TITLE II PL 480 EVALUATION - PHASE I :
ASSESSMENT OF DATA QUALITY AND AVAILABLITY

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EXECUTIVE SUMMARY

This document is the final report on Phase I of a two phase evaluation of PL 480 Title II in India. The purpose of Phase I was to assess the quality and availability of data in Sri Lanka for (a) performing an evaluation of nutritional impact resulting from the program, (b) performing a cost-effectiveness analysis of the program, (c) making recommendations to improve the program and (d) making recommendations on the feasibility of establishing a monitoring and reporting system as part of the program. The effort in Phase I consisted of a three-day field trip to observe food distribution in both schools and MCH clinics, two days of visits to centers near Colombo, a review of pertinent literature on the PL 480 Title II program in Sri Lanka, and a series of meetings with government officials, USAID officials, and persons from CARE.

The Sri Lanka PL 480 Title II program is distinctive for its distribution of pre-processed foods -- the weaning food Thriposha in its maternal child health (MCH) program and ready-to-eat biscuits in its School Feeding program. Anthropometic data on school children is not available for measuring nutritional impact gathered as part of the food distribution program. Nor, given the size of the ration and the cultural inducement for intra-familial sharing, would one expect to detect measurable nutritional impact from anthropometric measurements. Preschool children receiving Thriposha are weighed as a criterion for getting the food product. Adequate records are kept in some clinics on the child histories. However, a special data gathering effort is required to retrieve the data from the individual records stored at the clinics, and effort made especially difficult because elements of the data can be found only on cards kept by the mother.

In addition to the anthropometric data found in MCH clinics, several cross-sectional surveys designed to assess the overall quality of the distribution system in the MCH program are now being analyzed -- one by the National Institute of Business Management and one by CARE. When combined with an impact assessment based on a few clinics, these studies may offer insight as to the overall nutritional impact of the MCH program.

Most Sri Lankans, USAID officials in Sri Lanka and CARE officials view PL 480 Title II from a much broader perspective than one limited to a consideration of nutritional impact. PL 480 Title II has health objectives met by inducing mothers into the health system as well as by improving nutrition. It has educational objectives met by inducing attendance and allowing students to study while not being hungry. It has general economic objectives by being part of the Sri Lanka income redistribution program. Thus, it is essential to consider cost-effectiveness on a much broader spectrum of issues than nutritional impact as measured by anthropometrics.

A preliminary scope of work is developed for Phase II calling for a data gathering and analysis of nutritional impact data from MCH clinics to facilitate consideration of nutritional impact in the cost-effectiveness review. CARE has agreed to supervise a team of University students in the data gathering activity. It also calls for the development of a framework for doing cost-effectiveness that embraces the broad perspective shared in Sri Lanka regarding PL 480 Title II. This analysis should partition costs into long and short run costs and should consider the fact that different governments and agencies within governments bear different costs and may have different perspectives. Finally, it calls for a workshop to review (a) the findings of the nutritional impact study, (b) the findings of the other studies of supplementary feeding in Sri Lanka and, (c) an attempt to carry out the cost effectiveness study of the larger program.

In addition to a report making recommendations with regard to PL 480 Title II, it is hoped that this workshop will consider the need for establishing a better monitoring and reporting system to facilitate continuous reassessment of supplementary feeding in Sri Lanka.

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INTRODUCTION - PURPOSE OF PRESENT ASSESSMENT

For the past three decades, the United States Government has supported the wide spread distribution of food commodities in the developing world. Originally, the distributed commodities were drawn from American surplus agricultural production and were though of as a relatively inexpensive vehicle for providing assistance to the people in need. Recently, the surplus has diminished and the cost of the food commodities has risen. Transportation costs for shipping the food have increased dramatically as have the costs of administering the food distribution program. Serious questions have been raised concerning the benefit derived from food supplementation, not only by politicians seeking to reduce government expenditures but also by nutritionists who have observed little change in the nutritional well being of the recipients of food donations. In response to these questions, the United States Government is seeking evidence of the impact of supplementary feeding programs through a series of quanitative assessments of existing programs throughout the world. This report addresses the design of one such assessment, and evaluation of the PL 480 Title II program in Sri Lanka.

The PL 480 Title II program in Sri Lanka has two major components: a School Feeding (SF) program and a Maternal Child Health (MCH) program. (A third component has begun just recently - a program to test the marketability of the weaning food used in the MCH program called Thriposha.) The United States Voluntary Agency with primary responsibility for all food distribution is the Cooperative for American Relief Everywhere (CARE). The Sri Lankan program has several characteristics which distinguish it from programs in operation in other countries. In both programs, SF and MCH, the distributed food is preprocessed to facilitate consumption by the beneficiaries without additional special preparation. School children in grades I to 5 are given a ration of small biscuits for consumption on-site in the schools. Pregnant and lactating mothers as well as infants and pre-schoolers are given Thriposha, a pre-cooked blend of donated and locally provided foods which can be consumed in water or a variety of other food preparations not requiring cooking. The biscuits are produced by two

private Sri Lankan bakeries while the Thriposha is manufactured in a government owned plant managed by the Ceylon Tobacco Company and CARE. A second distinctive characteristic of the feeding program in Sri Lanka is a commitment to target MCH feeding to mothers and children determined to be at risk using nutritional criteria. Table I describes the overall PL 480 Title II program in greater detail.

Any effort to assess the impact of a nutrition intervention should deal with a variety of questions. A list of such questions can fill pages (such a list was generated as part of the evaluation scope guidance developed by USAID/DP/E). With regard to the program in Sri Lanka, we choose to identify only six:-

(1) Can the current programs, SF and MCH, be shown to cause measurable improvement in the nutritional well being of their beneficiaries?

(2) Given the nature of the pre-cooked foods, what is the appropriate ration size needed to induce nutritional improvement?

(3) What complementary services should be provided along with the food supplements to facilitate nutritional improvement (for example, diarrheal disease control, nutrition education, better water, etc.)?

(4) What is the appropriate method of targeting, if any?

(5) What level of intensity of application of services is needed to induce nutritional change (what is the number and mix of people needed to successfully administer an MCH clinic)?

(6) What is the relationship of the PL 480 Title II program to other sectors of the local economy and to the overall policies of the host government?

The first question, of course, is fundamental in any nutrition program. Questions 2 through 5 concern the design of a program -- each question represents a test of a basic assumption in program definition. The final question is necessary to place the PL 480 Title II program in its larger context. In Sri Lanka, especially, food supplementation programs must be viewed in the perspective of government commitment to equity and growth.

TABLE I - PL 480 TITLE II CARE PROGRAM IN SRI LANKA

	PROGRAM TYPE	PROGRAM DESCRIPTION	LOGISTICAL DELIVERY SYSTEM	APPROXIMATE NUMBER OF BENEFICIARIES DURING DEC. 1980	TYPE OF TARGETING
Ministry of Education	School Feeding-Biscuits	50 gms of locally manufactured biscuits distributed midmorning at schools to all children in grade 1 thru 5, 5 days per week during 180 days school year. (during next year the portion size is to be raised to 60 gms)	Distributed by rail and/or truck through the District Director of Education to Ministry of Food Warehouses. Redistributed to individual schools on a monthly schedule by private truck operators	900,000	Targeted to schools showing high malnourishment during 1973 survey
Ministry of Health - Thriposha	Infant & Preschool children - clinic	1500 gms of locally mfg. weaning food distributed at clinics (either MCH, Poly or well-baby) on a monthly basis. Program is designed to target on children exhibiting grade II or II malnutrition between the ages of 0 - 60 months	Distributed by rail and/or truck to SHS and then to MOH for storage. Private transport operators redistribute to clinics. Quantity of clinic supply depends upon storage facilities available.	220,000	Malnutrition status of children and in some instances only clinic attendance
	Antenatal Women	1500 gms of Thriposha distributed to mothers during 4 months of antenatal period on a monthly basis at antenatal clinics		77,000	4 month period prior to birth or indication of anemia in mother
	Lactating Women	1500 gms of Thriposha distributed to lactating mothers during the six month period following childbirth on a monthly basis thru clinics		28,000	6 month period following birth or indication of anemia in mother
Estate-Thriposha	Clinic	1500 gms Thriposha distributed monthly to mothers after visit to clinic. Program designed to target on mal	Approximately 80% of supply is picked up at production facility by Estate transportation system. Remainder is handled in a manner similar to MOH as described above	112,000	Clinic participation
	Creche	50 gms per day distributed on site to children attending creche during all days of crech operation (5 to 7 days per week)			Creche participation
Other Volag-Triposha	Sarvodaya	50 gms distributed on site to all children in crech (1-5 yrs. of age)	Distributed by MOH through Sarvodaya centers to Sarvodaya clinics and creches by private lorry. Families of recipients pay for final distribution costs	10,000	Sarvodaya day care or creche participation
	Save the Children	50 gms distributed on-site to all children in creche	Picked up by SCF at plant warehouse	800	SCF integrated program beneficiaries attending day care program

