

PA-ABD-538

SUMMARY REPORT: HOVIPREP (Home and
Village Prepared Weaning Foods) Project

October 1980 - December 1983

by

Robert W. Morgan, Ph.D., M.S. (Hyg.)
Project Coordinator/Weaning Foods
U.S. Department of Agriculture
Nutrition & Agribusiness Group
Office of International Cooperation
& Development

Washington, D.C.

December 1983

Best Available Document

SUMMARY REPORT: HOVIPREP (Home and Village Prepared Weaning Foods) Project

October 1980-December 1983

This report summarizes the activities of the HOVIPREP (Home and Village Prepared Weaning Foods) Project, an international nutrition development project carried out by the Massachusetts Institute of Technology and Harvard University in cooperation with with the U.S. Department of Agriculture Nutrition & Agribusiness Group (Cooperative Agreement No. 58-319R-1-86). Support for this project has been provided by the U.S. Agency for International Development, Office of Nutrition.

The report is divided into three parts:

1. Background.
2. Summary of Project Activities During 1980-83.
3. Recommended Future Activities to Meet the Weaning Age Crisis in Third World Countries.

1. BACKGROUND

Since 1967, the U.S. Department of Agriculture has provided technical assistance to AID-supported projects in Third World countries through the USDA Nutrition & Agribusiness Group, with special emphasis on projects to introduce or develop weaning foods. This assistance has focused largely though not exclusively on weaning foods processed in LDCs using local ingredients. Examples include the adaptation and use of U.S. designed low-cost extrusion cookers to manufacture foods locally in LDCs, including projects in Tanzania, Costa Rica, Guyana, and Sri Lanka. During the 1970's, the Nutrition & Agribusiness Group typically consisted of a core staff of of three to four food technologists with prior experience in U.S. food companies, and one or two part-time or contract personnel undertaking special assignments. Work was sponsored by AID and funded through a continuing RSSA (Resource Support Service Agreement) entitled the Food & Nutrition Technical Services RSSA (USDA 1-74). Annual budget was approximately \$900,000.

Late in the 1970's, AID decided to expand activities under the RSSA to include projects at the home and village level which would make increased use of home and community initiatives and foods readily available in local communities. A rationale for

this expanded activity was the increasing awareness among nutrition planners that large central-processing and food distribution programs were designed to reach and did reach specific segments of weaning age populations in Third World countries, but that expanded home and village initiatives would be required in order to reach other segments of weaning age children who did not have access to centrally-processed foods. In particular, expanded home and village initiatives would have the potential to reach children in most rural as well as lower class urban homes which might otherwise not be reached by other projects.

(A) DEFINITION OF WEANING FOODS PROJECTS

For the purposes of project implementation, donors usually define the weaning age as some specific time period such as 6-24 months or 6-36 months, and any foods other than mothers' breast milk given to a child up to the time the child is removed totally from the breast and able to thrive on regular family foods as "weaning foods".

Such definitions leave unclear several grey areas. Many children, for example, need supplementation prior to six months and graduate from the breast before reaching the age of 24 or 36 months. In some societies children do not receive supplementation at all. In practice, weaning foods projects tend to ignore these grey areas and to focus on the nutritional status of children up some specified age such as two or three years.

In addition to their own diets, the nutritional status of weaning age children is heavily dependent on the nutritional status of their mothers during pregnancy and lactation. Weaning foods projects therefore normally include a focus on supplementary foods for pregnant and lactating mothers as well as on foods for the children themselves.

(B) THE WEANING PERIOD NUTRITIONAL CRISIS

AID has sponsored 14 national nutrition status surveys in LDCs. Based on anthropometric measurements collected in these surveys, such as Height-by-Age and Weight-by-Height assessments, it is possible to say that between 55 percent and 75 percent of children aged 2-4 years or 2-5 years (i.e. up to the age of the fifth birthday or sixth birthday) are of normal nutritional status in the countries surveyed. If one extracts children of weaning age (6-24 or 6-36 months), however, the picture is quite different. Levels of malnutrition are found to be much higher,

and one might generalize and say that more than half and sometimes considerably more than half of the weaning age children in these countries are malnourished to one degree or another, based on recognized international standards.

The reasons for these high levels of weaning period malnutrition have been studied in different projects including the HOVIAREP Project, and most nutritionists feel that the more significant reasons are understood to one degree or another. These reasons include the harsh realities of extreme poverty, poor soils, inadequate supplies of nutritious foods, inadequate technologies for the preparation of these foods; and a related set of sociomedical reasons including crowded and unsanitary environments, high disease rates generally, the interaction of childhood diseases and childhood malnutrition each of which acts upon and aggravates the other. Low levels of knowledge about the nutritious properties of foods and their impact on health, social tradition and family custom which often may dictate inappropriate food use practices and the avoidance of available nutritious foods, and a pervasive sense of frustration and despair which creates a sense of resignation and often indifference on the part of parents toward the high levels of sickness and death in small children which they see all around them.

Yet even in these circumstances, one frequently finds in low income societies that the ingredients for adequate weaning diets are available but are not being appropriately used. In fact, nutritional levels of weaning age children appear to be dangerously low in a broad spectrum of LDCs spanning the range from better off to less well off countries and from higher to lower levels of available foods. A more significant question may be why large-scale and often well-financed and well-coordinated efforts to alleviate this critical situation of weaning period malnutrition have encountered and continue to encounter so much difficulty in achieving success, a situation described in further detail later on in this report. In commenting on this situation, one of the leading pediatricians in the developing world has made the following observation:

"We have seen dozens of weaning foods developed in this country. But not one of them has 'caught on'" (Professor C. Sansome-Kuti, Director, Institute of Child Health and Family Care, Lagos).

What this statement is saying is that the technologies for producing suitable weaning foods appear to be relatively well-developed in many of the LDCs, but that the techniques for introducing and promoting the use of these foods in homes and villages and of gaining the long-run acceptance of these foods so that they will impact on the nutritional levels of children seem to be inadequate, the "weak link" in the "chain of success". Why these weaning foods do not "catch on" is a question extensively studied in the HOVIAREP Project and discussed in SECTION 3 below.

The devastating effects of weaning period malnutrition are high levels of morbidity and mortality among small children, and often lifelong mental and physical crippling of the victims. The HOVIPREP Project has estimated that approximately 15 percent of all deaths in the world may be attributed directly or indirectly to weaning period malnutrition (see APPENDIX A below), and we believe that weaning period malnutrition clearly represents the most serious nutrition problem and one of the most serious sociomedical problems in the world today.

