires and the results of sampling should be sent directly by air mail, registered, to the Organization in Washington.

The procedures, methods and any modifications developed by any principal collaborator should be reported to the Organization and to other collaborators.

XII. Time-Table for Investigation

The agreements should be signed as soon as possible so that funds can be made available for the initiation of the program. It is expected that funds will be available for 27 months, including the 24 months of collection of data for deaths and samples. It was agreed that all areas should begin at the same time, namely July 1, 1968, for collection of data.

Staffs would be employed and trained in June. Thus the funding of the project will begin on June 1, if agreements have been signed. As 2-3 months may be necessary to complete all questionnaires after the 24-month period of collection, careful planning of funds alloted to each project is necessary.

XIII. Administrative Procedures

The administrative procedures related with the financial arrangements were explained. The funds will be distributed in quarterly payments and reports of expenditures are required for each quarter. The payments for the first two quarters will be sent without reports of expenditures. However, for the payment corresponding to the third quarter and for subsequent quarters, the reports of the expenditures accompanied by the corresponding supporting documents are necessary.

For example if the Investigation starts on June 1, the funds* will be sent by June 1 for the first quarter and this will be followed by a second payment on September 1. However, by October 15 the report of expenditures for the first quarter should be sent to Washington so that payment for the third quarter may be made by December 1. Quarterly reports are due as soon as possible after the end of the three-month period in order to insure that subsequent payments are made on time.

A form was distributed as well as instructions for the quarterly statement of receipts and disbursements which has spaces for totals of expenditures for personnel, equipment, supplies, transportation, postage and mailing costs and other (Form 1). This report ought to be as specific as possible including also signed invoices. Also the payroll for the period should be attached. A second form will be used for a monthly personnel report with the names of persons paid (Form 2). If any changes occur, including travel of the principal collaborator that should be included on this report, A third form (Form 3) is to be sent with the questionnaires and a copy is to be mailed separately to inform the Central Office of the mailing of questionnaires. The Central Office will inform the principal collaborator on receipt of the questionnaires by returning the lower half of Form 3.

In order to purchase permanent expensive equipment two bids should be obtained and sent to the Central Office. If the price appears satisfactory the Central Office will authorize local purchase. In some instances the Organization may be able to make the purchase with better terms.

If funds are not spent they will be held in the project for later use to complete field work, if necessary. Funds may be provided in local money. These forms and instructions are given in Section XI of the Manual of Procedures entitled Administrative Procedures.

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* Subject to receipt of the signed agreement.

XIV. List of Participants

Principal Collaborators

Dr. Dionisio Aceves Sainos, Professor of Preventive Medicine, University of Nuevo León, Monterrey, Mexico.

Dr. Rubén A. Castro, Professor of Hygiene and Social Medicine, University of the Northeast and Statistical Advisor, Ministry of Public Health, Resistencia, Chaco, Argentina.

Dr. Abel Dueñas Padrón, Dean, Professor and Head of the Department of Preventive Medicine, Faculty of Medicine, University of Cartagena, Colombia.

Dr. Fernando Figueira,* Professor of Pediatrics, "Instituto de Medicina Infantil", Federal University of Pernambuco, Recife, Brazil.

Dr. Ruy Laurenti, Instructor, Department of Applied Statistics, Faculty of Hygiene and Public Health, University of São Paulo, Brazil.

Dr. Adela Legarreta, Assistant Professor, Department of Biostatistics, School of Public Health, University of Chile, Santiago, Chile.

Dr. Julio León Trejos, Head, Department of Health Administration, School of Public Health, University of Antioquia, Medellín, Colombia.

Dr. Guillermo Llanos, Head, Epidemiology and Biostatistics Section, Department of Preventive Medicine and Public Health, Faculty of Medicine, University of Valle, Cali, Colombia.

Dr. Valois Martínez Colombres, Director, Provincial Health Service, San Juan, Argentina.

Dr. Gregorio Mendizábal, Director, Planning Office, Ministry of Public Health and Professor of Public Health, Faculty of Medicine, University of San Andrés, La Paz, Bolivia.

Dr. José Romero Teruel, Assistant Professor in Preventive Medicine, Department of Hygiene and Preventive Medicine, Faculty of Medicine of Ribeirão Prêto, University of São Paulo, Brazil.