No brief evaluation effort can produce definitive answers to these questions. Our charge is limited to the execution of such a brief evaluation. However, it is hoped that our work will lay the foundation from which on-going efforts to evaluate all nutrition related programs in Sri Lanka can evolve. The work order defining our task refers to "the feasibility of establishing a simple monitoring and reporting system". We hope that our proposed scope of work for the limited evaluation to be done in a second phase of this project be viewed as the first step toward the simple monitoring and reporting system; a step that will demonstrate the benefit to be derived from better reporting and analysis and to set the stage for additional development of an island-wide system.

I. A FRAMEWORK FOR EVALUATING NUTRITION PROGRAMS

Before we address the issue of the availability of data in Sri Lanka (as called for in our work order), it is necessary that we develop a framework for evaluating nutrition interventions. Any evaluation must begin with a statement of the goal of the program to be reviewed. The assumptions underlying the design of the program must be clearly stated with an articulation of the anticipated relationship between the program components and its goal. With regard to supplementary feeding programs, the relationship between the primary service, feeding, and the usual goal, a reduction in malnutrition, is intuitively appealing: by introducing additional nutrients into the diet of the nutritionally deprived, malnutrition can be reduced. (We should point out, that, for many years, the operational goals of most United States sponsored feeding programs were not nutritional.)

Although intuitively appealing, the casual relationship between increased food consumption and better nutrition has not always been supported by empirical evidence drawn from actual feeding programs. The litany for explaining the counterintuitive results is now well known in nutrition circles and was repeated to us by almost everyone with whom we spoke in Sri Lanka. The supplement, although directed toward a single family member, is often shared among all family members. If not shared, as in on-site feeding programs, the supplement is viewed by the family as a replacement for food otherwise designated for the family member receiving the supplement. Also, the nutrient content of most supplements is too small to fully compensate for any nutritional gap or the supplement is lacking in one or more of the critical limiting nutrients in the diet of the recipients. Finally, the benefit of the supplement is often dissipated because of wide-spread disease in the beneficiary population. (If one reviews questions, 2 through 5 in our introduction, the direct correpondence between the explanation of the failure of food supplementation to reduce malnutrition and the object of our evaluation effort should be clear.)

Although the arguments disputing nutritional improvement through feeding are valid, in Sri Lanka and elsewhere, they are not universally applicable in all cases. Not all supplements are shared nor do all supplements result in replacements. Not all recipients have a nutrient gap larger than the supplement nor are all beneficiaries laden with disease. Evaluation methodologies can and should be used to estimate the degree to which these conditions exist and to test the viability of alternative strategies for minimizing or accommodating their effects. We approach evaluation from this perspective, a perspective embracing knowledge and learning as the keys to better use of supplementary foods and/or the resources they represent.

Any evaluation begins with the selection of an indicator to measure goal achievement. The evaluation effort consists of verification that -

(a) the indicator selected improves over time, and
(b) the observed improvement is a result of the program.

The intuitive approach to such verification has its origins in scientific experimentation. The indicator selected is evaluated in two distinct but similar populations. The intervention or treatment is applied to one of the populations and the indicator is evaluated again. If the population receiving treatment shows improvement in the indicator compared to the "control", the intervention is said to have worked. Scientific experimentation is rarely, if ever, possible in social intervention. However, a variety of techniques have been derived for approximating the methods used by the scientists in their laboratories. These are summarized in Table II, a table which includes comments on the conditions under which each is applicable in Sri Lanka.

With regard to nutrition intervention, the following questions are of immediate concern to the designer of an evaluation study :

1. What are the relevant measures of nutritional well-being?
2. How much time should elapse before looking for changes in those measures?
3. How should "matched" groups of participants and non-participants be selected?

TABLE II SUMMARY OF EVALUATION METHODOLOGY OPTIONS

OPTION	METHODOLOGY TYPE	METHODOLOGY DESCRIPTION	COMMENTS ON THE PRACTICALITY OF METHODOLOGY
1	Randomized Control	Select a sample of beneficiaries at random from families receiving supplement and compare with a similar sample from families not receiving the supplement.	Generally this is regarded as the most scientifically rigorous methodology. It is also the most impractical. In Sri Lanka, children not receiving Triposha are not weighed; therefore, a randomized control does not exist (nor should it. Thriposha should not be withheld from needy children). Consequently, this methodology would require the design of a separate data collection effort and, unless the design called for multiple surveys, would be restricted to a cross-sectional analysis only.
2	Constructed Control	Compare a sample of beneficiaries with non-beneficiaries as above but accept samples which have known differences between the two populations. Then adjust as best as possible prior to comparison. Adjustments can be made during the sample selection process or during the analysis phase.	While more practical, this methodology would also require the gathering of new data and would demand that Thriposha be withheld from children who have been identified as being malnourished. The same cross-sectional problems would exist as in option 1.
3	Reflexive Controls	Compare a sample of beneficiaries prior to receiving Thriposha with the same beneficiaries after receipt of the supplement for a period of time. Beneficiaries can be catagorized by nutritional status at the beginning of supplementation in order to determine the differential impact of initial nutritional status.	There is data in some of the health clinics and on the health cards retained by some of the mothers which could be used in this approach. While data is of variable quality, several clinics were identified which had sufficiently good protocol to merit inclusion in the study. One problem with this approach is the high correlation between good records and better than average clinic services. Therefore, the results would tend to reflect the effects of Thriposha used in conjunction with better than average clinics. A more serious problem with this approach is that a child's "at riskness" varies with age leading to biases based upon the age the child first received supplementation.
4	Reflexive Controls by age cohorts	Compare an age cohort of beneficiaries who have received the supplement for a short period of time with an identically aged cohort receiving it for a longer period of time. Different age categories can be studied and beneficiaries can be categorized by nutritional status at the beginning of supplementation in order to determine the differential impact of health conditions at the beginning of the treatment program.	In this approach the shortcoming of variation in "at riskness" as a function of age is resolved by comparing identical age cohorts. Variations amongst groups are adjusted statistically in order to provide comparability when non-age related differences surface. The use of cohorts allows the use of both two-way contingency tables which are relatively easy to interpret as well as various multivariate analysis techniques.

4. How many people should be included in each group?
5. What tests should be applied to the data to verify the existence of program related changes in the nutritional well-being of the participants?

Typically the answers to these questions must be worked out simultaneously in response to the practical constraints on the evaluation design. In Appendix B, Notes on Data Collection, we will attempt to answer these questions with regard to an initial attempt to quantify the nutritional impact of Title II programs in Sri Lanka.