(C) COOPERATIVE AGREEMENT WITH MIT/HARVARD

As a result of interest in expanding AID's home and village level initiatives in weaning foods projects, the USDA Nutrition & Agribusiness Group in 1979-80 conducted a national survey of nutrition resources and personnel in the U.S. which have the experience and interest required to assist LDCs to undertake weaning foods projects, and based on this survey USDA signed a Cooperative Agreement with the Massachusetts Institute of Technology and Harvard University for the purpose of "providing technical assistance to help plan, develop, implement, and evaluate home and village prepared food supplement programs" in Third World countries. The 1979-80 national survey was performed by Washington consultant Sandra Gallier of New TransCentury Foundation, and her summarizing report provided invaluable baseline material for the HOVIPREP Project.

Perhaps the two most important elements of the Cooperative Agreement were as follows:

(1) Assistance would "consist primarily of short-term technical specialists" who would "assist governments and other agencies in developing countries who are undertaking, or who wish to undertake, food supplement programs";

(2) Assistance would "be based on present 'state-of-the-art', i.e. the advice will be derived from existing knowledge and experience".

In hindsight, it is possible to say that the latter two stipulations have had a profound effect on the outcome of the project (see SECTION 3, "Recommended Future Activities to Meet the Weaning Age Crisis in Third World Countries").

(C) PROJECT PERSONNEL

Technical staff for the initial year of the project were as

follows:

- (1) GRETCHEN G. BERGGREN, Harvard School of Public Health, Leader for MIT/Harvard;
- (2) NEVIN S. SCRIMSHAW, Massachusetts Institute of Technology, Co-Leader for MIT/Harvard;
- (3) PAUL R. CROWLEY, Leader for USDA.
- (4) ROBERT W. MORGAN, Washington Project Coordinator, assigned by MIT/Harvard to be located at USDA.

In January, 1982, Dr. Berggren resigned and Dr. Scrimshaw became Project Leader for MIT/Harvard. A new post was created as follows:

- (5) RICHARD M. LOCKWOOD, Boston Coordinator at MIT/Harvard (in January, 1983, Dr. Lockwood resigned and was replaced as Boston Coordinator by HEIDI VAN ARSDELL).

(D) PROJECT TASKS SPECIFIED IN COOPERATIVE AGREEMENT

Major project OBJECTIVES specified in the Cooperative Agreement were as follows:

- (1) To disseminate information about, and to stimulate interest in, projects to overcome malnutrition through the use of home and village prepared weaning foods.
- (2) In cooperation with AID, to identify interested agencies within developing countries which require short-term advisory services in implementing or evaluating weaning food projects.
- (3) To provide the services of short-term technical advisors to agencies within developing countries to assist with the planning, development, implementation, and evaluation of food supplement programs, giving special emphasis to home and village prepared weaning foods and supplements for pregnant and lactating women.

Major project PROCEDURES specified in the Cooperative Agreement were as follows:

Under the heading "TECHNICAL ASSISTANCE":

- (1) To compile and maintain a roster of advisors who have special expertise relevant to home and village prepared food

supplements and who can be made available through the project to assist agencies within developing countries.

(2) To inform appropriate agencies within developing countries as to the availability of technical assistance through the project and the benefits of utilizing this assistance, and otherwise to stimulate activities to plan, develop, implement, and evaluate home and village level food supplement programs.

(3) To identify and define special technical assistance tasks to be undertaken through the project.

(4) To provide or arrange to provide short-term technical advisors for the tasks to be undertaken through the project. This would include (a) subcontracting if required, (b) briefing and debriefing of field consultants, (c) arranging travel and related activities for field consultants (including the arranging of air tickets, passports, immunizations, and similar), (d) assistance in the preparation, editing, printing and distribution of consultants' reports, (e) and backstopping as needed to complete these tasks.

Under the heading "INFORMATION":

(5) To collect and catalogue information concerning projects utilizing food supplements as a means for overcoming malnutrition among weaning age children, and among pregnant and lactating women.

(6) To distribute relevant information in order to inform appropriate agencies on state-of-the-art with respect to weaning foods projects, and to stimulate interest in developing or improving such projects.

Under the heading "GUIDELINES":

(7) To convene a group of experts to develop, based on state-of-the-art, a set of "GUIDELINES" on how to plan, develop, implement, and evaluate food supplement programs with special emphasis on home and village prepared weaning foods.

(8) To compile, print and distribute these "GUIDELINES" as a means for assisting and stimulating agencies within developing countries to undertake food supplement projects.

(E) BUDGET

An annual amount of approximately \$200,000 per year has been added to the RSSA in FY81, FY82, and FY83 to carry out these

tasks. In addition to the costs of sending technical consultants to countries requesting short-term assistance, a major budget item, this amount supports the salaries at MIT/Harvard of one professional (part-time or full-time), a secretary, and an administrator (part-time); and in Washington of the Project Coordinator to serve as an interface with AID, to promote use of the project by AID and its clients, and to coordinate implementation of the project by the various organizations which participate in the project. Other budget items include printing costs and normal secretarial maintenance costs at MIT/Harvard.

A no-cost extension of the project to the end of May, 1984, was approved in order to permit completion of two MONOGRAPHS and the MANUAL.

2. SUMMARY OF PROJECT ACTIVITIES DURING 1980-83

Major project activities have included (a) seventeen short-term consulting visits to LDCs, (b) preparation and dissemination of 15 CONSULTING REPORTS as a result of these trips, (c) preparation of two MONOGRAPH REPORTS representing case studies of home and village projects in Nepal and Haiti, (d) convening of an international working group of experts to prepare a set of GUIDELINES for the conduct of weaning foods projects in LDCs, (e) and the drafting of a MANUAL for the conduct of such projects, based on the Workshop. Consulting visits occurred during the 21-month period May 1981-January 1983. The final year of the project has been devoted to revision and review of the MANUAL and the MONOGRAPH REPORTS prior to publication.

During the three-year life of the project, activities closely followed the OBJECTIVES and PROCEDURES specified in the Cooperative Agreement (pages 4-6 above), the three major OBJECTIVES being (A) to disseminate information about, and to stimulate interest in, weaning foods projects at the home and village level; (B) in cooperation with AID, to identify interested agencies in LDCs requiring short-term advisory services in implementing or evaluating weaning foods projects; and (C) to provide such short-term advisory services.

