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TOWARD A MONITORING AND EVALUATION SYSTEM FOR
P. L. 480 TITLE II MATERNAL CHILD HEALTH PROGRAMS IN INDIA

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LIST OF ABBREVIATIONS

ANC	Antenatal Care
BDO	Block Development Officer
CARE	Cooperative for American Relief Everywhere
CDPO	Child Development Project Officer
CPWP	Composite Program for Women and Preschoolers
CRS	Catholic Relief Services
CWS	Church World Service
FFW	Food for Work
GCI	Government of India
ICDS	Integrated Child Development Service
LWR	Lutheran World Relief
MCH	Maternal Child Health
MO	Medical Officer
MSNP	Modified Special Nutrition Program
M/BIE	Monitoring/Built-in Evaluation
NEP	Nutrition Education Program
OPG	Operational Program Grant
PER	Program Efficiency Ratio
SF	School Feeding
USAID	United States Agency for International Development
VOLAG	Voluntary Agency

EXECUTIVE SUMMARY

Following a qualitative evaluation of the P. L. 480 Title II program in India, USAID/New Delhi initiated steps toward quantitative evaluation of its various components. Based on a review of the literature and the current operation of MCH programs in India, a Monitoring/Built-in Evaluation system is envisioned as the device leading to a quantitative assessment of those MCH programs. This system is based on the notion of using impact and process data routinely in the management of the MCH programs. It is designed as much to promote more effective administration of those programs as it is to generate quantitative measures of their effect.

Compared to the typical evaluation survey, the Monitoring/Built-in Evaluation system calls for the collection of relatively small quantities of data on both the impact and delivery system in an MCH program. A hierarchical organizational structure, with a clearly defined chain of command and a sufficiently small span of control at each level of the hierarchy, is established and charged with the task of using the data to make management decisions on a monthly basis. In short, by applying the principle of "Management by Exception", a manager at any level in the organization reviews the data to identify exceptional cases among those program units under his/her control. Exceptional cases, both good and bad, are site visited, localized conditions as well as program operations are subjectively reviewed to ascertain the most probable reasons for the exception, and corrective action is taken when necessary to eliminate the underlying causes for the exception. (In exceptions on the side of too much impact, verification of the legitimacy of the impact should lead to exploration of the reasons for it to facilitate dissemination of the secrets of success.)

At the village level, an annual review session is held in every village (not merely exceptional ones)

- a) to assess progress on the impact indicators,
- b) to review all local program operations, and
- c) to develop a plan for the next year including a set of goals and a revised set of operating procedures designed to help attain those goals.

At higher levels, data generated throughout the year in the villages is consolidated to allow managers at those levels to review operations in the organizational units under their control. The data generated at the annual review are similarly consolidated and used not only for internal review but also to report program progress to funding agents and other interested outsiders.

The Monitoring/Built-In Evaluation system is designed to avoid some of the problems plaguing evaluation studies in the past. Large scale surveys for evaluation have rarely provided definitive results due to the logistical problems of mounting such massive studies and the difficulties inherent in accounting for competing explanations to observed changes in impact measures. (Both CARE and CRS have tried this approach in India. CRS is just now publishing a report based on data generated in 1979 -- a report which emphasizes the overwhelming problems encountered in arriving at results as much as the results themselves. CARE has not yet undertaken the analysis of its survey data, also collected in 1979.) Data routinely collected in the field is generally thought to be unreliable due to poor equipment, poorly trained village workers and, most importantly, because the data is never used for any worthwhile purpose. The Monitoring/Built-In Evaluation system offers a remedy for this last problem by strengthening management and instructing managers to use the data to help guide the program. This leads, as well, to better supervision of the village workers and enables management to review competing explanations for trends in the data on-site through field visitations.

Within India, there are currently several types of MCH programs in operation or planned. Based on the type of impact data available, a typology

of those programs can be formed. Level I programs are the straight feeding programs. Level II programs integrate various health and education services. A fixed number of beneficiaries is selected annually based on loosely applied criteria of economic backwardness. Level III programs introduce community-wide surveillance and targeting on a fixed number of beneficiaries selected using nutritional criteria. Level IV programs (as typified by the USAID/New Delhi proposal to the GOI for a modified ICDS scheme) use continuous surveillance to pick a variable number of beneficiaries to receive food aid. All other services are made available to the entire community.

The Monitoring/Built-In Evaluation system applies to Level II, III, and IV programs. It is generally agreed that Level I programs cannot produce measurable impact and, as there is now no routine data collection activity in those programs, the cost and effort required to establish any system is hardly worth expending. The stock monitoring system is similar in Level II, III and IV programs as is the basic data set for families and individuals. The stock monitoring is a simple accounting procedure to demonstrate that material inputs are being disseminated and to facilitate the maintenance of adequate supplies at the village level. Individual and family data consists of a register to identify all family members, growth charts for children with provision for recording health and immunization data, and charts for mothers to keep track of pregnancy histories.

In Level II programs, the primary impact indicator is the nutritional status of the beneficiaries. However, interpretation of the data is particularly difficult because of the biases introduced in the selection process (and the self-selection of drop-outs) and because of the natural tendency of a set of children to recover with age. In Level III programs, the primary indicator remains nutritional status. However, the annual community-wide surveillance makes it possible to assess community-wide change in nutritional status and to compute infant and preschool mortality rates. This enables interpretation of annual change without as much con-

cern for selection bias problems and problems due to aging. A transition matrix showing how many children shift from each category in one year to each of the categories in the next facilitates this analysis. In Level IV programs, the village-wide transition matrix can be used monthly to assess progress. Furthermore, because food beneficiaries are selected according to nutritional need, the count of such beneficiaries is a convenient indicator of program impact. Mortality rates can be computed and, if newborns are weighed at birth as planned, the birth weights of those children can be used as a third indicator of program impact.

The key to the successful implementation of the Monitoring/Built-In Evaluation system is the quality and intensity of supervision of the village workers. Although they are drawn from the village and have no special skills, village workers have shown remarkable skill when instructed properly and given adequate support. The specific recommendations are directed primarily toward strengthening the organizational structure to provide the village worker this much needed support.

The recommendations are as follows:

1. USAID should fund the completion of the CARE evaluation of their CPWP program.
2. USAID should fund the implementation of the Monitoring/Built-In Evaluation system in the most advanced CRS and CARE programs. Funding should be directed toward the hiring and training of VOLAG staff to create monitoring units to provide additional supervision for the programs. Also, recurrent costs of the monitoring units must be covered. Additional headquarters staff may be needed and, at first, workshops to review progress in system implementation should be supported.
3. The VOLAGS should move toward Level III MCH programming wherever possible to optimize food usage and to facilitate assessing program impact. Hesitation should be used in converting

existing programs to Level IV because transition to that level alters markedly the relationship between the VOLAGS, their counterparts and their beneficiaries. New programs, however, can be established according to the Level IV design.

4. The training institutions of India will need support to facilitate the inclusion of the Monitoring/Built-In Evaluation philosophy and implementation procedures into their curricula.
5. Research studies, on a limited scale, should be designed and implemented to verify that the current and/or planned MCH designs can have the desired results under ideal conditions. Other design hypotheses might be tested in research studies as well.
6. USAID staff will have to be retrained to view nutritional impact as a primary goal and the audits and monitoring done by USAID revised to reflect that goal.

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INTRODUCTION

In 1979, USAID/New Delhi commissioned a qualitative evaluation of the PL 480 Title II program in India (Nelson, Sahn and Rogers, 1979). Subsequently, USAID/New Delhi has initiated efforts to launch quantitative evaluations of the four separate components of the PL 480 Title II program -- cooperative promotion, Food for Work (FFW), School Feeding (SF), and Maternal Child Health (MCH). This document addresses this fourth component, MCH. Specifically, it is the development of a preliminary scope of work and implementation plan for a monitoring and evaluation system for the current and future PL 480 Title II MCH program in India. The terms of reference for this development effort are presented as Appendix I.

Currently, the PL 480 Title II MCH program in India is being administered almost entirely through two voluntary agencies -- the Cooperative for American Relief Everywhere (CARE) and the Catholic Relief Services (CRS).¹ CARE currently supplies MCH feeding centers in over 2000 blocks² reaching almost 6,000,000 children and pregnant/lactating mothers. The relationship between CARE and its counterpart, the Government of India (GOI), is such that the program is truly a collaborative effort. CARE neither designs nor implements its program unilaterally. Rather, CARE works through the State Governments of India who implement plans consistent with their own perceived needs and within the constraints established by the local infrastructure. Many of these CARE-GOI programs are little more than straight feeding programs. However, where possible, CARE has actively pursued the development of upgraded programs designed to integrate primary health care and nutrition/health education services with supplementary feeding in an effort to have more positive impact on its beneficiaries.

In a much smaller program, CRS supplies over 3000 MCH feeding centers throughout India reaching over 600,000 children and pregnant/lactating

¹A third VOLAG, Christian World Service/Lutheran World Relief (CWS/LWR) is currently using small quantities of PL 480 Title II food but will discontinue its use in the near future.

²A block in India is a governmental unit serving in the order 100,000 people.

mothers. In contrast to CARE, the CRS program is run independently of the government relying heavily on the infrastructure of the Catholic Church in establishing its program. It is a highly decentralized program giving the staff working in each diocese great freedom in designing and carrying out their own programs.

With regard to the design of an evaluation of MCH programs, most people would expect an outline of how a study would be conducted to determine the impact of existing MCH feeding programs on the nutritional status of the beneficiaries. Such matters as testable hypotheses, sampling designs anthropometric measurements might be discussed. However, after observing the situation and programs currently in operation in India, we decided that an alternative approach would be more appropriate and, in the long run, more useful. This decision was based on the fact that the majority of the existing MCH programs were considered by all to have little impact and, therefore, are not worth the time or expense that would be involved in a large-scale, cross-sectional evaluation. Moreover, two of the largest and best programs have already undergone evaluations, the results of which are subject to the same challenges facing most similar special studies. Also, no one has confidence in the anthropometric data (ages, weights) collected in several of the other MCH programs which are candidates for evaluation. This precludes evaluations based on the collection of longitudinal data from actual field records.

It should be stated at the outset that the authors of this report, based on their field experience in nutrition programming and their knowledge of monitoring and evaluation efforts, had certain preconceived notions regarding the subject we were asked to address. What we saw on our short visit to field sites and what we learned in our discussions in New Delhi with numerous officials only reinforced our biases. In short, this consultancy strengthened our conviction with regard to monitoring and evaluation that both functions should be built-in to any social service intervention from the outset. Although many people make a clear distinction between internal monitoring and external evaluation, we feel strongly that the two activities should be linked -- in effect, they are one and the same. To reinforce this notion, we will refer to the Monitoring/Built-

In Evaluation system (M/BIE) throughout this report. The implication of having a single M/BIE is that impact indicators are included in the routine monitoring function and used in conjunction with selected process indicators in every day program management.

The concept of using data generated routinely by field workers for the M/BIE suggests strongly that the system should rely on as little data as possible to minimize the clerical function of the field staff. Furthermore, analysis methods must be developed to convert the small amounts of data into relevant management information for use at every level of the hierachical organizational structure formed to implement the program.

The use of the routinely collected data also minimizes the need for costly, time consuming, special surveys for evaluation. The argument for objective, carefully designed surveys for evaluation carried out outside of normal program operations has some merit; however, the experience in India and elsewhere with such massive efforts has not been good. Typically, the results are strongly suspect even when produced by objective outsiders and often come too late to do anyone any good. The exception to this lack of need for special surveys is the special research study designed to answer very specific questions relating to the design or operation of an intervention.

One consequence of using only limited quantities of data for management is that much of the information sought routinely in special surveys is not recorded and analyzed formally in the M/BIE. Skilled managers within the M/BIE may inquire, at the village level, about a great many aspects of community life and program operation, but they never record their findings in a standardized format for submission to their superiors at higher levels of responsibility within the program. For example, information regarding the quantity and quality of an educational program of the local water system may be sought by management for particular sites in response to signals created in the M/BIE. However, that information is never formally or consistently recorded for use in reporting on the impact and/or effectiveness of the program to higher level officials or other external reviewers.

Although best suited for implementation at the start of a new program, an M/BIE for management of a nutrition intervention using limited quantities of data for controlling the every day operation of a program is appropriate for existing programs as well. Difficulties will be encountered in overcoming the resistance to "another data system" in existing programs; however, careful introduction of the concept of actually using data for analysis at the local level should help overcome this resistance. The difference in the M/BIE for alternative program formats lies in the nature of the impact data needed to "drive" the system. For convenience, we partition MCH programs into four classes or levels. The levels correspond to the type of impact information which can be generated, not to the sophistication or appropriateness of the underlying program.

Level I is the straight feeding program (for example, the Special Nutrition Program in India) where little if any impact data is available because no nutrition information is collected for the beneficiaries. Level II is the upgraded program which includes, as a minimum, regular weighing of children. Because weighing is always associated with health-nutrition education and often with the delivery of health services, Level II programs are of the integrated variety. Most of the upgraded CARE and CRS programs in India are Level II programs. Level III is similar to Level II except for the inclusion of annual targeting to identify the neediest "X" number of beneficiaries where "X" is an arbitrarily fixed number. This implies an annual surveillance of the entire population of a village to enable the selection of the neediest beneficiaries. Level IV is similar to Levels II and III except that the surveillance is continuous and the number of beneficiaries is variable depending on the number of children and pregnant/lactating mothers meeting predetermined criteria defining risk.

As of the start of this consultancy to develop a scope of work for a monitoring and evaluation system for MCH, USAID/New Delhi was taking the first steps towards initiating a major new thrust in PL 480 Title II programming in India. As of the writing of this report, a preliminary proposal had been submitted to the GOI in support of this new initiative. In brief, USAID/New Delhi modeled its proposal after the Integrated Child

Development Service (ICDS) scheme adopted by the GOI in 1976. The original program now reportedly operating in 200 blocks calls for the integration of health, education and social welfare services to improve the nutritional status of preschoolers, to reduce mortality, morbidity, malnutrition and school drop-out rates, and to enhance the ability of the mother to tend to her children through proper nutrition and health education as well as training to provide functional literacy. However, in support of the USAID/Washington commitment to channeling food aid to those most in need and to maximize nutritional impact, the USAID/New Delhi proposal calls for more stringent targeting of food commodities toward children and pregnant/lactating mothers determined to be "at risk" using strictly nutritional criteria. To free up the resources needed to implement nutritional targeting, USAID/New Delhi is proposing to partition the ICDS scheme into two phases where the second phase, including the pre-school education and mother literacy training would be deferred until substantial progress was made on the nutritional front.

In anticipation of the acceptance of some form of this proposed program, USAID/New Delhi requested that we consider the design of a monitoring and evaluation system for this "modified ICDS" plan as well as the existing MCH programs run by CARE and CRS. The new program is classified as a Level IV scheme with the same general model of monitoring and evaluation being applicable to it as well as the existing upgraded MCH program; the primary differences are in the nature of targeting and magnitude of the health services provided which, in turn, simplifies the reporting on nutritional impact.

In Chapter II of this document, we will develop the general model of the M/BIE in some detail. In Chapter III, we will address the implementation of this general model for Level II, III, and IV MCH programs in India. The discussion will include suggested forms for data collection and will illustrate how management should use the information on those forms to assist villages (or collections of villages) with their program implementation. In response to the work order (see Appendix A), Chapter I will review the literature on MCH evaluation in India and elsewhere. The review will raise several of the more important issues facing evaluation specialists--issues which contribute to our own bias toward built-in evaluation

done in conjunction with the routine monitoring of program progress. Finally, in Chapter IV, we will make specific recommendations on the steps needed to move toward implementation of the M/BIE.

I. DOCUMENTATION, LITERATURE AND EXPERIENCE ON MCH EVALUATION

The literature on the evaluation of nutrition programs is quickly becoming quite extensive as more and more pressure is applied by the donors of scarce resources to justify the use of those resources. Much of this pressure has come from USAID itself - one of the largest donors of food aid in the world. In fact, it is this same pressure that has prompted USAID/New Delhi to upgrade the MCH program. The Country Development Strategy Statement for fiscal year 1983 states, "Recent AID/W guidance on Title II has emphasized the need for better evidence of program impact. . ."

It would be tedious indeed to do a thorough review of the literature relevant to MCH evaluation. Such reviews already exist. The USAID/Office of Nutrition commissioned a review of the general literature on evaluation and the specific application of the principles of evaluation to nutrition (Sahn and Pestronk, 1980). Subsequently, one of the authors involved in that study reviewed the literature in India and included his findings in a document prepared to assist in the planning of an upgraded MCH program in India (Sahn, 1980). Another exhaustive review is unnecessary. We choose to limit our attention to three major issues: the meaning of monitoring and evaluation and their interrelationship, the problem of attributing observed changes in nutritional status to large scale interventions in the "real" world, and the inherent problem in evaluation of nutritional impact resulting from lack of understanding of the behavior of our best indicators.

A. Monitoring and Evaluation

In practice, monitoring and evaluation have too often been treated as separate and distinct entities in the operation of a nutrition intervention. The term "monitoring" has been used to describe the documents and activities required to control the flows of commodities and other material inputs to intervention sites. The term "evaluation" has been used to describe both the quality of

that delivery system (is the monitoring system doing its job?) and the impact resulting from the intervention. Monitoring, therefore, is the system which governs or controls program activities while evaluation is the special study done once or twice during an intervention to determine if it works.

