DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Centers for Disease Control

Memorandum

Date April 7, 1983

From Director, Division of Nutrition
Center for Health Promotion & Education

Subject Semi-Annual Progress Report - Peru, Contract No. 200-83-0600
Study of Energy and Protein Stores in Stunted Children

To Dr. John McKigney
Nutrition Advisor

The attached Progress Report #1 and the International Trip Report by Drs. Frederick L. Trowbridge and James S. Marks, adequately describe the activities that took place in regard to the subject contract during the last half of CY 1982. If you have any further questions regarding this contract, please let me know.

Frederick L. Trowbridge, M.D.

Attachment

December 3, 1982

F. L. Trowbridge, M.D. and J.S. Marks, M.D.

International Trip Report

William H. Foege, M.D.
Director, CDC
Through: Acting Director, CHPE _____

1. Dates and Places of Travel:

Lima, Peru (October 24, 1982 - November 3, 1982)

2. Purpose:

As Co-Principal Investigators, the purpose of this trip was to finalize the design and initiate field work in a USAID funded project to determine those anthropometric indicators that best predict body composition among growth stunted Peruvian children living in urban slums on the outskirts of Lima, Peru.

3. Contacts:

Guillermo Lopez de Romana, M.D., Director, Instituto de Investigacion Nutritional

Institute Staff
- Enrique Morales, M.D., M.P.H.,
- Kenneth Brown, M.D.
  - Co-PI on Diarrheal Disease and Breast Feeding Longitudinal Project in the Canto Grande Study area
- Sophia Madrid, Nurse Institute Staff, Supervisory Nurse on Project
- Douglas Robertson, Ph.D., Statistician, Institute Staff

Diarrheal Disease Project
- Bradley Sack, M.D., Director, Department of Geographic Medicine, Baltimore City Hospital, Co-PI on Diarrheal Disease/Nutrition Project
- Bradley Kay, Microbiologist, Diarrheal Disease Project

Others
- Michael Wolfe, M.D., Federal Republic of Germany, Foreign AID Program

4. Objectives:

A. In collaboration with Peruvian Co-Investigators from the Instituto

de Investigacion Nutricional (IIN) to refine and finalize the methodology for the study of lean mass and fat stores in preschool age Peruvian children using $H_2^{18}O$ stable isotope and anthropometry.

B. To assemble and test all equipment and study procedures, including field testing of equipment, forms, and procedures.

C. To define a detailed work schedule, identify personnel needs, plan for data analysis, and identify requirements for future consultation visits.

D. To consult with Dr. Lopez de Romana, Director of the IIN and with members of the Commission on Nutrition of the Office of the Prime Minister, and with Dr. Michael Wolfe of the German Government Foreign Aid Program on current activities and future possibilities for collaboration of CDC in nutritional surveillance activities in Peru.

5. Accomplishments:

A. Finalization of Protocol

The protocol was refined based on discussions with Peruvian colleagues and a review of recently collected anthropometric data from the study community. The following adjustments were made to the protocol:

1. The body composition studies will be made in the study community, using space available in the local health clinic, rather than bringing children to the Instituto.

2. After initiating body composition studies and taking all anthropometric measurements, the children will return to their homes with their mothers and final urine samples will be collected in the homes by specially trained community workers. These procedures will minimize the inconvenience to mothers and children in the study.

3. The $H_2^{18}O$ dose will be instilled directly into the mouth of all study infants and children, except for those few infants who are uncooperative and require the brief use of a nasogastric tube. Trials of direct installation of the water indicate its feasibility in most infants.

4. In addition to providing anthropometric results to the parents of all participating children, a urinalysis will be carried out on one of the urine samples as an additional service to study participants.

5. Based on a review of recent survey results in the study population, it was found that the development of stunting with high weight-for-height occurs rapidly in infants up to 3-years of age, with approximately 90 percent of infants being above the NCHS median of weight-for-height by this age. In order to focus more intensely on the younger age groups where this growth pattern emerges, it was decided to eliminate the study of the oldest group of children (60-72 months of age) and to use the resources saved to include a sample of infants under 1-year of age, and an increased number of 12-36 month old children.

6. A separate study, now being carried out by the Institute in the community will be longitudinally assessing growth breast feeding patterns, diet and infectious disease morbidity in 120 infants from birth to age 12 months. Plans are being developed to include as large a sample as possible of these infants in our study, measured at 12 months of age, in order to serve as a definitive assessment of body composition at the age of 12 months for our study, and to permit the collaborative analyses of the body composition outcome at 1-year of age in relation to antecedent feeding patterns and morbidity experience.

B. Equipment and Procedures

1. Calipers, standard scale, urine collectors, height measuring boards, Harpenden height measuring apparatus were all set up and tested in the clinic site at Canto Grande. Use of the electronic scale was not possible due to difficulty in clearing customs.

2. Based on forms used in the already initiated diarrhea/nutrition project, the forms for this project were field-tested and finalized.

3. Procedures to administer the dose of $H_2^{18}O$ were developed to cover the various ages under study and field-tested, as were the procedures for weighing and estimating the dose needed.

C. Work Schedule

Detailed work schedules were defined for Institute staff, both in the clinics at Canto Grande and upon return to the Institute. A similar schedule for the field workers was developed but key parts could not be tested until such workers are hired. We determined that two field workers will be needed for the first phase of the project.