(A) EXISTING HOME AND VILLAGE PROJECTS IN 1980

Less than half a dozen large-scale weaning foods projects at the home and village level were in existence in 1980 when the Cooperative Agreement was signed. Major projects of this type included:

(1) A project centered on two of the larger islands and one of the smaller islands in INDONESIA -- the UPGK ("Family Nutrition Improvement") Project on Sumatra and Java (subsequently extended to Bali) to promote mother and child health activities including improved weaning diets, through mothers' associations

at the village and local community level. The mothers' groups were organized and supported in the first instance by a national government ministry having a para-professional staff widely distributed in communities on the two larger islands (Ministry of Family Planning), subsequently augmented by similar para-professional staffs attached to other ministries (Department of Health and others). A recent evaluation of this project by HOVIPREP consultant Barbara Underwood has reported that the project continues to make important contributions in the areas of maternal and child health and nutrition, but suffers from problems of coordination of the several ministries involved. The director of a private foundation instrumental in the development of the project (Lukas Hendrata) has stated that geographical extension of the project to new areas is limited by the distribution of the para-professional cadres, and that extension to other areas of Indonesia such as Borneo, Sulawesi and West Irian could not be contemplated at this time.

(2) Introduction of a highly-nutritious weaning mixture (Sarbotam Pitto or "Super Flour") by community health workers in NEPAL. The mixture composed of roasted wheat, rice or corn ground to a fine flour, combined with roasted soy also ground to a fine flour, can be prepared by mothers in homes. Identification of the mixture which is patterned after a traditional snack food for the elderly in Nepal, and its method of introduction to semi-literate mothers in homes by the community health workers involved, represents a model for home and village interventions, and the "Super Flour" has been promoted by the Nepalese Government in a national poster campaign. According to HOVIPREP consultant Susan Colgate who has prepared a MONOGRAPH REPORT on the project, the new weaning mixture has been adopted and is making a nutritional impact in those areas of Nepal where the community health teams make personal contact, but has not been widely adopted in those other areas of Nepal reached by the poster campaign alone.

(3) The introduction of Mothercraft Centers and subsequently of Nutrition Demonstration Foyers ("Foyers de Demonstration") in rural communities in HAITI. This project relies on a newly-created cadre of para-professionals ("Monitrices"), young women recruited in most instances from the project villages themselves, and on simple demonstration centers which resemble other village structures, so that rapport with the mothers of severely malnourished children is obtained and held during the lengthy process of rehabilitating the children. The Foyers are designed to interact with mothers over a shorter time frame and therefore to reach more mothers than was possible in the Mothercraft Centers, a trade-off which suggests one of the problem areas confronted by these two related sets of approaches in Haiti. HOVIPREP Project Leader Gretchen Benggren, who with her husband has worked extensively in Haiti, was instrumental in Mothercraft Center development and subsequently visited Haiti as a HOVIPREP consultant to review currently used weaning diets in the Foyers.

Dr. Berggren and others have prepared a MONOGRAPH REPORT on the Haiti projects.

(4) Expansion of village projects in THAILAND involving preparation at the village level of ground rice and legume mixes. A number of donors including World Bank and USAID are supporting these approaches in Thailand, which in some instances involve the formation of mothers' cooperatives in villages for the purpose of producing and packaging the new weaning mixtures as an income-generating activity. Local health workers are frequently instrumental in initiating projects, and the Thai Government is assisting with inputs such as the provision of simple grinding mills to project villages, and initial small monetary grants to mothers' cooperatives. HOVIPREP Consultant Nevin Scrimshaw visited Thailand in 1982 and has reported on the expansion of the USAID project to a target of 1,000 villages, as well as on the activities of other donors. Basic questions remain about the Thai approach, one of these being the long-run viability of the income-generating activities.

These projects represent the larger activities in LDCs having a strictly home and village focus. A number of other projects such as the Philippine Nutripak project may best be described as large central-processing activities having home and village components. In the Philippines project, for example, weaning food packets similar to those employed in Thailand are prepared centrally for distribution; efforts to promote village manufacture including forms of support by government such as the provision of small mills have not up to now formed a major component of the project.

Two general statements which might be made as a result of this brief review are:

(a) That home and village initiatives usually rely on face to face contact by new cadres of para-professional workers.

(b) That none of the existing home and village projects show evidence of attaining the status of self-sufficiency and spontaneous replication which in theory ought to be possible; in fact, the few existing projects of the HOVIPREP type continue to need large infusions of supervision and support in order simply to carry on.

A further generalization arising from these two might be the following:

(c) Because few projects exist and the need is extensive, pilot projects of an experimental nature are indicated, with a focus on identifying, recruiting, training, and maintaining new cadres of para-medicals. Once again, this aspect is discussed in SECTION 3.

(B) MEETING THE OBJECTIVES OF THE HOVIPREP PROJECT

A first task of the HOVIPREP Project was therefore to address the first stated objective in the Cooperative Agreement, i.e. "to disseminate INFORMATION about, and to stimulate interest in, projects to overcome malnutrition through the use of home and village prepared weaning foods".

Second and third objectives were to IDENTIFY AGENCIES in LDCs requiring short-term assistance, in cooperation with AID, and to PROVIDE SUCH TECHNICAL ASSISTANCE (see "Tasks", "Objectives", and "Procedures" specified in the Cooperative Agreement, pages 4-6 above).

A special constraint of the HOVIPREP Project from the outset was that funds were not included in the Cooperative Agreement for the actual implementation of projects. Funds for implementation were expected to be provided by the countries interested in undertaking projects, possibly with the assistance of USAID or other donor agencies. Our tasks were therefore limited to the provision of information and technical assistance to agencies in a position to implement projects, with the expectation that this might stimulate interest in project support and the actual implementation of projects by others.

Of the eight "PROJECT PROCEDURES" specified in the Cooperative Agreement (see pages 5-6 above), numbers 1-4 pertain to technical assistance and numbers 5-8 to the dissemination of information. Specific activities under these headings were as follows:

PROCEDURE 1 -- To Compile a Roster of Advisors:

Dr. Bengtson and the staff at MIT/Harvard contacted several hundred professionals in the U.S. and overseas by mail and in person where possible during 1980-81, to explain the objectives of the project and to determine the availability of these professionals for short-term advisory roles in LDCs. A special feature of this early project activity was a series of informal monthly meetings at MIT attended by interested professionals in the Boston area and by the frequent visitors to MIT, Harvard, Tufts, Boston University, the University of Massachusetts and the many other institutions in the Boston area having an interest in nutrition.