This distinction between monitoring and evaluation is in evidence in the CARE-MCH program, the CRS-MCH program and in the model for MCH supported by the GOI. CARE has a sophisticated sampling scheme for monitoring the flow of food commodities which is applied routinely to account for food losses, etc. But for their upgraded MCH program, the Composite Program for Women and Preschoolers (CPWP) in Kerala, a special, one-time evaluation survey was administered in December of 1979. Analysis of the data generated during that survey is only just beginning. Similarly, CRS monitors the flow of food but trusted its evaluation to a special survey, also done in 1979. The results of the survey are just now "going to the printers". ICDS has been reviewed with several different types of special evaluation studies. The first was an effort to determine the degree to which the organization and infrastructure for the program had actually been put into place (Program Evaluation Organization, 1978). The second was an impact evaluation based on a series of surveys carried out by teams of special medical consultants to the project (Integrated Child Development Service, 1981).

We urge that this conceptual separation of monitoring and evaluation be abandoned. That is, monitoring should do more than control the flow of services. It should give some indication of the quality of that flow and continually track program progress by assessing impact so that mid-course corrections can be made in a timely manner to improve the efficiency or quality of the service delivery system. In the ideal case, data flowing from the monitoring system will be used to dictate policy changes with respect to the mix and/or nature of services delivered as well. The ultimate statement that malnutrition was reduced by "x" percent should

flow from the every day monitoring system and not require a special study and two years of analysis. The merger of evaluation and monitoring (use of impact indicators to monitor service delivery and the use of data collected routinely in a program for evaluation) is an unusual concept for India feeding programs and for USAID programs worldwide. The aforementioned CARE-MCH evaluation and the CRS-MCH evaluation are typical examples of the separation of monitoring and evaluation. The India Title II Food for Work Evaluation Plan calls for in-depth case studies to determine the nature and magnitude of the impact in the various types of programs in India using food as payment for labor. Outside of India, the special evaluation study is equally popular. The Philippine Title II, MCH Evaluation Scope of work resulted in a special study to test assorted hypothesis regarding the operation of the feeding programs in that country. Also, the published evaluation of the CRS Nutrition Education Project in Morocco (Gilmore, 1980) was based on a special study combining data generated especially for the study with retrospective data already existing in the field.

The results of all of these special evaluation studies are immediately subject to challenge by the informed observer because of the extreme difficulty almost always encountered by researchers and/or evaluators in assembling a workable data set in the developing world. The problems encountered in gathering data were openly and honestly discussed by CARE, CRS and the ICDS Central Committee representatives in India and our own experience in other parts of the world confirms that as far as data is concerned India's problems are not unique. We believe that the routine collection and use of impact data for monitoring as well as evaluation will enhance the integrity of the data because it will be used by the people collecting it and not merely passed to some computer for the generation of a report. Perhaps more importantly, the use of the data in the field will contribute to the improved

performance of the program staff by providing them rapid feedback on the fruits of their activities. There is some evidence in the literature that even in situations where the data was not necessarily destined to play a major role in the management of a given program the more intensive training and greater numbers of personnel in data oriented programs (research programs) leads to greater program impact. In their conclusions with regard to costs and effectiveness of feeding programs, Beaton and Ghassemi write

This may suggest that administrative costs have been kept too low in operational programs; that additional or better prepared personnel might increase effectiveness. (Beaton and Ghassemi, 1979;iii)

The integration of monitoring, evaluation and program operation necessitates additional and better trained workers and, therefore, contributes to overall program performance.

B. Competing Explanations of Observed Outcomes

A second reason for challenging the results of special evaluation studies is the extreme difficulty of capturing reliable and quantifiable data on the many exogenous factors thought to be relevant in causing changes in the nutritional status of individuals and whole communities. In the evaluation of all social programs which occur in a dynamic and unpredictable "real" world settings stretched over a period of years, there are always competing explanations for the observed changes in impact indicators. Even in the most carefully controlled "experiments" utilizing comparisons of matched groups of participants and non-participants, competing explanations of changes in the impact indicators can be found.

In an effort to categorize competing explanations for nutrition and other social interventions, Sahn cites ten "threats to validity": history effects, maturation effects, testing effects, instrumentation effects, regression artifact effects, attrition or addition effects, Hawthorne effects, multiple intervention

interference, selection-intervention interactions and pretest-intervention interactions (Sahn, 1980; 88-90). He goes to show how just about any of the evaluations of nutrition programs in the literature - even those growing out of carefully conceived research designs - can be attacked by one or more of these threats. A USAID funded study of community-level nutrition programs explores, in great depth, the necessity for accounting for alternative explanations of empirical findings, (Drake, Miller, Humphrey, 1980). This latter study suggests that the appropriate methodology for analyzing nutrition intervention data is the explicit cataloging of all competing explanations for observed patterns in impact indicators and the systematic elimination of as many explanations as possible through objective and/or subjective analysis.

The ever present existence of these competitive explanations of observed changes points up the need to acknowledge that a change in an impact indicator is not automatically attributable to the existence of an intervention. In research programs, this is a major problem, one requiring the use of rigorous experimental design and the collection of vast quantities of related data (to help ferret out the competing explanations). In an applied program which is results oriented, this is less important. USAID and the GOI should be content to know that the nutritional status of the beneficiaries of a program is improving. Still, those responsible for resource allocation want to have some feeling that their programs contribute to the positive trends in impact indicators.

A monitoring and evaluation system integrated into the routine operation of an intervention is more likely to impart that sense of confidence in a program than an external evaluation study. One part of such an integrated monitoring and evaluation system must be the use of the data by management to shore up the operation of the program. Localities not having some impact (or

having more impact than is reasonable to expect) must be "site-visited." Corrections in those areas, once put in place should result in more appropriate progress with regard to the impact indicators. Or, if no such progress results, the site visits should lead to the identification of the competing explanations which explain the aberrant behavior of the impact indicators. If this system of using the data for management operates with any degree of efficiency, confidence that observed changes in impact indicators are due to the program should be high or, at least, the competitive explanations of impact should be well known.

C. Impact Indicators

One class of competing explanations for observed outcomes is sufficiently important in both the design and assessment of MCH programs that it deserves special attention. The evaluation literature as well as the literature on program design has been concerned with the identification of the proper indicators for diagnosing nutritional efficiency and/or measuring change in nutritional status.

With regard to the assessment of the nutritional status of preschoolers, there has been considerable research; however, the experts still argue over the need to measure height along with weight for field diagnosis of malnutrition. Height measurements are difficult to take in the field, add a layer of complexity in data processing and analysis, but enable the distinction of wasting from stunting in a malnourished child. Unfortunately, the experts disagree with respect to the importance of stunting as it relates to health. Nor is the growth response of a stunted child in the face of an intervention well understood. A recent article by Martorell et. al. challenges the once accepted contention made by the 1971 Joint FAO/WHO Expert Committee on

Protein and Energy Needs that chronically malnourished children retain the capacity for complete catch-up recovery. (Martorell et. al., 1979)

This lack of full understanding of the recuperative power of a malnourished child is, in itself, a competing explanation for the observance of no change in the nutritional status of a population taking part in an intervention. If moderate stunting afflicts a population, an intervention may do little to alter weight for age or height for age scores, while the population remains healthy but small.

With regard to the determination of nutritional deficiency in mothers, there has been less research and, consequently, less agreement as to the best indicators of impact through intervention. Birth weight is generally accepted as an indicator of risk in the new born, but even here there is disagreement as to the degree of risk associated with different weights.

In summary, the monitoring and evaluation of nutrition programs is especially difficult because the very best indicators of impact are not well understood. Observed outcomes in an intervention may well reflect phenomenon associated with the indicators and have little relationship to the underlying health of the population benefiting from an intervention.

II. TOWARD A GENERAL MODEL OF MONITORING/BUILT-IN EVALUATION

The MCH programs operating in India at present include some straight feeding programs and some upgraded programs--Level I and Level II programs as defined in the Introduction. In most of the upgraded (Level II) programs, criteria for beneficiary selection include nutritional need as well as economic need. In practice, nutritional need is taken as equivalent to economic backwardness; that is, the poorest, least educated members in a community are assumed to be those who are most in need of food supplementation. We neither saw nor heard of a program which systematically surveyed all members of a community prior to selection of beneficiaries; therefore, we assume that no programs have achieved Level III status.

CARE claims that 3.9 million of its 5.9 million MCH beneficiaries are now in Level II programs. However, those acknowledged as having the highest degree of integration -- the CPWP in Kerala, the MSNP in Madras, the integrated Nutrition and Health Program in Gujerat and the integrated program in Calcutta -- have approximately 600,000 beneficiaries. CRS serves about 638,000 beneficiaries all told--one-third in the Nutrition Education Program (NEP), one-third in integrated programs based on the community worker concept and one-third utilizing government services without the aid of a community worker. According to the CRS administration in New Delhi, 40% of all their programs have progressed to the point that the regular weighing of children produces data of sufficient integrity to be used for impact assessment. They are working steadily to increase this percentage.

A. Level I MCH Programs Should Not Be Monitored

Before considering the existing monitoring system in Level II programs, we feel it necessary to consider and dismiss the notion of evaluating Level I MCH efforts. Currently, Level I programs

(in CARE) fall under the system used by CARE to monitor stock flows and commodity distribution records. If these programs are carried into the future, and there is general agreement that they should be either upgraded or dropped, the monitoring of commodity flows and distribution should be maintained but not enhanced. Because impact assessment would have to be done through a special study as there is currently no impact data generated as part of routine program operations, it should not be done at all.

Our skepticism concerning external evaluation studies, in general, was explained in Chapter I. However, our negative attitude toward impact evaluation of Level I programs has its origin elsewhere. There is general agreement among all concerned parties in India that Level I programs are ineffective in generating measurable nutritional impact. CARE, CRS, USAID and the GOI all agree:

- the typical food supplement is not large enough to make up the nutrient gap of the beneficiaries
- the impact of the supplement is further diluted through sharing
- the ration too often serves as a substitute for the food the child would otherwise receive at home, and
- increased food intake is ineffective unless accompanied by health and educational services designed to reduce infection, eliminate parasite infestation and improve food habits.

The expenditure of valuable resources to verify that straight feeding does not work makes little sense in the context of this overall agreement.

B. Existing Monitoring in Level II Programs

The institutionalized monitoring systems currently in operation for CARE and CRS Level II programs deal exclusively with commodity positions and flows. CARE has developed a sophisticated system which provides their administration with an accurate accounting of stock levels at various points in their vast feed-

ing network. An innovation introduced by CARE in the mid 1970's is a random sampling technique. By visiting and studying in some depth the operation of only 10 percent of their network, CARE has been able to develop an accurate picture of the performance of their distribution system nationwide.

CARE also utilizes Planning, Implementation and Evaluation (PIE) reports on a quarterly basis in all of its programs. The PIE focuses on intermediate indicators (process indicators in the jargon); that is the PIE monitors the coverage attained by the delivery system on quantifiable program inputs and/or services. Actual delivery is compared to planned targets. For example, indicators such as the ratios of equipment purchased to the target or tons of food distributed to the quantity of food which should have been distributed are computed. Health inputs (for example, deworming medicine) are included when CARE funds are used to procure them.

The CRS program is both smaller and more decentralized than the CARE program. Thus far, the central administration of CRS has limited its monitoring to stock and commodity situations. The regular reports submitted to CRS headquarters in New Delhi through its zonal offices give the number of beneficiaries fed, the quantity of Title II commodity distributed and the number of beneficiaries receiving health inputs such as immunizations. The latest form introduced by CRS but not yet field tested includes a limited amount of nutritional status information -- the number of beneficiaries falling into each nutritional grade as determined by weight for age. Also, some CRS programs have undertaken their own analyses of impact data generated from the weighing program. For example, the Kottar Social Service Society is currently consolidating nutritional status data in its villages for comparison to a similar consolidation done three years ago.

C. Impact Evaluation in Level II MCH to Date

While little has been done to routinize the monitoring of nutritional impact in Level II programs, several special impact evaluations studies have been undertaken by CARE and CRS. We have already mentioned the two most ambitious studies in our general discussion introducing our bias toward incorporating evaluation in the monitoring system and using both impact and process data for management purposes. We consider them in greater depth here.

The CARE study of the CPWP and the CRS study of the NEP were quite similar. Both were cross-sectional surveys involving massive quantities of data. Both organizations experienced considerable difficulty in the field gathering the data and even more difficulty in transforming the data into machine readable form for computer analysis. The data for each study was gathered in 1979. CRS is just now completing its analysis-- CARE is just beginning.

At this time, CRS is submitting a report on the NEP evaluation to the printers. (It should be available for review in July or August of 1981.) Although we have not seen the report, we discussed its content at length with the CRS nutritionist in New Delhi. The nutritional impact data show that a) CRS beneficiaries are better off than the control and that b) long - term beneficiaries exhibited faster growth rates than beneficiaries of the same age who had participated in the program for a short time only. However, the openness and honesty of the CRS people should be applauded. Much of our discussion centered around the very real problems in the data set which cast some doubt on the impact analysis results. These problems included such events as the withdrawal of several newly trained interviewers after suffering poor reaction to their own immunizations and the refusal of the computer people to process the data on schedule for fear that the analysis was somehow politically motivated. Most importantly, the retrospective data

drawn from weight charts for beneficiaries surveyed was often missing or inconsistent with the weights taken during the survey. Though the analysis results are positive, they must be taken "with a grain of salt."

CARE has not yet pushed its analysis as far as CRS. Preliminary tables have been generated containing the univariate distribution of most survey variables for several groupings of villages. These groupings partition the villages surveyed according to length of time in the CPWP. The computer printouts with these tables are 8 to 12 inches high--they have not yet been reviewed. While we are generally opposed to and discourage large scale evaluation studies of this type, we do recommend that CARE be given assistance in completing the study (see Recommendation I, Chapter IV). The agonizing work of creating the data set is complete -- it would be unwise and disappointing if the analysis is deferred any longer.

D. A General Model for Monitoring/Built-In Evaluation

Because of the expense, aggravation and lack of definitive results in their special evaluation studies, CARE and CRS share an unwillingness (perhaps, an aversion) to undertake similar studies in the future. The alternative approach is to generate the data for evaluation as part of the daily routine of village workers and their supervisors. In the introduction, we expressed our own bias toward this alternative approach. Moreover, to make this approach a viable one, it is necessary to use the data collected for management.

Otherwise, the collection of this data becomes an unwelcome burden on program staff -- a burden that quickly causes the deterioration of the data gathering system and the demise of the evaluation effort.

Several guiding principles must be applied to a system using data for management purposes:

- the quantities of data recorded and objectively analyzed should be kept to a minimum
- analytic procedures for converting the data into management information must be well defined and understood by program staff at all levels
- the staff has to understand and be committed to the concept of managing a program to achieve operational goals--in this case, nutritional improvement of the beneficiaries.

In the balance of this section, we elaborate on a general model for M/BIE in the context of MCH programs in India.

1. Components of the M/BIE

It is convenient to identify three components of an M/BIE: data, management structure, and operational procedures

a. Data

An M/BIE requires that two types of data be collected at the local level and consolidated for analysis at higher levels of the management structure--impact indicators and stock inventory data. The impact data must include measures of nutritional status in a nutrition program. Because MCH programs are concerned with decreasing the rate of preschoolers death, mortality rates (infant and preschool) are a second indicator of program impact. However, an accurate mortality rate can be determined only if the entire community is placed under periodic surveillance. (Otherwise, drop-outs cannot be attributed to death and birth-rates can not be accurately determined.) This presupposes that the MCH program is a Level III or Level IV program. Finally, birthweight of newborns is a good indicator of the impact of the training, food stuffs, and antenatal care given pregnant women. This indicator can be collected in any level MCH program if newborns are weighed at birth. The Level IV program proposed by USAID/

New Delhi, the modified ICDS, includes provision for gathering birthweight data.

The measure of nutritional status selected for a given MCH program depends on the operational procedures used in the program for diagnosing "problem" children. Most common is weight for age -- the comparison of the weight of a given child to a standard weight for children of the age of that child. For consistency, we recommend that this measure be used where ever possible. However, in many cases heights of children may also be ascertained in the field. (USAID/New Delhi is considering the use of an innovative wall chart to determine weight for height deficiencies as part of the diagnostic procedure in their modified ICDS while CARE has provision for recording height data on the weight chart used in the CPWP.) If heights are gathered, the use of a Waterlow classification for impact assessment is advisable (Waterlow, 1972)

The stock inventory data must include quantities of basic material inputs on-hand and an indication of the rate of flow of those inputs to the beneficiaries. The quantities on-hand signal the system that replacement materials are needed when stocks are low. The rate of flow indicates whether services are being delivered at the proper rate. (If 10 bags of food commodity are on-hand in two successive months without any food being dispersed, there is a total lack of delivery of service.)

We should note that the M/BIE, as defined here, does not include an effort to assess the quality of non-tangible inputs such as health/nutrition education or home visits. Although it is possible

to record quantitative information regarding intangibles (number of classes held, number of visits made), there is no way to assess the quality of those services with numbers. We choose to rely on the subjective assessment of quality during site visits by supervisory personnel -- assessments made in response to a poor showing on either the impact indicators or the inventory data.

b. Management Structure

The key to the successful application of the M/BIE concept is strong supervision and management of village operations. The weakest component of existing MCH programming in India is the mid-level supervision of field workers. This component must be strengthened--for the good of both the M/BIE and the MCH program itself.

We envision the formation of a clearly delineated hierarchical organizational structure in which the span of control at any one management level is sufficiently small to facilitate frequent personal contact between supervisor and subordinate. This personal contact facilitates the review of the qualitative aspects of service delivery and provides opportunity for on-site training and/or the reinforcement of lessons learned in more formal group training sessions.