D. Other Accomplishments

We met with Dr. Michael Wolfe and, separately, with Dr. Lopez de Romana to discuss prospects for nutrition surveillance activities in Peru. Dr. Wolfe is interested in identifying and developing data sources which can be used to define and monitor the location and 70 of health and nutrition problems in 3 departments in the sierra, high valleys, and Amazon areas of Peru where the German Government is planning health projects. Dr. Wolfe has made an assessment of available health data in these areas and found it to be very limited and unreliable as a basis for planning.

We have also suggested that the German Government might consider providing financial support for the analyses of survey data from 1975 which included 3,000 preschool children sampled from all regions of Peru, but which have not been analyzed due to inadequate data management resources of the Peruvian Institute of Nutrition. It might be that USAID would also have some interest in supporting such an analysis as part of baseline data development for nutrition surveillance activities. It was agreed that Dr. Doug Robertson would work with Dr. Enrique Morales to develop an estimate of costs and feasibility for analysis of the data utilizing the computer resources at the IIN.

Discussions with Dr. Lopez de Romana raised the possibility that the Commission on Nutrition of the Office of the Prime Minister, might seek technical consultation in nutritional surveillance from CDC Division of Nutrition by way of the USAID Mission in Lima. Since the USAID staff is undergoing many personnel changes currently, contact was not made directly with the AID Mission, but such contact could be useful on subsequent trips to explore interest in support for nutrition surveillance activities.

6. Summary:

This trip centered around the finalization of plans for initiating a USAID funded study of anthropometric indicators that predict body composition among Peruvian infants and children. This project is to be carried out in collaboration with the Instituto de Investigacion Nutricional, a non-profit Institute that is presently working on a large, longitudinal diarrhea project in a recently settled barriada on the outskirts of Lima. This barriada is also to be the site of our project.

Discussions with the Institute Director and staff and analysis of recently completed census data from the barriada led to two substantive changes in the protocol. First, because the ongoing longitudinal diarrhea project is gathering extensive dietary information, we decided to test the children at 1-year of age who are enrolled in the longitudinal study from birth. This data will provide a measure of body composition as an additional outcome variable which can be compared to the dietary and disease data collected over the

first year of life. Second, because the heights and weights gathered during the census demonstrated that the children became increasingly high in weight-for-height by age 18 - 30 months, we elected to measure more children in these earlier age groups and include infants above 6-months of age, while excluding children greater than 60-months of age.

The remainder of the trip was spent developing the final forms to be used, the daily schedule of activities and detail protocols for the Institute staff and field workers. Testing of both the protocol procedures and forms was carried out in the field.

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and Education

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Chief, Epidemiology Branch
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cc:
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TO: David Pitts
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FROM: George G. Graham, M.D.
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SUBJECT: Progress Report #1, Phase I
Contract #200-83-0600
Study of Energy and Protein Stores
in Stunted Children

DATE: February 28, 1983

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A. PROCEDURES

The project has gotten under way in one of the "pueblos jovenes" (young towns) of one of the large shanty areas peripheral to the city of Lima. As the basis for an epidemiologic survey of infant diarrhea in the same community, a census had been carried out six months prior to the beginning of this study. Making use of the census data, children of the appropriate ages were selected for possible participation. Because the diarrhea survey is based on cohorts of newborn infants, this study was begun only with those over six months of age.

The project was presented to the community leaders as an extension of the diarrhea survey, for the purpose of evaluating the nutritional status of older infants and young children.

During the first two weeks the necessary equipment and materials were secured, the first contacts with the mothers were established, a locale for the field station was secured and prepared, and an aide was hired and trained. We were fortunate in finding a person with a good education and with previous experience in field work. Initially we had planned to make use of the health station in the community, in which we had already been working, but because of severe space limitations it was decided to find another location. In the immediate vicinity of the health station we were able to rent a room in a private home: it is well located and the room is independent of the rest of the house. The rent is being shared with the diarrhea survey.

The following steps are being followed:

1. The nurse anthropometrist and the aide contact the family to explain the project and the procedures, to obtain consent, and to fix a

6. During the first three hours after the administration of the stable isotope all urines are collected and fluid intake is kept to a minimum. If the child is thirsty, small measured amounts are given.

7. After three hours no fluids are given and two urine samples are collected from 4 to 6 hours after the administration of the isotope. Once these voidings are collected, the study is complete.

8. During the entire duration of the study at least four carefully timed voidings should have been collected.

9. During the course of the study, after the isotope has been given, the following anthropometric data are obtained: weight, height, sitting height, head circumference, chest circumference at full inspiration and expiration, biacromial and biiliac diameters, midarm and wrist circumferences, and skinfold thicknesses at the following sites on the left side of the body: triceps, biceps, subscapular and suprailiac. The equipment and procedures utilized have been those described in the proposal and contract: they are carried out by the nurse anthropometrist after standardization at the Instituto. At this time the height and weight of the mother are also determined; the father is evaluated on a different occasion.

10. All participating children have a tuberculin skin test applied on the day of the study, have their immunizations completed, and have one urine sample examined microscopically.

11. The child is visited at home two days later to read the tuberculin test and the mother is given a card with the results of the

4. In one case the basal urine sample was discarded by error; in all others all the necessary samples were obtained.

5. According to the original protocol all urines (except the basal one) obtained during the first three hours were to be discarded. We are now keeping all of them to avoid the error mentioned under (4) above.

6. All children have been tuberculin tested and have received all missing DPT and oral polio vaccines.

7. One child was treated for a urinary infection.

8. Six children have been treated after the study for episodes of measles, furunculosis, otitis and lower respiratory infection.