Based on these contacts, signed agreements and Curriculum Vitae from about 250 experts were obtained and a core roster of about 50 professionals was compiled and distributed to agencies in LDCs. This listing includes experts in food technology, the behavioral sciences, medicine, agriculture, and a number of related disciplines. Without the clustering of nutrition-related

institutions in the Boston area and the frequent professional visitors to this area, it is doubtful that so large and representative a list could have been compiled in so short a time (see copy of list of experts together with mini-vitas, APPENDIX B).

PROCEDURE 2 -- To Inform Agencies and Stimulate Interest:

Several types of mailings were subsequently carried out by the Project, to agencies overseas including USAID Missions, nutritional institutions, and individuals. These mailings have been considered as an additional form of technical assistance, as well as a means for informing agencies about the HOVIPREP Project and for stimulating interest in home and village interventions, and have included:

(a) A single sheet illustrated BROCHURE describing the weaning age nutrition crisis in LDCs, successful aspects of the large projects in Nepal and Haiti, and the types of assistance offered by the Project. The BROCHURE was designed and written by Dr. Morgan, assisted by the Project's consultant staff (see copy, APPENDIX C).

(b) Fifteen HOVIPREP CONSULTANT REPORTS resulting from short-term technical assistance missions provided by the Project. While it is true that these reports normally are requested by and written for a specific agency in a specific country, an effort was made by HOVIPREP to cast these reports in such a manner as to be of interest more widely in LDCs. With the consent of the consultants involved, most reports have therefore been edited and revised several times following their original submission, and have received a wider distribution (see Appendix D for complete listing of HOVIPREP CONSULTANT REPORTS).

(c) Reprints of published papers dealing with weaning foods projects at the home and village level have been sent on request to agencies and individuals. Two papers prepared by the HOVIPREP staff and published in the United Nations University FOOD & NUTRITION BULLETIN were circulated via a general mailing:

(1) Gretchen G. Berggren, Robert W. Morgan, and the HOVIPREP Consultant Staff, "QUESTIONS AND ANSWERS ABOUT WEANING", Vol. 1,4 (January 1982), pages 21-24.

(2) Gretchen G. Berggren, "HOME-PREPARED FOOD SUPPLEMENTS, MOTHERCRAFT CENTERS, AND NUTRITION IN HAITI", Vol. 3,4 (October 1981), pages 29-33.

(d) Copies of a computerized annotated bibliography prepared by Dr. Berggren and staff at MIT/Harvard, reviewing approximately

500 published papers dealing with different aspects of home and village weaning foods projects, have been circulated by HOVIPREP to requesting agencies and individuals (see discussion of "THE WEANING FOODS ARCHIVE" under "PROCEDURE 5" below).

(e) The draft text of a monograph, "SARBOTTAM RITHO: A HOME-PREPARED WEANING FOOD FOR NEPAL," by Miriam Krantz, Sabitri Panari and Susan Colgate, has received international review and is being printed for distribution by the HOVIPREP Project. The text of a second monograph, "A MODEL FOR COMBATING MALNUTRITION IN HAITI: THE NUTRITION DEMONSTRATION FOYER", by Gretchen G. Berggren, Maria Alvarez, Eddy Genece, P. M. Amadee-Gedeon and Mireille Henry has received preliminary review and is being prepared for international review. Purpose of the monographs is to provide a detailed case study of a particular project, and thus to serve as a form of technical assistance and also to stimulate interest among agencies in LDCs in implementing similar projects in other countries.

(f) The draft text of a MANUAL for the conduct of weaning foods projects in LDCs has been completed and is being circulated internationally for critical review (see fuller discussion under PROCEDURES 7 and 8 below).

PROCEDURE 3 -- To Identify Special Technical Assistance Tasks Which May Be Undertaken Through HOVIPREP:

The Project has identified a number of tasks which in our opinion would be of value in order to improve the nutritional status of weaning age children and their mothers in Third World countries. Principally these have included (a) the direct provision of HOVIPREP consultants to pilot projects in different ecological regions of the Third World in order to test specific home and village interventions under varying local conditions, and (b) the identification, recruitment, training and support of new cadres of para-professionals in connection with such projects. Since the scope of work and funding under the present project did not permit this range of activities, it is our hope that activities of this type may be provided for and implemented in future projects of the HOVIPREP type (see SECTION 3).

PROCEDURE 4 -- To Provide Short-Term Technical Advisors to Assist Requesting Agencies in Third World Countries:

During the 21-month period May 1981 to January 1983, a total of 17 consulting missions were provided by HOVIPREP to requesting

agencies in LDCs. Countries assisted were as follows:

SUB-SAHARAN AFRICA (8):

Liberia (2)
Nigeria (1)
Senegal (2)
Sudan (1)
The Gambia (1)
Upper Volta (1)

NORTH AFRICA & THE MIDDLE EAST (2)

Egypt (1)
Tunisia (1)

ASIA (6)

Indonesia (1)
Kiribati (1)
Nepal (1)
Sri Lanka (2)
Thailand (1)

LATIN AMERICA/CARIBBEAN (1)

Haiti (1)

In most instances a single consultant from HOVIPREP took part in each mission. In three cases, two consultants participated (Egypt, Kiribati and Nigeria). On these three occasions, the experts involved were, respectively, a behavioral scientist and a trained nutritionist. On each of the other missions, the consultant was either a pediatrician or a trained nutritionist. Some evidence will be offered in SECTION 3 below that the presence of both a behavioral scientist and a technical scientist may be a crucial element in the successful outcome of these missions, and the recommendation is made in SECTION 3 that future consulting teams in weaning foods projects contain at least this dual element, despite the added costs that may be incurred. In this connection, see statement by Dr. Peter H. Pellett, Professor of Nutrition, University of Massachusetts (APPENDIX E). Dr. Pellett, a trained nutritionist of considerable reputation, served as a HOVIPREP consultant both as an individual and also as part of a two-person team, and has made some observations about the relative merits of these two approaches.