Strengthening the organizational structure is most critical at the lower levels of management, especially at the first level of supervision above the village workers. Because the village workers are local women without prior special training and because the success of the entire MCH program rests

on their abilities and skills, supervision of the village workers is absolutely essential. Thus, the first line of supervisors must be highly skilled -- at data interpretation, problem solving and training--and have the time and motivation to work in the field.

The guiding principle of the hierarchical structure should be "management by exception". The analysis of data at each level of the organizational hierarchy consists largely of the identification of exceptional cases among the units under his/her jurisdiction. An exceptional case is one performing extraordinarily well or one performing poorly. In either case, personal visits to the exceptional case are in order; in the former case to learn what works and in the latter, to correct what doesn't.

Note, the use of impact data as the basis for management by exception is not a new concept in MCH programs. In all existing Level II MCH programs in India, management by exception is the guiding principle for the village worker. By analyzing basic data on the family--dietary habits, health status and/or the nutritional grade of preschool family members--the village workers identify "exceptional" families needing additional remedial or curative assistance. Home visits are recommended to facilitate the prescription of corrective action and to follow up on the progress made due to the correction. Our suggestion is that this same mode of operation be extended throughout a hierarchical organizational structure where consolidations (aggregations) of selected impact indicators be used to prompt visits by supervisory personnel for the purposes of identifying problems,

making corrections and observing the changes resulting from those corrections.

c. Procedures

For the system to work, procedures for consolidating and analyzing data at the various levels of the organizational hierarchy will have to be established. At the lowest level, data on individuals and families will be recorded at the village level. These data will have to be consolidated for the village to create a "score card" for assessing the progress of the beneficiaries and the performance of the village workers.

Supervisors in the first level of the organization higher than the village review the consolidated data for their villages to identify exceptional cases. An exceptional village is one that:

- deviates from the norm established by all other villages
- deviates substantially from the historical trend for that village
- fails to exhibit positive improvement for a substantial period of time

Visits are made to exceptional villages and corrective actions taken where necessary.

These first line supervisors consolidate the data from their villages for review by supervisors in the next level of the hierarchy. (The number of levels depends on the overall size of the program.) This consolidation takes two forms. First, the data is aggregated linearly. That is, if the village level indicator is the number of grade III

malnourished children, the consolidated indicator is the number of Grade III malnourished children in all villages reporting to the supervisor. Second, the data is aggregated by counting the number of villages, making progress with respect to the chosen indicator. For example, the supervisor would tally up the number of villages with fewer grade III children than in the last consolidation. This second form of aggregation helps prevent the masking of small changes in some villages by larger changes in the opposite direction in only one or two villages.

Ultimately, by consolidating data at each level of control in the organizational structure, indicators are computed for the program as a whole. These are the same indicators used at the village level and all other levels in the organization. This "grand" consolidation gives supporting agencies such as USAID or UNICEF an indication of the impact of the programs they sponsor.

The final consideration with regard to the consolidation of data is the frequency or periodicity of each consolidation. This varies according to

- the type of data (impact or inventory)
- the level in the organizational structure (village, intermediate supervisory, program as a whole)
- the method of beneficiary selection (Level II III or IV type program)

In Level II and III MCH programs, we recommend the monthly consolidation of village-level inventory data and the quarterly consolidations of impact data. Because of the annual addition and sub-

traction of beneficiaries, an annual review of impact data is needed at the village level. This review should be done jointly by the village worker and the first line supervisor in the village. If possible, other village leaders should participate in this review as well. This special annual review should be held in all villages and not tied to performance criteria.

Unless an intermediate level of the organization is used as a distribution point for one or more of the material inputs to the program (food, medicine, etc.), quarterly reviews of both impact and inventory consolidations should be adequate. Any organizational level storing materials for distribution further down in the structure should review inventory on a monthly basis.

Inventory and impact consolidations at the program level should be done annually and should be based on the data generated during the annual reviews at the village level. The program-wide review should be performed more with policy direction as a focus than with the performance of distinct units with the organizational structure.

The only deviation in periodicity of consolidation in Level IV programs is in the frequency of impact consolidation at the village level. Because Level IV programs are continuously screening potential beneficiaries, impact can be measured quite easily by looking at the number of beneficiaries meeting the screening criteria at any given time. If monthly screening is applied, monthly impact review is possible and desirable.

2. Feasibility of the M/BIE

In our discussions with CARE and CRS workers in the field and in our subsequent conversations with GOI administrators in New Delhi, we introduced the philosophical arguments for the M/BIE and the practical implications of those arguments as regards implementation. Without exception, the feasibility of implementing the concept of routine use of impact data in program management was seriously questioned. For the most part, the issues raised by those with the most experience with MCH activities in India were valid and caused considerable concern on our part. Frankly, we cannot dismiss any of these questions, in good conscience, without careful response.

Overall, the objections raised against the M/BIE concept dealt with the practical constraints on implementation--not on the general concepts. These constraints include:

- the skill level of the typical village worker; particularly, in their ability to record, analyze and interpret quantitative data,
- the maintenance of the equipment needed to facilitate the collection of reliable information,
- the lack of resources to provide adequate supervision or to update the training of all field workers
- the lack of good communications and transport in the field, and
- the inability to coordinate the many bureaucracies--government and non-government--playing some role in program implementation.

During our field visits, we observed first hand instances in which all of these constraints were operating to limit the effectiveness of existing MCH programs. Because of

the early emphasis on the USAID/New Delhi proposal to upgrade existing MCH programs to a modified ICDS (Level IV) scheme, the role of these constraints in the modified ICDS was discussed at great length during our visits and meetings. Given the excessive demands on village workers in this scheme the constraints were thought of, in general, as insurmountable. (The emphasis on continuous nutritional targeting in the modified ICDS scheme places added stress on village workers, their equipment, their supervisors and all supporting agencies involved in the programs; therefore, the feasibility of implementing the new scheme is especially in doubt.)

Our response to the charges that an M/BIE, especially in the Level IV type of MCH program, is not feasible is that as difficult as it may be, the practical constraints must be overcome--not so much for the M/BIE as for the maintenance of a viable MCH program capable of causing nutritional improvement in the target population. Because these constraints represent serious limitations to the effectiveness of any MCH program, additional effort must be made to overcome them for the good of the program. The M/BIE may well be the device to facilitate the response to the constraints as it will force program staff to act to overcome them. Several changes in attitude are needed--by USAID, the GOI, and the VOLAGS--to pave the way for the M/BIE.

a. A Results Orientation is Needed

For many years, the overwhelming problem of delivering services (especially food) to the more backward segments of the Indian population has occupied the time and thoughts of USAID, CARE, and, to a lesser extent, CRS. The magnitude of the program in India--CARE is feeding more preschoolers in India than there are people in many other nations--is so

great that solution of the logistics problems has become an end in itself. A program was defined as successful if hungry people were actually being fed. There has been little opportunity to worry about the degree to which the feeding was accomplishing any nutritional objective.

The introduction of impact assessment as a routine managerial function in a program is a marked departure from the historical approach that management concentrate only on the delivery of food commodities and other material inputs.

There is strong resistance to taking this marked departure--within some segments of USAID as well as within the VOLAGS and the GOI. One source of resistance is the fear that the nutritional impact of the programs will not become evident in a sufficiently short period of time and that government officials (particularly in Washington) will stop supporting the program prematurely.

This is a valid fear (see our discussion of the lack of responsiveness of nutritional impact in Chapter I). Yet, USAID/Washington is now demanding the demonstration of impact in response to the political pressures in the United States.

Thus, the fear of no impact must be set aside and an educational program launched in Washington regarding the reality of nutritional response to intervention.

A second source of resistance is more subtle and more difficult to dismiss. Integrated MCH programs have broader goals than just nutritional improvement. In particular, the CRS program in India operates with a broad range of goals from

nutritional improvement, to economic improvement; to increasing the independence and self-sufficiency of the beneficiary population. The role of food in integrated programs with diverse goals is often the magnet to attract people to those programs. By emphasizing nutritional impact, the non-nutrition goals of integrated programs are diminished in importance. USAID must carefully consider the adverse impact on these other goals of a marked departure to use nutritional impact as a dominating management objective. We believe that the goal of nutritional impact is not inconsistent with the broader development goals of integrated MCH programs and, as regards the usage of food, is a necessary impetus to its most advantageous application.

b. Middle Management Must be Strengthened

Most of the practical constraints limiting the feasibility of the M/BIE for MCH programs can be resolved with money. Scales can be purchased, training can be upgraded and intensified and vehicles and petroleum secured. The skill of the village workers and the coordination of the bureaucracies, however, may be beyond the touch of money. The critical nature of these constraints suggests the need for some special attention regarding the methods for overcoming them.

During our field visits, we were stunned repeatedly to see how dependent village level workers were on distinct bureaucracies for support. In the CARE - CPWP program, the village worker received food through CARE, health inputs through the Ministry of Health, medicines from UNICEF and relied in part, on community contributions for her own pay. Furthermore, super-

vision was supposed to be provided by a health worker, the Auxiliary Nurse Midwife, although the reporting system was defined by CARE. Our discussions with the Program Evaluation Organization attached to the India planning department confirmed that the ICDS program was suffering from similar coordination problems. Clearly, the USAID/New Delhi modified ICDS scheme would have similar coordination problems. As proposed, the scheme would be implemented under the auspices of the ministry of Social Welfare, while the local health structure will be expected to deliver all health inputs and to supervise the village health workers. Similar to the GOI ICDS program, USAID/New Delhi's version will rely on management by committee at the block level where a Child Development Project Officer (CDPO), a Block Development Officer (BDO) and a Medical Officer (MO) will vie for control of the program. (CRS has fewer coordination problems because of its independence from government structure; however, many of the health inputs upgraded CRS villages come from the government health service too.)

The response to the coordination problem is the establishment of a middle level of program management, with a clearly defined chain of command and a primary responsibility for the MCH programs. In our discussions of the components of the M/BIE, we made express reference to the need for a hierarchical organization committed to the concept of management by exception. To overcome the coordination problems, now extant in MCH programming in India, we urge that the structure be more than a "tree" diagram on paper. Those responsible for system performance must be given the discretion and the power to act. This

requires that more than "lip-service" to the goals and objectives of a nutrition oriented MCH program be offered by all participating agencies. Power may have to be surrendered from one agency to another to overcome the problem of coordinating service delivery and supervision in MCH programs.

C. M/BIE Must be Accepted as an Evolutionary Process

The enormity of the MCH program in India tends to produce stagnating programs. Designs are created on the "drawing board" in government offices and put into place in the field. Changes in those designs are hard to make as the inertia of the cumbersome organizational structure needed to initiate the programs takes hold.

We fear that a monitoring and evaluation system of any kind will be subjected to a similar fate. An initial design concept will be installed and left to stagnate. We hope that the general model for an M/BIE presented in this chapter be viewed as a framework rather than as a "fait accompli". In the next chapter, we will articulate, in considerable detail, the data and analysis requirements for initiating an M/BIE in Level II, III, and IV. MCH programs. However, for the M/BIE to succeed (and for the MCH programs to succeed as well), this articulation must be viewed as a starting point in an evolutionary development process. No one knows, in advance, what problems will be encountered during the real life application of a new concept. We hope that USAID/New Delhi and the VOLAGS in India recognize the need to work steadily at improving the M/BIE so that it will someday truly work.

III. IMPLEMENTATION OF THE M/BIE

To implement the M/BIE concept for MCH programs in India, it is necessary to define the data collection and analysis procedures at the village level and at higher levels of the management structure. In this chapter, we will attempt to specify an initial configuration of data gathering and analysis techniques from which USAID/New Delhi, CARE and CRS can develop an M/BIE.

A. The Core of the Data Base--The Family Record

At the core of the M/BIE is the record keeping system used by the village worker to keep tabs on beneficiaries and materials in her village. Village level consolidations of impact data are made from consolidations regarding the coverage of the service delivery system. The forms and materials needed to facilitate data collection on individuals are the same for Level II, III and IV types of MCH programs.

We recommend that the basic tool of the village record keeping system be a looseleaf notebook containing the following information:

- a map of the village giving house location by number,
- a family card for each family (in Level III and IV programs, there must be a card for every family in the village while in Level II programs in a card is needed for beneficiary families only),
- pregnancy charts for each woman receiving antenatal care (ANC)
- weight charts for all children 60 months of age or younger.

The map serves as a quick reference for locating beneficiary families. In Level III and IV programs, featuring periodic surveillance of the entire village, the map will facilitate the preparation of the initial village census and will prove to be a valuable tool for locating families in all subsequent surveillance activities. In all programs utilizing the home visit, accurate maps will encourage careful planning of visitation sche-

dules by the village worker to minimize travel time and maximize exposure. Finally, the maps will serve as a guide to supervisors, who, though not from the village, may choose to visit select families to spot check the work of the village worker. Quite possibly, Malaria Eradication and Control Program numbers could be used to identify structures.

A sample family card is shown in Figure 1. These family cards should be kept in the looseleaf notebook in numerical order for ready reference. The data called for represents the minimum amount of descriptive data to enable an outsider to get a "feeling" for the inner make-up of the family. Every individual is identified. Descriptive information for each adult includes name, birthdate, occupation, education and contraception usage. (We recognize that the question concerning contraception may be untenable in many circumstances and of course, it may be omitted. However, family planning may well be identified as a critical element in many MCH programs and, therefore space for contraception use is included in the sample form.) For each child, name, sex, birthdate, record of death and immunization status is recorded. The family identification number is shown in its simplest form on the sample--a form assuming one family per house. If households with multiple families are present (one structure housing two or more distinct family units), a compound identification number is needed. The first element is the house number, the second is the family number within the house.

In Level III and IV programs calling for village-wide surveillance, the initial filing of these forms provides a means for computing, retrospectively, an infant mortality and/or pre-school mortality rate. Deaths and births over the 12 month period prior to the census can be used to compute these indicators which can then be used as a baseline for subsequent comparisons.

FAMILY RECORD

VILLAGE:

FAMILY/HOUSE NUMBER:

VILLAGE WORKER:

SURNAME:

ADULTS

Relation	Given Name	Birthdate	Occupation	Education	Contraception ¹
1. Father					
2. Mother					
3.					
4.					
5.					

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CHILDREN

	Name	Birthdate	Died ²	Immunizations Completed		
				BCG	DPT	POLIO
1.						
2.						
3.						
4.						
5.						
6.						

1. If contraception is being used, enter type; otherwise enter "none"
2. If child died, enter date; otherwise, leave blank

Figure 1

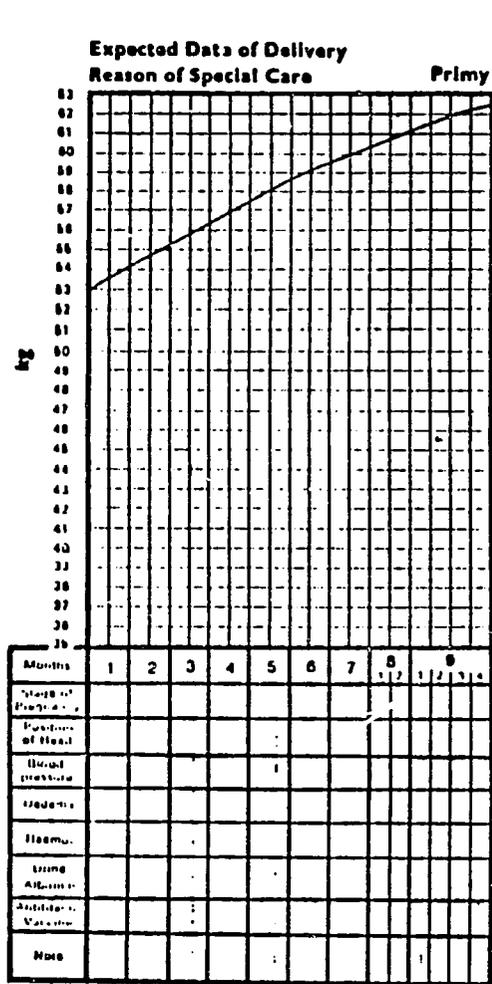
All subsequent cards for each family should be stored in the looseleaf notebook following the family card. The looseleaf concept (one we did not see used much in India) facilitates the addition and/or removal of individual cards or even whole families in response to births, deaths, migrations and even program drop-outs.

The first individual card for any given family should be the pregnant mother's chart. Of all data forms, we are least able to define the pregnant mother's chart. First, all programs treat the pregnant mother differently. Some merely distribute extra food to pregnant and lactating mothers while others provide more complete antenatal care. The modified ICDS plan proposed by USAID/New Delhi calls for a new and different role for the traditional midwife--the Dai--both in providing care and recording data. The degree to which the tasks reserved for the Dai in this plan are accomplished, by the Dai or any other village worker, will dictate what data can actually be collected. Second, less is known about risk in pregnancy than in the first years of life; therefore, it is difficult to specify the relevant data for the pregnant mother's card.

For now, we recommend that a simplified version of the card designed by Drs. Kusum and P. M. Shah be considered as the model. This card is shown in figures 2a and 2b (2a and 2b represent opposite sides of a single card.) The information called for on this card represents more data than that which could be collected under even the most ambitious MCH program now envisioned by USAID/New Delhi. As a minimum, pregnant women should be weighed periodically during their pregnancy and receipt of iron and folic acid, tetanus immunizations, food supplements and other antenatal care should be recorded.