However, one general warning must be issued in considering the evaluation of nutrition programs. The indicators that are generally used to measure nutritional status are highly imperfect. Worldwide, nutritionists rely on anthropometric data -- heights and weights -- as an indication of malnutrition. Individuals, especially, pre-school children, are said to be malnourished if their growth is inadequate. Inadequate growth can be recognized by comparing the heights and weights of children to standards established from observation of "well-nourished" populations. Unfortunately, there are a variety of reasons why anthropmetric measurements do not reflect accurately changes in the nutritional well being of a population subjected to an intervention. First the correpondence between inadequate growth and malnutrition is imperfect -- well nourished children can be small, poorly nourished children can be large. Because of this imperfect correspondence between growth and nutrition, arbitrary determinations must be made to define malnourishment. Although experience over the years has verified that certain determinations (Gomez Classification, etc.) are most reliable, it must be remembered that they too misclassify children as to their true nutritional status.

Second, by classifying children according to nutritional status, there is a built-in understatement of nutritional change. A comparison of the reduction in percentage of children malnourished in one group to the percentage in another will <u>always</u> result in an understatement of the actual difference. This is a result of the mathematics involved in making the comparison and the imperfect nature of the classification as to nutritional status and not, merely, a reflection of bad data or poor field protocol.

Finally the scientific community has produced some evidence that children who have experienced some malnutrition at an early age do not have full recuperative power with regard to growth. Thus, one can not expect an intervention directed toward a population suffering from malnutrition to return to normal as defined by anthropometrics.

In summary, there is a difference between nutritional impact and impact measurable using anthropometrics. There may be considerable actual impact that is not reflected in the anthropometry of the treated population. For a more complete explanation of the problems in using anthropometry in assessing nutritional impact, we refer the reader to our own publication, An Analysis of Community Level Nutrition Programs.

II. DATA QUALITY AND AVAILABILITY

One of the factors limiting the scope of a short term evaluation is the quality and availability of the data already in existence. The terms of reference leading to this report stresses an evaluation based on nutritional impact but refers to cost effectiveness analysis as well. Data for each type of analysis must be reviewed.

A. Data To Permit Quantitative Assessment of Impact

In the nutrition field, impact is generally regarded as a positive change in the nutritional status of the beneficiaries of an intervention where that change exceeds the change which might have occurred in the absence of the intervention. However, nutritionists are not in agreement as to the best measure of nutritional status. In Sri Lanka, as elsewhere, nutritional status is measured using anthropometrics : height for age measures stunting, weight for height measures wasting and weight for age is a composite of the two. Data on nutritional status is available in Sri Lanka from two sources: special surveys and weight charts in the food distribution centers.

In Sri Lanka, there are several special surveys on nutrition. Each is cross sectional and all but one claims to be a baseline for comparision with future studies. These include the "CDC" survey of 1976 (Sri Lanka Nutrition Status Survey, 1976), the surveys being done currently as part of National Nutritional Surveillance program (Food and Nutrition Policy Planning Division, Ministry of Plan Implementation, 1980) and the CARE study of primary school children (described in draft in CARE - Sri Lanka, 1980). The first two of these present a nutritional profile of the island and are not useful for assessing the nutritional impact of particular programs. The CARE study is based on a sample of children including participants and non-participants. However, because the schools receiving the supplement were drawn from those with the most malnourishment, a comparison of the nutritional status of the two groups to assess program impact is inappropriate. Generally, these surveys call for

measuring the age, weight and height of all children which are then used to develop profiles of the population with regard to stunting and wasting.

Of more interest is a study now underway based on a survey of approximately 5,000 mothers in families receiving Thriposha. This study is being conducted by consultants to the National Institute of Business Management for the Ministry of Plan Implementation. Although the emphasis of the study appears to be on the delivery system for and usage of Thriposha, an effort was made to get weight data for pre-schoolers admitted to the program due to nutritional deficiency. Data processing, analysis and report writing are now underway so it is difficult to judge the quality of the data, but based on our discussion with the study directors, we are optimistic that the findings will be of considerable importance. CARE, too, has mailed survey questionnaires to the medical doctors in charge of health facilities distributing Thriposha. When these are returned, they will provide a slightly different perspective on the impact and distribution system of the MCH program.

Given the need to assess nutritional status over time of participants and non-participants, of most interest is the longitudinal data collected as part of the daily operations of the feeding programs. In the SF program, no such data exists. Because targeting is done at the level of the school, children are not weighed as part of the program. Yearly, each school is supposed to be visited by a doctor from the Health Ministry but, even when such visits are made, only first, fourth and seventh graders are examined. At best, each student is observed once in three years. We were unable to ascertain whether adequate records of these visits were kept (they are not kept in the schools) and, furthermore, we doubt that the examinations can be linked from visit to visit on a child by child basis.

In the MCH program, the potential for collecting longitundal data on program participants is far greater. In theory, all pre-school children coming to a health clinic must be weighed and

found to be severely malnourished prior to receiving Thriposha. CARE has distributed weight charts for maintaining records, not only on weights but immunizations as well. In practice the record keeping has not yet developed to the point of usefulness. Too often the children are not weighed, the weights are not recorded, or the record is unintelligible. Our field visits confirmed the expected -- health clinics are understaffed and over-crowded and record keeping is a low priority activity. However, centers do exist where records appear to be adequate for analysis. In no case have summaries of the data been prepared. Moreover, in none of the clinics visited by the authors were all the records kept in one place. Either the weight histories or the Thriposha consumption records (or both) were kept by the mother. To assemble a usable data set at a health clinic, a team of people would have to be present at a clinic to capture the component of the data kept by the mothers. Of course, if the visit was made only once, data would exist only for the mothers who appeared on that day.

In a very small program, (800 beneficiaries) Save The Children Federation (SCF) has kept very good records on the weights of their Thriposha recipients. A report on impact is currently in draft form (Kahn, 1981) and will be completed by the end of this month. Our guess is that Sarvodaya, a Sri Lankan Voluntary Agency emphasizing community development, may be keeping adequate records in some of the 1,000 villages in which it operates. (The one Sarvodaya clinic that we visited was not keeping adequate records; however, it would be unfair to generalize from only one visit.)

Our conclusion with regard to data quality and availability for quantitative assessment of <u>nutritional impact</u> is that none exists for School Feeding. For the MCH program, data could be derived from records kept at the clinic in some clinics only. This data would consist of retrospective time series including weights, ages and a history of Thriposa consumption on a child by child basis. The clinic data, if analyzed in conjunction with the Ministry of Plan Implementation survey and the CARE survey of medical personnel could be used to initiate a study of nutritional impact. The analysis of the data from the clinics should yield

an initial estimate of the potential of the Thriposha program for inducing measurable nutritional impact while the special surveys should give an indication of the problems in implementation which must be overcome to realize that potential. Because the clinic data is stored on records pertaining to individual beneficiaries, a special data gathering effort must be carried out to develop a data set from the clinics.

B. Data For Cost-Effectiveness Studies

The data required for a cost-effectiveness study goes beyond the data needed to measure impact. The costs of delivering each service must be derived. Also, comparable measures with regard to effectiveness must be developed for programs offering considerably different sets of services.

With regard to costs, considerable data exists with regard to cost components of program elements paid for in the budgets of the Government of Sri Lanka, USAID/Sri Lanka and USAID/Washington. The problem in assembling cost data lies in developing a framework for its organization. First, one must account for the fact that a dollar spent by the United States is not a direct cost for the Sri Lankans. Even within the United States program, various costs come from different budgets and cost cutting measures in one sector are often viewed from the viewpoint of that sector alone. (For example, Food For Peace in Washington selects a mix of commodities for a given country to meet its own food budget constraint by substituting cheaper foods which may cost more to transport. Transport costs are covered in separate budget.)

With regard to effectiveness, the appropriate measure is more elusive. For School Feeding, no data to measure nutritional impact directly exists in the field today. Furthermore, due to the inconsistency between measurable impact using anthropometry and actual impact (see Section I),

the use of the commonly used impact measures would give a distorted view of effectiveness. As an alternative, a measure of the nutrient content of the supplement provided might be used -- understanding, of course, that the nutritional impact of nutrients delivered in different quantities may be quite different.

