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COLLABORATIVE RESEARCH SUPPORT PROGRAM ON INTAKE AND FUNCTION

Sixth Quarterly Report
(December 1, 1982 to February 28, 1983)

Functional Implications of Malnutrition (CRSP)

Project No. 931-1309

During this period, all components of the CRSP have concentrated on completion of Phase I activities and planning for Phase II. Activities of the US teams of investigators have focussed on field-centered work: pilot testing of instruments, the collection of preliminary data for sampling decisions, and the staffing and training of field operations. U.S. Principal Investigators have been heavily involved with the Management Entity in the research decision process and in the preparation of reports for the External Evaluation Panel. Data management personnel of all the projects have been involved in preliminary data analysis and have worked with the Management Entity in the coordination of data management plans. Detailed reports of the three projects are attached.

Management Entity Activities:

In December a major report was prepared and circulated to members of the External Evaluation Panel (EEP). This report provided extensive background on the CRSP, discussion of design as agreed upon by the Scientific Coordination Board, and elements of design alternatives where consensus had not yet been reached within the group. Proposed instruments, sampling strategies, and preliminary data collection in the field were provided in the comprehensive written reports.

The External Evaluation Panel meeting, held in Berkeley on January 17 to 19 was attended by EEP members: Philip Payne, Marion Yarrow, Richard Adams, T.N. Srinivasan, Alice Whittemore, and Sol Chafkin, Chairman. Two members, David Picou and Gerald Keusch were unable to attend. Martin Forman and Samuel Kahn represented USAID. Three Principal Investigators of U.S. projects, Gail Harrison, Lindsay Allen, and Charlotte Neumann represented the three projects and the Egyptian Principal Investigator, Osman Galal represented the three overseas projects. Co-Program Administrators Doris Calloway and Carl Rosberg, Deputy Director Judith Balderston, and Management Consultant George Beaton represented the Management Entity. The three-day meeting included discussions of the complex research design and presentation of reports on preliminary work in the field. Time available for the meeting proved to be inadequate for a full discussion of all important issues. It has been proposed that the next meeting should allow for four or five days of meetings with greater opportunity for discussion.

Discussions centered on ways of simplifying and focussing the research design. A report, drafted by members of the External Evaluation Panel, is being circulated and editted and will be presented shortly to USAID.

Following the EEP meeting, in consideration of their recommendations and questions, the three project representatives, Gail Harrison, Lindsay Allen, and Charlotte Neumann, reconvened with Doris Calloway, Judith Balderston, and George Beaton for the purpose of resolving design issues and for planning the remainder of Phase I work. From

these discussions, decisions were made for the completion of pilot testing of instruments and preliminary data collection in the Spring. The scheduling of the remainder of Phase I activities and planning for Phase II was also discussed. A May meeting of project representatives in Berkeley was scheduled. In preparation for that meeting, participants were given assignments for summary statements to be prepared on each of the sectors of the CRSP research (intake, morbidity, performance, etc.) with respect to the main research questions, hypotheses and data needs. Demographic surveys, concentrating on family composition by age of mother will be collected immediately for each project in order to make available for the May meeting data necessary for sampling decisions. Preliminary data will be sent to Berkeley in advance of the meeting so that advice can be sought from members of the Berkeley Statistics Department.

Data management activities of the CRSP were a main concern during this period. A meeting took place in mid-December with data managers of all projects participating over three days in Berkeley. The Deputy Program Director, Judith Balderston, and Berkeley Data Manager, Patsy Fosler organized the meeting which brought together the data managers from Egypt and Mexico along with data management staff from each of the US institutions. A full report of the meeting is attached to this report along with schedules of future data management activities. We believe that it is essential that CRSP data management activities are well-coordinated in advance of the beginning of data collection in Phase II. Agreement on data management procedures, adoption of a standard data management plan, acceptance of quality control methods, and consensus on the logistics of data flow are fundamental to the success of the CRSP.

The Deputy Director participated in a very informative meeting of CRSP directors in Washington in mid-February. AID officials arranged for an unusually productive three-day meeting in which issues of interest to the CRSP's were presented. The similarity of issues among CRSP's and the possibility of future networking of CRSP personnel in the US and overseas made this a very beneficial meeting.

Business and financial activities of the CRSP included:

Following the recommendation of the Institutional Council, the budget year was changed to coincide with the federal fiscal year. Management Entity solicited updated budgets from participating institutions for the 18-month period, 4/1/83 - 9/30/84. (The former budget period was 4/1/x - 3/31/x)

Subcontract agreements were amended to provide for monthly fund advances based on quarterly estimates to limit the amount of money drawn down from federal funds as requested by AID. Financial reporting was linked more closely with fund advance requests under the amended agreements to provide incentive for timely report submission.

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Management Entity met with representatives of Deloitte, Haskins and Sells in regard to independent audits of participating overseas institutions. DH&S subsequently submitted a proposal and it is anticipated that UC will accept the offer to establish a one-year renewable contract with the audit firm.

Management Entity met with the manager of the local Thomas Cook office to evaluate services and procedures under the present contract for airfare and accommodations for CRSP travelers. Improvements have been noted in several areas and ME is arranging to continue the contract for another year for those participating institutions that desire the services of Thomas Cook.

Negotiations between the UCLA and University of Nairobi components of the Kenya Project were finalized and the agreement was signed in February.

Discussions with AID continued on the appropriateness of cost-sharing for funds retained at US institutions for equipment purchases for overseas use. The problem has been referred for consideration by JCARD.

DATA MANAGEMENT IN THE NUTRITION COLLABORATIVE RESEARCH SUPPORT PROGRAM

Introduction

The data management process has been of central significance to the Nutrition CRSP since its inception. Recognizing the importance of careful monitoring of the data collection to facilitate inter-project comparisons, contractual responsibility for assuring the quality and consistency of data on a continuing basis was placed in the office of the Program Director. According to the inter-university agreements, each project's data management methods were to be consistent with inter-project agreements to insure the quality and comparability of data collected and of the subsequent analyses.

The Technical Advisory Group on Statistical Design and Data Management, meeting early in 1982, produced a report (excerpted here in Appendix A) which provided important guidelines in the subsequent planning of data management activities. Recognizing that the goal of the CRSP is the "completion of three highly comparable investigations in three different country settings" the TAG report stressed the need for continuing inter-project collaboration to develop comparable protocols, coding procedures, quality control, and data management.

Continuing data management for the CRSP is therefore conceived as a collaborative effort between and within the projects. The CRSP Data Management Group consisting of representatives from the country institutions, the U.S. institutions, and the Management Entity, serving as coordinator, monitor, and consultant, was set up to oversee this process.

Scope of Data Management Activities

In the narrowest sense, CRSP data management begins as data flow from field collection operations. These data flow activities can be seen in Figure 2 which portrays Phase II procedures according to the place where they will be carried out and according to the sequence of activities. Appendix B, which appeared in the First Annual Report of the CRSP, provides details on Phase II data management procedures. In preparation for receiving data from the field, however, data management activities for the transfer, cleaning, editing, documentation, and early analysis, as well as the training of personnel, will need to be in place and operational before the beginning of the Phase II collection. Many of these activities have been taking place during the Phase I collection and processing of preliminary data and have used the expertise and cooperation of data management staffs.

As can be seen in Figure 1, which presents activities to be completed in Phase I, the combined expertise of co-investigators, their statistical analysts, and data managers will be needed. Obviously, decisions about design and protocol development will be the responsibility of the principal investigators of each project. Data managers will participate in the formulation of data capture instruments or interview schedules. At that stage it will be essential to have the input of data managers to insure that forms are appropriate for coding or direct data entry. Data managers will also assist in the training of field personnel in important areas of data checking and correction as well as in designing the system for data flow from the field to the country institutions.

Throughout the Phase II data collection, the data management team will work with project statisticians to carry out analyses for the project

co-investigators. These analyses will be important for determining whether data being collected are appropriate for answering research questions of the CRSP and for testing hypotheses. At the completion of the Phase II data collection, during Phase III analyses of the data collected, data management activities will continue under the supervision of statisticians and project investigators. At that time, with the completion of documentation, data will be accessible for all users; data management per se will be complete and analytical activities can be carried out with assistance of a computer programming staff.

Objectives

The ultimate goal of the data management system is to facilitate comprehensive inter- and intra-project analyses. To this end, a data base management system including the use of SAS, Statistical Analysis System, will be utilized by all collaborating projects. A management system will permit all three projects to share in development, maintenance, and use with the advantages of:

--Standardization of data definition and document action

--Improvement in physical access to data items

--Reduction of data redundancy

--Simplification of writing application programs

--Reduction in the need for program maintenance

--Consolidation of updating, retrieval, reporting, and utility functions

The data will exist in the most basic and simplest of forms, i.e., the images of the raw data collected. This will constitute the computer readable (magnetic tape storage) "raw data files." When the data are

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transferred to the management system, this basic form will be preserved. For analysis, it will not be necessary to access the entire database, but instead the data management language of SAS will enable us to produce specific files for specific analytical purposes. Thus, it will not be necessary to predict all types of analyses which may be required later; the sophisticated computer system to be used will permit the conversion of basic data to complex analysis files at any later time.

Design of Forms

As reported by the data management group in December, a method of organizing the material for form development was suggested: each co-investigator responsible for development of protocols will be asked to specify what data items are to be collected, and information about why the data item is needed and how the data item will be utilized in the project--including but not limited to analysis. This specification will be in a written form and will serve as a basis for form design, computer usable coding, input and file structure. As a result of the meeting in Berkeley of PI's, the specific lists of hypotheses and variables are being prepared. The variable lists will include the following information for each variable:

The variable name and definition

Are there component variables? If so, list

How are data or components collected and recorded?

Is there a time frame...weekly, monthly, other schedule?

Is special equipment necessary?

What is the question(s) wording to be used?

At this time, ME will have the responsibility of creating a directory of the hypotheses and variable lists sent to the Berkeley office and will systematically report to all projects the status of variables and, as time progresses, the data capture instruments. The data capture instruments, when submitted, will already have been reviewed by the appropriate member of the data management team.

When the data capture instruments have been developed, the ME data manager will do the SAS setups for the core variables: formats, names and definitions. These will be circulated for approval to the three projects but the names must be agreed upon by all the projects.