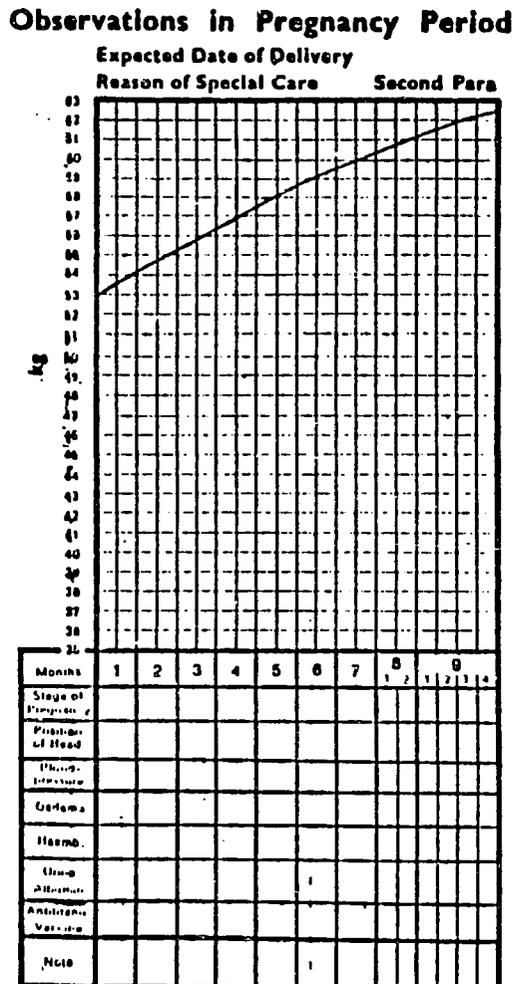
After the mother's card comes the cornerstone of the preschooler program--the child's growth chart. A sample card, patterned after the new chart in use in the CARE-CPWP program in Kerala, is shown in figure 3. It is more than just a growth chart; it is a longitudinal health and nutrition record for the child.

Figure 2b
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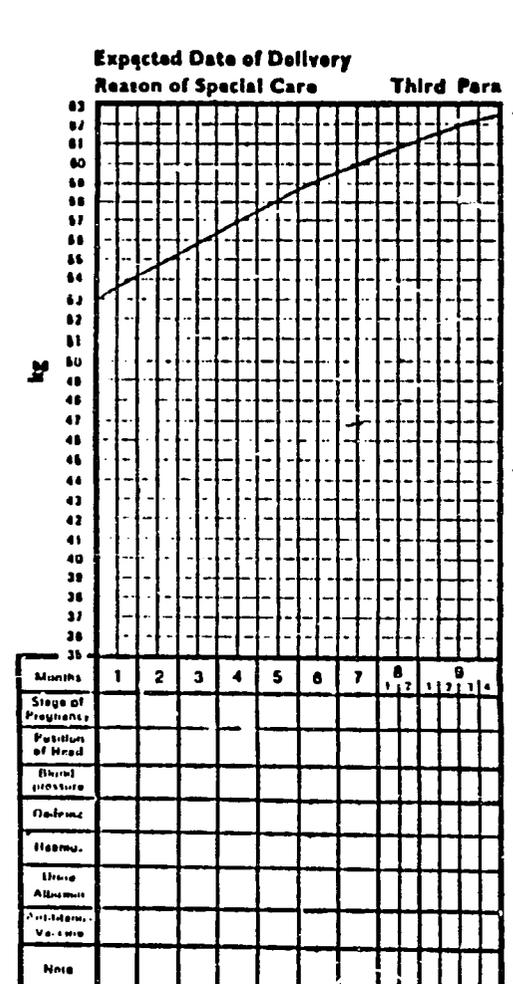
Post-natal Observation

Date	Mother		Child	
	Breast-feeding	Note	Weight	Note



Post-natal Observation

Date	Mother		Child	
	Breast-feeding	Note	Weight	Note



Post-natal Observation

Date	Mother		Child	
	Breast-feeding	Note	Weight	Note

Five common causes of morbidity are listed across the top with adequate space to allow for two observations in any given month. This facilitates a reentry of the child's health status in the event of a follow-up home visit. The growth chart is standard in that it is partitioned into nutritional grade using the GOMEZ standard applied to the NCHS-CDC definition of normal. The choice of standard and classification can be made locally. In fact, the USAID/New Delhi ICDS proposal suggests using 65% of standard as a definition of "at-risk." The chart, in this case, should be broken at 65% rather than the GOMEZ classifications of 85% for Grade I, 70% for Grade II and 60% for Grade III.

Below the growth curve are several rows for recording the delivery of services to the child in question. The "at risk" row takes on different meaning for the different Level MCH programs. In Level II and III programs, the box might be checked every time a given child is identified for special treatment and/or a home visit. It might even be used to record the fact that the child was referred to the health system. In Level IV programs, the child is continuously (monthly or quarterly) reclassified with respect to "at-riskness". This box should record the result of that reclassification. In the USAID/New Delhi modified ICDS scheme, the entry in this box might denote the reason for the at-risk designations for example, S=under 65% of standard, G=no growth for 2 months, and I=severe illness.

The next few rows are used to record the ages at which the child is immunized. It may be desirable to include an additional box at the very beginning or very end of the row to be checked upon completion of the given series. However, the family record also contains provision to record the completion of each immunization series. We chose to avoid the redundancy though some program manager may prefer to record completion of each series explicitly on the weight card itself. Finally, the last two rows are used

to record the delivery of other prophylactic services such as Vitamin A and deworming medicines.

The reverse side of the card could be used to record problems identified during home visits. (Recording the outcomes of home visits directly on the child's weight card is more informative for a supervisor reviewing the cards than is a separate register for home visits because it allows for rapid comparisons of growth performance and visitations.) We discourage the entry of routine notations to describe home visits. Such entries as "explained proper weaning practices" or "instructed to set up kitchen gardens" are not too useful. Rather, the emphasis should be on the identification of specific problems relevant to the child and his/her family.

One question usually raised with regard to weight charts concerns who should keep them--the mother or the village worker (or both)? We recommend that the cards be retained in the notebook at all times. Although retention of the cards by the mother is often supported because of the educational value of the card, the importance of the charts to the effective functioning of the program and the M/BIE makes it imperative that they be safeguarded. It is always possible to use duplicate charts, but the additional work and expense in doing so is not, in our judgement, worthwhile. However, if the mother does keep the chart, it should contain additional educational messages such as the formula for mixing up an oral rehydration packet or an aid to interpreting the growth curve itself. In Level III and Level IV type programs, retention of the card by the mother is likely to prove even more difficult because for many families, the card will not be linked to receipt of supplementary food. (In the past, mothers have shown most care in keeping the cards when they were used as the identification required for receipt of food.)

B. Consolidation of the Inventory Data

1. Village Level-Monthly Inventory Report

The stock position of the village should be summarized in a Monthly Inventory Report. This report monitors the delivery of tangible inputs to the beneficiary population. A sample form is shown in figure 4.

The sample form consists of three parts: food distribution, stock balances and immunizations. The food distribution section indicates the number of children and mothers actually fed during the month, broken down into weekly periods. In Level IV programs, the number of beneficiaries varies from month to month while in Level II and III programs, the number remains constant through each year. The number of kilograms distributed in a month can be determined by multiplying the number of beneficiaries by the ration. (This assumes that the proper ration is administered.)

The stock balance section of the form focuses on material inputs and is used primarily as a device to signal that one or more program inputs is in short supply. (Note, the list of inputs will vary from one program to the next or from one year to the next in a single program. The list shown corresponds to the proposal for the USAID modified ICDS scheme.) The accounting for each input is quite simple. Opening balances and receipts are summed to derive total available for use. The quantities distributed and lost due to spoilage are subtracted from that total to yield the closing balance. If the balance is less than the requirements for next month, the village worker must "call forward" to obtain replacement supplies. Inputs administered periodically such as Vitamin A (every 6 months) or deworming (every

MONTHLY INVENTORY REPORT

MONTH:

VILLAGE:

VILLAGE WORKER:

FOOD DISTRIBUTED

Number of Beneficiaries	No. Receiving Food each week					Total (Kgs.)
	1	2	3	4	5	
Children						
Mothers						

_____ Total Disbributed

STOCK BALANCES

ITEM	Opening Balance	Receipts	TOT	Distributed and loses	Closing Balance	Call Forward
Food (Kgs)						
Oralite (Packets)						
Iron/Folic Acid						
Vitamin A (doses)						in Mo.:
Deworming (doses)						in Mo.:

IMMUNIZATIONS

Vaccine	No. of Children/Mothers	No. Having Competed Series	No. Required in Coming Month
BCG			
DPT			
POLIO			

Figure 4

4 months) must be treated somewhat differently. We suggest that the next distribution month be recorded for these inputs. In the month before this distribution, requests for additional supplies can be generated.

The third and final section of the Monthly Inventory Report shows not only how many children and/or mothers were immunized during the month but also gives an indication of how many more immunizations are yet to be given in the coming months. This is an indication of how much work is yet to be done on immunizations and how much additional vaccine is needed.

2. Village Level-Program Efficiency Report

A second form, shown in figure 5, is a companion to the Monthly Inventory Report. Called the Program Efficiency Report, this document contains comparisons of the actual rate of service delivery to a set of targets. (This form serves the same function as the CARE-Planning, Implementation and Evaluation form.) The ratio of the actual quantity of an input given to the target is called the Program Efficiency Ratio (PER). This ratio encapsulates the performance of a village with regard to a given program input in a single number.

The form calls for the computation of a PER for each tangible input to the program. Most important is food distribution. The target is computed by assuming full distribution of the proper ration for the month. The actual distribution is taken from the Monthly Inventory Report. Similar computations are performed for the various immunization programs except that the efficiency in these cases measures overall performance of the program to date and not merely performance in

PROGRAM EFFICIENCY REPORT

VILLAGE:
MONTH:
VILLAGE WORKER:

I. FOOD

Number of beneficiaries:
Number of weeks:
Ration per week:
(Multiply these three numbers to set the target)
Target:
(Read actual delivered from Monthly Inventory Report)
Actual:
(Multiply actual by 100 and divide the result by the target)
PER =

II. IMMUNIZATIONS

	<u>No. of Children/Mothers</u>	<u>No. Series Completed</u>	<u>PER</u>
1. BCG			
2. DPT			
3. POLIO			
4. TT			

(The PER is computed by multiplying the number of series completed and dividing the result by the total number of children/mothers.)

III. OTHER

1. Oralite
No. Cases Diarrhea: Packets Distributed:
(Multiply packets distributed by 100 and divide by No. cases)
PER =

2. Iron/Folic Acid
No. Pregnant/Lactating Women: Pills Distributed:
(Multiply Pills by 100 and divide by number of women)
PER =

Figure 5

the preceding month. This is accomplished by calculating the PER for series completed rather than shots given in the month.

The sample Program Efficiency Report shows similar computations for other program inputs--oralite (oral rehydration) and Iron/Folic Acid. In these cases, it may be difficult to calculate a true target because the number of serious cases of diarrhea or number of pregnant/lactating women may not be known. If the disease portion of the child's weight chart is filled in diligently, an estimate of the incidence of diarrhea might be generated by adding up cases reported for use as a target. Similarly, in Level IV programs involving continuous screening of mothers to detect pregnancies early a target can be determined for pregnant/lactating mothers. In practice, the Program Efficiency Report will have to be tailored to fit the program design.

The importance of the Program Efficiency Report lies in its contribution toward establishing expectations with regard to impact indicators (see C. Consolidation of Impact Indicators). If services are not delivered efficiency, one cannot expect to find nutritional impact.

Some question remains as to who should fill out the Program Efficiency Report -- the village worker, her supervisor or both working together. The answer to this question will depend on the strength of the organizational structure (will the supervisor visit regularly?) and the ability of the village worker to handle the arithmetic calculation for percentages. Our recommendation is that the form be filled out jointly by supervisor and village worker to facilitate communication between the two regarding the adequacy of local performance. The form should be stored in the village to facilitate comparisons of trends over time.

3. Higher Level Inventory Consolidations

The supervision of the supervisors of the village workers requires that the data on groups of villages be consolidated for higher level review. As noted in our discussion of the general M/BIE model, the span of control at each level should be sufficiently small to enable frequent personal contact between the supervisors at one level and the people working at the next lowest level. This requires the most intense coverage at the first supervisory level wherein lies the direct responsibility for village performance. Perhaps one supervisor should be assigned to as few as five villages at this lowest organizational level to facilitate monthly visits. Because quarterly visits may be sufficient at higher levels, the span of control may be broader, say 10 supervisors at level 1 to a single level 2 supervisor. (Some practical experimentation will be needed in the field to determine the best coverage for supervisory personnel at all levels.)

For convenience, let us call an intermediate level of supervision a "subcenter". The Monthly Subcenter Consolidation Report, shown in figure 6, is conceptually similar to the village level consolidations. Sections I and II of the Monthly Subcenter Consolidation Report aggregate the stock balance and the immunization sections of the Monthly Inventory Report. The form for these sections of the report parallels exactly the form used in the village summary -- the supervisor need only add up the numbers on those village level forms.

Section III of the Monthly Subcenter Consolidation Report summarizes the village level Program Efficiency Reports. In addition to computing overall efficiency of all villages in the subcenter, the mid-level supervisor should look at

MONTHLY SUBCENTER CONSOLIDATION REPORT

VILLAGE:

MONTH:

VILLAGE WORKER:

Total No. of village visits during month:

I. Stock Inventory

Item	Opening Balance	Receipts	Distribution (Losses)	Closing Balance	Call Forward
Food					
Oralite					
Iron/Folate					
Vitamin A					
Deworming					

II. Immunizations

Vaccine	No. of children/ Mothers	No. Fully Immunized	No. Requiring In Coming Month
BCG			
DPT			
POLIO			
TT			

III. Review of Village Performance:

Village	% Families Contacted	Food Per	Immunization %Coverage	Diarrhea %Coverage	Iron/Folic % Coverage
1.					
2.					
3.					
4.					
Average					

Figure 6

the PER's for the individual villages in the subcenter. This enables the mid-level supervisor to identify particular villages not responding to the prods of the first line supervisor.

Identical forms can be used for higher level consolidations. The precise definition of appropriate higher level consolidations must be done in the context of the program being monitored. CRS programs should ultimately arrive at a zonal consolidation, CARE might group blocks within states and/or turn to Statewide consolidations, and the USAID/New Delhi modified ICDS might go to block summaries.

C. Consolidation of the Impact Data

In defining Level II, III and IV MCH programs, we made use of the different types of impact data available in each. Level II programs must rely on nutritional status of the beneficiaries as its only impact indicator. Because of the annual village-wide surveillance, Level III programs can add mortality indicators and, by comparing the community nutritional status at each village-wide census, the status of the entire community. Because of the continuous surveillance in Level IV programs, the indicator of number of children at-risk can replace the more traditional nutritional status indicators. In any Level program, birthweights of newborns can be added if the data is obtained regularly. Since such a plan exists for the USAID/New Delhi modified ICDS scheme, we will include birthweight as a third indicator for Level IV programs.

1. Level II Programs

a. Quarterly Consolidation

Although many existing Level II programs in India call for the monthly weighing of preschool children, we suggest that the nutritional grades of individual children be consolidated by age on a quarterly basis. In all

probability, monthly consolidation would not demonstrate sufficient change from month to month to justify the effort involved in the consolidation. (Instances exist where insufficient change has demoralized village workers prematurely.) Also, the need for a consolidation every third month would serve as an added incentive to the village worker to track down children who fail to be weighed on the regular monthly schedule. Figure 7 is a sample Nutritional Status Summary form for a village level quarterly consolidation.

Note, it is essential that the quarterly consolidation be based on weights taken in just the month designated as the month for the consolidation. Weights taken in March for a child not in attendance in April should not be added into a consolidation done in April. Furthermore a distinction should be made between children weighed in successive quarters and those absent in either the present quarter or the preceding quarter. The sample form contains three separate identical blocks-- one for children weighed in successive quarters, one for children weighed in the current quarter only and one for children weighed in the last quarter only. This third block, of course, must use weights and ages as of the month designated for the consolidation in that last quarter.

The breakdown by age in each of the three blocks in the form is critical for the proper interpretation of the data. Our observations of weight charts in India confirms that a pattern common the world over regarding growth in conditions of deprivation holds in India too. Children are born small but within a range that can be considered normal. (Additional review of birthweight data might, in fact, reveal that children are born quite normal.) For the first six to eight months of life,

NUTRITIONAL STATUS SUMMARY

VILLAGE:

MONTH:

VILLAGE WORKER:

CHILDREN WEIGHED THIS QUARTER AND LAST QUARTER

NUT. GRADE AGE	NORMAL	GRADE I	GRADE II	GRADE III	TOT
0 - 12					
12 - 24					
25 - 36					
37 - 48					
49 - 60					
TOT					

CHILDREN WEIGHED IN THIS QUARTER ONLY

NUT. GRADE AGE	NORMAL	GRADE I	GRADE II	GRADE III	TOT
0 - 12					
12 - 24					
25 - 36					
37 - 48					
49 - 60					
TOT					

CHILDREN WEIGHED LAST QUARTER ONLY (GRADE IN LAST QUARTER)

NUT. GRADE AGE	NORMAL	GRADE I	GRADE II	GRADE III	TOT
0 - 12					
12 - 24					
25 - 36					
37 - 48					
49 - 60					
TOT					

Figure 7

most children grow at nearly the rate of growth prescribed by the international growth standards. During the weaning period, when children become more mobile and are, therefore, exposed with greater frequency to disease causing agents, this near normal growth ceases. For the next 12 to 18 months of life, many (perhaps, most) children in the more backward areas of India show little or no growth. The result is that they slowly slip from the nutritional grade of Normal, through grade I to grade II and, sometimes to grade III. At around two years of age, the survivors begin to grow again. Those who grow slightly faster than the standard might jump one or two grades while those who grow at or slightly below the standard rate will maintain their grade or even drop a grade. As a result of this typical growth pattern, the consolidation of nutritional grades over a village will produce a different percentage of Normal and Grade I children depending on the age distribution of the children included in the consolidation. The youngest and oldest age groups will have the highest percentages of normal children.