Our conclusion with regard to cost-effectiveness is that an analysis could be done to derive ratios such as "dollar cost per calorie delivered" which, in turn, can be used to compare programs. However, the framework for computing costs and the assumptions concerning both the impact of a calorie and the efficiency of the delivery systems must be made explicit so that the ratios can be interpreted from the proper perspective.

C. Data To Provide An Adequate Basis To Improve Program Effectiveness

The terms of reference for this consultancy refers to data to provide an adequate basis for making recommendations to improve program effectivenss. We believe that an impact assessment, however rudimentary, and a cost-effectiveness analysis done with the proper framework will lead to recommendations to improve program effectiveness. Beyond that, a review of the operation of the program on a more micro level, for example, a review that considers procedures in a single health clinic, might contribute considerably to program effectiveness.

III. DATA ANALYSIS

During our years of working together in the nutrition field, we have developed some very strong opinions with regard to the method of analyzing data drawn from nutrition interventions. At best, we can provide a brief summary in this document.

First, there are natural patterns in the **rates** of occurrence of nutritional deficiency measured using anthropometrics in a population facing a harsh environment. Typically, pre-schoolers undergo a period of maximum risk shortly after weaning and, even in the absence of intervention, will improve again with age. Any impact analysis must separate intervention effects from these natural patterns.

Second, nutritional indicators respond to many events in the complex social, physical and economic environment and not just to intervention. These events comprise competing explanations for observed changes in nutritional status measures and must be systematically reviewed (and eliminated) before any change can be attributed to an intervention.

Third, such an analysis (one which identifies and reviews potential competing explanations of observed outcomes) must be done with individuals who were on-site during the intervention. Outside analysts do not have sufficient knowledge to understand all of the local dynamics surrounding an intervention.

Finally, the analysis process must be iterative. Inevitably an interpretation of a given set of data will result in questions and/or will identify competing explanations which require that additional analysis be done. This leads to an iterative analysis process.

Based on this strong opinion regarding analysis methods, the scope of work (Section V) developed in this paper will call for the initiation of an iterative process of analysis involving Sri Lankans to concentrate on developing proper interpretations of all data collected. This analysis will attempt to distinguish program effect from known competing explanations of change in the impact indicators.

Data processing capability appears to exist in Sri Lanka but is already overloaded. Both CARE and the Government consultants have described the tedious process of "grabbing time" on local computers to accomplish their work. Therefore, in the interest of rapid turn around, we suggest that a first round of analysis of the impact data be done in the United States. In keeping with our method of analysis, this first round should be reviewed in Sri Lanka. At that time, a strategy for additional analysis can be conceived.

Scheduling of Phase II is dependent more on the speed with which the impact data is gathered than on data editing and analysis. Within one month of the completion of the data set, a preliminary analysis can be completed in the United States.

IV. LOCAL CONTRACTOR FOR DATA COLLECTION

We considered drawing a team of people to function as a local contractor from several sources -- CARE, a University, the Government and the private sector. This last possibility was not fully explored due to time constraints and, more importantly, our belief that evaluation should be integrated into the routine operation of an intervention.

Several people indicated that the best source of qualified personnel for a short term data gathering effort was the University. Students wishing to earn extra money or recent graduates not yet regularly employed can be trained and put into the field on relatively short notice. Such a team would need careful supervision in the field.

During our brief stay in Sri Lanka, CARE arranged for and guided us in our field trips. We were greatly impressed by the familiarity of the CARE Nutrition Educator, Mr. D.D. Jayatilleke, with both the details of the MCH program and the more general techniques of data gathering. (Mr. Jayatilleke had been a team leader with CDC during the 1976 survey effort and he participated in the CARE school survey activity). We inquired of CARE to their willingness to release Mr. Jayatilleke or one of his colleagues to supervise the data collection effort and were gratified with their positive response. Thus, the plan calls for the data from the MCH clinics to be gathered by a team of students under the direction of CARE.

V. PRELIMINARY SCOPE OF WORK FOR PHASE II

According to the terms of reference guiding this work, we are to include a preliminary scope of work for a subsequent evaluation (Phase II) of the Sri Lankan PL 480 Title II Program. This scope of work should:

> Specify an appropriate methodology for the evaluation of PL 480 Title II that would provide adequate and accurate information concerning: (1) nutritional impact; (2) cost-effectiveness; and (3) redesign guidance to improve effectiveness, yet would be sufficiently simple and economical in design to be conducted within approximately a four to six week time period.

Given the availability of data and the desire for rapid completion of the evaluation, we have had to redefine the objectives of Phase II to a more limited but attainable goal.

First, because nutritional impact data using anthropometic measures is unavailable for school feeding, we must limit the impact phase of the study to the MCH program. A second important reason for this limitation is that given the size of the ration and the cultural tendency toward sharing, it is unreasonable to expect any study in the schools to find measurable nutritional impact. This assertion is accepted by nearly everyone in Sri Lanka. The program has been supported over the years because of a government commitment to equity and because of Sri Lankan's strong emphasis on education, an emphasis which views school feeding as an incentive to good attendance and an assurance that children will not be hungry while at their studies.

Second, because the record keeping system in the MCH clinics is still in its infancy, it is impossible to design a representative sample of clinics with adequate data to justify conclusions regarding nutritional impact on an island wide basis. We must be content with an effort to demonstrate the impact of Thriposha on a

limited number of clinics. If Thriposha can be shown to have impact in even a handful of clinics, we will be able to conclude that the current program can have measurable impact.

Third, given the complexity of objectives for both school feeding and MCH programs, the former having attendance and non-hungry student objectives and the latter having incentive objectives (get mothers to the clinics), it is necessary to develop a framework for cost-effectiveness that is based on broader concerns than nutrition per unit of cost. Such a broad perspective is consistent with the Sri Lankan view of feeding programs -- the exercise of articulating the model will help bring USAID, CARE and Sri Lanka into accord with respect to the appropriate objectives for PL 480 Title II.

We do not believe that a brief evaluation based on restrospective data should be viewed as a "final" product. We prefer to view this as an initial impact evaluation of a system to incorporate evaluation into subsequent PL 480 Title II activities in Sri Lanka.

In summary, the objectives of Phase II are to (a) explore the ramifications of assessing nutritional impact in a limited sample of MCH clinics, and (b) develop a broad framework for reviewing the cost-effectiveness of alternative feeding programs as well as the relative effectiveness of non-feeding alternatives for meeting the secondary objectives now attributed to those feeding programs. Hopefully, by pursuing these two objectives simultaneously, we will introduce the notion of using impact assessment within a broader framework for improving PL 480 Title II programming.

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Note, we must not lose sight of the broader perspective with regard to supplementary feeding programs. Throughout the years, a variety of non-nutrition objectives have been met through the PL 480 Title II program. Even now, decisions with regard to the scope and magnitude of the supplementary feeding program are being made in response to a variety of foreign aid objectives such as the easing of the balance of payments problems in Sri Lanka. However, we must restrict the standard for measuring program impact to that most commonly stated: to improve the well-being of the poorer elements of the host country population where well-being is defined in terms of improved nutrition, health status and education. The study of nutritional impact in selected clinics is to be combined within the cost-effectivenss framework with information already available in other studies to assess supplementary feeding as a means to promote nutritional, health and educational well-being.

The tasks to be carried out are arrayed in the following preliminary scope of work.

Part A - Limited Assessment of Nutritional Impact in MCH Centers.

Task 1 Collect retrospective longitudinal data and supporting descriptive information on children and mothers who have participated in the Thriposha program.

(a) In addition to a longitudinal record of weight and Thriposha usage for each child on a monthly basis, the child's birth date, sex, parity and ages of first and last exposure to Thriposha will be gathered.

(b) Along with the longitudinal record of anemia and Thriposha usage for mothers, the mother's birth date, occupation and the occupation of her husband will be recorded.

(c) Background data on the facility providing Thriposha including type, location, geographical area served and staffing will be gathered.

(d) If possible, an effort will be made to collect data on children who stopped receiving Thriposha due to a regaining of health or some other reason even though those children might not be attending the clinic at the time the data is gathered.