The variable lists will be the first generation of the data management "data book." The data book's primary focus will be on the core data. Its purpose is to distribute the information on the variables purported to be the same between the projects. It will include the information of the variable lists as well as the data capture instruments used to collect the variables and the instructions for data collection. In some cases, such as anthropometry, the instruments, the measurements, and the methods of data collection will be almost identical. In other areas the outcome variables will be expected to be the same, but the methods of collection will be different. This is true of nutrients and food intake, for example. Where possible (where not contributing to bias) one way tabulations from each project on these core variables will be a part of the data book.

Editing: Error Detection and Correction

Important data editing issues were addressed at the inter-project data management meeting in Berkeley in December, 1982 and, in particular, the question of changing the data collected during the quality control process. There may be important variability contained in the uncleaned data, including real, though inconsistent, responses to questions and genuinely mistaken observations. The loss of this information may be detrimental to the study. It should be possible to reconstruct any record as it existed at any stage of its data processing history. The computerization of the data base, particularly with the use of a sophisticated management system, allows the use of markers to indicate the original erroneous data and its cleaned replacement.

Data validation requires both manual and machine processing. In the case of large datasets such as in the Nutrition CRSP, it is important that manual processing be minimized and computer processing should be maximized. Extreme care should be taken when planning data editing procedures to assure that errors will be detected, and that additional ones will not be introduced when the original errors are corrected. The editing has three parts: error detection, error resolution, and error correction.

The size of large datasets requires the careful organization of the first of these, error detection. The more casual editing procedures that are often applied to small datasets, such as visually scanning for missing records or for records that are off by one column, are inappropriate. Error detection has four main steps which should be done in the following order: key field univariate tests, key field multivariate tests, data field univariate tests, and data field multivariate tests. Key fields

are those which contain the identification information. Key field and data field editing involve the same kinds of tests, but from a data management perspective they are two distinct kinds of editing. The distinction is one of function rather than content. Key fields have a special function of uniquely identifying records and may also contain information that is useful as data.

Univariate tests involve only one data item, such as SEX or AGE. At the locations where direct data entry is available the univariate functions of out of range and invalid values are already addressed by the entry program. Multivariate tests involve two or more items and are often referred to as "consistency checks." For example, a multivariate test of sex and pregnancy flags any pregnant males.

Undetected key field errors are more costly and can lead to far more serious problems than undetected data field errors. These errors can cause records to be misplaced or cause the key field to be associated with the wrong data fields. For example, an error in community ID on a person record could cause that individual to be placed in the wrong community and the wrong household. The severity of these potential errors requires keyfields to be edited carefully and absolutely validated.

The second part, error resolution, must also be formalized when dealing with large datasets. Simply finding the correct value, or deciding the orginal value was correct, or setting the item to missing is inadequate. The decision itself must be documented. This can be done with error correction forms, which identify the error, the correction, and the person who made the decision. The error correction forms themselves are maintained in one or more datasets and can be handled in the same way as the rest of the study data.

The final part, error correction, consists of record deletions, record

additions, and data item value changes. It is sometimes the case that this can be accomplished with explicit code. At other times transaction files, which contain the changes to be made, must be created, documented and otherwise maintained as a part of the study database. The error correction form can be a duplicate of the original form where the error occurred. It would contain the same identification fields which include form number, village, family, person, birthdate, sex. The date the correction is being made will occur in the fields that usually contain date information collected. There should also be a one digit code specifying whether this form is original (code=0) or corrected information (code=1). Finally, the form will have the corrected information in the proper field and all other data fields will contain no information. This form can then be merged with the appropriate protocol data file or it can be merged into a separate transaction file.

DESIGN AND DATA MANAGEMENT ACTIVITIES
FOR COMPLETION OF PHASE I
(IN MONTHS)

FIGURE 1

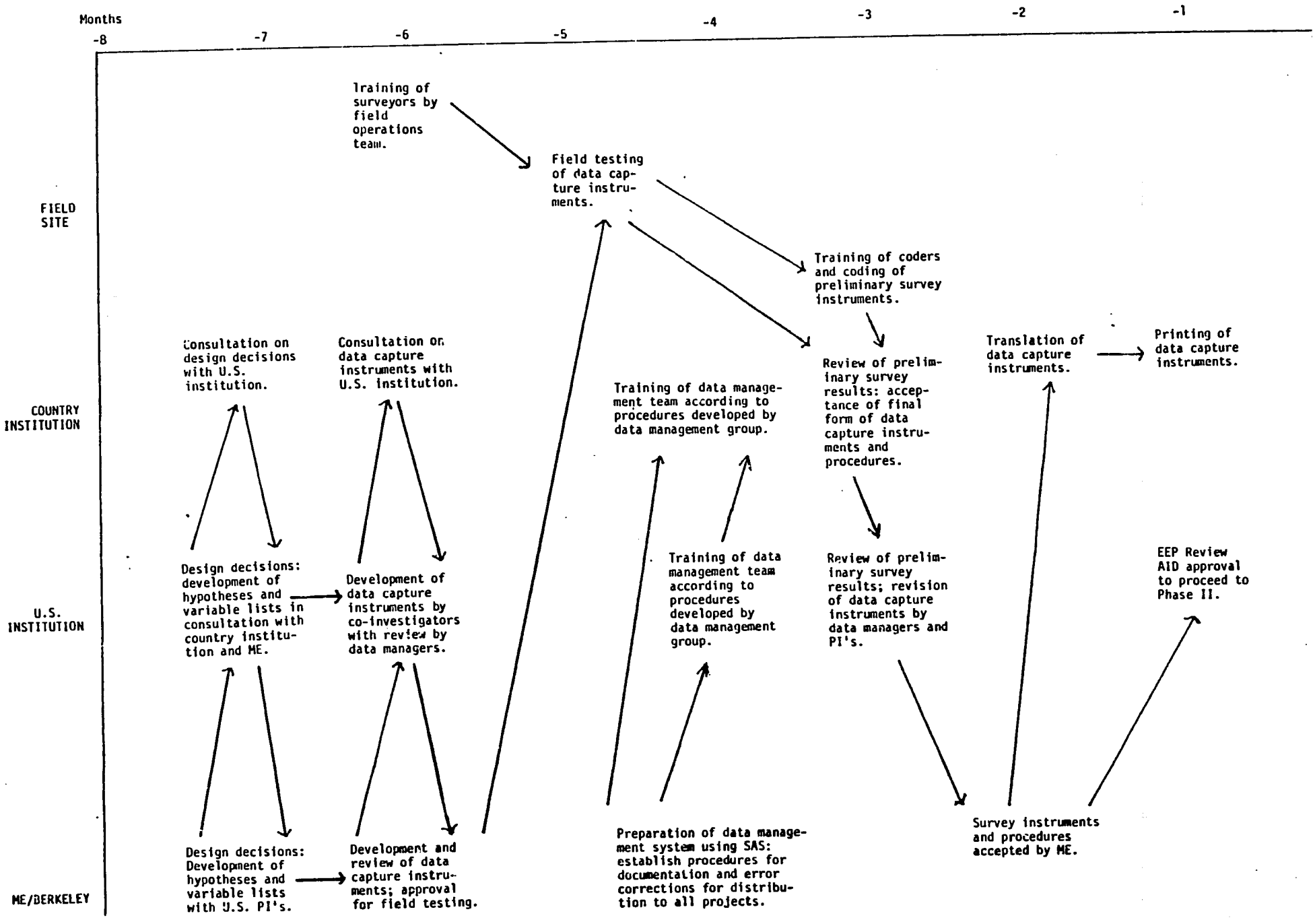
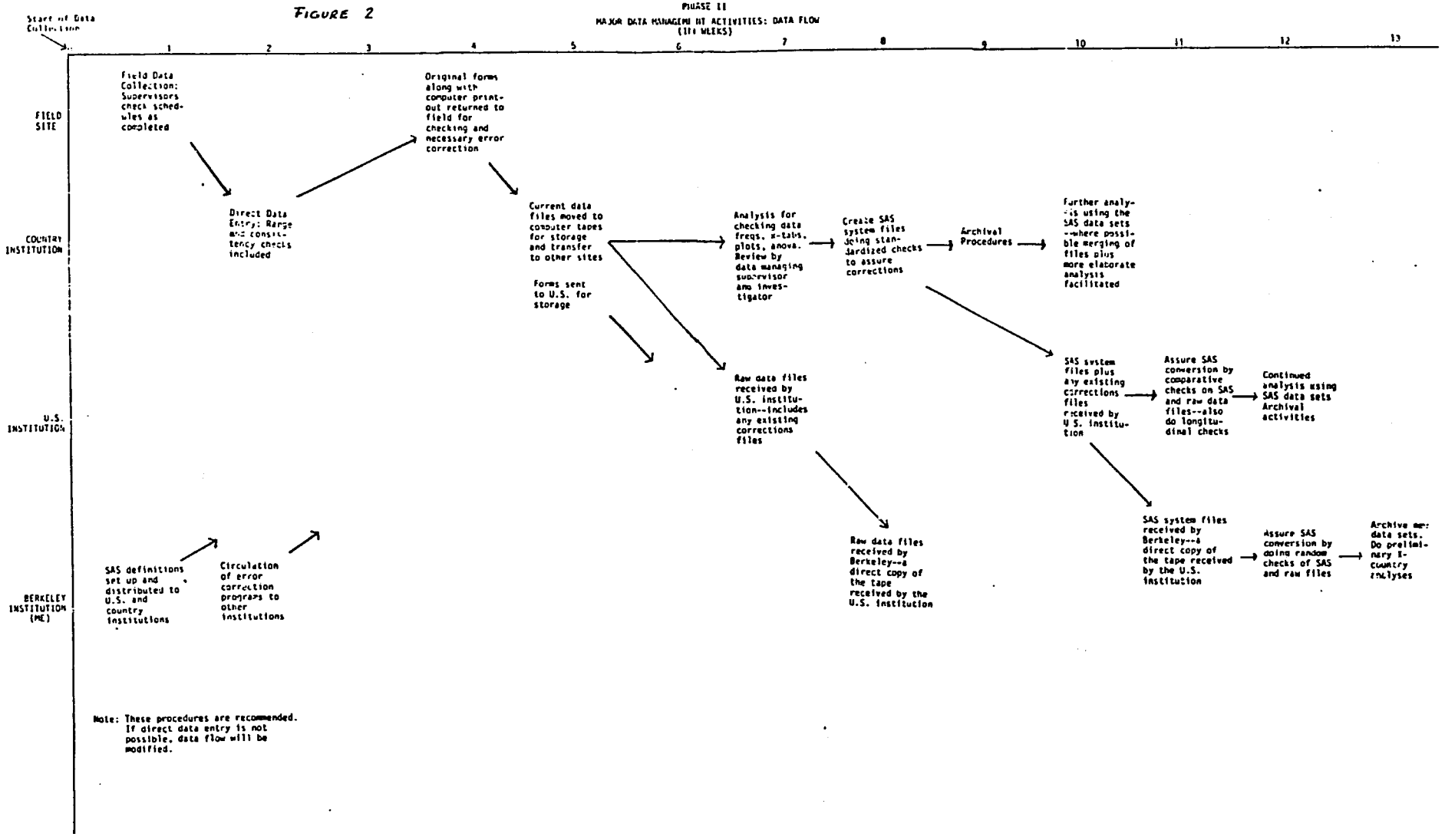


FIGURE 2

PHASE II
MAJOR DATA MANAGEMENT ACTIVITIES: DATA FLOW
(1ST WEEKS)



Note: These procedures are recommended. If direct data entry is not possible, data flow will be modified.