By the very nature of the process for selecting beneficiaries for Level II MCH programs, the age distribution of the participants is constantly changing. Throughout the year the designated beneficiaries are aging; therefore, one would expect to find a higher percentage of normal and Grade I children in the third quarter for a fixed set of beneficiaries than in the first. At the time of the yearly selection of new beneficiaries, the age distribution will shift again--this time in favor of the children nearer the critical period of no growth. (Older children graduate and are replaced by the younger children thought to be most at risk.) Proper interpretation of the longitudinal trend

in nutritional grade changes requires that these effects due to age shifts be separated from program effects. The categorization of nutritional grade by age enables the analyst to do this. (Of course, if program policy shifts to encourage younger children to participate--say in the 8 to 10 months age group--the aging effect will be reversed. Over a year, the younger children would pass through the period of no growth and would get progressively worse.)

The partitioning of the reporting of nutritional grade into the three categories--weighed in successive quarters, weighed in the current quarter only and weighed in the last quarter only--is necessary to help explain one of the other major contributors to shifts in the nutritional status of a set of program participants--the potential self selection of participants from among those most able to improve. In the extreme, the easiest way to demonstrate impact through a consolidation of nutritional grades is to allow the Grade III children to die. This, of course, is an unacceptable way to show nutritional impact. Quite often in practice, the "worst-off" children are the program drop-outs -- the children who do not show up for the weighings because they are too ill. The reporting of the nutritional status of all children who do not show up is an indication of the degree to which this phenomenon applies.

Proper interpretations of the impact indicators is critical to the application of the "management by exception" principle in the M/BIE. To illustrate the interpretator process consider the two "filled in" Forms in Figures 8a and 8b. The handwritten numbers in the table are fictional data for an imaginary village

NUTRITIONAL STATUS SUMMARY

VILLAGE:

MONTH: April

VILLAGE WORKER:

CHILDREN WEIGHED THIS QUARTER AND LAST QUARTER

NUT. GRADE AGE	NORMAL	GRADE I	GRADE II	GRADE III	TOT
0 - 12	2	2	1		5
12 - 24	3	7	5	3	18
25 - 36	5	6	8	3	22
37 - 48	1	3	4	1	9
49 - 60	2	2	1	1	6
TOT	13	20	19	8	60

CHILDREN WEIGHED IN THIS QUARTER ONLY

NUT. GRADE AGE	NORMAL	GRADE I	GRADE II	GRADE III	TOT
0 - 12		1			1
12 - 24		2	2	1	5
25 - 36			1		1
37 - 48		1			1
49 - 60		1	1		2
TOT		5	4	1	10

CHILDREN WEIGHED LAST QUARTER ONLY (GRADE IN LAST QUARTER)

NUT. GRADE AGE	NORMAL	GRADE I	GRADE II	GRADE III	TOT
0 - 12		1	1		2
12 - 24		1	2	2	5
25 - 36	1		1	3	5
37 - 48	1		1	1	3
49 - 60	1	2			3
TOT	3	4	5	6	18

Figure 8a

NUTRITIONAL STATUS SUMMARY

VILLAGE:

MONTH: July

VILLAGE WORKER:

CHILDREN WEIGHED THIS QUARTER AND LAST QUARTER

NUT. GRADE / AGE	NORMAL	GRADE I	GRADE II	GRADE III	TOT
0 - 12		2	2		4
12 - 24	2	6	5	4	17
25 - 36	3	8	8	5	24
37 - 48	2	4	3	2	11
49 - 60	3	2	2	2	9
TOT	10	22	20	13	65

CHILDREN WEIGHED IN THIS QUARTER ONLY

NUT. GRADE / AGE	NORMAL	GRADE I	GRADE II	GRADE III	TOT
0 - 12	1				1
12 - 24		1	1	2	4
25 - 36		1	3	1	5
37 - 48		1		1	2
49 - 60	2		1		3
TOT	3	3	5	4	15

CHILDREN WEIGHED LAST QUARTER ONLY (GRADE IN LAST QUARTER)

NUT. GRADE / AGE	NORMAL	GRADE I	GRADE II	GRADE III	TOT
0 - 12			1		1
12 - 24			1	1	2
25 - 36			1		1
37 - 48					
49 - 60		1			1
TOT		1	3	1	5

Figure 8b

participating in a Level II MCH program. We present the sample tables devoid of percentages. In fact, the computation of row percentages--the percentage of children in each age category in a particular nutritional grade--is extraordinarily helpful addition to the table. However, percentages are very often foreign concepts to village workers and, perhaps, to the first line supervisors as well. Therefore, we begin without the percentages. However, by using the tables, the workers should eventually recognize the need for a method to avoid the misleading signals generated by absolute numbers and should "invent" the percentage to facilitate relative comparisons. Mechanically, the percentages are best displayed by including them in each box in parentheses.

The following list of indicators can be used easily during the review performed by supervisors and village workers in analyzing the Nutritional Status Summary.

- the number (percentage) of children weighed
- the relative distribution of nutritional grades of all beneficiaries
- the relative distribution of the nutritional grades of those children not weighed in the current quarter as compared to all others
- the relative distribution of the nutritional grades of those children weighed only in the current quarter as compared to all others

As village workers and supervisory personnel gain experience with these indicators and the form itself, norms on each of the indicators will be established. These norms will be localized and reflect the prevailing conditions in a village or region. Interpretation of progress or regress on the indicators will be made against these localized norms, not against a country wide standard. The following paragraphs illustrate how

an analysis based on these indicators might proceed.

In April, 70 children were weighed (60 in January and April and 10 in April only). This is 70% percent of the possible 100 children--not a particularly good showing. In July, the number of children weighed increased to 80 (65 in April and July and 15 in July only) This shows a marked improvement between April and July. Clearly, a substantial drop in the number of children weighed from one quarter to the next is a signal that some problem exists and that a supervisory visit is needed. (The problem may be nothing more than the seasonal out migration of whole families seeking temporary employment--a fact that should be noted by the supervisor, but a condition that might not be reversible within the context of the MCH program.)

We see also that only 88 children were accounted for in April (60 + 10 + 18) and 85 in July (65 + 15 + 5). This suggests that at least one dozen designated beneficiaries may have "dropped out" of the program. During his/her visit, the supervisor should ascertain the actual drop-out rate by looking at the weight cards for the 15 children not contacted in April and July. If those same children have been absent in the interim as well, their homes should be visited and their participation encouraged or their names dropped from the roles of beneficiaries.

The second indicator, the relative distribution of nutritional grades, reveals a growing malnutrition problem in the "sample" village. Nine of 70 children (12.9%) weighed in April were Grade III while 17 of 80 (21.2%) were Grade III in July. This increase is an immediate cause for concern and should prompt the supervisor to inquire further as to the state of the local environ-

ment, the existence of widespread disease, the breakdown of the service delivery system etc. This downward trend in nutritional status is reinforced when looking at second and third degree malnourished children together. In April, 32 of 70 (45.7%) children are Grade II or III while, in July, 40 of 80 (52%) fell in those grades. Note, the rate of malnutrition in any particular quarter might be sufficiently high to prompt a visit -- even if the trend is not substantially downward.

The third indicator, the relative distribution of the nutritional grades of children not weighed in the quarter of record, reveals a serious problem in April. Of the 18 children not weighed, six (33.3%) were in Grade III. This is an indication of a failure of the village worker to track down those children most in need of help. This pattern reverses itself in the second quarter where only five children weighed in April were not weighed in July and only one of those (20%) was in Grade III. Hopefully, this reversal was prompted by the supervisor's visit. The importance of this indicator lies in helping interpret the second indicator--the rate of malnutrition in the beneficiary population. If the ten additional children weighed in July were drawn from the eleven Grade II and Grade III children not weighed in April, one would expect the overall rate of malnutrition to increase--as it does. The rise in the percentage of grade III children from April to July might be nothing more than the reinclusion of malnourished children missed in the earlier quarter.

The fourth indicator, the relative distribution of nutritional grades of children weighed in the current month only, is the "reverse" of the third indicator. Our hypothesis that the July weighing picked up mal-

nourished children missed in April is borne out in our sample data. Nine of 15 (60%) of the children returning to the sample were in Grade II or III.

One must look at indicators 2, 3 and 4 together to fully understand quarterly shifts in the distribution of malnutrition in the beneficiary population. The latter two indicators are needed to confirm that observed changes in the distribution of children by nutritional grade from one quarter to the next are true shifts in nutritional well being--not merely shifts resulting from weighing a different subset of the beneficiaries in successive quarters.

Selection biases (changes in nutritional status resulting from weighing different sets of children) are not the only competing explanations, for observed shifts in nutritional status. Village workers and supervisors must be made aware that many "non-intervention" related factors are constantly changing and causing change in the nutritional well being of a community. These related factors must be systematically checked by the supervisors with the village workers as part of the effort to interpret nutritional status impact data. These factors are too numerous and too complex to be monitored in a routine data collection system. However, a "subjective" review of local conditions almost always identifies factors which have changed in a given community. To facilitate such identification, supervisors should be trained to inquire about

- local employment patterns
- local food prices and availability
- localized disease epidemics
- changes in the physical and/or natural infrastructure (water, waste disposal etc.)
- The existence of other governmental or private programs affecting nutrition.

Any of these factors might have greater positive or negative impact on nutrition than the MCH program and, therefore, must be considered when interpreting impact data generated by the MCH programs.

b. Annual Review

The monthly inventory checks and the quarterly consolidations of impact data are done to facilitate the rapid identification of problems (or successes) so that corrective action (or organizational learning) can be taken. However, every village-- ordinary as well as exceptional-- should undergo a periodic review for the purpose of improving program operations in that village. The annual selection of new beneficiaries provides a logical moment for a review of program progress in Level II programs. By coordinating an annual review with the selection of a new set of beneficiaries, the reviewers can focus attention on change in nutritional status in the participants for the past year without having to consider the possibility that observed changes reflect the different status of the additional and/or departing beneficiaries. Also, progress over a year is a useful measure for reporting to outside support agencies (USAID, etc.).

We envision a special meeting of relevant people as the forum for the annual review. The participants will vary depending on the particulars of the organizational structure of the Level II type program and the resources available to bring additional supervisory help into the review process. At the very least, the village worker and her immediate supervisor must participate in the review. In programs where a gathering of community leaders and/or government officials is the forum for selecting new bene-

ficiaries, the annual review can be performed simultaneously, thereby, involving those dignitaries. Finally, if an intermediate level supervisor or a supervisor of village workers in another subcenter (a different set of villages) can be brought in, his/her participation will add an element of objectivity which only an informed outsider can bring to the review process.

Each annual review should consist of several activities:

- compilation of impact statistics
- review of program operations
- formulation of a plan for next years activities

The impact statistics are quite similar to those used in the quarterly consolidation. However, because of the yearly changeover in beneficiaries, it is important that the annual review consider explicitly the differences in nutritional status of the incoming beneficiaries and the outgoing beneficiaries. Figure 9 is a form that facilitates such a comparison. The two sub-tables in the top portion of the table provide a direct comparison of the children continuing in the program for successive years. If the numbers filled in for the current year are based on weighings taken in the same months as those in the sub-table for last year, it is easy to track cohorts-- the 13-24 month old children in last year are the 25 to 36 month old children this year, etc.

The single sub-table in the center of the form displays the nutritional status of incoming beneficiaries. Typically, these will be younger children replacing the graduates. The bottom third of the table is reserved for

NUTRITIONAL STATUS SUMMARY -- ANNUAL REVIEW

VILLAGE:

YEAR: 1981

CHILDREN CONTINUING FROM ONE YEAR TO THE NEXT

LAST YEAR

	N	I	II	III	TOT
0 - 12	2	2	1		5
13 - 24	6	9	7	4	26
25 - 36	4	7	6	6	23
37 - 48	4	7	8	3	22
49 - 60					
TOT	16	25	22	13	76

THIS YEAR

	N	I	II	III	TOT
		2	1	2	5
	5	8	9	4	26
	5	7	8	3	23
	4	8	7	3	22
	14	25	25	12	76

CHILDREN NEW TO THE PROGRAM THIS YEAR

	N	I	II	III	TOT
0 - 12	2	2			4
13 - 24	4	4	5	2	15
25 - 36	1	2	1	1	5
37 - 48					
49 - 60					
TOT	7	8	6	3	24

CHILDREN LEAVING THE PROGRAM

FIRST WEIGHING IN LAST YEAR

	N	I	II	III	TOT
0 - 12					
13 - 24					
25 - 36	1		1		2
37 - 48	1	2	2	1	6
49 - 60	4	4	5	3	16
TOT	6	6	8	4	24

FINAL WEIGHING IN LAST YEAR

	N	I	II	III	TOT
		1	1		2
	6	6	8	2	22

Figure 9

children no longer considered beneficiaries. The two sub-tables provide a convenient record of the progress of those children prior to their departure from the program.

Note, this form assumes that the annual review is done after the first weighing for the new year. If the review coincides with the selection of new beneficiaries, this means that new beneficiaries (as well as continuing ones) must be weighed at the time of the selection. Currently, this procedure is not followed in most Level II MCH programs in India-- beneficiaries are selected without being weighed. Resolution of this procedural quandary can be achieved if

- MCH programs weigh children as part of the selection-annual review process
- separate meetings are held for selection and annual review with the latter following the former
- the form is simplified so that the final weighing in the last year is used for continuing children as well as drop-outs and new children are ignored.

We recommend the first option but, being realistic, we realize that it may be infeasible in many MCH program settings.

Interpretation of the change from year to year in the nutritional status of the beneficiaries is greatly facilitated by a graphic representation of the nutritional status of the community. This graph would be a plot of the percentage of Grade II and Grade III malnourished children against age for two successive years. Figures 10a and 10b are two sample graphs for the data in Figure 9. The first compares all beneficiaries in the last year to all beneficiaries in the current year. The second makes a similar comparison but only for those