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* Unable to attend. (Represented by Dr. Roberto Nunez da Silva.)

Dr. Kenneth Standard,* Head, Department of Social and Preventive Medicine, Faculty of Medicine, University of the West Indies, Mona, Jamaica.

Medical Interviewers

Dr. Orlando Bonilla, Resident of Department of Preventive Medicine and Public Health, Faculty of Medicine, University of Valle, Cali, Colombia.

Dr. Miguel Gueri, Research Assistant, Department of Social and Preventive Medicine, University of the West Indies, Mona, Jamaica.

Dr. Ney Guzmán, Resident of Department of Preventive Medicine and Public Health, Faculty of Medicine, University of Valle, Cali, Colombia.

Dr. Alfredo López Vargas, La Paz, Bolivia.

Dr. William Mejía, Head, Department of Epidemiology and Statistics, School of Public Health, University of Antioquia, Medellín, Colombia.

Dr. Roberto Nunez da Silva, "Instituto de Medicina Infantil," Federal University of Pernambuco, Recife, Brazil.

Dr. Claudio Pérez, Faculty of Medicine, University of Cartagena, Colombia.

Dr. Carlos Rivera, Resident of Department of Preventive Medicine and Public Health, Faculty of Medicine, University of Valle, Cali, Colombia.

Dr. José Rojas, Specialist in Public Health, Faculty of Medicine, University of Cartagena, Colombia.

United States

Dr. James L. Abernathy, Assistant Professor, Department of Biostatistics, School of Public Health, University of North Carolina, Chapel Hill, North Carolina.

Dr. Ira W. Gabrielson, Assistant Professor, Medical School, Yale University, New Haven, Connecticut.

* Unable to attend. (Represented by Dr. Miguel Gueri.)

Colombia

Dr. Carlos Agualimpia, Director, Health Manpower Study, Ministry of Public Health, Bogotá.

Dr. Alfredo Aguirre, Department of Preventive Medicine and Pediatrics, University of Valle, Cali.

Dr. Raúl Bernal, Technical Director, "Secretaría Municipal de Salud Pública," Cali.

Dr. Pelayo Correa, Director, Office of Biomedical Research, University of Valle, Cali.

Dr. Jorge Escobar Melguizo, Department of Pediatrics, University of Valle, Cali.

Dr. Mercedes de Gaiter, Department of Pathology, University of Valle, Cali.

Dr. Alvaro Rueda, Chief of Epidemiology, "Servicio Seccional de Salud del Valle," Cali.

Pan American Health Organization

Dr. Hans Bruch, Statistical Consultant, Zone II, Mexico, D.F.

Miss Mary H. Burke, Statistician, Health Statistics Department, Washington, D.C.

Mr. Fredrik Deck, Statistical Consultant, Zone IV, Lima, Peru.

Mr. Martin R. Frankel, Consultant on Sampling, Institute for Social Research, University of Michigan, Ann Arbor, Michigan.

Dr. John P. Kevany, Nutrition Advisor, Health Promotion Department, Washington, D.C.

Dr. Sylvia Plaza, Maternal and Child Health Advisor, Health Promotion Department, Washington, D.C.

Dr. Ruth R. Puffer, Principal Investigator and Chief, Health Statistics Department, Washington, D.C.

Miss María Mercedes Segarra, Medical Record Librarian, Health Statistics Department, Washington, D.C.

Dr. Carlos Serrano, Medical Officer, Recife, Brazil.

Dr. Abelardo Temoche, Statistician, Health Statistics Department, Washington, D.C.

INVESTIGAÇÃO INTERAMERICANA DE MORTALIDADE NA INFÁNCIA

Reunião de Médicos Entrevistadores

Ribeirão Prêto - 3-6 de Abril, 1968

Programa

3 de abril - 4.ª feira - Miercoles

Departamento de Matemática Aplicada à Biologia

8h 30min - Abertura dos trabalhos.