Best Available Document

Report of the data management group:

The data management group met on December 13, 14, and 15 in Berkeley to discuss the data activities in the study. Dr. M.H. Khalil from Alexandria who is responsible for the Egyptian host country data activities and Ms. Marsha Wrona from University of Kansas were present from the Egyptian project. Dr. Pesaj Goldfeder from Mexico City and Dr. Roy Tembi from the University of Connecticut attended from the Mexico project. Anne Coulson from UCLA represented the Kenya project; Diana Dolan from UCLA participated as an observer on behalf of the Kenya project. Dr. Judith Balderston and Patsy Fosler organized the sessions and worked closely with the group during the sessions. The agenda for the meeting is attached as Appendix A.

The data management function is central to the successful completion of the project at this point and throughout the remainder of the project. The Technical Advisory Groups concerned with substantive questions have developed or are finalizing development of the protocols detailing the data to be collected. P.I. meetings have determined the overall structure and objectives of the project. The data management function now must:

a) translate the protocols into the required data capture instruments;

b) establish the pattern and timing of data flow from host country to U.S. institution to Berkeley and to establish alternatives;

c) prepare data capture instruments for data collected outside the main system: e.g. centralized loboratory determinations and establish appropriate data flow.

d) set up appropriate quality control procedures and data cleaning operations;

e) establish appropriate data management computer systems and interactions in host country, USI and ME;

f) work closely with statistical consultants to determine optimum appropriate analyses for research questions;

g) establish a carry out plan for sharing of techniques and other appropriate data management information;

h) develop data book scheme for circulation to PI's, interactions to determine PI data interests and forms for request of computer analyses;

i) develop techniques and processes resulting in final cross country data set for analysis of project and for eventual public use.

The meeting included reports of the group from other meetings and from each site, discussion of the reports and data management implications, discussion of data management aspects of the study and recommendations. These are summarized below under sections a - i, described above.

a) Data Capture Instruments: Dr. Balderston reported to the group on the meetings in Washington in November and on the present status of the study protocols. The group recognized that data management input and interaction is necessary at this time to translate the protocol requirements into field usable, computer and system compatible data capture instruments.

It was recommended that a data management specialist work closely with each TAG chairman to develop the data instruments. These should then be subjected to field test in each country before finalization by the TAG chairman and data specialist. Input from other TAG members would be appreciated, as would comment from other data specialists and field users of the instruments, but, given the serious time constraints, such input would have to be prompt and specific.

As a method of organizing the material for form development, it was suggested that each investigator be asked to specify what data items are to be collected, why the data item is needed and how the data item will be utilized in the project (including but not limited to analysis). This specification should be in written form; it will serve as a basis for form design, computer usables coding and input and file structure.

To try to establish the types of requests that may be made by investigators, it was recommended that each investigator be asked, by

the USI or host country data managers, for three recent data (computer) requests and/or recent research publications. "Recent" is defined as within the last four years. Copies of these documents, or summaries, should be forwarded to Berkeley as well as retained at the local levels.

b) Data flow direct: (Direct data flow is defined as data collected in the field, sent directly to the host country institution and from there to Berkeley. Though there may be data manipulation and reduction in the process, there is no external data source, such as common laboratory measurements, or nutrient content determinations. Data flow for this latter type of information is detailed under (c) below.)

The original specification of data flow was determined by the TAG on Statistical Analysis in January 1982. This called for the initial processing of host country specific, USI specific and core data in the host country, with machine readable data and copies of data capture instruments to be sent to the USI on a regularly scheduled basis. The host country has the option of retaining the host country specific data and forwarding only the UCI specific and core data. The UCI has the option of forwarding only the core data to Berkeley.

Copies of raw data in type form will be sent on a regular basis (monthly, or every four weeks, or at similar time intervals agreeable to both host country and USI). The host country may also forward SAS data sets to the USI. (It will probably be possible for Mexico to do so, Egypt does not at present have the capacity as they have a non-IBM system, the capability in Kenya is not presently known.) The SAS data set(s) will be in addition to the raw data tapes, and not in their place.

Copies of raw data will also be forwarded at the same time. The recommendation of the group was that the feasibility of forwarding microfilm or fiche copies of the data be explored. This would have the advantages of limited storage needs, low cost shipment and elimination of need for multiple form copies, such as NCR. Each institution is to investigate the host country technology and cost for microfilm for data form transmission.

Data will be further checked and cleanded at the USI. Core data (with or without non-core information) will be forwarded in raw data SAS format to Berkeley. All the USI's have SAS capability and can create SAS files according to the standards to be worked out at Berkeley in collaboration with the SAS data set providers. Both raw data tapes and SAS data sets will be sent from each USI to Berkeley on a regular basis. As the raw data and SAS sets should cover the same information, and as data from a number of sources must sometimes be collected to complete a time-related observation on a single individual or household, the USI will retain individual data until the given time-related core observations (e.g. 3 month follow-up) are completed or known to be subject to either long delay or non-completion. "Completed" individual and household core items will then be forwarded in raw and SAS format.

Berkeley also carries a data archive responsibility and therefore will need copies of completed data capture instruments. If microfilm is a feasible procedure, a second copy of the microfilms will be sent to Berkeley. Otherwise, raw data copies will be forwarded by the USI

according to a schedule agreed upon between the USI and Berkeley.

The direct transmission of information from the host country to Berkeley may be necessary and/or advantageous from time to time. This might be useful in cases in which the data managers in the host country need to interact on data management problems with Berkeley staff and consultants or in which problems require direct communication with Berkeley by all sites. In all such cases, the USI must be informed of the communication and must receive copies of the data, forms or other material sent in each direction.

Berkeley is charged with the responsibility for maintaining the definitive data set for the core data in the project. ME's files will, therefore, be regarded as definitive, and it is the responsibility of the USI and/or the host country data managers to advise Berkeley of any differences between their core data sets and Berkeley's.

c) Data flow - indirect: (Indirect data flow applies to all data originating from centers other than the field sites. This might include clinical laboratory determinations, nutrient content analysis, etc.) Data relating to individuals or households coming to data management from other sources than the field may need special handling. For each such situation, procedures will be developed. In general, if the data originates within the host country, it will be processed through the data management facility there and forwarded as in (b) above. If the data forms originate outside the host country, it will be sent to the appropriate USI where it will be processed. Copies of the

computer readable raw data and of the data campture forms will be sent promptly to the host country. Otherwise, management of this external data will be the same as in (b) above.

The external data problem, whether handled through the host country or the USI does present one additional problem. That is making sure that the external data is expected, that it has been requested and whether or not it has been received. Procedures will be developed for each of the specific situations.

d) Quality control/data cleaning: Quality control involves the selection and training of data collectors, the nature and content of data collection forms, the supervision of the data collectors, training of supervisors, coders and editors, checking procedures, computer editing (range checks, single time consistency and longitudinal incompatibilities and utilization of analytic results to identify problem areas for recheck.

To the extent possible, quality control and data cleaning procedures should be undertaken in the host country. Problems can be readily identified; observers and others are available for queryl further information and/or retraining if necessary.

Problems noted in data sets at any level will be referred back to the originating source for resolution. Special forms for advising all parties of any changes in data already sent on will be developed.

The question of "changing" the data collected during the quality control process was raised. There may be important variability contained in the "uncleaned" data, including real though inconsistent responses to questions, genuinely mistaken observations. The loss of this information may be detrimental to the study. On the other hand,

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poor key entry may not provide information worth preserving. The computerization of the data base, particularly with the use of a sophisticated management system, allows the use of markers to indicate the original "erroneous" data and its "cleaned" replacement. A system must be developed to do this, specifying variables and nature of errors in which preservation of the original data is useful and those in which it is not.

Quality control procedures were described for each of the host countries. Each area has an excellent grasp of quality control and cleaning procedures.

e) Data management system: The magnitude and complexity of the data base to be accumulated in this study make it necessary to use a sophisticated data management system. This system should allow a structure that is free and flexible enough for most data management and analytic uses, rather than the file management, hierarchical or management information system. The SAS system has been selected for use in the study. It is available at Berkeley and the Berkeley Data Manager is familiar with the system. Consultant support is available. All three USI's have SAS capacity with computer facility and consultant support for SAS. The group in Mexico has SAS capability, the one in Egypt does not; the situation in Kenya will be determined.

The selection of any data base management system has implications which may enhance or restrict future activities. The SAS management system offers considerable flexibility in present and future planning and utilization, particularly as it has capability for producing data files for us in BMD-P and other sophisticated data systems. The data base will also be maintained in its original non-SAS form so that any desired operations outside of SAS can be accomplished with minimum difficulty.

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Because not all of the host country groups have SAS capacity, the development of the initial SAS files will be completed at the USI's rather than in the field. In data transmission, both SAS and raw data files will be transmitted simultaneously.