CURVES COMPARING MALNOURISHMENT RATE FOR TWO YEARS:
ALL CHILDREN

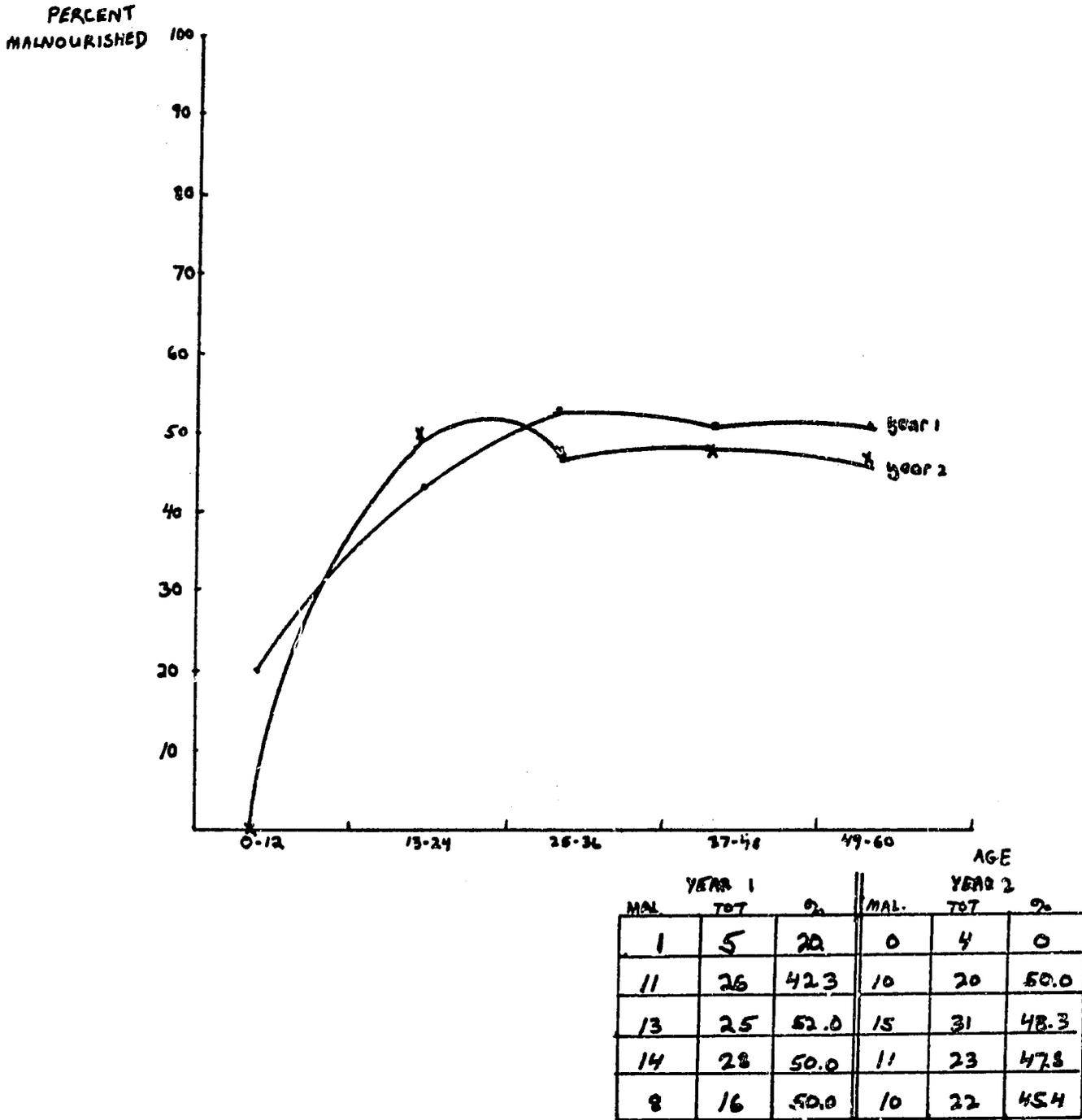
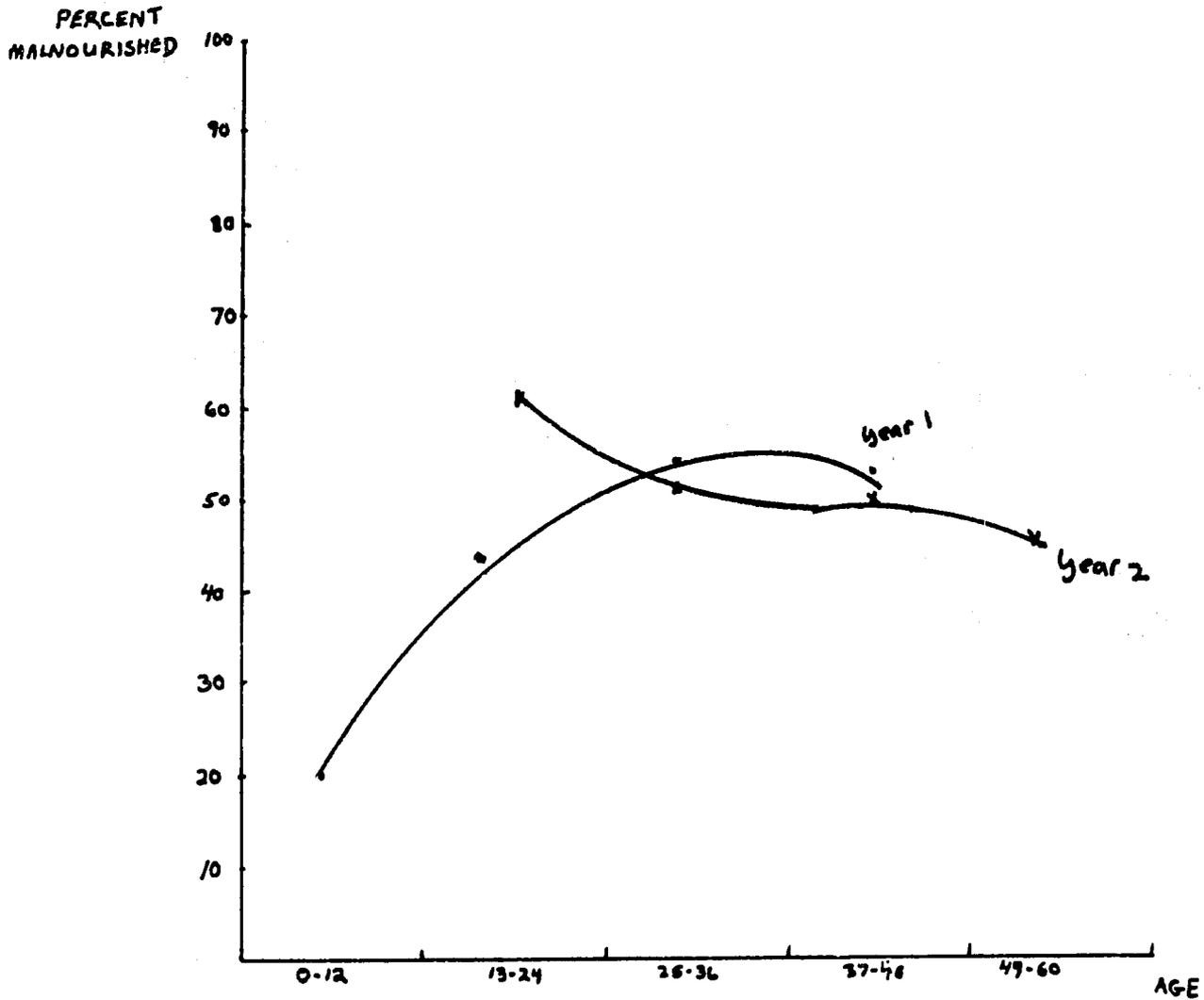


Figure 10a

CURVES COMPARING MALNOURISHMENT FOR TWO YEARS:
CHILDREN WEIGHED IN BOTH YEARS ONLY



YEAR 1			YEAR 2		
MAL.	TOT	%	MAL.	TOT	%
1	5	20.0			
11	26	42.3	3	5	60.0
12	23	52.1	13	26	50.0
11	22	50.0	11	23	47.8
			10	22	45.4

Figure 10b

beneficiaries continuing in the program from year to year. The first graph shows that for each age category save one--the 13 to 24 month olds--the rate of malnourishment has dropped over the course of a year, but very little. (Note, if just one child in the 37 to 48 month age category were classified as grade II malnourished, the result would be reversed. Twelve of 23 or 52.1% would be malnourished--a number greater than the 50% in the former year.)

The second graph confirms that some of the observed improvement comes from those children with continuing involvement in the program. Again, except for the 13 to 24 month old children, the malnourishment rate for each age group has decreased. Furthermore, by looking at the progress of a cohort (for example, by comparing the 37 to 48 month olds in the current year to the 25 to 36 month olds in the preceding year), we can see if those particular children have improved. Unfortunately, this type of analysis gets very subtle. The 25 to 36 months cohort in the present year has shown some deterioration. Only 42.3% of them were malnourished in the earlier year when they were one year younger. Now 48.3% are malnourished. Yet, that is an improvement. We would expect a malnourishment rate of 10 percentage points higher--the difference between the 13 to 24 month old children and the 25 to 36 month old children in the earlier year. Yet, we observe a change of only 5 percentage points, an improvement.

This type of analysis can be carried to a level of incredible complexity as one tries to distinguish program effects from improvement due to both aging and the turnover in program beneficiaries. Our suggested forms and graphs represent a "beginning" only. One

could easily envision the preparation of graphs comparing children according to the level of intensity of participation (how many months were the children fed) or the duration of participation (the number of years included in the program). Our hope and expectation is that once the concept is learned by field workers and supervisors, they will take the appropriate steps toward complexity indicated by their own local context. For example, a village struck with a disease epidemic might choose to compare the progress of stricken children to those who remained healthy while a village with two religious groups might choose to compare children drawn from each.

In both the literature review and the discussion of the general M/BIE model, we emphasized the need to interpret nutritional status data within the local context and suggested that competitive explanations of observed changes be sought prior to acceptance of those changes as intervention related. We can only reiterate that the training of field workers and supervisors must include a directive that this need be met. We have tried to "build in" consideration of the alternative explanations of aging and selection in the design of the annual nutritional status summary form. Under no circumstances are these the only alternatives to be considered.

In addition to a review of potential competing explanations to observed change, the annual review should include an appraisal of the operation of the program in the village. (Poor operating procedures are, in fact, one competing explanation for a lack of change on im-

pact indicators.) First and foremost, the review should be viewed as an opportunity for the village worker to get help in areas which may be troublesome. For example, if food deliveries are late or erratic, the health service inputs are insufficient, or segments of the community refuse to participate in the program, the village worker can seek solutions with the aid of her supervisors and the community leadership. Note, any discussion of systematic problems must be conducted in the spirit of assistance--not for the purpose of grading the village level worker. The worker must be encouraged to seek solutions to her problems--not to hide them.

We offer a checklist of items that can be used to guide the subjective review of program operations in a typical Level II intervention. This list includes:

- a discussion of the frequency and utility of home visits
- a review of immunizations records to assess the degree of coverage
- a review of the disease rates and patterns to assess the need for special medicines or other medical assistance
- a review of problems with ration sharing or substitutions
- a review of community support--both financial and in terms of the contribution of time and ideas

During implementation, this list should be expanded to reflect the particular package of services delivered through the program.

The final component of the annual review is the preparation of a plan--complete with goals and procedures--for the coming year. One problem with MCH programming

in India is the enormous magnitude of even the smaller programs. These programs become impersonal and inflexible and fail to encourage or even allow for local innovation within the broader program framework. By encouraging the preparation of a localized plan on an annual basis, the M/BIE will contribute to the establishment of a local initiative to make the program work.

c. Higher Level Consolidations

Higher level consolidations of impact data are computed at each level of the organizational hierarchy for the program. The interpretation (analysis) at each level parallels the procedure prescribed for the village level. However, the alternative explanations for observed outcomes become increasingly difficult to identify and prove as the numbers are consolidated for more and more villages, events in one village tend to "cancel" out events in other villages. For this reason, we again suggest that higher level consolidations include a statistic measuring the number of villages meeting some agreed upon level of success.

For example, the statistic computed by counting the number of villages showing a drop in the percentage of children in Grade II or Grade III states of malnourishment is a useful statistic. Moreover, we suggest that at each level of consolidation, the number of villages for which an alternative explanation of both improvement and lack of improvement be noted. Thus, in a year in which increased rainfall produces a bountiful crop, the high percentage of villages showing improvement might be attributed in part to this natural phenomenon. Of course, the reverse situation obtains in a drought year.

We would anticipate that the level of sophistication of the organization with regard to the ability to interpret data will increase over time as individuals develop experience with handling numbers. (In situations where programs fail to demonstrate impact, village workers and supervisors will be especially quick to develop competing explanations for their lack of progress.) This maturity should be anticipated by USAID. It must be recognized that the M/BIE itself will mature as persons in the system develop a sophistication for using numbers and explaining them.

2. Level III Programs

The major difference between Level II and Level III programs is the annual surveillance of all families in the village to facilitate the selection of a fixed number of beneficiaries from those in the community with the greatest nutritional need. In theory, many of the Level II programs aspire to such systematic surveillance; in practice, few, if any, achieve it. The operation of the M/BIE is only slightly altered in a Level III program.

The looseleaf notebook containing family data will now have a family record for everyone in the village--not just for beneficiaries. Because a census must be done annually as part of the beneficiary selection, births, deaths and migrations can be systematically recorded. With this additional data and the weights of non-participants, the annual review can be made easier while, at the same time, can be made to yield more usable information. The quarterly consolidations for Level III programs remain identical as those in Level II.

At the annual review, it is now possible to compare the nutritional status of the community as a whole at two points in time. This comparison can be effectuated in two ways. The first way, which by now should be familiar, calls for the display of the numbers of children falling in each of a mutually exclusive set of categories where each category represents all children of a given nutritional grade in a particular age grouping. This table should be produced for the community as a whole and for the two sub-groups of participants and non-participants. Figure 11 is a sample form to be used in making this comparison.

If the screening process is working efficiently, the participant and non-participant groups should not be comparable because all of the most malnourished children should be in

NUTRITIONAL STATUS SUMMARY -- ANNUAL REVIEW

VILLAGE:

YEAR:

VILLAGE WORKER:

COMMUNITY

NUT. GRADE AGE	NORMAL	GRADE I	GRADE II	GRADE III	TOT
0 - 12					
12 - 24					
25 - 36					
37 - 48					
49 - 60					
TOT					

PARTICIPANTS ONLY

NUT. GRADE AGE	NORMAL	GRADE I	GRADE II	GRADE III	TOT
0 - 12					
12 - 24					
25 - 36					
37 - 48					
49 - 60					
TOT					

NON-PARTICIPANTS ONLY

NUT. GRADE AGE	NORMAL	GRADE I	GRADE II	GRADE III	TOT
0 - 12					
12 - 24					
25 - 36					
37 - 48					
49 - 60					
TOT					

Figure 11

the participant group. However, trends in the deterioration of the non-participant group might be noted and the selection process modified accordingly to include some segment of the community not yet malnourished but destined to become so. The implication of our observation that in India, in conditions of severe nutrient deprivation, children cease growing in the second year of life is that a preventive program will concentrate on children in that age range. In contrast, a curative program will not discover these children until they are near the end of their second year or into the third.

The second way to look at nutritional status changes in a community is through a transition matrix. A transition matrix is an array of numbers displayed in a two way table. Each box in the table contains the count of children who have made the transition from the category represented by the row in which the box lies to the category represented by the column in which the box lies. Figure 12 is a very simple 4 x 4 transition matrix. The rows run horizontally and the columns run vertically. Each row corresponds to a nutritional grade, each column to a nutritional grade. Each box contains the number of children who, at the start of some time period, were of the nutritional grade designated by its row but, by the end of the period, were in the grade corresponding to its column. In figure 12, 3 children began classified as normal but made the transition to grade I.

In practice in a community, there are additional possibilities. For example, if the time of transition is a year, as in the annual review of Level III MCH programs, children can be born during the year, they can be new to the community during the year (in migrants), or they can have been "missed" in the surveillance done at the start of the year. Also, some children die, move out of the community, age

SAMPLE TRANSITION MATRIX

	NORMAL	I	II	III
N	15	3	2	0
I	4	20	4	2
II	2	10	12	6
III	1	4	5	10

Figure 12

beyond the limit for consideration as a program participant, or are "missed" in the surveillance done at the end of the year. Figure 13 is a sample form for applying the transition matrix concept in a Level III MCH program.

The transition matrix becomes an acceptable tool for the annual review for two reasons. First, everyone must be accounted for in the surveillance effort; therefore, we do not have to worry about the selection bias which can cause problems when different subsets of a community are monitored at different points in time. Second, and most importantly, it can be assumed that the age distribution of the children covered in the successive community-wide surveillance efforts is constant; therefore, we need not worry about spurious impact due to aging.

Interpretation of the transition matrix is relatively simple. If children are moving to higher nutritional grades (assuming normal to be the highest), the program is working. As with the nutritional grade by age table, the transition matrix can be partitioned into one for participants and another for non-participants. Hopefully, the participants will show the greatest improvement. Again, if participants are generally the older children, their improvement relative to the non-participants must be interpreted in terms of the age differentials. (The age independence assumption applies to the entire community only.)

The transition matrix contains the data needed to compute a preschool mortality rate. A widely accepted method of presenting a mortality rate is a ratio of the number of deaths per thousand live births. Deaths and births are immediately available from the transition matrix. Computation of the preschool mortality rate can be done using the following formula:

ANNUAL REVIEW -- TRANSITION MATRIX

VILLAGE

YEAR:

VILLAGE WORKER:

	NORM	I	II	III	OVER AGE	MOVED AWAY	DIED	NOT CONTACTED
NORM								
I								
II								
III								
New Born								
Moved In								
Not Contacted								

DEATHS

	<u>NAME</u>	<u>AGE</u>	<u>REASON</u>
1.			
2.			
3.			
4.			
5.			

$$PMR = (D \times 1000) \div B$$

Where

PMR = preschool mortality rate
D = number of deaths in a year
B = number of births in a year

In each village, a list of child deaths should be compiled including the age of the child at time of death and the reason for the death. The reason is important to enable the annual review team to separate nutrition related deaths from all others. (If two healthy children drown in a water related accident, the preschool mortality rate for a given village is hardly an accurate indicator of nutritional impact.)

An infant mortality rate can be computed by limiting the "deaths" element of the formula to cases in which the child was less than a year old. Again, it is important to distinguish nutrition/disease related deaths from others, especially at the village level.

Both the counts of children in each nutritional grade and age group and the transition matrices can be aggregated at the higher levels of the organization until, ultimately, a picture of the progress of the entire program over an entire year emerges. This process is sufficiently similar to the process described for Level II programs, that we will not repeat the explanation here.

3. Level IV Programs

According to our definitions, Level II and Level III programs are nearly identical. They differ with regard to the diligence and procedure for selecting the fixed number of beneficiaries for the program. Because our model for Level IV programs is the USAID/New Delhi proposed scheme for a modified ICDS, we must consider all the dif-

ferences between this concept and Level II and Level III programs. The most obvious difference and the one we emphasized in our definition is the continuous screening to select beneficiaries. However, one can call the yearly surveillance of Level III type programs "continuous". The real difference is not so much in the frequency of the surveillance as in the definition of beneficiary. In Level II and Level III programs, all services delivered by the village worker are directed only to the designated beneficiaries. In Level IV all villagers are beneficiaries. Only the food supplement is limited to a select set of "elite" people--those most in nutritional need.

In the discussion that follows, we will refer to those targeted for receiving food as "food beneficiaries." There are a variable number of "food beneficiaries" in a Level IV program but all villagers are beneficiaries of the health and education inputs into the program. From a nutrition standpoint, a Level IV program has a built-in, obvious measure of impact--the number of food beneficiaries. A successful program has its own termination schedule. When there are too few food beneficiaries in the village to justify maintaining the food distribution network, the program should be terminated.

Our discussion of Level IV programs assumes that many of the characteristics of the USAID/New Delhi version of ICDS are inherent in Level IV programs. In fact, many of the specific characteristics (for example, the definition of children considered to be food beneficiaries) are subject to change. As with Level II and Level III programs, the broad outline of the M/BIE remains constant. Only the details change in response to the details of the implementation plan for the scheme.

We have already noted that the family record (the loose-leaf notebook with family, mother and child records) is identical for all Level MCH programs. Because all villagers are beneficiaries and because the best indicator of impact in a Level IV program is the number of "food beneficiaries," we can utilize a transition matrix as the primary device for monitoring impact. Reiterating the argument in support of the transition matrix in Level III annual reviews, the surveillance of the entire village lessens concern that impact will show up in the data due to aging and/or selection biases. By not having to be concerned with these competing explanations, the village worker and her supervisor should find the interpretation of impact data a relatively easy task.