Task 2 Transmit the data, in weekly or biweekly batches, to Community Systems Foundation for error detection and correction and entry into a Data Base Management System.

Task 3 Analyse the nutritional impact on children and mothers by comparing growth in children of the same age but differing exposure to Thriposa. Also, consider differing impact as a function of nutritional status at entry, age of mother, parental employment, sex and parity.

Task 4 Prepare a report on the analysis and submit it to the team designated for participation in the in-country review (see Part C). (The reports of the consultants to the National Institute of Business Management on the Thriposha program, the SCF report on the 800 child pilot study and the CARE reports on their ongoing evaluation activities should be submitted to the team members as well).

Part B - Development of the Cost Effectiveness Framework

Task 1 Develop a cost accounting framework considering the perspective of institutions bearing those costs (see Table III for an example).

Task 2 Gather the cost data from Washington D.C. for the framework developed in Task 1.

Task 3 Develop the rationale for using various effectiveness measures to match up with the costs; for example, "calories delivered" enables a comparison of school feeding and MCH feeding.

TABLE III - COST - EFFECTIVENESS FRAMEWORK

	Perspective			
	USAID		GSL	
	Short-term	Long-term	Short-term	Long-term
1. Raw materials at US point of embarkation				
2. PL 480 mgmt. & admin. costs				
3. Shipping US to SL				
4. In-country raw materials Corn Soya Fortification ICSM Other				
5. Cleaning, processing and packing				
6. Storage at or near plant				
7. Transportation to distribution center at MOH or MOE				
8. Transportation to point of beneficiary distribution				
9. Distribution costs				
10. Record keeping, audit and other direct management costs				
11. Losses - Raw material Cleaning etc. at production in transit system at storage facilities				
12. Unallocated Overhead costs				
Total Costs				
Number of Beneficiaries				
Cost per Beneficiary				

Part C - Conduct a Workshop in Sri Lanka to review all prior analyses and formulate conclusions with regard to supplemention programs and their evaluation.

The purpose of the workshop is to synthesize the findings of the limited impact study, the various process studies (the NIBM study and the CARE study now in progress) and the subjective elements of program valuation. The product of the workshop should be a single report. Participants should include representatives from CARE, USAID, the Ministries of Plan Implementation, Health and Education and the evaluation team. If possible, the workshop should be conducted in retreat to permit an intensive review by a captivated audience.

The following questions might be used to guide the review process.

1 - Why do the different studies yield different results?

2 - What are the competing explanations for the results?

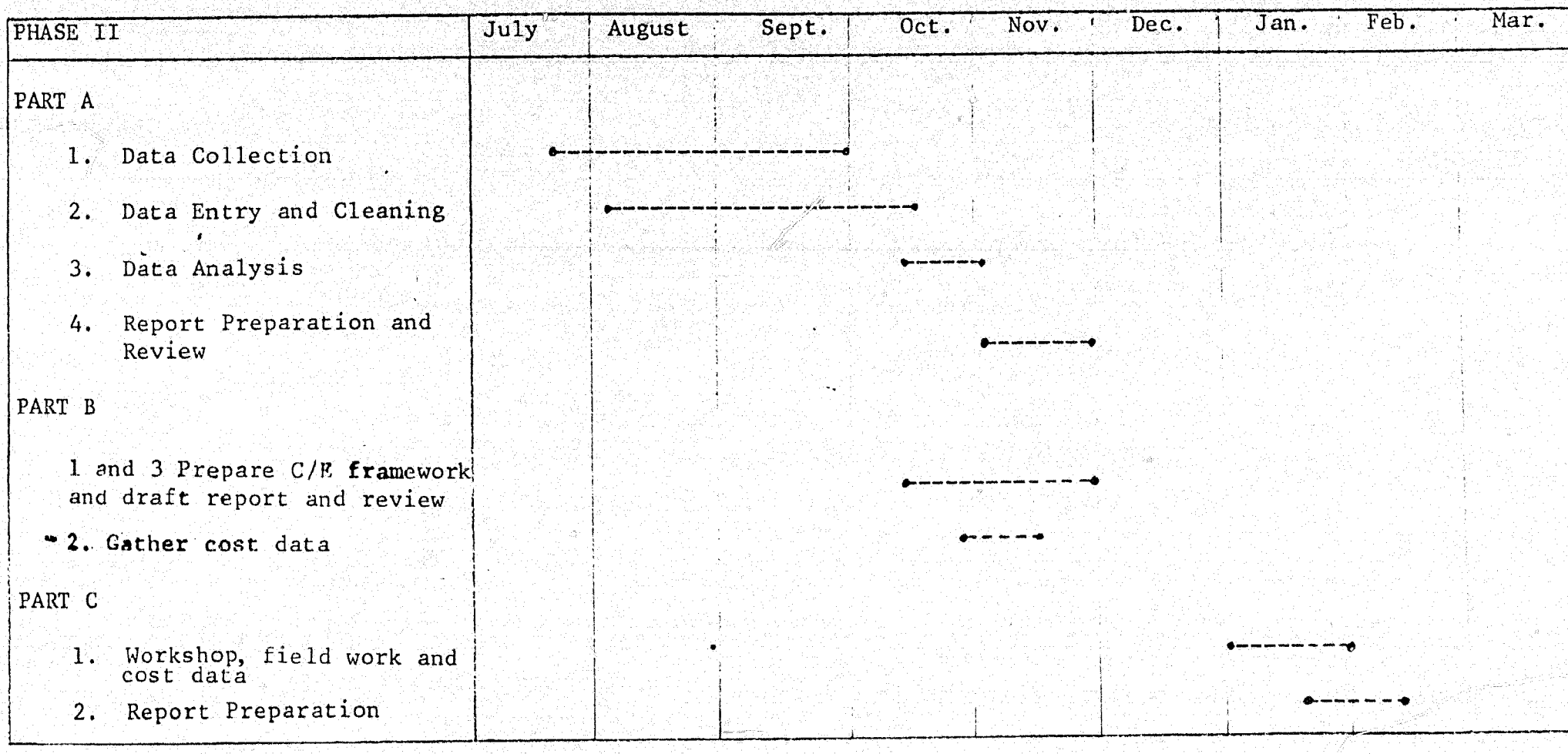
3 - Why aren't the results more conclusive?

4 - What are the practical ways of improving the monitoring and reporting system in the future to help in resolving competing explanations of observed outcomes.

5 - What are <u>all</u> the costs involved in supplementary feeding programs and who bears them?

Table IV is a Gantt chart illustrating the anticipated timing of Phase II. The critical element in determining timing is the duration of the data gathering effort.

TABLE IV - GANTT CHART OF PHASE II SCHEDULE



Note: If desired, parts B and C could begin earlier, shortening the time horizon. The critical path during any such compression is primarily in the supplementary data gathering.

VI. MONITORING AND REPORTING SYSTEM

In 1980, CARE introduced a record keeping system in the MCH program. A two-part chart was designed to store the histories of the mother and child -- one part to be kept by the mother and one by the Health facility distributing the Thriposha. A separate register was designed to facilitate summarization of the data stored on the original cards. When used in conjunction with the stock accounting forms, this record keeping system could serve as the basis of a monitoring and reporting system.

The experience to date with these forms has shown a need for further development. First, there have been suggestions from the field that the weight chart and some of the other spaces for recording data on the two-part chart could be increased. Second, the register for the summaries is difficult to understand -- most clinics did not fill them in accurately at the onset of the program. CARE is now reconsidering the format of these new forms and will probably issue new ones in the future.

However, the problems in the physical design of the forms were minor in comparison to the administrative difficulties in getting the clinics to use them. Most health facilities distributing Thriposha are understaffed and over populated. The clinics we observed hosted several hundred mothers in a morning with staffs ranging in size from 4 to 6 people. The medical personnel tried to examine all children, the nurses and midwives took responsibility for immunizing children, weighing them and distributing Thriposha. In the chaotic environment which results, record keeping is a low priority activity compared with providing the needed basic health care.