Apresentação dos participantes

Objetivos e planos para a Investigação

Informações sôbre o trabalho piloto (1967)

- Recife
- Ribeirão Prêto

Informações sobre a Reunião de Cali (Colombia, 25-29 de março)

12h às 13h30min - Almôço

Departamento de Higiene e Medicina Preventiva

14h - Fontes de Informação

- Hospitais
- Médicos
- Outras

Arquivos Hospitalares

Visita ao Arquivo do Hospital das Clínicas de Ribeirão Prêto

16h - Discussão de casos selecionados

- Ribeirão Prêto
- Recife
- Cali

4 de abril - 5.ª feira - Jueves

8h 30min - Trabalho de campo - Entrevista à familia (Equipes A, B, C e D)

10h 30min - Visita ao Serviço de Pediatria e de Obstetrícia de Santa Casa de Ribeirão Prêto.

12h às 13h 30min - Almôço

Departamento de Patologia

14h - Medidas antropométricas

Avaliação do estado de desnutrição

16h - Patologia pediátrica

16h 30min - Discussão dos casos visitados

5 de abril - 6.ª feira - Viernes

8h 30min - Trabalho de campo - Entrevista à família (Equipes A, B, C, e D)

10h 30min - Departamento de Medicina Preventiva
Discussão dos casos visitados

12h às 13h 30min - Almôço

Departamento de Matemática Aplicada à Biologia

14h - Metodologia da Investigação
Análise do Questionário

Centro Médico de Ribeirão Prêto

20h 30min - Características da mortalidade urbana

Investigação Interamericana de Adultos

Planos para a Investigação Interamericana de Mortalidade na Infância.

6 de abril - Sábado

Departamento de Matemática Aplicada à Biologia

8h 30min - Planos para a amostra de unidades habitacionais na Investigação Interamericana de Mortalidade na Infancia

Definições

Conceito de causa básica do óbito e causas associadas.

12h - Almôço

Tarde livre

Jantar conjunto a ser programado.

7 de abril - Domingo

Manhã livre

Tarde - visita a ser programada

8 de abril - 2.ª feira - Lunes

Departamento de Higiene e Medicina Preventiva

8h 30min - Desnutrição na infância
História alimentar
Critério de Gomez

12h às 13h 30min - Almôço

14h - Visita à Delegacia de Saúde de Ribeirão Prêto

Departamento de Higiene e Medicina Preventiva

15h - Registro de óbitos e de nascimentos
Mortalidade peri-natal.

9 de abril - 3.ª feira - Martes

Departamento de Higiene e Medicina Preventiva

8h 30min - Revisão final
Apresentação dos relatórios
Recomendações finais

INVESTIGAÇÃO INTERAMERICANA DE MORTALIDAD NA INFÂNCIA

REUNIÃO DE MEDICOS ENTREVISTADORES

Ribeirão Prêto - Abril 3-9, 1968

Participantes

Argentina

Chaco - Dr. Jorge Bassi
San Juan - Dr.ª Neri Romero

Brasil

Recife - Dr. Edésio José da Costa Lima
Dr. Roberto Moreira Nunes da Silva
Sr.ta Isabel dos Santos

São Paulo - Dr.ª Maria Adelaide Borges
Dr. Rubens Blasi
Dr.ª Marisa C. Lobo da Costa

Ribeirão Prêto - Dr. Uilho Antonio Gomes
Dr.ª Luci Moreira da Silva
Dr. Lupercio Cortez
Dr. Marcos Antonio Barbieri
Sr.ta Cleuza Maria Borges
Sr.ta Maria Aparecida Alves Rodrigues
Sr.ta Labib Jorge

Colaboradores

São Paulo - Dr. Ruy Laurenti
Dr.ª Eunice Pinho Castro Silva

Ribeirão Prêto - Prof. Dr. J. Renato Woiski
Prof. Dr. Geraldo Garcia Duarte
Prof. Dr. José Eduardo Dutra de Oliveira
Dr. José Romero Teruel
Dr. Manildo Fávero
Dr. José Alberto Mello de Oliveira
Dr. György Böhm
Dr.ª Clarisse D. G. Carvalheiro
Dr. Juan Stuardo Y. Rocha
Prof. Frautisek Schulz (Tchecoslovaquia)

Organização Pan Americana da Saúde

Dr.ª Ruth R. Puffer
Dr. Carlos Serrano
Dr. José A. Coll
Dr. Someswara Rao