Before presenting the basic form, let us summarize the operational assumptions in the modified ICDS scheme. Children are assumed to be "at-risk" (a food beneficiary) if:

- they are below 65% of the weight for age standard
- they have not gained weight for two successive months
- they have suffered recently, from an acute illness (measles, diarrhea, etc.)

The second condition presupposes monthly weighing of all children. (USAID is considering relaxing this stringent requirement for weighing by adding a weight for height measure. Successive lack of weight gain will show up in a single weight for height measurement where two measurements are needed to detect no weight gain.) A second operational assumption of the modified ICDS scheme is that trained midwives, Dais, will weigh all newborns at birth.

If these assumptions are operationalized, impact in the program should be monitored by the monthly review of the

transition matrix form in figure 14. Recall that each row of the matrix corresponds to a category that describes all children as of the start of the surveillance period. Each column corresponds to a category describing each child as of the end of the period. The number in each box is the number of children starting in the row category while ending up in the column category. Figure 15 is an example of the form with hypothetical numbers included. Five children were not at risk at the start of May but were at risk by the end of that month.

Several other useful pieces of information are incorporated on the form. Each death is listed including the age of the child and the reason. The birthweights of all newborns are listed. Similarly, a count of the number of children designated as at a risk for each of the possible reasons is included.

Interpretation of the data on this form is fairly straightforward

- the program can be assumed to be working if the number of children undergoing transition from not at-risk status to at-risk status is higher than the reverse
- the village worker is achieving good coverage if the number "not contacted" is small
- the lack of nutrition related deaths is a sign of effective service delivery
- birth weights in a safe range indicate that antenatal care is adequate.

A similar form is suggested for monitoring the progress of pregnant and lactating mothers. The modified ICDS scheme calls for monthly visits to all women of child bearing age to ascertain pregnancy status. The matrix applies to all those mothers who are either pregnant or

NUTRITIONAL STATUS SUMMARY IN MATRIX FORM

VILLAGE:

MONTH:

VILLAGE WORKER:

A. TRANSITION MATRIX

NUMBER OF CHILDREN IN VILLAGE:

Total Last Month	Total This Mo.	AT RISK	NOT AT RISK	NOT CONTACTED	MOVED AWAY	TOO OLD	DIED
		At Risk					
Not at Risk							
Not Contacted							
Newborn							
New Resident							

B. DEATHS

Name	Age	Reason
1.		
2.		
3.		
4.		
5.		

C. BIRTH WEIGHTS

Name	Wt.
1.	
2.	
3.	
4.	
5.	

**D. CHILDREN
SELECTED AT RISK
FOR**

1. < 65% STD:
2. No. Wt. Gain:
3. Acute Illness:

Figure 14

NUTRITIONAL STATUS SUMMARY IN MATRIX FORM

VILLAGE: MONTH: *Sample* VILLAGE WORKER:

A. TRANSITION MATRIX

NUMBER OF CHILDREN IN VILLAGE:

		Total This Mo.	31	62	4	3	6	3
Total Last Month		AT RISK	NOT AT RISK	NOT CONTACTED	MOVED AWAY	TOO OLD	DIED	
30	At Risk	24	3	1	1	0	1	
70	Not at Risk	5	54	2	2	6	1	
2	Not Contacted	1	0	1	0	0	0	
3	Newborn	0	2	0	0		1	
4	New Resident	1	3	0	0			

B. DEATHS

Name	Age	Reason
1. ~	10	Diarrhea
2. ~	22	Snakebite
3. ~	2 DAYS	Unknown
4.		
5.		

C. BIRTH WEIGHTS

Name	Wt.
1. ~	2400
2. ~	2700
3. ~	2250
4.	
5.	

D. CHILDREN SELECTED AT RISK FOR

1. < 65% STD: 6
2. No. Wt. Gain: 14
3. Acute Illness: 4

Figure 15

lactating. Note, in the sample form in figure 16 the counts of the reasons that pregnant/lactating women are at risk is devoid of reasons. The suggested list in the modified ICDS scheme is so long and cumbersome, all are agreed it will have to be shortened and refined. Given the nature of some of the reasons currently under consideration, women identified as at risk may never be able to make the transition to a not at risk category. For example, extremely short women are considered to be "at risk". They surely will not grow taller as a result of their pregnancy. As a result of their being non-alterable reasons for selection as an at-risk woman, the transitions make less sense--there will be few women moving into the not at risk category.

The two transition matrices are to be used with the inventory report forms on a monthly basis by village worker and supervisor to identify the existence of problems and trigger the same type of review recommended for the Level II programs. In short, competing explanations for observed trends should be actively sought and, where possible, proved. If unfavorable trends are attributable to problems in the program, corrective action must be taken.

On a monthly basis, the Nutritional Status Matrix Form and the Inventory Form are submitted to the first level supervisor who makes a site visit if the forms suggest the existence of a problem. As in Level II and Level III programs, we suggest that all villages undergo an annual review involving, if possible, the village worker, her supervisor, a higher level supervisor or supervisor from another area, and selected village leaders. At this annual review, we suggest that an annual transition matrix for the village be derived from the notebooks. Similarly,

TRANSITION MATRIX FOR MOTHERS' STATUS

VILLAGE:

MONTH:

VILLAGE WORKER:

A. TRANSITION MATRIX

Number of Pregnant/Lactating Mothers:

		Total this mo.						
Total last mo.	At Risk	At Risk	Not at Risk	Not Contacted	Moved Away	Pregnancy Terminated	Lactated 6 mos.	DIED
	Not at risk							
	Not contacted							
	Pregnant since last Month							
	Moved In							

B. Reason for Death

- | | Name | Reason |
|----|------|--------|
| 1. | | |
| 2. | | |
| 3. | | |

C. Mothers Selected at Risk For

- 1.
- 2.
- 3.

Figure 16

the display of the nutritional grades of all children by age category should be drawn up as in the Level II and Level III reviews. The graphic representation of malnourished children by age should also be used. With the data in-hand, participants in the annual review should undertake the steps outlined in the section on Level II programs: a review of the impact statistics including a search for competing explanations, a review of program operations with special attention given to localized difficulties, and the preparation of a plan with goals and procedures for the coming year.

In general, the monthly transition matrices and inventory report forms can be consolidated at the various levels of the organizational structure and reviewed to identify geographical areas needed special attention from higher level supervisors. The tables prepared in the annual review should be reported to USAID and the GOI as evidence of program impact or lack of it.

D. The Role of Special Studies

Early in this document, we built part of our argument for incorporating evaluation into an on going monitoring system on an attack of the special evaluation study. Hoping that the intervening pages of description of the M/BIE have convinced the reader of its merits, we now back away from our attack on special studies. There are instances when such studies play an important role in nutrition evaluation work.

In an article concerned with evaluating large scale interventions, Habicht and Butz make a cogent appeal for verifying the assumptions underlying the design of such a program through a series of small studies. Basic assumptions must carefully be tested in a laboratory and, if borne out, tested in a limited field setting. Habicht and Butz go on

to argue that once the design is shown to work in the field, a pilot project is necessary to test the feasibility of large scale implementation. They conclude

Once a program is implemented on a large scale, the only concern is that it results in an improvement compared to past health and nutrition status and that these results persist. This requires the establishment of a monitoring system of the public health intervention program. It requires no rigorous control group and a minimum of crucial measurements (Habicht and Butz, 1979; 137)

In India, as elsewhere, there have been too few adequately constructed field tests and pilot studies to verify the validity of intervention design. Particularly for a program as radically different as the USAID/New Delhi modified ICDS scheme, such limited studies should be undertaken. Furthermore, these studies must do more than demonstrate change in nutritional impact indicators.

Competing explanations of nutritional status changes had to be considered in subjective analyses for an M/BIE to be effective. A more carefully conceived "experiment" may be necessary to enable some objective analysis to separate program effect from other factors contributing to changes in nutritional impact measures.

For any large scale MCH program--be it the CARE-CPWP, the CRS-NEP or the USAID/New Delhi modified ICDS--it may be necessary to launch a special study under more carefully controlled conditions to verify that the package of services and the delivery system proposed can have a positive impact. Let us emphasize that the demonstration of impact in a pilot program cannot be taken as proof that a scaled-up version can work. However, demonstration that a pilot, implemented under the best circumstances, does not work is a fairly good indication that a larger version will not work.

We envision a limited experiment done in only 15 or 20 vil-

villages to test the feasibility of an MCH plan. Preferably, the villages would be selected to maximize their similarity with respect to size, geographic location, socio-economic make-up and initial nutritional status.

The villages would be divided into three groups: intensely supervised, normally supervised and a control. The geographical proximity of the villages will have to determine the method of assigning villages to groups--it may be desirable to keep all villages in a group physically close together to facilitate the provision of intense supervision or, if they are all conveniently close, a random assignment could be used. In the intensely supervised group, the program would be established according to the prescribed scheme except that extra supervisory assistance drawn from the universities, the government, the VOLGAS or USAID itself would be provided. In the normally supervised group, the program would operate exactly according to the scheme. In the control group, the initiation of the program would be delayed one year.

In all villages, a detailed interview of all households would be conducted at the start of the experiment. This interview schedule would include questions regarding family size, education, income, water source, waste disposal system, general knowledge of the subject matter to be taught during the forthcoming education sessions, and carefully done anthropometric measurements (height, weight and age) on all preschool children.

The program would be operated normally for a year in the two groups receiving services except that extra expert supervision and assistance will be provided in the intensely supervised group. At the end of a year, the questionnaire will be repeated in all villages. In addition, the disease his-

tories, immunization histories and monthly weighings of all preschoolers will be recorded retrospectively from the growth charts.

The quantity of data involved in this experiment is massive and will require computerization and expert analysis. The obvious hypotheses to be tested are:

- the scheme, under intense supervision, can be shown to have a positive impact on the nutritional status of the community.
- the scheme, under normal supervision, can be shown to have a positive impact on the nutritional status of the community.

However, the analysis should not stop with the comparison of nutritional status in the three treatment groups. A number of hypotheses related to the theory underlying the design of MCH programs also be tested. These include such hypotheses as:

- Families which learn more from the program will show the greatest improvement in nutritional status.
- Participants not receiving food supplements will partake of the health and education services with equal gusto as those who do receive food.
- The mix of health services provided can, in fact, lead to a reduction in infectious disease.

Finally, the data would be extraordinarily useful to do some testing of hypotheses regarding the ability of children to exhibit catch-up growth. Such hypotheses include:

- the nutritional supplement is adequate to cause some catch-up growth in weight-for-age in stunted children
- the nutritional supplement is sufficient to counteract the no-growth phenomenon observed in so many children between 8 and 20 months of age.

If resources are available, the experiment should be continued for a second year, perhaps adding a fourth group of vil-

lages as a control while including the original control into the normally supervised group. This will facilitate the testing of hypotheses concerned with the duration of an intervention required for it to achieve success. For example, one might test

- Are the greatest benefits from a health/nutrition intervention felt in the first year of a program, or second?
- Can interest in the intervention be sustained beyond one year, particularly in households not receiving a food supplement?

Other special studies may be indicated by the results of the initial studies. Many experienced nutritionists ascribe to the theory that the limiting factors in nutritional impact are the quantity and/or quality of water available to the community and the nature of its waste disposal system. If inroads in improving water and waste disposal in some villages could be made, hypotheses concerning the importance of these factors in nutrition could be tested. However, this type of hypothesis is clearly beyond the scope of any test of the efficacy of an MCH program and should be viewed as research--not impact evaluation.

Although it would be most desirable to complete special studies of the kind suggested here prior to launching full scale intervention efforts, the need to continue the fight against malnutrition precludes waiting for the results of such studies. Our suggestion is that the studies be incorporated into the earliest phases of implementation of the large scale intervention so that those responsible for maintenance of the program can learn as the program grows.

IV. CONCLUSIONS AND RECOMMENDATIONS

Where do we go from here? Clearly, our primary conclusion and recommendation is that USAID, the VOLAGS and the GOI move toward the implementation of the M/BIE concept in their MCH programming. The prescription of a set of steps that would lead toward an M/BIE in India is a difficult task. At the end of Chapter II, we argued that the installation of an M/BIE was an evolutionary process in which a great deal of organizational learning would have to occur. A team of consultants cannot descend upon the subcontinent and "make an M/BIE happen." Because the M/BIE must be carried out by hundreds, even thousands, of individuals currently working in and around India's MCH programs, the process of installing the M/BIE must be viewed as open ended, with frequent mid-course corrections as the VOLAGS learn what works and what does not.

We have no illusions about the problems that will be encountered in implementing and institutionalizing an M/BIE system. Our field visits and discussions with involved officials, in government and in the VOLAGS, indicate that the task will be formidable. But we must remember that the voluntary agencies faced much the same problem when they introduced their commodity flow and accounting procedures several decades ago. As with the commodity flow and accounting procedures, the M/BIE will take time -- the end result will probably be far different from the initial concept.

Frankly, we are optimistic that the VOLAGS have the skills and the commitment to take the M/BIE concept and make it work. With neither prodding nor help, CRS is moving steadily toward their own version of an M/BIE. They have already taken the first giant step of asking that consolidations of nutrition data be reported routinely to zonal supervisors and, from there, to New Delhi. In the upgraded programs, CARE, too, seemed ready to initiate a review of impact data though there was some hesitancy because of the fear that the data would be misinterpreted (competing explana-

tions would not be explored adequately). To facilitate the efforts of the VOLAGS, there are several steps that can be taken now by USAID. These steps constitute our recommendations.

1. Fund the Completion of the CARE - CPWP Study

Although we have advised against conducting large-scale studies of programs and projects to determine nutritional impact, we do recommend that the CARE study of the CPWP be completed. After investing several years of time and effort into the evaluation, CARE should be encouraged and assisted in the analysis of the data. While discussing the project with the voluntary agency staff, we noted indications that interest in the study was waning. One of the principal reasons for this is that the amount of data available literally intimidates those who are responsible for determining the results. The organization has neither the in-house staff nor the funds available to hire professionals to complete the job adequately.

CARE has indicated its willingness, in fact eagerness, to have assistance in completing the CPWP study. Most of the hard work has already been done--the surveys have been administered and the data is in machine readable form. Lacking now is a clear plan of analysis. CARE must decide what specific information they desire to derive from the voluminous data and arrive at an analysis strategy to yield that information. For this and the actual processing of the data, outside local experts are recommended. We had neither the time nor the inclination to make a thorough study of which firm or group might be best to carry out this work. Since the work will be done for and in conjunction with CARE, the latter must make the ultimate decision. But obviously capable groups exist in Delhi and elsewhere in India (for example, the experts who assisted CRS in their NEP study as well as private firms like ORG).

If funds were made available through some mechanism like an Operational Program Grant (OPG), CARE would be in a position to find the most appropriate institution to carry out the data analysis. One novel approach of selecting the party to do the work would be to follow a process similar to that used by USAID. CARE would draft a "request for proposal" specifying what the organization wants to learn and with it provide a copy of the questionnaire. The information would be circulated to 10 or so reputable firms or organizations asking them for a plan of analysis including variables to be used, statistical tests to be employed, and time and cost estimates. This would not only generate ideas but also give CARE the best idea of the capacities and capabilities of the various bidders.

2. Fund the Implementation of the M/BIE in Existing Upgraded Programs

We recommend that resources be made available to the VOLAGS to initiate usage of impact data as a management tool. Although the upgraded programs are now collecting nutritional status data on a regular basis, it is important that the training of the workers be supplemented to include the subject of interpreting consolidations of that data, and that the monitoring function be strengthened to facilitate proper usage of that data.

The funding required could be generated through an OPG or series of OPG's. It is best if each VOLAG progresses slowly by selecting a few of its better programs as "pilots" and, only after some experience is derived, is it appropriate to scale up to cover the whole program. The funding should cover five separate items

- a. Training - Because the M/BIE concept is predicated on the assumption that local village workers and their immediate supervisors use problem identification and

solving techniques at the local level, training in these areas must be provided. The basic concepts of the M/BIE must be introduced at all levels of the VOLAG administrative structure but, in our view, the key to success lies in the villages. Because the development of adequate training programs is so central to the M/BIE implementation and because funding of the trainers is a separate task, we discuss the training as a separate recommendation (See 4).

- b. Monitoring Units - We have alluded to the lack of sufficient supervisory assistance at the lower levels of MCH programs. To alleviate this problem, we recommend that special staff be introduced with the express responsibility of monitoring the M/BIE effort. The distances between centers in a program determine the size of the monitoring unit; however, an initial configuration might call for one monitoring supervisor per 50,000 beneficiaries. The salaries and training of the new staff must be funded.

This monitoring unit would, in fact, resemble the current set of field officers monitoring stock inventory for CARE. It is quite possible that as stock inventory responsibilities are assumed by the government, the existing CARE field staff could be retrained to oversee the nutritional status monitoring process.

- c. Transport - the monitoring unit would require funding for transportation--possibly in the form of new vehicles if none are immediately available. (To maximize efficiency, each monitor will require a vehicle.) In addition, recurring costs, maintenance, petroleum, etc. will be high and must be covered.
- d. Headquarters Staff: Additional personnel will be required at the central headquarters of the voluntary agencies to

monitor and consolidate the nutritional impact information being sent in by the state offices. This activity is required to ensure that the data are properly utilized for policy making purposes as well as to ensure that the the information is summarized for submission to USAID.

e. Workshops/Meetings: Funds should be made available to the voluntary agencies to permit periodic workshops at the state and national level to discuss problems and progress in the new M/BIE system. The sharing of experience can be most helpful in facilitating the introduction of the new approach.