Furthermore, the instructions for use of the forms need to be supplemented with training by field staff. There is enormous turnover in medical personnel throughout the island (many doctors are leaving Sri Lanka to take advantage of more lucrative opportunities elsewhere). This turnover increases the difficulty in imbedding a consistent record keeping system. Finally, from the health worker's perspective, there is little incentive to maintain adequate records because of the lack of time to utilize those records in diagnosing individual problems or in reviewing the accomplishments of the health facility.

In this document, we could speculate on the best format of the forms, design protocol for their use, recommend storage systems and suggest methods for consolidating the basic data into usable information. However, the mechanical aspect of record keeping should be designed to support the workers -- not to over burden them. Therefore, the monitoring and reporting system must be devised and worked out with the agencies which must supply the resources to allow the system to operate. We recommend that one charge to the team designated to review the analysis (Part C of the Statement of Work in Section IV) be the redesign of the record keeping, the design of a reporting system that provides feedback to the health facility personnel, and a scheme for finding the resources to enable the system to function.

APPENDIX A

PERSONS WITH WHOM DISCUSSIONS WERE HELD

1. Miss Sarah Jane Littlefield, Director, USAID, Colombo.

2. Dr. James R. Brady, Assistant Director, USAID, Colombo.

3. Mr. Robert L. Chamberlain, Chief, Human Resources Office, USAID, Colombo.

4. Dr. Raja Ameresekere, Director Food & Nutrition Policy Planning Division Ministry of Plan Implementation.

5. Mr. Sriyan Weerasinghe, Deputy Director, Food & Nutrition Policy Planning Division, Ministry of Plan Implementation.

6. Dr. David Perera, Nutritionist/Medical Research Institute.

7. Dr. S. Goonesekere, Medical Officer/Family Health Bureau.

8. Dr. Beatrice De Mel, Medical Officer/Nutritionist/Ministry of Health.

9. Mr. Ratnaweera, Senior Consultant/National Institute of Business Management.

10. Ms Deraniyagala, Senior Consultant/National Institute of Business Management.

11. Mr. Chandra de Soysa, Secretary/Educational Services.

12. Mr. George Taylor, Director/CARE Mission.

13. Mr. C. Hanser, Assistant Director/CARE Mission.

14. Mr. D.D. Jayatilleke, CARE Mission.

15. Dr.(Mrs) Priyani Soysa, Professor of Paediatrics, University of Sri Lanka.

16. Mr. Samarajeewa, Regional Director of Education, Kegalle.

17. Mr. G.M. Gamage, Administrative Officer, Kegalle.

18. Mr. Kaluarachchi, Principal, Paragammana Junior School.

19. Mr. Warmasuriya, Principal, Udambawa Siyamabalapitiya School

20. Mr. G. Dharmaratne, Principal, Pussella Kanista Vidyalaya.

21. Dr. S. Silva, Superintendent of Health Services, Kandy.

22. Dr. (Mrs.) T. Viswaratnam - MO/M.C.H., Kandy

23. Dr. (Miss) S. Ekanayake, Medical Officer, Maternity and Child Health, Kandy Municipality.

24. Dr. (Mrs.) Amerasekere, M.O.H. Municipality, Katukelle Clinic.

25. Dr. (Mrs.) T. Wiswaratnam, Akurana P.U.

26. Dr. (Miss) M. Thaha

27. Miss Regina Peter and Miss Dayani S. Udawatta, Sarvodaya Center, Panwila.

28. Mrs. Sisira Navaratne, Sarvodaya District Center - Palle Talawinna.

29. Dr. Marina Fernando, Director, Save the Children Federation.

30. Mohsin Ali Khan, Nutritionist, Save the Children Federation.

APPENDIX B

NOTES ON DATA COLLECTION

In considering the questions raised in the text pertaining to the design of an evaluation, we are confronted immediately that, in a retrospective study, there is little leeway in answering those questions. The evaluation must be based on the data available.

Because no height data is taken in the field, we must rely solely on the weight for age measure of nutritional status as the key indicator for assessing impact. The raw data for computing any other measure is non-existent.

We hope to be able to collect weight data back in time for, at least, two years. Recognizing that some children will have much shorter histories, we acknowledge that relatively few children will have data spanning two years. We hope that some children will have a two year history while some will not. This will facilitate comparison of children of similar ages receiving Thriposha for different lengths of time.

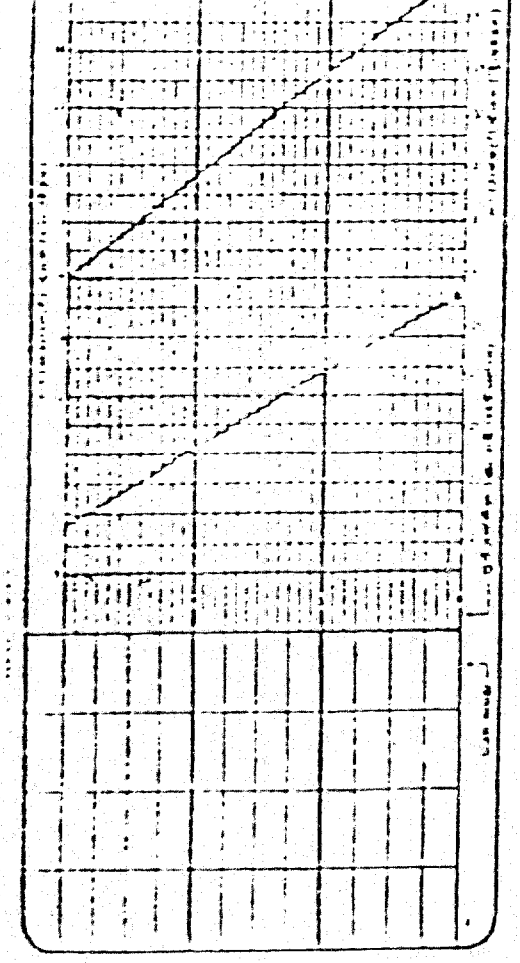
We will have little, if any, data on non-participants, therefore, we will will have to use the method of reflexive controls. We recommend that histories be collected for some 2000 children. The number 2000 is somewhat arbitrary as are all sample sizes. (Selecting the size of a sample is an art, not a science, which calls for the balancing of the cost implications of sampling additional cases with the added precision to be gained from those cases. The artistic nature of sample selection is demonstrated further because that precision can be determined only if one knows the variances of the variable to be collected, in advance). With 2000 children, we believe that we can make the types of comparisons suggested above--comparisons of children in age cohorts receiving differing quantities of Thriposha. A partition of 2000 children by age and by intensity of participation will probably yield enough cases in each category to facilitate the analysis. (Because we do not know the variance in the intensity indicator, we can not be precise in picking the sample size.)

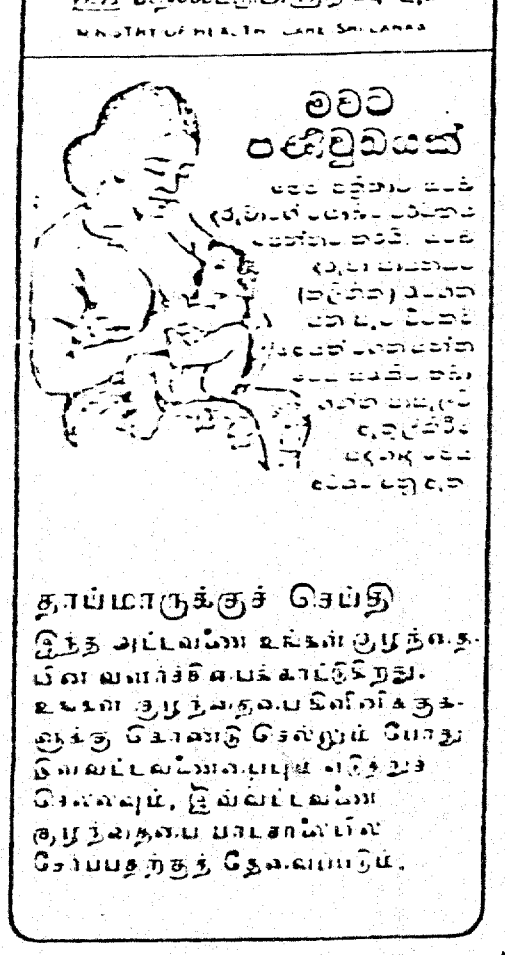
We favor the application of relatively simple tests in analysis of nutrition related data -- until such tests can no longer respond to the basic hypotheses. The first set of tests are the comparisons of the percentages of malnourished children in populations of the same age receiving different quantities of Thriposha. Because the categorization of children into a normal-malnourished partition may mask changes, mean percent of standard attained can be used to compare groups. The introduction of other variables, such as parity or sex, will require multi-variate analysis.