USI and host country data managers should establish local systems for follow-up schedules to make sure work is completed in a timely manner and to prevent loss to follow-up due to staff problems, absences of household, etc.

f) The USI and local data managers need the support of statistical consultants. A statistical consultant, of senior rank, should be appointed in each USI and host-country to assist the data manager in management plans, analyses, etc. (In some locations, the chief of data management may be him or herself such a statistician--We recommend that the responsibility be shared even in this event.) Contact with the study statistical consultant should be established as soon as possible and maintained throughout the study.

g) The experience of the group meeting at Berkeley was such that it was determined that some mechanism would be desirable for sharing of techniques and other appropriate data management information between Berkeley, the USI's and the host countries. The problems that will be posed in this study are common to all of us and different from those of other data management operations. It was felt that a "newsletter" to be circulated project-wide would be very helpful--perhaps irregularly published at the start, but sent out as needed. All data management staff should contribute to and request items in the "newsletter". As the forms are developed and study plans finalized, further common communication is going to be essential and must be planned.

h) As the forms are completed and the specific core variables to be collected are established, a data book will be developed incorporating all of the variables, and, as available, some sort of country specific and study-wide histograms or marginals. Data managers will be responsible for interacting with their PI's (or other interested investigators) in terms of their data interests and the kinds of analyses these investigators envision--research questions, table definitions or specific analytic requests. These interactions must be both site specific and TAG specific. The earlier the investigators can be interested in defining or describing the analyzable research question or specific analyses, the more responsive the data management system can be to their concerns.

The data book will be updated at regular--to be determined--intervals.

i) The techniques and processes which will finally result in a data set combining all countries' data must be developed. This will be needed both for the intermediate and final analyses of the project and for the public use tapes and documentation. This work should start no later than the time that the data collection forms are in place--in this way the overall data management system can be developed to optimize this cross-national data set and analysis or, if probing of the host-country core data sets is found not feasible, to specify what data can and cannot be combined, at what level combination can be done and the underlying reasons for this.

In summary: 1) data capture instruments have yet to be developed; data management experts or specialists should be involved in the development,

2) data flow was provisionally agreed upon, subject to feasibility once the actual substantive data flow starts later this year.

3) data managers felt the need for available support from a senior statistical consultant (in a consultant and not directive capacity).

4) some method of communication on areas of mutual interest should be developed.

5) investigators should be encouraged to inspect provisional data and to specify their interest in detailed research questions.

6) the data management function in a study of this size and complexity is pervasive. Data managers should be aware of the opportunities and responsibilities this entails and should be particularly careful not to let data management problems and decisions (of their own or of others in their studies) slip in time toward the analysis.

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Quarterly Report
Egypt Project
Nutrition CRSP
University of Arizona
Sixth Quarter 1983 (Dec. 15, 1982 - March 15, 1983)

I. Country Project Status

1. Travel
2. Negotiations with Counterpart Institutions
3. Recruitment of Staff for Project
4. Placement cf Staff in the Field
5. Methodology Development
6. Data Management/Data Analysis

II. CRSP Involvement

1. Interproject Activities

III. Plans for Next Quarter

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I. Country Project Status

1. Travel

A. University of Kansas
Dr. Norge W. Jerome spent from January 27, 1982 until March 4, 1983 in Egypt to conduct pilot studies and focused ethnographic research in Kalama, Egypt.

B. Purdue University
Dr. A.H. Ismail visited Egypt from December 12, 1982 to January 4, 1983 for pilot study of work performance. A trip report was circulated in December 1982.

Dr. Ted Wachs visited Egypt from January 4, 1983 to January 24, 1983 to meet with Egyptian scientists on cognitive measurements.

Dr. Nel Kirksey and her research associate, Dr. Marilyn Borschel, visited Egypt from March 4, 1983 to March 28, 1983 to conduct the pilot study of breast milk intake.

C. University of Arizona
Dr. Ronald Watson visited Egypt from December 21, 1982 to January 10, 1983 to train lab personnel at the new NAMRU facility in routine immunological assays for the pilot study. A more detailed report was circulated in January 1983. He stopped briefly in Egypt from March 13-15, 1983, while traveling to Saudi Arabia on another funding source.

Dr. Gail Harrison attended two meetings in Berkeley. The first one was the meeting with EEP from January 17-19, 1983. The second one was a meeting of U.S. project representatives (in response to the EEP's report from January 27-30, 1983).

D. Egypt
Dr. Osman Galal took a trip to the U.S. in January 1983. He visited the University of Arizona January 20-21, 1983 and attended the EEP meeting in Berkeley January 17-19, 1983 and visited Purdue University on January 23-24, 1983.

2. Negotiations with Counterpart Institutions
University of Kansas and University of Arizona submitted budgets for years three and four (April 1, 1983 to September 30, 1984) to Purdue University in January 1983. The Egyptian Ministry of Health submitted its budget to Purdue University on February 13, 1983. Purdue University submitted its overall budget for years three and four to University of California, Berkeley in March 1983.

Kansas received approval for implementing the pilot phase of the Egypt Nutrition CRSP from its Human Subjects Review Committee.

3. Recruitment of Staff for Project

A. University of Kansas
Ruth Hassanein redesigned the Data Manager's job responsibilities and worked with Dr. Jerome on reviewing and interviewing applicants and final candidates. They succeeded in recruiting Ms. Beverly Beaton, R.R.A. Ms. Beaton assumed the position as Data Manager on the project Jan. 31, 1983.

B. University of Arizona

Joan Harrison was hired as Research Coordinator in early January 1983. She has been on medical leave since February and expects to return in May.

J.C. Jackson was hired as part-time research assistant to Dr. Watson in January 1983 to set up radio-immuno assays which cannot be performed in Egypt.

4. Placement of Staff in the Field

Dr. Jerome accomplished several tasks while in Egypt from January 27th - March 4th, 1983. These include:

a. Initiating and leading the training of Egyptian field workers for Time Use studies.
b. Developing a research protocol and conducting pilot studies on Time Use in Kalama (using both observational and recall techniques).
c. Finalize plans and protocols for additional pilot studies on individual and household food intake in Kalama.
d. Initiating research on housing layout in Kalama to better understand the symbiotic relationship between humans and animals living under the same roof, and problems of personal hygiene and sanitation.
e. Conducting focused ethnographic research on 1) infant and child care, 2) working styles, 3) family structure and relationships, 4) eating styles, and 5) material assets in Kalama.

Dr. Kirksey accomplished several major tasks during her trip to Egypt March 4-28, 1983.

a. Protocols for reproduction and lactation interviews were drafted.
b. Plans for hematological and milk analysis were made.
c. Progress was made in developing protocols for inter-laboratory standardization for Hb., Hct., & ferritin assays.
d. Pilot study of test weighing of breast-fed infants was begun.
e. Casual milk samples were collected and transported to the U.S.; analysis is in progress in Dr. Kirksey's laboratory.

5. Methodology Development

A. University of Kansas

Prior to Dr. Jerome's departure for Egypt, she prepared documents on "Social Performance" measures for review by the External Evaluation Panel in January.

Dr. Jerome and Judi Ricci revised the Household Sociodemographic Survey Instrument and the Community-Level Survey Instrument prior to further revision in the field.

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B. Purdue University

Dr. Ismail concluded from feasibility pilot study data that BMR/RMR and work capacity could be collected on all ages for both males and females. Modification of physiological protocol utilizing Ergo-oxyscreen was successful in the pilot study. This modification will be carried out in both the Egyptian and Kenyan projects.

Dr. Kirksey continued the pilot study of Breast Milk Intake in Egypt during March. The field protocol was based on some pilot studies of babies at Purdue and Arizona earlier this year. A detailed report is in preparation.

C. University of Arizona

Dr. Watson has set up pilot studies to standardize routine assays for thymic and other immuno functions. Equipment and training needs are being identified for these protocols and some radio-immuno assays will be conducted in Arizona.

Dr. Harrison and Dr. Ritenbaugh had developed summary models of anthropometry and reproduction, incorporating recommendations from the EEP, management and other countries' principal investigators.

6. Data Management and Data Analysis

Kansas processed and submitted to M.E. Egypt Project data needed for cross-project comparisons. Staff members entered Kalama census data from 1,470 forms and some anthropometric data. This is equivalent to 10,014 cards of data. Beverly Beaton wrote a program for "Raw Census Data" printout.

Data management consultant Dr. Ann Coulson visited Egypt on February 1-9, 1983 to meet with Egyptian Project staff and Dr. Jerome.

II. CRSP Involvement

1. Interproject Activities

Dr. Galal and Dr. Harrison attended the February meeting with EEP. In response to the recommendations, Core protocols were drafted in relevant areas by various project members, and shared with other projects.

Dr. Wachs prepared a report on cognitive measures for the EEP after consultation with Egyptians and psychologists from other projects. A meeting was scheduled for Dr. T.D. Wachs, Dr. Emmy Werner and Dr. Tiffany Field to meet with Dr. Marion Yarrow in April to further discuss the reserach design.

III. Plans for Next Quarter

All pilot projects will be completed and statistical analysis will be conducted at the University of Kansas. A meeting of U.S. project representatives is scheduled for May 1983, the Anthropometry Manual and protocols for core activities will be presented at the meeting.

Prepared by Gail G. Harrison
4-13-83

KENYA NUTRITION CRSP

Quarterly Report (12/1/82-2/28/83)

Field Report (2/10/82-3/22/83)

C.G. Neumann, M.D., UCLA

TRAVEL

International

Dr. Gerald Gardner, Kenya: January 10-27, 1983. Trip report submitted.

Dr. Charlotte Neumann, Kenya: February 10-March 22, 1983. See below.

Mrs. Anne Coulson, Kenya: February 9-24, 1983. Trip report pending.

Dr. Robin Gorsky, Kenya: February 13-March 5, 1983. Trip report submitted.

Domestic

Dr. Charlotte Neumann, Berkeley, CA:

External ~~Advisory~~ Evaluation Panel, ~~December 15-19, 1982~~ January 15-19, 1983.

Follow-up Principal Investigator meeting, January 21-25 1983, to finalise the core design.

Dr. Robin Gorsky, UCLA: January, 1983, to meet with Dr. Gardner and Dr. Neumann.

Miss Susan Weinberg, UCLA: January, 1983, to interview for the field nutritionist position; March 25-26, 1983, for orientation for field work in Kenya.

RECRUITMENT

University of California

Susan C. Weinberg, Master of Science, Nutritional Science, Cornell University, Field Nutritionist position commencing March 25, 1983 for a minimum of 2 years.

Susan B. Roberts, PhD candidate, Cambridge University, England. Mrs. Roberts will go to Kenya for a minimum of three months commencing at the end of April, 1983, to help with the food intake and lactation pilot studies. There is a possibility she will be able to remain for 1-2 years.

Physician position is now under recruitment. Supervision of morbidity, disease, and clinical aspects of the study will be the main responsibilities.

Dr. Eric Carter has been named field director as of March 15, 1983.