An important element of technical assistance to LDCs

normally would be the degree of follow-up and project implementation resulting from such missions. In two cases in which extended follow-up discussions aimed at project implementation have resulted from a HOVIPREP consultancy, a determining factor appears to have been the availability of funds from other sources to carry out a project. These two cases are as follows:

(1) EGYPT. As a result of a visit by HOVIPREP consultants Robert W. Morgan and Carol Adelman in August, 1982, at the request of USAID/Cairo, to examine the potential for the development of local weaning foods initiatives complementary to or supplementary to the present large PL-480 Title II food distribution project carried out by Catholic Relief Services through Government MCH centers, followup discussions and further technical assistance missions have taken place regarding a centrally-processed weaning food project using local resources, and further discussions have taken place regarding home and village projects in Egypt. Both types of initiatives would be funded in part by the USAID Mission.

(2) NIGERIA. As a result of a visit by HOVIPREP consultants Robert W. Morgan and Peter H. Pellett in October, 1982, at the request of university medical schools in Lagos and Ife, to assist nutritionists at the two universities in developing new weaning mixtures from locally-available ingredients and to design field projects for testing and promoting the new mixtures in homes and villages, four project proposals have been submitted to HOVIPREP, each with the potential for separate funding. These include:

(a) Proposals from the Universities of Lagos, Ife and Ibadan resulting from the HOVIPREP CONSULTANTS REPORT by Drs. Morgan and Pellett, and a request from the UNICEF office in Lagos for copies of the three proposals following a reading of the report, with the possibility that UNICEF might assist some joint project activity at the home and village level in Nigeria. Interest has also been expressed by the Federal Ministry of Health in Lagos.

(b) A request for further technical assistance from a large commercial firm, A.S. Leventis (Nig) Ltd., operating in West Africa which may develop a low-cost manufactured food based on the Morgan-Pellett Report.

A list of HOVIPREP consultants, together with the purpose and dates of consultancies, and titles of reports issued, is found in APPENDIX B.

PROCEDURE 5 -- To Collect and Catalogue Information:

During the course of the Project, Dr. Berggren and staff at MIT/Harvard reviewed about 500 books, papers and documents dealing with food supplements for weaning age children and pregnant and lactating mothers, and prepared a computerized annotated bibliography, THE WEANING FOODS ARCHIVE, which has been made available to nutrition agencies and professionals on request. Copies of the ARCHIVE have been sent on request to all USAID Missions in the Latin American/Caribbean area and to a number of other missions, agencies and individuals. Additional copies are available at USDA and MIT and continue to be made available to interested agencies.

PROCEDURE 6 -- To Inform Agencies of "State-of-the-Art", and to Stimulate Interest in Developing or Improving Projects:

The limited "state-of-the-art" material to draw upon in this category comes principally from the four large projects described previously in Indonesia, Nepal, Haiti and Thailand, and from individuals who have worked in the field including a number of the HOVIPREP consultants listed in APPENDIX B. During the course of the project, HOVIPREP consultants have visited the four countries listed and have prepared MONOGRAPH REPORTS describing home and village level activities in Nepal and Haiti, and CONSULTANT REPORTS on Indonesia and Thailand.

Perhaps the most comprehensive general review of interventions at all levels including home and village projects is contained in the draft text of a MANUAL on the conduct of weaning foods projects in LDCs prepared by the HOVIPREP Project (see section on "GUIDELINES" below). More limited situation-specific material on state-of-the-art is contained in other HOVIPREP MONOGRAPH REPORTS and CONSULTANT REPORTS (see complete listing in APPENDIX D).

An early task of the Project was to stimulate interest in home and village activities among USAIDs and PVCs. To the extent that this can be carried out over the telephone and by mail, we have pursued this objective via personal contacts with individuals, as well as via general contacts with agencies. Every chance was taken to meet with overseas personnel who might be visiting the U.S., a number of AID personnel for example being contacted during two meetings at Coolfont. HOVIPREP consultants and consultants for other projects often made overseas contacts in our behalf.

But these are half-way measures at best. The recommendation is made in SECTION 3 below that future project activities include a travel budget so that project principals can travel to overseas

sites for the specific purpose of meeting with agencies and professionals in person in order to promote project development. Successful businesses operate on this principal and in fact would not think of operating in any other way. Just as the successful elements of the four large weaning foods projects listed above were entirely dependent on face-to-face contacts, so also can it be said that successful project promotion depends on face-to-face contacts in the field. The several projects which have been successfully promoted by HOVIPREP in spite of these limitations have been promoted in just this manner, by project principals who were travelling for other purposes and who by chance were able to make essential face-to-face contacts which led to project development.

A promotional activity of the Project carried out largely via the mails which apparently did have a limited success in stimulating an interest in home and village projects among agencies in LDCs was the single sheet illustrated BROCHURE defining the magnitude of the weaning age crisis, giving brief descriptions of the successful elements of the projects in Nepal and Haiti, and describing the activities of the HOVIPREP Project. It should be noted that the BROCHURE was simply and inexpensively produced by photo-offset, the text was simply and easily modified from time to time in response to comments received, and large numbers of copies could readily be carried in the briefcases of travelling consultants. The BROCHURE was designed and written by Dr. Morgan, assisted by the HOVIPREP consultant staff (See copy attached as APPENDIX C).

PROCEDURE 7 -- To Convene a Working Group of Experts
to Prepare Weaning Foods Project GUIDELINES:

At the invitation of the HOVIPREP Project, twenty experts with international experience in weaning foods projects of various types were convened at the Massachusetts Institute of Technology June 20-24, 1982. The group represented expertise in projects at the home and village level, in centrally-processed foods projects, and in subsidized and donated foods projects. Approximately 500 pages of written material was drafted representing a formalized set of GUIDELINES for the conduct of weaning foods projects in LDCs.

PROCEDURE 8 -- To Compile and Distribute These GUIDELINES,
to Assist and Stimulate Weaning Foods Projects in LDCs:

HOVIPREP appointed an Editorial Committee and an Editor to review Workshop materials and prepare a comprehensive set of

GUIDELINES in the form of a MANUAL, for printing and distribution. This text has been completed and is currently being circulated for international review under the title: "IMPROVING THE NUTRITIONAL STATUS OF CHILDREN DURING THE WEANING PERIOD: A Manual for Policy-Makers, Program Planners and Field Workers".

(C) SUMMMATION

The Project has thus followed closely the three OBJECTIVES and eight PROCEDURES specified in the Cooperative Agreement (pages 4-6 above).