3. Move Toward Level III MCH Programming and Consider the Implications of Level IV Programs for the VOLAGS

Where possible, Level II MCH programs should be changed into Level III programs. To optimize the usage of food, selection of beneficiaries according to nutritional need is a logical step. From the M/BIE perspective, the interpretation of data at the annual review becomes much easier and more appealing intuitively because of the elimination of some of the concern for selection biases and biases due to aging. As we noted in the text, most Level II programs ascribe, on paper, to the principle underlying Level III programming. Now, these principles should be put into practice.

From a purely nutritional perspective, Level IV programs make even better use of food than Level III programs because all food commodities are directed toward only those at risk. Similarly, from the M/BIE perspective, Level IV MCH programs are the simplest to monitor and evaluate. The age independent transition matrix can be used throughout. However, we have strong reservations about the wisdom of pushing either CARE or CRS toward such programs. If we were starting from scratch in a new country, we would recommend that Level IV programming be used. However, we cannot deny 30 years of CARE and CRS history in India.

With regard to CRS, their "cost-recovery" system is based on having enough beneficiaries in each village to cover the costs of paying the village worker. The contributions of the villagers, though not tied officially to food, flow quite regularly and without resistance because of the food. Level IV programming disrupts this "cost-recovery" process. More important than the administrative problem, the philosophy of CRS is in conflict with the extraordinary emphasis on nutrition in Level IV programs. Most CRS activities are broad development efforts involving far more than nutrition. A Level IV program would diminish CRS' ability to draw entire villages into the development activity. The food is as important to CRS as a vehicle to initiate community participation as it is for its therapeutic value.

CARE also faces administrative difficulties with Level IV programs. Cost recovery for CARE is usually based on the quantity of food delivered and, in some cases, is based on the number of food beneficiaries. Level IV programming would imply that the costs recovered in a particular geographical area would vary but the "fixed" costs for that area would remain constant. Planning a program in the face of uncertain revenues with fixed expenditures is considerably more complicated than planning when both can be accurately estimated. Also, CARE's counterpart, the GOI, has political motivation to disseminate the food to as many people as possible notwithstanding the diminution of impact which follows.

Consequently, we support the notion of introducing Level IV programming in "new" areas or "new" programs but are reluctant to urge that the existing operation of the VOLAGS be disrupted to accommodate the Level IV concept. The five areas of funding outlined for Level II programs apply as well for Level III programs.

4. Upgrade Training - We addressed the need for improved and increased training of VOLAG Staff in moving toward implementing

the M/BIE in recommendation 2. Of course, all government employees -- from the village health worker to the Block Development Officer -- will need additional training as well.

A large number of institutions in India have been involved in training health staff and village workers for the various health and nutrition programs currently in progress. The new direction suggested by the M/BIE system, however, will place new demands on these facilities, not so much in terms of number as in orientation. Consequently, the training facilities will require assistance to familiarize themselves with the new approach and develop the most appropriate teaching methods. New skills and techniques will be required. To meet the challenges, financial and technical assistance will be needed by the training facilities. We recommend that USAID assist those facilities determined most appropriate to support the upgraded MCH programs.

We did not have sufficient time and do not feel confident to suggest which training facilities should receive support. A thorough study of the different institutions is required and USAID should hire a consultant to investigate the capabilities and capacity of the training centers to carry out the training and orientation of the supervisory level workers of the upgraded programs. Selection should be based on willingness and eagerness to adopt the approach suggested in this report.

The type of training called for by the suggested M/BIE system is not commonly found in existing training programs or institutions. Special emphasis should be placed on participation, practical exercises, case studies, and problem solving. The new demands will require technical assistance to help the chosen institute(s) to develop courses and training techniques appropriate to the field needs. Some expertise may be available at such places as the Indian Institute of Management

(Ahmadabad) and the Administrative Staff College of India (Hyderabad) but time constraints did not allow us to investigate and substantiate this. The National Institute of Public Cooperation and Child Development (NIPCCD), which has carried out extensive training for the ICDS scheme, may be suitable if they are willing to adjust their approach to meet the revised requirements. The choice ultimately rests with the GOI which should, together with USAID and the VOLAGS responsible for the monitoring, consider how the training can best be carried out.

In addition to consultancies and technical assistance, we recommend that the institute(s) found to have the greatest interest, most conducive philosophy, and most promising capacity, be assisted by USAID to develop courses material, hire additional staff, carry out training in the field and purchase required equipment.

5. Fund Special Studies

The special studies suggested at the conclusion of Chapter III will require financial and intellectual support. The normal budgets of the voluntary agencies will not be able to cover such costs. Consequently, we recommend that USAID, possibly through OPGs, fund these undertakings.

The specific problems or research questions identified for in-depth study may apply to any of the three levels of MCH programs. The primary special study, described in Chapter III, is an investigation of the performance of a particular intervention design under differing levels of supervision. It asks the question, can a given design produce the desired effect? Although applicable for any level program, the cost involved in special studies may restrict them to large programs such as the proposed modified ICDS scheme. In any case,

the special study villages would serve as field learning laboratories where hypotheses are tested and results fed back into the program.

Other special studies might be considered. A second possibility would be a study of the wisdom of screening program beneficiaries by age rather than nutritional status. The hypothesis supporting such an approach is that the maximum amount of serious malnutrition occurs between the ages of 8 and 18 months. A review of weight charts at every center we visited showed that in case after case a child, if it is to experience a nutritional problem, will do so in this 10 months of maximum vulnerability. It is as if the children hit a "nutritional wall" at which time the growth curves flatten out or even fall off. Thus, instead of devoting the tremendous personnel, training, management, and supervisory efforts to targetting on nutritional criteria it might be easier and cheaper to feed all those who fall within the age of maximum nutritional danger.

Many other examples exist and others will suggest themselves to the voluntary agencies as they institute the M/BIE system and begin to upgrade their programs. The VOLAGS, the concerned government departments, and USAID should cooperatively decide on priority areas to be studied in the special efforts.

The costs involved in the special studies would include:

- funding technical assistance for designing the studies/problems. Foreign advisors could be brought in although it is our opinion that many capable and knowledgeable indigenous advisors exist. It should be possible to draw on Indian resources without compromising quality. The advantage to using local assistance would be that they would be present throughout the study and could, in the best of situations, be the same people who would implement the studies.

funding of an institution to conduct the field work, that is, manage and provide the intensive coverage required in the special studies. It is suggested that both the design and implementation activities should be carried out by the same party.

We were not in a position to identify appropriate institutions that could or would be willing and able to carry out the special studies. Possibilities include such reputable organizations as the National Institute of Nutrition and the Vellore Medical College. This decision will have to wait until the nature of the studies is determined.

6. Reorient USAID Field Staff

As much as the voluntary agency personnel (from high echelon administrators to intermediate level workers) and government staff need orientation and training, USAID field staff, who are responsible for ensuring its supplementary food distribution programs are functioning effectively, also need to learn about and become familiar with the operation of the proposed M/BIE systems. To date when the USAID staff visited feeding programs in the field, they have been concerned primarily with counting stock and accounting for leakages. The attention paid to nutritional impact of the Title II programs has been minimal. This emphasis is reflected in the priority placed on commodity flow control by the voluntary agencies. If CARE and CRS are expected to change, USAID staff will obviously have to change; otherwise, neither CARE nor CRS will take the new approach seriously and devote the effort necessary for it to succeed.

Special training sessions and field exercises must be established for the USAID field monitoring staff to explain the new emphasis on nutritional status, the indicators, the different program levels, M/BIE rationale and reporting procedures. Un-

less the staff is properly oriented and fully conversant with the new approach, there is not much hope that the voluntary agencies will focus on nutritional impact and implement the M/BIE any more seriously than they are monitoring nutritional status at present. As a result, not only will USAID not have the evaluation data it requires, but there is a very good chance that its MCH programs will not be nearly as effective as hoped.

APPENDIX A

Background

USAID/New Delhi is designing an improved monitoring and evaluation system for the PL 480 Title II MCH program in India. The services of two specialists have been requested to develop a preliminary scope of work and implementation plan for this monitoring and evaluation system.

ARTICLE I - TITLE

PL 480 Title II MCH Monitoring & Evaluation System, No. 498-U249.

ARTICLE II - OBJECTIVE

To assist USAID in setting up an evaluation and monitoring system for the Title II MCH programs in India.

ARTICLE III - STATEMENT OF WORK

The purpose of this work order is to develop for USAID/India a preliminary scope of work and implementation plan for an improved monitoring and evaluation system for the PL 480 Title II MCH program in India which will permit both improved monitoring of ongoing activities as well as evaluation at a later time of the actual impact of those activities. The system should focus on the states' public sector programs and rely to the greatest extent possible on implementation by state organizations and CARE. It should also include specifications for monitoring and evaluation of private sector programs supported by CRS. To achieve this purpose, the Contractor's technicians shall perform the following tasks:

- A. Review documentation and literature on Title II MCH evaluation in India and elsewhere (including the India Title II PFW Evaluation Plan and the Philippine Title II MCH-Evaluation Scope of Work) to identify useful approaches.
- B. Recommend MCH impact indicators and testable program hypotheses.
- C. Review the present internal MCH monitoring and evaluation systems of CARE and cooperating state governments and CRS; assess the degree to which the existing systems provide reliable data on the recommended impact indicators; and review evaluation findings reached thus far.
- D. Recommend which data should be collected by state government organizations and CARE including when and how, taking into account existing data collection efforts and the cost of data collection.
- E. Recommend a strategy (specifying details and timing) for the collection of data that will not be collected by CARE or state organizations and, if possible, help identify an Indian contractor who can carry out this data collection.
- F. Recommend modifications in the present CRS information collection systems in order to provide, to the extent possible, data comparable to that recommended for care-supported MCH programs.

- G. Recommend organizational changes and/or VOIAG staff training required to install the improved monitoring and evaluation systems (S) and to carry out the monitoring.
- H. Draft a preliminary scope of work for the eventual evaluation of the impact of the program on beneficiaries (to be prepared according to the general evaluation scope guidance developed by ASIA/DP/E).
- I. Conduct meetings or debriefings as necessary to acquaint the COI, CARE and CRS (and, if identified, the Indian contractor in E above) with the purpose, scope, and methods proposed for the improved monitoring and evaluation system (S).

ARTICLE IV - REPORTS

The Contractor shall submit a draft report to be discussed with USAID before the technicians' departure. A final report shall be submitted within one month of the completion of the assignment.

ARTICLE V - RELATIONSHIPS AND RESPONSIBILITIES

The Contractor's technicians shall receive technical direction from USAID NPR Division Chief, Dr. Lesar and FFP Officer, L. Flynn.

ARTICLE VI - TERM OF PERFORMANCE

The desired starting date is April 15, 1981 and the estimated completion date is May 30, 1981.

ARTICLE VII - DUTY POST

The Contractor's technicians shall work primarily in New Delhi, India.

ARTICLE VIII - LANGUAGE REQUIREMENTS

None

ARTICLE IX - ACCESS TO CLASSIFIED INFORMATION

Contractor's technicians will not require access to classified information.

ARTICLE X - LOGISTICS SUPPORT

USAID/New Delhi will provide office space, office equipment, interpreter/secretarial services and travel arrangements/tickets, as available.

ARTICLE XI - WORK WEEK

The Contractor is authorized up to a six-day work week with no premium pay only upon USAID/New Delhi approval.

ARTICLE XII - LOCAL CURRENCY

All international travel, per diem and in-country expenses shall be funded in Indian Rupees.

(a) Whenever the U.S. Government (USG) holds local currency amounting to more than two years of normal USG expenditures, the country is declared by the Treasury Department as an "excess currency" country. India is such a country because of U.S.-owned Rupees generated by Public Law #80 grain sales and other American economic assistance to India in the past 20 years. Under the Rupee Agreement of 1974, the U.S. and India agreed that use of U.S.-owned Rupees would be limited to certain "established uses" which were in effect prior to June 1972. The specific "established uses" applicable to AID-financed contractors are international travel and transportation, and the subsistence and personal expenses of AID-financed personnel while in-country.

(b) "Program expenditures" in India; that is, expenditures which do not fall within the "established uses" categories of international travel and transportation, and subsistence and personal expenses of AID-financed personnel while in India, must be made with Indian Rupees purchased under the normal foreign exchange conversion procedures of the Indian Government, i.e., Rupees should be purchased from local Indian banks or other authorized foreign exchange dealers within India.

(c) For international air travel that goes to, through, or from India (including layovers in India of more than 24 hours), tickets must be purchased with excess Rupees. Any air freight charges for transportation of things originating in or destined for India must likewise be paid for with excess Rupees. Only Pan American, TWA and Air India will accept excess Rupees in payment for international travel/transportation, and then only when purchases are made with a Government Transportation Request (GTR) and/or a Government Bill of Lading (GEL). Thus the contractor must request AID to issue a GTR/GEL. The request must cite their contract number and the funding/obligation data for the contract and specify that payment is to be made by USAID/New Delhi in Indian Rupees. (This does not apply to those missions having their own excess currency and those countries where PANAM, TWA or Air India ticket service is not available). Airlines will issue tickets or airway bills against GTRs or GELs and bill AID directly for payment. Such payments in Rupees will be recorded as U.S. Dollar costs against the contract. If this method is used under a contract financed by a Federal Reserve Letter of Credit (FRLC), the beneficiary of the FRLC will receive a request from AID for repayment of the U.S. Dollar equivalent of the Rupee cost incurred.

(d) While in India on AID-financed business, travellers are required, to the maximum extent possible, to convert their Dollars at the U.S. Embassy and Consulate cashier offices in New Delhi, Madras, Calcutta and Bombay to cover their subsistence expenses. Dollars may also be exchanged for excess Rupees for their personal expenses since this is an "established use" under the Rupee Agreement. Only personal expenses of non-Indian national AID contractor employees are eligible for such currency exchange, however, without specific prior approval from the Government of India. It is to the travellers' financial advantage to avail themselves of embassy and/or consulate cashiers' facilities for their subsistence and personal expenses, as the conversion rate is usually higher than that offered at banks and considerably higher than at hotels. Personal dollar checks in reasonable amounts may be cashed at the above USG facilities to cover such

expenses. The Government of India has recently allowed foreigners to pay their hotel bills in Rupees. However, some hotels still are requiring foreign tourists to pay their bills in foreign exchange. To ~~insure that hotels will accept payment in Rupees, AID-financed travel-~~ less should obtain a letter from USAID/New Delhi stating: "This is to certify that (NAME) is on official travel in India for the United States Government and has been advanced Rupees from the U.S. Embassy. These funds are owned by the U.S. Government, and their use for payment of hotel bills has been approved by the Ministry of Finance."

Best Available Document

APPENDIX B LIST OF PEOPLE INTERVIEWED

USAID/New Delhi

Priscilla Boughton	Director
Richard Brown	Deputy Director
Lawrence Flynn	Chief, Food for Development
John LeSar	Chief, Population, Health and Nutrition
John Westley	Assistant Program Officer
Mary Ann Anderson	Nutrition Advisor
N. Krishnamurthy	Officer, Food for Development
H. Ramaswamy	Officer, Food for Development
Zarina Bhatti	Social Scientist

CASA/New Delhi

Ron Yoder	Director for CWS/LWR
Shirley Yoder	Advisor

CARE/New Delhi

Douglas Attwood	Director
William Huth	Deputy Director, Food Programming
Sneh Rewal	Nutritionist
Ram Dar Gava	Deputy Asst. Director, Food Program

CARE/Tamil Nadu

Christopher Conrad	Administrator
P. R. Chouhan	Asst. Administrator
Mr. Paul	Field Officer

CARE/Kerala

M. Subramaniam	Administrator
Dr. C. R. Soman	Asst. Prof. Nutrition, Triviandrum Medical College

CRS/New Delhi

John McHale	Director
Mangalam Bala- Subramaniam	Nutritionist

CRS/Projects

Tirunelveli Social- Society	(Palayamkottai, Tamil Nadu)
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CRS/Projects cont.

Fr. Thomas Malayampuram	Executive Director
C. M. Nesam	Nutritionist
C. Kalyani	Nutritionist
S. Alphonse	Organizer, Palayamkattai Center
St. Bridgit	Organizer, Paliyampatti Center

Kottar Social Service Society (Chunkankadai, Tamil Nadu)

Fr. T. James	Director
Sr. G. Lieve	Asst. Director
S. Teresiana	In Charge

Trivandrum Archdiocese

Most Rev. Benedict Margregoriose	Archbishop
Mr. Peter	Nutrition Program Coordinator

CARE Projects

Modified Special Nutrition Program (Madras)

Dr. G. Umarani	M.O., Choolai Maternity Center
Dr. Shamsunissa	M.O., Chetput Maternity Center
R. Rajamani	Health Visitor, Chetput

Composite Program for Preschool and Preschool Children

(Kerala)

P. N. Krishnakumari	Teacher, Kuzhivila Center
T. Ratnabhai	Teacher, Priyadar sini Center

All India Institute Medical Science

Dr. B. N. Tandon	Head, Human Nutrition Unit
Dr. K. Ramachandran	Head, Dept. of Biostatistics
Dr. S. Bhatnagar	

Program Evaluation Organization (Planning Commission)

Harpal Singh	Joint Advisor
R. B. N. Sahay	Deputy Advisor (Soc. Dev.)
V. E. Easo	Senior Research Officer (Social Dev.)

Ministry of Health

Dr. P. C. Sen	Nutrition Advisor
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National Institute of Public Cooperative and Child Development

Ms. A. Joseph	Specialist (Nutrition)
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