Kenyan Staff

The Kenyan group are recruiting for the following: field coordinator, social scientist, physician, public health nurse, administrator, secretary and additional field workers.

Mrs. Ann Pertet, a field nutritionist, has been secunded from the Kenya Medical Research Institute (KEMRI).

Mr. Ben Mururia has been secunded as the senior field supervisor from the Central Bureau of Statistics for the duration of the field work.

An administrator will be secunded from KEMRI.

MAJOR ACTIVITIES IN KENYA

Completion of mapping

Preliminary survey

Training and retraining of field staff

Pilot studies

Subcontract finalisation with the University of Nairobi

Vehicles, bus rental

US-Kenya AID Mission visit to project site

Review clearance procedures for duty-free importation of project supplies and equipment

Retreat - entire Nutrition CRSP Senior Staff

Major Activities in Kenya

1. SUBCONTRACT

The formal subcontract between the University of Nairobi and the University

of California (UCLA) was signed on February 28, 1983 by the Registrar, Mr. Gicuhi, and the Vice-Chancellor, Professor Mungai, for the University of Nairobi, and by Robert Pierce on behalf of the Regents of the University of Cailfornia for UCLA. This will now allow for an orderly flow of funds into the University of Nairobi for their component in the Nutrition CRSP field work.

As for the current status of the University of Nairobi, classes have resumed in order to allow seniors and graduate students (masters and doctoral level) to take their examinations and submit final theses so they can graduate. Classes will probably resume for the entire University by September or October 1983.

The flow of monies will be into a Nutrition CRSP research account with its own account number at the University of Nairobi, to which Dr. Kagia and co-directors Drs. Bwibo and Thairu will be signatory (any two at one time). Monies (Kenya shillings) will then be periodically transferred to the Embu bank account for the Nutrition CRSP Kenya Project and will be under the control of the field director, Dr. Eric Carter, for day to day disbursement and accounting. This will allow strict monitoring of expenditures and accounting. Receipts will be submitted to the Financial Officer, University of Nairobi, for submission to UCLA. A duplicate system of submission of receipts by Dr. Carter will be made to UCLA. Requests for funds and receipts of expenditures will be submitted quarterly rather than monthly since it takes about one month from the time of sending requests and monies from UCLA to the University of Nairobi and then to have cash flow into the field. The local auditing firms, Delloitte and Sills, have been contacted.

A direct benefit and immediate effect of the signing of the subcontract has been to give the Kenyan group a feeling of being fully involved and "bonded" to the project, and the feeling that the project is now their own as

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as well as the University of California.

PRELIMINARY SURVEY

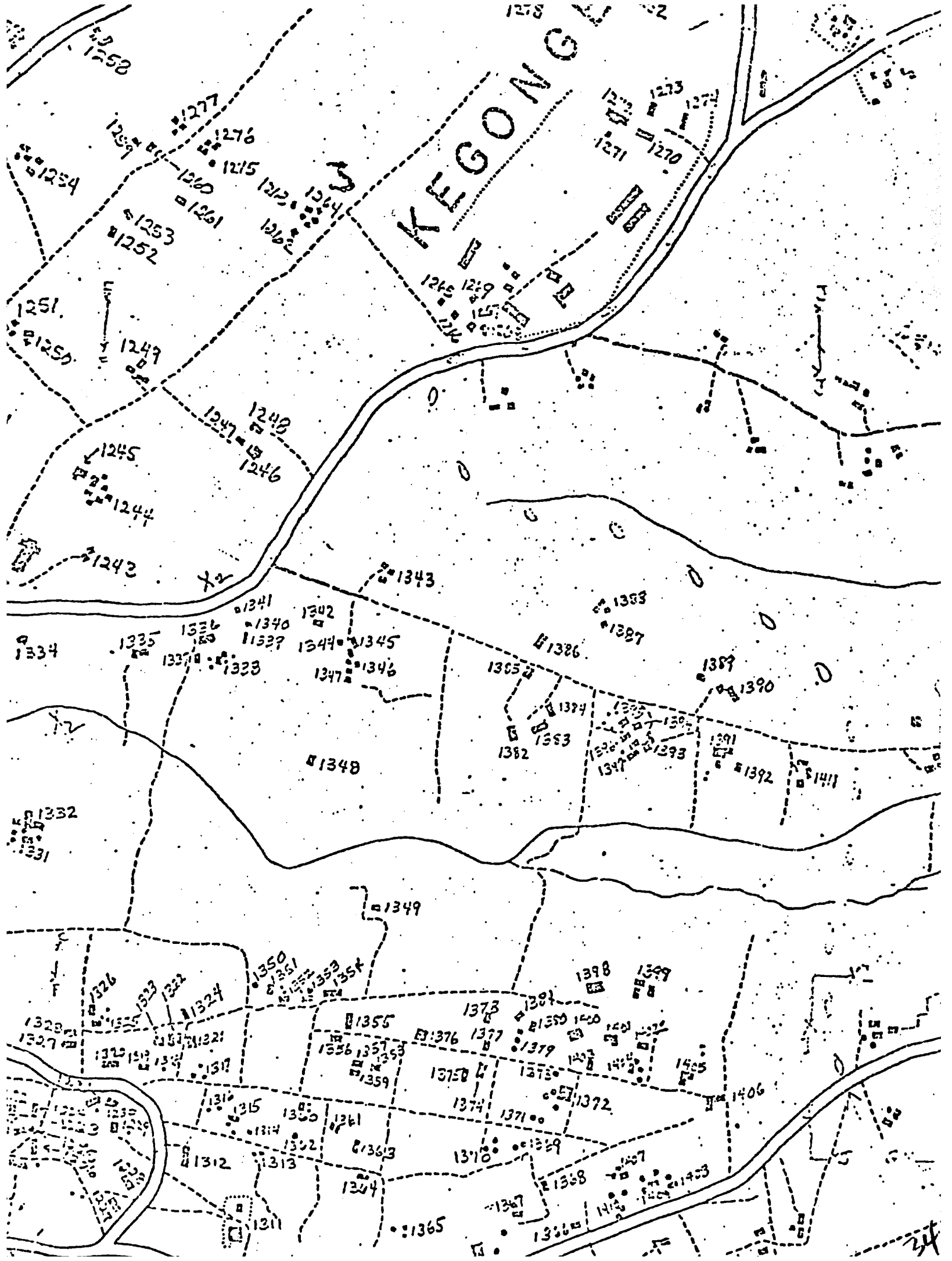
Map Completion

Aerial photography was carried out in November, December 1982, but because several corridors were missed and because cloud cover interfered with clear photographs, mapping was incomplete and still being improved upon. Nonetheless, a functional map has been produced locating househoulds, rivers, tracks, water pipelines, and land features allowing field work to progress. The households were prenumbered on the map and now are being checked out in the course of the preliminary survey in small sections at a time so as to compare the location of a houshold on the map with the actual existence of such a household. Revisions and renumbering are made day by day by the field staff. (See a portion of the map). The mapping has been welcomed as a great benefit by the lcoal government groups, particularly the chiefs and district officer, as being a great service and benefit to the project.

Preliminary Survey Field Work

The preliminary survey is now in full swing. The plan is to do about 100 households in each of the three sublocations, then return to the first sublocation to complete that area, and then the following two. This will allow us to be certain that the three sublocations continue to yield suitable households for potential inclusion in the final study. (See the Gantt chart). Kararumo sublocation has now been completed and appears to have more cases of malnutrition than Kathanjure.

The approach has changed somewhat from the original 140 households in the earlier part of the preliminary survey although the basic elements are the same. Registration and the preliminary survey have been combined in that set of questions (see questionnaire) are asked by the enumerator to see if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the household should be elimiated immediately from the study, after recording the ages and who resides regularly in the household.

During the preliminary survey, food prepared and consumed during the previous 24 hours is inquired into and a household eating score is being obtained in terms of energy consumed. A combination of weighment, recall and observation is being used. The total calories are divided by the number and type of persons eating. All food intake data (drawn from the one-day HH food preparation form (TABLE I) is related to a HH eating score; this is derived from the type and number of persons eating a meal. Based on literature figures for energy needs FAO):

To obtain a HH Eating Score

Member		Recommended energy intake				
adult	AM	is	multiplied	by	1	(2700)
adult	AF	"	"	"	0.75	(2000)
young male	YM	"	"	"	1.1	(2900)
young female	YF	"	"	"	0.8	(2100)
school age	SC	"	"	"	0.9	(2400)
pre-school	PS	"	"	"	0.5	(1400)
infants	"	"	"	"	0.3	(800)

and the amounts added up.

The overal HH nutrient intake are then divided by the HH eating score. The data collected by the Kenya CRSP on HH intake only includes dishes prepared and eaten in the HH and does not include snacks which may contribute significant amounts of nutrients to the HH. Although this is a crude method, we are quite satisfied that this will give us a good idea of the range of energy intake among the households and can serve much better as a stratifier than SES used as an intake proxy in the Kenya project. Household measures and

volumes are being hand calculated in grams of raw ingredients (edible portions) in the field and then will be submitted to computer programs for energy content of foods using existing FAO and USDA tables. Although these may not accurately reflect the foods eaten, these are all that exist. Extensive recipes have been collected. There has been a pilot weighment of food stuffs of various sizes obtained in the market, and a food catalogue has been started.

The anthropometry is now being done within the household rather than at measuring stations. Arm circumference, weight of all children 5 years and under, and weight and height and arm circumference of mothers is being obtained. Six teams of census workers and supervisors, and six teams of food intake staff and their supervisors are now at work unde. the direction of Drs. Cattle, Carter, Janson and the senior field supervisor from CBS. Data entry from the preliminary survey will be done at the University of Nairobi at the computer center, and simple analyses provided there. A duplicate set of data are being sent to UCLA and will be processed and analyzed in California as well.

Economic Indicator

The number of structures in the household compound and the number of structures having iron corrugated roofs versus thatch are being counted. It was felt by the Kenya investigators that more SES data collection at the first home visit would not be welcomed and that unreliable answers might be forthcoming.

PROPOSED METHOD OF HOUSEHOLD SELECTION FOR DEFINITIVE STUDY

Criteria

Household Composition

1) Children 0-2 years, 6-10 years; mated pair with the mother under 35 years.

2) If no children, then an adult mated pair with mother under 35 years is required. This includes those households with and without deaths in children under 5 years.

3) Presence of the father as a regular household member and usually not away from home.