Most relevant agencies in LDCs have been contacted and made aware of the following important aspects of weaning period malnutrition:

-That a separate and distinct problem exists with respect to the nutritional status of children during the weaning age, as documented in a number of AID-supported and other nutritional status surveys in Third World countries;

-That this problem normally requires separate and distinct project planning and nutritional intervention;

-That weaning period malnutrition may be the largest single nutritional problem and one of the largest socio-medical problems existing in the world today;

-That weaning period malnutrition is responsible directly or indirectly for widespread mortality and morbidity in this vulnerable age group, and for extensive lifelong mental and physical crippling of the victims involved;

-That large segments of weaning age children in LDCs are not reached by the existing large projects involving centrally-processed foods and subsidized and donated foods;

-That a means for reaching these other segments of children is through projects at the home and village level using local initiatives and locally-available ingredients;

-That relatively few such home and village projects exist at present so that there is an implied need for much greater project development in this area.

As a result of these informational activities, seventeen short-term consulting missions have been provided by HOVIPREP in fourteen countries. These consulting missions have contributed to the texts of two MONOGRAPH REPORTS and fifteen CONSULTANT REPORTS. A working group of experts convened by HOVIPREP at the

Massachusetts Institute of Technology in 1982 has produced the draft text of a MANUAL for the conduct of weaning foods projects in LDCs and this text is now receiving international review.

The limited existing "state-of-the-art" has been described in informational literature of various types distributed by HCVIPREP to agencies in LDCs. The tenacity with which the problem persists, in the face of well-designed and well-financed projects to combat this situation, is probably an important factor deterring interested agencies from initiating new projects. One important factor in this critical situation seems to be quite clear: the presence of suitable nutritious ingredients from which adequate weaning mixtures can be prepared does not in itself solve the problem. Suitable foods in suitable quantity exist in many countries in the developing world, and yet even in these countries weaning period malnutrition persists. One might say that there appears to be a "chain of obstacles" existing which impedes the proper feeding of young children, that all of these obstacles must be identified and addressed before progress can be made in improving children's diets, and that solving all but one or two of these obstacles fails to produce improvement. All links of the "chain" must be shored up, or the whole will fall.

This set of problems is addressed in SECTION 3.

3. RECOMMENDED FUTURE ACTIVITIES TO MEET THE WEANING AGE CRISIS IN THIRD WORLD COUNTRIES

Mortality among very young children has always been frightfully high, everywhere in the world until the present century and more particularly in Third World countries today. Three of the principal causes of young child mortality in LDCs are usually considered to be the following:

- (A) Widespread diarrhea;
- (B) The communicable diseases of childhood;
- (C) Weaning period malnutrition.

Development workers in LDCs have at their disposal recognized tools for combatting the first two of these causes, (A) diarrhea through sanitation and hygiene projects, and to an increasing extent through new developments in oral rehydration therapy, and (B) the communicable diseases of childhood, through immunizations. The third principal causative factor, (C) weaning period malnutrition, is not being addressed on the same scale or to the same extent, particularly at the home and village level.

And yet it is projects at the home and village level which have the greatest potential for reaching the majority of children in low-income societies, and particularly those children in most rural homes as well as in lower class urban homes. SECTION 3 briefly makes the following observations based on the experience of the present project, in the hope that these observations may provide useful guidelines for larger HOVIPREP-type interventions in the future:

(1) Weaning foods projects at the home and village level (HOVIPREP-type projects) have experienced meager development in Third World countries in part because the existing "state-of-the-art" is meager (this statement is intended to apply to HOVIPREP projects and not to centrally-processed or subsidized foods projects). A first step toward improving the nutritional status

of children during the weaning period in LDCs should therefore be the development of experimental projects in specific countries to add to our "state-of-the-art". In particular, these pilot projects should focus on such critical areas as (a) simple technologies for improving food production, preparation, and storage in homes, and (b) new initiatives for promoting behavioral change.

(2) With respect to the latter (promoting behavioral change), an obstacle to HOVIPREP project development in LDCs is often the absence of a cadre of para-professionals who can promote new weaning diets in homes and villages, and hence who can perform the critically important role of being "agents of behavioral change". Because the job of promoting a new weaning food fits well with a number of other community development jobs in LDCs at the home and village level, it is often possible to give additional training to an existing cadre of community development workers so that they can function as HOVIPREP workers as well. This was done in the Indonesian example cited above, in which family planning workers received additional training in health and nutrition activities including HOVIPREP activities. If such a cadre does not exist, then a new cadre must be specially created, as was done in the case of the "Monitrices" in Haiti. But this is not always easily done. In Indonesia, the project functioned on the three islands of Sumatra, Java and Bali because the cadre of family planning workers were already present on these islands; but it was not feasible to extend the project to other islands of Indonesia such as Borneo and West Irian because the family planning cadre did not exist in these areas. A second priority in addressing weaning period malnutrition in LDCs should therefore be pilot programs for the identification and training of existing para-professionals suitable for such projects, or the identification, recruitment and training of new cadres. The development of these para-professional cadres should form an important component of the pilot projects recommended in Paragraph One.

(3) In a sense, the comments made in Paragraph Two above apply as well to projects to combat diarrhea and the infectious diseases of childhood, at the home and village level. The promotion of sanitation and hygiene measures and of ORT (Oral Rehydration Therapy) and the administering of immunizations to children, in village and local community settings, normally require special cadres of para-professionals working in the local communities and frequently natives of these communities or resident in these communities. With appropriate organization and training, it is possible to develop special cadres of home and village workers who do all of these things well, including the HOVIPREP component. The work-load for a single para-professional of this type is not too great, and in fact is made easier in a number of important ways because of the multi-purpose role. The reader will probably grasp in an intuitive way the time-and-cost

effectiveness of this approach; but even more important is the fact that each of these activities complements the others in a variety of special ways, so that greater efficiency and rapport with the residents of the project community who are the intended beneficiaries of the project is achieved by the multi-purpose worker. Full use of the multi-purpose para-professional should be made in future HOVIPREP-type projects.

(4) Amplifying on the above, UNICEF has developed the significant new "GOBI" approach to home and village activities in health and nutrition. The acronym stands for the following:

- G - Growth monitoring
- O - Oral rehydration therapy
- B - Breast-feeding
- I - Immunizations

One might add weaning Food Promotion to this list ("GOBIW"), in part because the same cadre of multi-purpose worker can promote all five of these activities at the home and village level; in part because weaning foods (or "complementary foods", in the terminology preferred by UNICEF) are an essential component of the health and nutrition picture of the growing young child and its mother; and in part because the presence of all five of these components adds strength to the activities of each of the other four. In other words, a weaning foods component complements ORT in special ways; an immunization component complements weaning foods; and so forth. These remarks are amplified below.