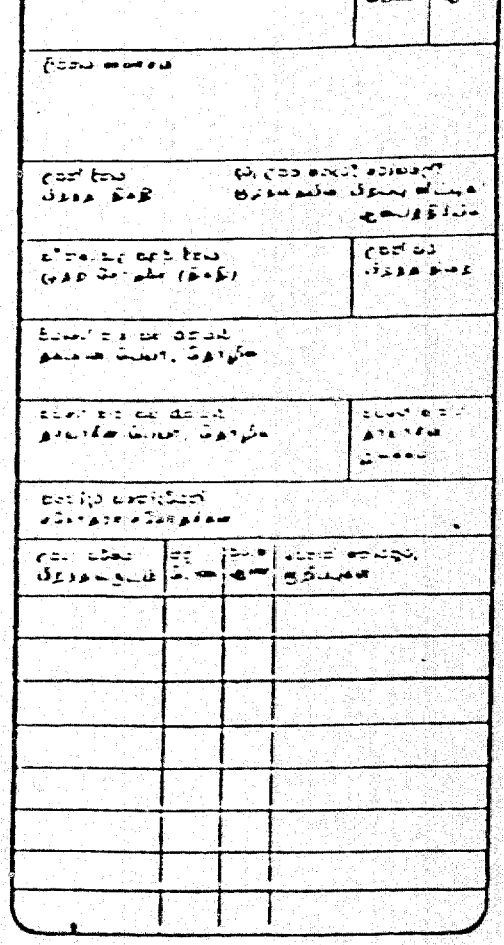
During our field trip, we were struck by the diversity in record keeping schemes in the different health clinics. Each medical doctor adjusted the procedures to conform to the physical layout of his/her clinic and to the staffing of the clinic. Therefore, it is impossible to devise a precise protocol for gathering the data. Upon selection of a clinic, procedures for that clinic will have to be drawn up.

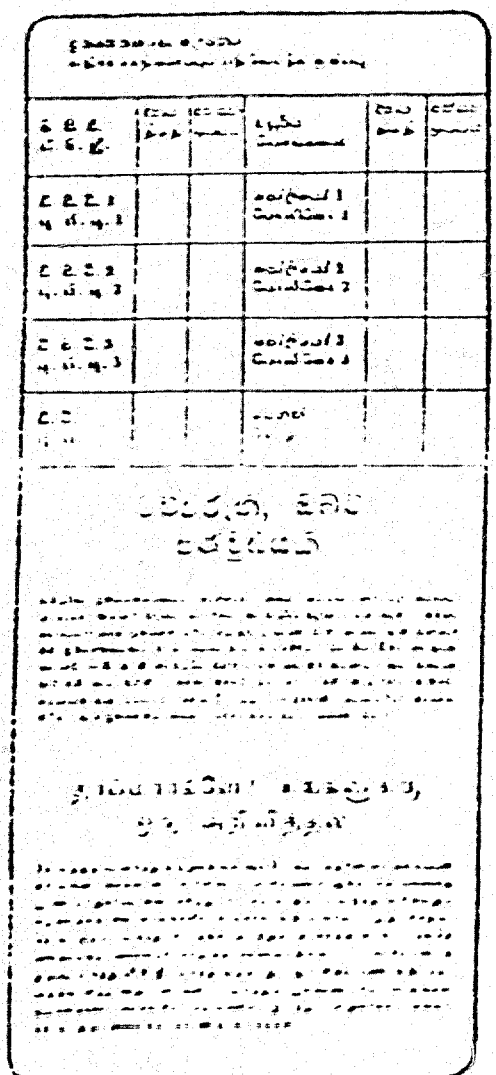
As a minimum, each child included must have a longitudinal record of weights dating back to his/her first dose of Thriposha. Weights need not be recorded continuously but it is necessary that either the precise age of the child at the time of the weighting or the date of the weighting be recorded. It is also necessary that a continuous record of Thriposha distribution to the child be available. In the "ideal" center, this minimum data would be on-hand in the center recorded or the CARE weight chart (Figure B-1).

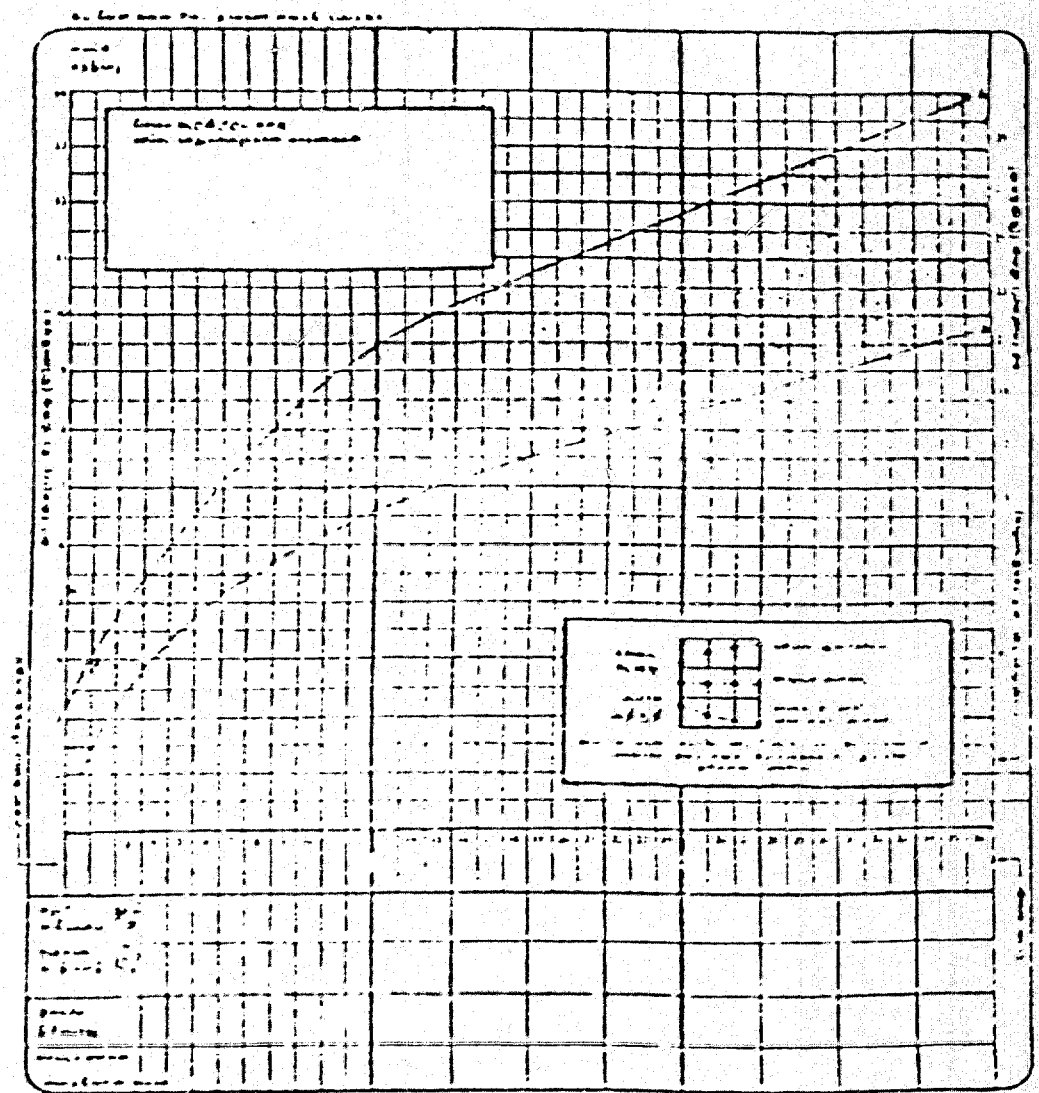
We did not see an ideal center. In each center visited on our field trip, one of the critical elements -- weight history or Thriposha distributon history -- was kept by the mother. In these instances, it will be necessary to capture the data during the clinic as the mother passes through the line. This will naturally produce a bias since children not receiving Thriposa will be underrepresented. (In a clinic requiring attendance of normal children once every three or every six months, mothers of healthy children will not appear every month while mothers of Thriposha recipients will appear monthly).