Disqualifiers

1) Polygamous households.

2) Presence of 2 or more severely malnourished children; children whose weight for age is $\leq$60% NCHS standard.

3) A mother whose weight for height is less than 75% of standard.

4) A father away from home greater than three months at a time.

5) A house completely non-cooperative or inaccessible.

Approaches

1) Preliminary survey data will be used to determine potentially eligible households.

2) Calculation of household intake score for each eligible household will be made, and households will be ranked by intake scores and list ranked intake scores, household number and composition.

3) Cross tabulation on intake score versus household composition will be performed.

4) Look at proportions in target households; proportion of households with 0-3 years, 6-10 years.

5) Divide the ranked households into three groups: low, medium, and high ranges of food intake. Divide each group into HH with 0-3, 6-10 year olds.

6) Choose randomly in each subgroup the number of HH to give the same proportion of 0-3 and 6-10 year olds.

An alternate method is to decide beforehand on 3 levels of energy intake

based on HH intake scores* - severely deficient, mild-moderate deficient, and "adequate" energy intake. In the final sample include:

- all in the severely deficient group (predict 3-5%)
- all in the mild-moderately deficient group (predict 25-30%)
- no more than a subsample of 25% from the "adequate" group (predict total group will be 65-70% of all studied).

Match the households in the "adequate" group with the age composition of the households at least in the mild-moderately deficient group. It would be useful to cluster the sample for convenience and to control for other variables.

PERSONNEL AND TRAINING

Field Personnel

The Kenyan field staff, at present, numbers 45 field enumerators, 10 supervisors, a senior field supervisor from CBS, and the part-time involvement of a senior scientist, Dr. A.A. Janson. The enumerators are, for the most part, women between 20 and 30 years old.

It has taken about 4 months of training and retraining for the group to be able to carry out the preliminary survey, obtaining census information, limited illness information, anthropometry, and simple household food intake. A group of ten are involved in a pilot on activity observations. The supervisory group are mainly male with A level (junior college) education. A second CBS field supervisor will be secunded to the project. The CBS supervisors are experienced in nutritional surveys and will be helpful in the training of the supervisory group.

In terms of the enumerators, they have been trained to do height, length and weight using Salter scales, adult spring scales, and arm circumference. The group did very well on the standardization tests, requiring little in the way

of retraining for these measures. Dr. Jansen, from the Department of Community Health, comes into the field on a regular basis, two to three days a week, to help with the general field work along with Drs. Cattle and Carter. There are 6 teams of two that collect census and illness information and 6 teams of two that collect food intake information. Every 4 workers are supervised by one supervisor. The other Nairobi Medical School senior scientists come into the field periodically. Mr. Mekke, a post graduate student, will work full-time on the activity work performance pilot representing Professor Thairu in the field.

Recruitment will shortly take place for 25 enumerators to start their training for the final study since training takes so long, and to enable the pilot and preliminary study to go on simultaneously. The preliminary survey serves as excellent training ground.

Staff recruited from the University of California, Susan Weinberg and Susan Roberts, are both arriving in April. They will help primarily with the training for food intake and the pilot weighment versus recall method. Mrs. Roberts will also assist with lactation pilot studies. Now that Dr. Eric Carter has been officially designated as the Field Director, both by the Kenya and American group, he will need to be freed up for this overall management function, and Dr. Cattle must be freed up more to enable her to do ethnography studies.

Nutrition CRSP Retreat, Nyeri

Both Professor James Kagia and Dr. Neumann felt it essential to hold an in depth meeting for the senior research team. Nyeri, which is about two hours away from Nairobi, removed from the University and from the Embu field site, was chosen and Dr. Cattle acted as the coordinator. The main purpose (see the letter and agenda) was to have each of the senior Kenya investigators fully consider their own areas of interest and involvement, think out all the

steps, contents, methodology, training, piloting and core studies, and become completely familiar with the core requirements of their own sections as well as those of the others. They also were to indicate any other research non-core interest they might have and to become acquainted with the overall project. Close attention was given also to administrative, management, fiscal matters, as well as ethical considerations and service benefits of the research to the study population. Training and staff requirement was also covered quite thoroughly. The agenda and some of the available minutes are enclosed. The meeting was judged by all as an unqualified success.

As for the non-core areas, this is not extensive. The following are non-core areas: chronic adult morbidity will be identified; studies on the behavior of diarrheal disease due to rotovirus under different levels of energy intake; work capacity and activity will be studied among adolescents; activity observations will be made as well as recall. There may be some work on hepatitis and measles. All non-core studies will have to await final approval as noted by ME.

Logistic planning received detailed attention. Based on the core requirements of January 1983 (see "logistic" charts), enumerator requirements as well as the household intrusion load in terms of number of days of study per month were considered. It was projected that a field staff of 90 would be required as well as 11-13 days per month for household visits to obtain all that was needed for the core measures. Because the households in the study area are far flung and households are not located in villages, it was felt that three study sublocations would each require a sublocation office. The maximum number of households that could be covered per day are from 4 to 5. Also, it was felt that the enumerators could not be too multi-purpose as their educational backgrounds were quite limited, and one would not want

to overload them. However, for morbidity collection and anthropometry, we will try to obtain services of nursing school graduates, or community nurses. The personnel needs have been spelled out (see list).

Dr. Eric Carter was chosen as the field director for the next year. It is hoped that an assistant field director, a Kenyan social scientist, will work with him, and after 1 to 2 years, the Kenyan would then become the field director. Professors Thairu and Bwibo have been designated co-directors, Prof. Kagia the project director (PI) in Kenya, and Dr. Neumann the UC project director (PI). Dr. Carter will report to Professor Kagia as well as to Dr. Neumann.

DATA, COMPUTER SITUATION

Please refer to the trip report, Mrs. Anne Coulson, (not appended). E. Njeru is to be trained for the supervision of data entry, data editing and simple analyses, using the University of Nairobi computer center. Negotiations to use the Government of Kenya IBM computer, a much larger capacity computer, for more detailed and complex analyses is under way. There will be a triplicate flow of data: one set to the University of Nairobi, one set to the University of California, one set stays in the field.

The Apple Microcomputer will be used by the three projects in Mexico, Egypt and Kenya. The Apple computer will be used primarily as a field research management and logistic tool to act as a "tickler file" indicating which households and individuals are due for which studies, and who have missed tests and observations.

The preliminary view of logistics is that the three sublocations will need sublocation offices to be used for cognitive testing, clinical and other examinations, and to serve as a field enumerator headquarter and supervisor office. The staff will report, check-in and receive day to day instruc-

tions here. Kararumo, the rural health training center, has furnished the Nutrition CRSP with two large rooms, a waiting area, and a house which can accomodate several people. The rooms will serve as the work performance laboratories, as well as those for blood drawing and physical examinations.

COMMUNICATIONS

A medium range radio set-up will be installed with the base station at the Emub office and receivers and senders in the vehicles or hand carried by the supervisors which can be placed in the homes with no phones when the vehicles are not in use. Dr. Carter is obtaining a radio license and the Carters have already obtained a telephone which is on the standard dialing system. One can dial the USA directly!

OFFICE/LABORATORIES

In Nairobi, on the grounds of the Medical School, there is an old but solid structure in which four offices and a bathroom will be renovated, and will house the administrative, secretarial staff and any of the statistical clerk staff, and will serve as the University of Nairobi project headquarters. This will cost about $4000.

In Embu, a new building for laboratory, dormitory, and office space is now being built on the grounds of the Embu Provincial Hospital. This has the advantage of being a secure location with water and electricity. The building will be donated to the hospital at the end of the project. The building will have an office for the administrative staff and field director. The laboratory will enable such routine work as hematology, parasitology, to go on plus the processing of blood, urine, and other laboratory work. There will be a freezer and a refrigerator, a base radio and also the microcomputer will be kept here. This is being built at the cost of $14,000. The building

will also have 4 dormitory spaces which can house staff coming from the University of Nairobi, and food can be obtained close-by. This will greatly cut down on per diem field expenses. In terms of living quarters, Dr. Carter, Dr. Cattle, and Susan Weinberg each have their own residences. There is still the possibility of renting, very inexpensively, a large house at Kyeni School or Hospital for other temporary or permanent staff.

TRANSPORT

A school bus belonging to the Kyeni Girls' School is being used on a rental basis to transport the 45 field workers daily to various work sites. The project now owns two 4-wheel-drives, one used from UNICEF, and one station wagon for commuting primarily to Nairobi. Because the school bus is available during school holidays and during school only from time to time, we are badly in need of a large capacity van, and this is being requested. There is a 15-passenger Nissan Microbus (right-hand drive) available in Kenya, duty-free, and quickly obtainable. This will help with the transporting of study subjects as well as staff in this far flung study area.

TIME TABLES

See the Gantt chart.

TRAVEL - UPCOMING

Anticipated travel in the next six months:

Dr. Emmy Werner, Psychologist - training and pilot testing of cognitive studies.

Dr. E. Stiehm, Immunologist - to work with Dr. Bowry in the pilot testing and to check out the Immunology methodology.

Dr. Gerald Gardner, Kinesiologist - to set up the final phase for the work performance studies.

Dr. Charlotte Neumann to return during the summer - overall direction of the project and launching of the definitive study, picking of study households.

Mrs. Anne Coulson - to set up the data management flow techniques prior to the final study.

Dr. Robin Gorsky - for general overally direction, implementation of the final study and finalisation of the activity observation studies.

Dr. Arifi, Statistician - currently on sabbatical in Europe and may visit the project site and consult with the Kenyan investigators.

Dr. James Cherry - to check out the possibility of rotovirus and other infectious disease work and morbidity.

Drs. Calloway and Balderston are urged to visit the project site first-hand so they have a much clearer understanding of the possibilities and the problems of working in the Kenya Project.

Professor Thairu is anticipating a two-month study trip to the United States to work with Dr. Gardner in work performance and neurophysiology.

FINAL STUDY DATE

It is anticipated that the definitive study will start in September.

Duty-free Importation

A long list of possible equipment and supplies has been submitted to the Ministry of Finance to obtain advance clearance for these items so they may be brought in duty-free without any delays. The first batch has already been cleared. Clearance is also now being obtained from US AID.