(4) Another general comment follows directly from the above. Projects to combat weaning period diarrhea are hampered, -- in fact greatly hampered, -- by the general absence of concomitant projects to combat weaning period malnutrition, (a) in part because of the close interaction of these two disease conditions, so that combatting one disease helps to combat the other, and (b) in part because sanitation, hygiene, ORT, and HOVIPREP projects all contain the essential element of "education-by-doing" in the local community. Although Immunization Projects are to a certain extent separate and distinct from ORT and HOVIPREP projects, these too can be assisted at the home and village level by the concomitant presence of ORT and HOVIPREP projects, because of the common element of "education-by-doing". Finally, the promotion of Breast-feeding and the Growth-Monitoring of children (the preferred method for this being the periodic weighing of children by HOVIPREP workers) require the critical process of "education-by-doing" in order to achieve maximum effectiveness.

(5) The element of "education-by-doing" involves careful work over long periods of time by the specially-created cadres of para-professionals, who are the key performers as "agents of

behavioral change" in each of these project elements. The role of higher-trained professionals is to train the para-professionals, and where necessary to provide continuing supervision and support. This too takes time. Short-term consultancies, though useful in identifying and evaluating projects and sometimes also in obtaining funding for projects, are therefore seldom useful in implementing HOVIPREP-type projects in the field. Further provision should therefore be made to support the longer-term presence of higher-trained persons in the field, in future projects of this kind.

(6) In the implementation of HOVIPREP-type experimental and training projects as recommended above, provision should therefore be made to support HOVIPREP staff on long-term assignment in the field, in addition to the short-term consultancies of the type provided in the present project.

These remarks are amplified in the remainder of SECTION 3. The ideas expressed in this section have been developed by the writer through conversations with colleagues including colleagues at MIT/Harvard, in USDA and AID, and in the many other institutions collaborating in this project; through experience in the field; and particularly through the experience gained in the present HOVIPREP Project. It is hoped that these remarks may make a contribution to future project activities in Third World countries for the improvement of the nutritional status of weaning age children.

(A) COMMENTS ON THE MISSING "STATE-OF-THE-ART"

It has been pointed out earlier in this Report that relatively few weaning foods projects exist in LDCs which have their focus at the home and village level. This would imply a limited "state-of-the-art". And yet the reader might be tempted to say, "Look at all the weaning foods that have been developed, -- in LDCs and throughout the world. How can you say that there is no 'state-of-the-art'?"

From the point of view of HOVIPREP projects, the key to understanding this question lies in the comment cited earlier in this Report by a leading Third World pediatrician:

"We have seen dozens of weaning foods developed in this country. But not one of them has 'caught on'" (Professor D. Ransome-Kuti, Director, Institute of Child Health and Family Care, Lagos).

Why so many of the nutritious and low-cost weaning foods

developed by experts throughout the world do not 'catch on' is a question central to the success of future HOVIPREP projects. The technology of creating adequate nutritious weaning mixes from locally-available foods is in a sense better developed than the technology of introducing these foods in Third World homes and villages and of promoting their daily use. As Dr. Peter H. Bellatt, Professor of Nutrition, University of Massachusetts has observed: "A food that is not consumed has no nutritional value."

In attempting to understand why so many well-designed weaning foods do not 'catch on' in the developing world, it is useful to view the steps leading to the successful introduction of a new weaning food as "links in the chain" of success. Closing each "link" represents the overcoming of a particular obstacle. Failure to close any link will cause the entire chain to fail. Consider the following example from coastal West Africa, based on a HOVIPREP consulting trip in 1982 (each numbered paragraph represents a piece of knowledge or an identified procedure forming one "link" in the hypothetical "chain" leading to the successful introduction of a new weaning diet):

(1) Malnutrition among weaning age children in this area is high and MCH centers are frequently called upon to treat children with advanced cases of marasmus and kwashiorkor.

(2) The traditional weaning food in this area is a fermented maize pap, which because of high acidity can be preserved without refrigeration for an extended time period in rural homes. The strong fermented taste is well-liked by mothers and children.

(3) Unfortunately a typical serving of the pap, made up from a scoop of the raw fermented mixture combined with boiling water, has been found in a number of laboratory tests to contain on the order of only about 30 Kcal and 0.5g protein. Even seven servings a day of the pap of a weaning age child would not come close to meeting minimum recommended nutritional requirements.

(4) Spared from the pap, another prominently available food in the area having a recognized nutritional potential is the cowpea, a prevalent legume. Nutrition educators have been recommending the addition of cowpeas to the children's pap for at least two decades and many mothers seem to recognize the nutritional value of cowpeas, which form an important part of most adult diets. But mothers in the area will in general reject the use of cowpeas in children's diets, because they say the cowpeas have a bad taste, cause digestive problems in the young children, and often lead to diarrhea.

(5) Animal sources of protein such as eggs and fish are also not used, in part because of local taboos and in part because they are expensive. Green leaves are often added to children's diets and make an important nutritional contribution, but green

leaves by themselves do not provide the necessary energy or protein requirements.

(6) In frustration, local MCH workers when confronted with a severe case of marasmus or kwashiorkor will frequently throw up their hands and tell mothers to go to the local market and purchase an expensive commercial baby food such as Cerelac, for want of any easily available alternative.

(7) The HOVIPREP consultants worked with local nutritionists to produce nine weaning mixtures composed of maize and cowpea in various forms, ranging from the reducing of both ingredients to flour mixtures in differing proportions, to the fermenting of both ingredients together in the manner of traditional pap. All of these mixtures had the white appearance of traditional pap, and none had a detectable bean taste. With a teaspoon of sugar added to each serving, these mixtures approximate the nutritional value of cow's milk. They are now being tested in the field for long-range acceptability to mothers and children and demonstrated weight gain on the part of the children.

Several links in the chain leading to successful promotion of a new weaning mixture have thus been closed. But other open links still remain.

(8) The HOVIPREP consultants noted, for example, that most mothers who work away from home during the day, in their fields in the rural areas or in city jobs, make up a full day's allotment of pap for the young child in the early morning before leaving for work. An older sister or other family member is left to feed the child. The day's allotment of pap normally will last until evening when the mother gets home. But every once in a while the day's allotment will start becoming contaminated in the late afternoon, particular on hot and humid days. In time the day will come when the child gets diarrhea which is attributed to the weaning mixture. One such episode may be enough to bring permanent rejection of the new mixture. If word gets around in the neighborhood, all families in the area may reject the new mixture.