මවට
පණිවුඩයක්
தாய்மாருக்குச் செய்தி
இந்த அட்டையை உங்கள் குழந்தை
நலனைக் காக்கிறது.
உங்கள் குழந்தையை மருத்துவரிடம்
கொண்டு செல்லும் போது
இவ்வட்டையையும் எடுத்து
செல்லவும். இவ்வட்டையை
குழந்தையை பாடசாலையில்
சேர்ப்பதற்குத் தேவையாகும்.







In these clinics, it would be useful if the records of non-attending mothers be checked for any indication of the reason for non-attendance; for example, a notation that the child achieved normal weight.

Figure B-2 is a sample form for the collection of data. We have included space for notation of illness in the child because the medical hospital records in one Colombo hospital had such a notation. It is not essential that a health record exist for the child; however, it would prove to be a useful addition if it were available.

Figure B-3 is a sample form for data about the clinic. We doubt that sufficient examples will be drawn from any single type of clinic to allow any conclusions to be drawn about the relative impact of clinic types. However, if some segment of the data is irregular, it would be of use to know the nature of the clinic from which it originated.

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Name of Health Facility: ______________________

Name of data gather: ______________________

Today's date: ______________________

Mother's name: ______________________ Clinic Number __________

Mother's age in years: __________

Total number of children in family: ______ Number of children under 60 months of age: ______

Current Occupation of Father: __________ Current Occupation of Mother: __________

Father	Mother
/ / Laborer	☐ Laborer
/ / Cultivator	☐ Cultivator
/ / Government Employee	☐ Government Employee
/ / Other	☐ Housewife
/ / Unemployed	☐ Other

Childs Name: ______________________

Birth Date of Child: ______________________

Sex of Child: ☐ Male ☐ Female

Birth Order: ☐ 1st ☐ 2nd ☐ 3rd ☐ 4th ☐ 5th ☐ 6th or more

Date of Weighting	Weight of Child (indicate in Kg. or lbs.)	Age in Months	Receipt of Thriposha indicate with(✓)	Health indication (described with notation if any)
December '81				
November '81				
October '81				
September '81				
[illegible] '81				
[illegible] '81				
[illegible] '81				
May '81				
April '81				
March '81				
February '81				
January '81				
December '80				
November '80				
October '80				
September '80				
August '80				
July '80				
June '80				
May '80				
April '80				
March '80				
February '80				
January '80				
December '79				
November '79				
October '79				
September '79				
August '79				
July '79				

Name of health facility_____

Location of health facility_____ Urban ☐

Suburb ☐

Name of Clinic:_____ Rural ☐

Number of Doctors : None ☐ 1 ☐ 2 ☐

Number of Nurses : None ☐ 1 ☐ 2 ☐ 3 ☐

Number of medicines or aids: None ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐

5 ☐ 6 ☐ 7 ☐

Number of other attendants: None ☐ 1 ☐ 2 ☐ 3 ☐

Number of children attending clinic _____

Number of mothers attending clinic_____

FIGURE B-3: DESCRIPTION OF CLINIC FORM

APPENDIX C

Attachment No. 1

USAID/SRI LANKA

PL 480 Title II Evaluation--PHASE I: ASSESSMENT OF DATA QUALITY AND AVAILABILITY

Scope of Work

I. Background: AID/Washington and USAID/Sri Lanka have determined that a comprehensive evaluation of the Title II program would be a useful step to improve program impact and effectiveness. AID/Washington and Asia Bureau missions are presently undertaking comprehensive evaluations of all Title II programs for these purposes. (See Memo of IDCA Director to AID Administrator, Sept. 8, 1980). To date, evaluation of the Philippine program has been completed, India is under way, and an evaluation of the Indonesia program is scheduled for September, 1981.

Conducting two-phased evaluations has proven to be a useful approach for Title II and other major programs that are of a magnitude or maturity warranting impact evaluation but regarding which uncertainty exists concerning data quality and availability. Under these circumstances, Phase I has involved an assessement of data quality and availability while Phase II has involved the actual field evaluation. Given the uncertainty concerning the quality and availability of appropriate data in Sri Lanka to conduct a quantitative assessment of the nutritional impact of Title II, it has been determined that a phased approach to the evaluation of the Sri Lanka Title II program would be the most appropriate means of evaluation. (See State 129739 and Colombo 288). Accordingly, the services of two contractors have been requested to undertake Phase I.

II. Purpose: The purpose of this work is (1) to assess the quality and availability of primary data for purposes of subsequent quantitative assessment of the nutritional impact of the Maternal and Child Health and School Feeding programs as a means to improve program effectiveness; (2) to identify a local contractor qualified to begin data collection and to provide guidance concerning specific data to be obtained and on data aquisition methodologies; (3)to develop a preliminary scope of work for the Phase II evaluation which will set forth the key questions to be answered and the methodology for answering them and which will be prepared according to the general evaluation scope guidance developed by ASIA/DP/E; and (4) to make recommendations concerning the feasibility of establishing a simple monitoring and reporting system (e.g. a system that would provide to project managers information on the nutritional progress of beneficiaries on a regular basis).

III. Product: The contractor will produce a report (approximately 20-25 pages) tentatively entitled, "Title II PL480 Evaluation-Phase I: Assessment of Data Quality and Availability." This report should be able to stand as a self-contained document and will be organized according to the outline specified under V below. The body of the report will specify answers to the following questions:

A. Data Quality and Availability:

1. Why Needed. State purpose of present assessment.

2. Primary Data Quality and Availability. Are the existing primary data, including control group data, of sufficient quality: (1) to permit quantitative assessment of the nutritional impact of the Maternal and Child Health and School Feeding Programs; (2) to permit a simple cost-effectiveness analysis of the MCH and School Feeding Programs; and (3) to provide an adequate basis for making recommendations to improve program effectiveness?

3. Data Analysis. What is an appropriate scheme for data analysis, interpretation, and reporting? With regard to electronic data processing, to what extent can this be undertaken in Sri Lanka? To what extent must it be undertaken in the United States? How much time is likely to be required for data editing prior to analysis? What implications does this have for scheduling Phase II?

B. Local Contractor for Data Collection:

1. Local Contractor. Is a qualified local contractor available to begin data collection and what would the work of the contractor entail?

C. Preliminary Scope of Work for Phase II

1. Scope and Methodology. This section should include a preliminary scope of work for Phase II. It should specify an appropriate methodology for the evaluation of PL 480 Title II that would provide adequate and accurate information concerning: (1) nutritional impact; (2) cost-effectiveness; and (3) redesign guidance to improve effectiveness, yet would be sufficiently simple and economical in design to be conducted within approximately a four to six week time period.

D. Monitoring and Reporting System

1. Feasiblity. What is the feasibility and practicality of establishing a simple yet effective monitoring and reporting system to enhance program effectiveness? What would be the elements of such a system?

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