RELATIONSHIPS WITH THE USAID KENYA MISSION

Dr. A. Rose Britanek and Mr. Chuck Mantione spent a day at the project site in Embu District visiting the households with the field team and observing their work in order to have a better understanding of the scope of the project. Dr. Britanek has arranged for the block clearance of the people anticipated

coming in the next six months. The American Ambassador is not happy about having so many consultants coming at one time, but Dr. Britanek has explained the necessity for this and anticipates no problems with future clearances. Mr. Wasonga of the Ministry of Finance and Economic Planning met with the Project to understand what is going on and see how the data might be used. He is interested in short term training at the University of California for some of his staff in the School of Public Health.

The principal investigators and A. Coulson met several times with the Director of the Central Bureau of Statistics (CBS). He assigned two of his field staff to the Project for the field phase and also shared some very valuable background nutritional and economic data. Mr. Agunda would welcome any of the Project findings.

A committee on post graduate training was set up chaired by Prof. Bwibo. Other members are Prof. Thairu, and Drs. S. Kinote and Eric Carter. They are to review the applications for master or doctoral level training within the project site and set up selection criteria. First priority is to be given only to those students enrolled at the University of Nairobi in a masters or doctoral program, and University of California (UCLA, UC/Berkeley, or UC/Davis) for graduate field work within the project area. Students from outside the universities will probably not be given permission to carry out research in these areas.

An ethics committe met under Dr. S. Kinote and the benefits and degree of intervention has been defined.

APPENDIX

KENYA PROJECT GANTT CHART

MONTHS / WEEKS	APRIL 1 2 3 4	MAY 1 2 3 4	JUNE 1 2 3 4	JULY 1 2 3 4	AUGUST 1 2 3 4	SEPTEMBER 1 2 3 4
PRELIMINARY SURVEY (PS)	250 hh	250 hh	100 hh			
FIELD STAFF (NEW)						
- ADVERTISE	—					
- RECRUIT	—					
- TRAIN	—	—				
- INTEGRATE INTO PS		—				
SENIOR/ADMIN. STAFF						
- ADVERTISE						
- RECRUIT						
- INTEGRATE INTO CRSP						
PILOT TESTS						
- Food Intake			—	—		
- Activity	—		—	—		
- Work			—	—		
- Morbidity			—	—		
- Reproduction			—	—		
- Anthropometry			—	—		
- Cognitive			—	—		
- Lab. Work			—	—		
ANALYSIS - PS	—	—	—	—	—	
ANALYSIS - PIOTS			—	—		
HH SELECTION				—	—	
HH RECRUITMENTS					—	
MAIN STUDY						—

SCHEDULE OF PROPOSED MEASUREMENTS:

Weekly: (regular)

EI Morbidity HH visit: recall and observation for target individuals.

EI Morbidity HH visit: current illness subroutine-target individuals ill with key sicknesses.

EI Morbidity HH visit: anthropometry on target individuals ill with key sicknesses.

Weekly: (special)

EI_A Newborns' anthropometry - 1st week of life.

EI_A Breastmilk samples - initial 72 hours and 8th day.

EV Social Performance - subroutine on hh "crisis" (coping strategies)

Monthly:

1. Reproduction Question - lead females.
2. Anthropometry - all targets.
3. Food Intake - all targets, all households.
4. SES - lead males, lead females.
5. Activity Frequency Recalls (covering 1 week) - target individuals plus teens (not 0-2).

Every 3 months:

1. Anthropometry - Height of school-age children (7-10).
2. Activity Observations (continuous) - all targets (not 0-2).
3. Cognitive - young children (0-2).
4. Work (RMR-VO_2 submax - finger prick - medical exam) - target individuals (not 0-2) plus teens.
5. Breastmilk samples - all target lactating females.
6. Breastmilk volume - all babies born during study.
7. Socail Performance - lead males, lead females.
8. Activity Observations (discontinuous) - 7-10 (once per school term).

SCHEDULE OF PROPOSED MEASUREMENTS: (continued)

Every 6 Months

1. Blood drawing - 0-2, 7-10.
2. Saliva - 0-2, 7-10
3. Stool (parasites) - 0-2, 7-10.
4. Urine (parasites, glucose) - 7-10.
5. General medical exam - 0-2, 7-10.

Yearly

1. Cognitive tests - target adults, 7-10.
2. Blood drawing - lead males, lead females.
3. Stool and urine - lead males, lead females.
4. General medical exam - lead males, lead females.
5. Ethnographic - initial and update - hhs.

(OR ONCE ONLY)

6. Anthropometry - height - lead males, lead females.
7. General medical hisotry - all targets at entry.

(OTHER)

1. Withdrawal data - as appropriate.

ENUMERATORS:

Enumerators I:	Morbidity, Reporduction, Anthropometry 15 enumerators + 3 supervisors
Enumerators I_A:	Birthweights, Milk samples, other measurements 3 enumerators + 1 supervisor
Enumerators I_B:	Breatmilk Volumes 6 enumerators + 2 supervisors
Enumerators II:	Food Intake 30 enumerators + 6 supervisors
Enumerators III:	Cognitive 6 enumerators + 1 supervisor
Enumerators IV:	Work/Activity (Cog. obs. - school activity/social performance - HH ratings) 16 enumerators + 4 supervisors
Enumerators V:	SES/Census/Social Performance/Ecol. 15 enumerators + 3 supervisors

(Est.) Total field enumerators: 91

(Est.) Total field supervisors:

EXAMPLE HOUSEHOLD (MONTHS)

1	2	3	4	5	6	7	8	9	10	11	12	13
Morbidity Repro? Anthro FI SES Act Freq Ht Act Abs Cog 0-2 Work BM sam BM vol Soc Perf Act Obs-Sch. Gen med history Anthro-ht adults Cog-adults 7-10 Ethnogrphc	Morbidity Repro? Anthro FI SES Act Freq	Morbidity Repro? Anthro FI SES Act Freq	Morbidity Repro? Anthro FI SES Act Freq Ht Act Obs Cog 0-2 Work BM sam BM vol Soc Perf Act Obs - Sch.	Morbidity Repro? Anthro FI SES Act Freq	Morb Repro? Anthro FI SES Act Freq Blood Exam 0-2,7-10	Morb Repro? Anthro FI SES Act Freq Ht Act Obs Cog 0-2 Work BM sam BM vol Soc Perf Act Obs - Sch.	Morb Repro? Anthro FI SES Act Freq	Morb Repro? Anthro FI SES Act Freq	Morb Repro? Anthro FI SES Act Freq Ht Act Obs Cog 0-2 Work BM sam BM vol Soc Perf Act Obs - Sch.	Morb Repro? Anthro FI SES Act Freq	Morb Repro? Anthro FI SES Act Freq Blood Exam 0-2,7-10, adults Anthro-ht adults Cog-adults 7-10 Ethnogrphc	Morb Repro? Anthro FI SES Act Freq Ht Act Obs Cog 0-2 Work BM sam BM vol Soc Perf Act Obs - Sch.

EXAMPLE HOUSEHOLD (DAYS)

1	2	3	4	5	6	7	8	9	10	11	12	13
Morbidity Anthropm Repro.	FI	FI	SES Act Freq FI				Ht-School Age Act Obs	Act Obs	Cogntv	Work	Breast milk sample Social Perf	Breast milk volume

NUTRITION CRSP - KENYA PROJECT

PERSONNEL NEEDS

KERI RETREAT

GREEN HILLS HOTEL, March 16 - 19, 1983

March 19, 1983

PERSONNEL FOR THE NUTRITION CRSP - KENYA PROJECT

PRESENTER: Prof. Thairu SECRETARY: Prof. Thairu

The following are the break down of the posts which are needed in CRSP KENYA. Some have been filled while others are still vacant.

A. SCIENTISTS

The following Divisions within CRSP need to appoint permanent scientists or trainee scientists who will be located in Embu.

1. Community Health (one) VACANT
2. Paediatrics (one doctor & one child psychologist) VACANT

NB The other divisions i.e Nutrition & Physiology already have identified their scientists.

B. ADMINISTRATION OFFICE NAIROBI

1. Computer Person (one) FILLED
2. Secretary (one) VACANT
3. Accounts Clerk (one) VACANT
4. Messenger/Cleaner (one) VACANT

C. ADMINISTRATION OFFICE EMBU

1. Accountant (one) VACANT
2. Administrator (one) VACANT
3. Senior Field Supervisors (ex Central Bureau of Statistics (two) FILLED

D. FIELD IN EMBU

1. Co-ordinator (either Sociologist or Doctor with MPH) (one) VACANT
2. Medical Doctor from U.S.A. (one) VACANT
3. Senior Technician Medical (one) VACANT
4. Technician Food Technology (one) VACANT

5. Technician Physiology (one) VACANT...

6. Senior Laboratory Analyst for Foods etc located at MRC (one) VACANT

7. Physician (Kenyan) (one) VACANT

8. Community Nurses 12(twelve) VACANT

9. Registered Nurse 1(one) VACANT

10. Enumerators 91 PARTIALLY VACANT

11. Supervisors 18 PARTIALLY VACANT

E. In addition to these there are at present the investigators from University of California and University of Nairobi as well as the enumerators and their supervisors and the one secretary and driver.

Dr. S. Kinote 3/19/83

MEETING MINUTES

Ethical Questions Related to Intervention:

Questions:

1. Do we need to intervene?
2. Will it change results?
3. Does CRSP take over health services of area?
4. Are results of tests given to the subjects?
5. Is there an intervention phase?

Answers:

1. M.D. obligated to treat and/or refer.

2. How much does intervention interfere? We will have affect on subjects by being there. Special interventions such as immunizations might have too great an effect on the subjects. Immunization should be encouraged.

What to intervene on: Imunizable disease.

Immunizations: Refer to Health Center for immunization. Project should facilitate cold chain and availability of vaccine.

All life-threatening conditions:

- contact with appropriate facility and immediate emergency treatment, and then refer to usual health care facility; will supply transport.

Minor illness: Keep simple medications for minor treatment, first aid kits for nurses, etc. and simple treatment.

3. Does project take over health services for the area? Answer is no re: Dr. Oyoo, Provincial Medical Officer.

4. Results of blood tests should be given to the patients and referral for treatment of conditions such as anemia and hookworm.

5. Intervention component, is it part of the program? During the third year,

depending on what is found, these could be an intervention phase.

Anemia - Most of the anemia is iron deficiency. Below 5-8 gram % advise about diet and suggest therapy. Below 5 grams - refer to hospital for treatment.

NUTRITION CRSP—KENYA PROJECT
Community Health/Faculty of Medicine
P.O. Box 30588, Nairobi
University of California, Los Angeles, U.S.A.
Field Address: P.O. Box 1002, Embu, Kenya

Functional Effects of Mild/Moderate Malnutrition
Research Permit No. OP/13/001/12C78/(9)

March 1, 1983.

(G. Neumann

Dear

The Kenya Nutrition CRSP Project will be holding a retreat from the evening of March 16 to midafternoon of March 19 at Greenhills Hotel, Nyeri.

The principal investigators feel that it is essential for all senior investigators to meet together to thoroughly review the project in terms of the overall core* and items of each functional areas, food intake, nutrional status and socioeconomic status (not only in terms of an overview of the core project but also in terms of each functional area, food intake, nutritional status and socioeconomic status). This important meeting is to help all participants gain a common understanding of the Nutrition CRSP.

To accomplish this, each senior investigator is being asked to prepare a short written paper (conserning their understanding of the core requirements of their area of interest). To facilitate the preparation of this paper the appropriate summary core section from the management entity will reach you shortly. Each of your papers will then be duplicated and distributed to all participants during the first evening of the retreat. This will allow the senior investigators to become aquainted with the contents of each other's functional area prior to your oral presentation and discussion on the two following days. The CRSP Project driver will pick up your papers from your University Offices on Friday morning March 11th.

The senior investigators responsible for the following core areas are:

Food Intake & Nutritional Status	Dr. Kinoti Dr. Carter (discussant)
Disease:	
Morbidity	Prof. Bwibo
Immunology	Prof. Bowry Dr. Neumann (discussant)

* Core= that data required by the Kenya, Mexico and Egypt projects by the Management Entity, University of California, Berkeley.

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Research Permit No. OP/13/001/12C78/19

March 1, 1983.

Reproduction	Dr. Jansen
Cognition/Pyschologic Function	Dr. Meme
Work Performance	Prof. Thairu
Activity-Time Allocation	Dr. Cattle
Core Summary	Prof. Kagia

Each investigator will be scheduled for one hour; a half hour presentation followed by a half hour discussion. The presentation should include a brief description of the functional area, the research questions, method of data collection, personnel and equipment needs, frequency of data collection and target subjects etc.

The retreat will be held at the Greenhills Hotel, Nyeri from Wednesday March 16, to Saturday March 19. Participants are requested to arrive Wednesday evening for dinner (7.00pm) and should expect to remain until Saturday 3.00pm. Transportation will be provided to and from Nairobi.

We look forward to this valuable meeting.

Yours sincerely,

Dorothy J. Cattle.
(Retreat Coordinator for Prof. Kagia & Prof. Neumann, Principal Investigators)

NUTRITION CRSP—KENYA PROJECT
Community Health Faculty, of Medicine
P.O. Box 30588, Nairobi
University of California, Los Angeles, U.S.A.
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Nutritional Effects of Mild/Moderate Malnutrition
Research Permit No. OP/13/001/12/C78/19

NUTRITION CRSP - KENYA PROJECT March 9, 1983.

AGENDA

March 16 - 19 1983 Green Hills Hotel - Nyeri

March 16, Wednesday

4.00 to 6.00pm	Arrival, check-in	
7.30 to 8.30pm	Dinner	

Session Begins

8.30 to 9.30 A.M.	Welcome	Prof. Karia
	Current Status and Overview of CRSP Projects	Prof. Neumann

March 17, Thursday - Core Studies

9.00 to 9.30am	Introduction and Definition of core studies and Data Collection	Prof. Neumann
9.30 to 10.30am	Food Intake and Nutritional Status	Dr. Kinoti Dr. Carter (discussant)
10.30 to 11.00am	Tea/Coffee break	
11.00 to 12.30pm	Disease	
11.00 to 11.45am	Morbidity	Prof. Bwibo
11.45 to 12.30pm	Immunology	Prof. Bowry Prof. Neumann (discussant)
12.30 to 2.00pm	Lunch	
2.00 to 3.00pm	Reproduction	Dr. Jansen Prof. Bwibo (discussant)
3.[illegible]	Growth	Dr. Mama
4.00 to 4.30pm	Tea break	

4.30 to 6.00pm	Work/Activity	
4.30 to 5.15pm	Work Performance	Prof. Thairu Dr. Carter (discussant)
5.15 to 6.00pm	Activity	Dr. Cattle
6.00 to 6.30pm	Socioeconomic	Prof. Kagia Dr. Cattle (discussant)
6.30 to 7.30pm	Dinner	
8.30 to 9.30pm	Summary of core	Prof. Kagia

Friday, March 18 - Pilot Studies

9.00 to 9.30am	Objectives of Pilot Studies and Timing	Prof. Neumann
9.30 to 10.30am	Food Intake Anthropometry	Dr. Carter
10.30 to 11.00am	Coffee/Tea Break	
11.00 to 12.30pm	Disease	
11.00 to 11.45am	Morbidity	Prof. Bwibo Prof. Neumann
11.45 to 12.30pm	Immunology	Prof. Bowry
12.30 to 2.00pm	Lunch	
2.00 to 3.00pm	Pregnancy	Dr. Jansen
3.00 to 4.00pm	Cognition	Dr. Meme
4.00 to 4.30pm	Tea Break	
4.30 to 6.00pm	Work/Activity	
	Work Performance	Prof. Thairu
	Activity	Dr. Cattle
6.30 to 8.30pm	Dinner	
8.30 to 9.30pm	Review Preliminary Survey & Selection of Final Study Households	

Best Available Document

Saturday, March 12- Administrative Session

9.00 to 10.00am	Organization Lines of Authority Decision Making Committees	Prof. Kagia (Chairman)
	Personnel Needs Field Laboratory Building, remodelling	Dr. Carter
11.00 to 12.30pm	Field Logistics	
12.30 to 1.30pm	Lunch	
1.30 to 2.30pm	Publication	
2.30 to 3.00pm	Training	
3.00pm	Adjourn	
3.00 to 4.00pm	Executive Session if needed Kagia, Bwibo, Thairu, Neumann & Carter.	

MEXICO PROJECT: Sixth Quarterly Report
February, 1983

Activities in Mexico

This has been an interim period between extensive pilot testing and inauguration of Phase II, with emphasis on refining research design in Mexico and in the overall CRSP, further pre-testing of specific research tools and further census activities. Dr. Allen was in residence in Mexico through January.

L. Allen, G and P. Pelto, T. Field and G. Finley spent time in Mexico City and Solis in January, working with INN staff to develop final methodologies for each of the project's functional areas. Methodologies developed during these discussions were to be presented at the January External Evaluation Panel (EEP) Meetings in Berkeley. Strategies developed included a plan for pilot testing and personnel training for the period January to June, 1983.

Other noteworthy events in Mexico City and Solis included the following:

1. A re-census of the 4 preliminary study communities is undertaken and completed by the end of February.
2. A data tape sent from R. Tembi to P. Goldfedder arrives at INN late in January. Pesaj & Co. were able to read this without problem, indicating good communication potential between data analysis operations at UCONN and INN.
3. Peter Guarnaccia (new UCONN field research manager) and wife Linda arrived by pick-up truck in Solis (early January) commencing an 8-month field residence. Temporary housing was arranged at the exhacienda.

4. Funds were transferred from UCONN to INN to cover the period January through March (February 11).
5. Todd Walker, research associate working with Tiffany Field on infant and toddler cognitive studies, arrived in Solis with wife and child, commencing residence in field to train research assistants and refine cognitive development instruments. Prior to Mr. Walker's arrival, INN hired a research assistant for this area.
6. A plan for new pilot studies in the Solis Valley was developed.

Activities in Storrs, (also Berkeley and Washington)

Principal activities in Storrs included verification of data on tapes sent from INN, preparation of a tape of Mexico data for Berkeley and further analysis of preliminary 4 community and San Francisco pilot study data. This was also a heavy administrative period (budget period revised, re-evaluation of overall project research design, contract revisions with INN).

G. Pelto was in residence at Storrs throughout this quarter. Additional activities of note during this period were:

1. R. Tembi participated in CRSP Data Manager's Meeting in Berkeley (Dec. 13-17).
2. A revised preliminary and pilot study report was prepared and dispatched to Berkeley for the EEP meetings in mid-January.
3. Charlene Pepin joined CRSP operations at Storrs as Project Secretary (Feb. 4).
4. L. Allen participated in EEP Meetings in Berkeley (Jan. 17-19) and returned the following weekend for further work on research design.

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5. Prepared variable lists, models, hypotheses to be tested, and general description of methods of data collection for areas of activity and social performance.
6. Sandy Van Gelder represented UCONN in Washington, D.C. at CRSP administrative meeting addressing cost-sharing and other project operations (Feb. 15).
7. Plans for acquisition of computer equipment were finalized.

Problems

Difficulties in acquisition of equipment for use in the field (to be titled to INN) continued to plague the project. The delay has caused serious delays in meeting research schedules in Solis, with ramifications throughout the project. In addition, confusion about cost-share requirements for equipment to be transferred to INN, resulting from shift in funds to the UCONN budget for purchase in the U.S. (a function of current economic strategies in Mexico), and AID apparent persistence in refusing to waive cost-share requirements on this equipment, continued to be troubling.

Objectives for Upcoming Quarter

Projected activities for the next quarter in Mexico include:

1. Hiring and training Mexican research assistants in all areas.
2. Commencement of a new pilot study on 50 families, selected from the probably final sample, including the following elements:
   a. Measure of food intake. Comparison of 24-hour recall and short-term recall methods (weighed portion method).
   b. Test of new method for measuring tortilla intake.
   c. Analysis of samples of dietary items for nutrient content.
   d. Anthropometry
   e. Activity measurement: compare consistency of 1, 3, and 7 day recalls.

f. Test heart rate monitors for measurements during activity during fixed tasks.

g. Calibration of heart rate monitors in work capacity tests using treadmill in Mexico City.

h. Test questionnaires on SES, productivity, "modern" and "educational" attitudes and orientation.

i. Test methodology for cognitive studies with children in Solis clinic and other Solis Valley health centers.

j. Renovate laboratory space, set up project laboratory in Solis.

3. Develop software for data entry in the field.

4. Test morbidity data collection methodology using trained community workers in 8 communities.

Activities projected for Storrs include:

1. Purchase and installation of computer equipment.

2. Purchase and delivery of equipment for the project and INN:Mexico.

3. Further analysis of previous pilot study data.

4. Development of program for field entry of dietary data.