Clearly this is one link in the chain which has not been closed, and it may prove sufficient to bring down the whole chain.

(9) The HOVIPREP consultants discussed with the local nutritionists the possibility of creating a special dry weaning mixture for the late afternoon serving each day. But clearly this is something that would have to be tried in the field, over an extended time period. The special late afternoon mixture represents a departure from custom and also from the established routine, and might prove to be too cumbersome for mothers and families to accept. Here we have some additional and unanticipated links to the chain, which must be tested in the

field before they can be seen to hold. And modifications in the chain may become necessary based on the later field experience.

The experience in West Africa highlights certain factors common to HOVIPREP projects in general:

(a) Project staff (including HOVIPREP Project staff if the project in question is one of the experimental or pilot projects recommended above) must be prepared to spend extended time periods in the field, before they can be certain that any given "chain of success" is starting to hold;

(b) Even after numerous links in the chain have been closed, other weak links may later present themselves;

(c) The only reasonable way to deal with weak links which appear is through continuing project participation in the field, and the development of ad hoc solutions to problems which arise;

(d) In the circumstance, existing "state-of-the-art" consists of the weaving together over long time periods of this series of ad hoc responses to weak links as they arise, by project professionals in the field;

(e) Existing "state-of-the-art" is situation specific to given countries, and often to given sub-divisions within countries. General principles common to several countries may appear in time, but for the most part they do not exist today.

(f) These represent some (but not all) of the reasons why "state-of-the-art" is not extensive with respect to HOVIPREP projects, and why short-term consultancies are not adequate in and of themselves to meet HOVIPREP needs.

(B) "HOVIPREP" AND "GOBI" PROJECTS:
STRENGTH THROUGH CO-EXISTENCE

Six activities by para-professional workers at the home and village level have been described, for improving the nutrition and health status of young children. These include the HOVIPREP activity:

- (1) Introducing new diets for weaning age children and their mothers;

and the GOBI set of activities by UNICEF:

- (2) Growth-monitoring of young children;
- (3) Oral rehydration therapy;
- (4) Breast-feeding promotion;
- (5) Immunization programs for children.

Presumably ORT and in fact all of these activities also include:

- (6) Provision for improving sanitation and hygiene in the environment.

Based on experience in the Third World, all of these activities have two things in common: (a) with preparation, hard work, and good luck, they probably could be initiated in most LDC areas; but (b) once initiated, they are extremely difficult to maintain. Even after well-designed projects are funded and implemented, the disappointing outcome is that they nevertheless tend to fail. The goal of HOVIPREP and GOBI projects is the direct opposite, i.e. to reach some kind of "take-off" stage so that these activities become self-sustaining and self-replicating, i.e. the activities are seen to be beneficial and are maintained in project communities and adopted in neighboring communities without the necessity of being specially promoted. This goal has been attained in Third World countries in agriculture and education; up to now it has not in general been attained in nutrition and health.

When any of these activities do reach the "take-off" stage, governments may continue to assist with capital inputs (i.e. providing new seeds to farmers, building new schools, providing simple mills and weighing scales to assist village nutrition projects, helping in swamp clearance and sanitation and hygiene projects, building rural health facilities, and so forth). The public "sees" that these activities are "good" and comes to demand them. It no longer becomes necessary for governments to promote these activities, but simply to assist the public to make them happen.

The primary goal for HOVIPREP-type and GOBI-type projects, then,

is to find ways to initiate and maintain these sets of activities long enough so that the public can "see" that they are "good". This is not easy. It may take six months or longer to rehabilitate a severely malnourished child. Long before this time, the worried mother may have given up and gone home. Another child in the center may have died, frightening her away. An angry husband may demand that she give up these activities, or take up bottle-feeding, or forget about having the child weighed, or whatever. The most difficult aspect of any of these nutrition and health interventions at the home and village level is to find ways for maintaining these sets of activities long enough, -- and usually this means a very long time indeed, possibly a year or even several years, -- until the public suddenly "sees" that they are "good".

How can this be done? One way, as has been suggested above, is to initiate HOVIPREP-type and GOBI-type projects together, so that the same para-professional worker promotes all of these activities together. This does not become a drain on the para-professionals' time, but if properly organized tends to make their work easier, since these sets of activities then become complementary and mutually-reinforcing. To understand how these processes work together, it is necessary to analyze each of them separately.

INTRODUCING NEW WEANING DIETS	)	Each of these activities
	)	requires the element of
PROMOTING BREAST-FEEDING	)	"education-by-doing",
	)	i.e. patient work with
PROMOTING BETTER SANITATION	)	community residents by
& HYGIENE IN THE ENVIRONMENT	)	the para-professionals

Of the six activities mentioned, implementing and maintaining these three probably is the most difficult, because there are no visible inducements or motivations which that can be offered to project recipients other than the word of the para-professional that after a very long time the child's nutrition and health will be improved. This is a serious obstacle, but there are still other obstacles more serious than this one, -- because each of these activities carries with it one or more "negative inducements" as well. To introduce new weaning diets in the household, for example, may disrupt traditional family eating patterns, traditional household economic patterns, and very possibly traditional family authority patterns. Promoting breast-feeding may hamper the woman at work and may disappoint wives or anger husbands who want the baby to be bottle-fed, because they have seen "modern" women bottle-feeding their babies in magazine pictures, in the movies, or on television.

The most unlucky fellow of all is usually the sanitation worker,

who must go around homes and market places telling people to do unpleasant things (cover up meats being sold in the stalls to keep off the flies, even though this makes it difficult for the customers to see what they are buying; stop drinking from the nearby water supply because this one is contaminated, but rather drink only from the water supply that is far away and inconvenient). All of these things "nassle" the listener and offer nothing immediate in return. The medical sociologist Geert Van Etten has gone so far as to observe that the promotion of sanitation and hygiene in villages might better be undertaken by tailors and seamstresses, because they can offer the listeners something "positive" (a new jacket or dress, for example) in addition to something "negative" (don't drink the water from this well which is nearer, but only from that one which is further away); whereas the sanitation worker only has "negative" things to say (see Geert Van Etten, Rural Health Development in Tanzania, Van Gorcum Press, Amsterdam, 1975). These observations alone might be sufficient to explain the comment of the Third World pediatrician quoted above, "We have seen dozens of weaning foods developed in this country: but not one of them has 'caught on'."

GROWTH-MONITORING OF SMALL CHILDREN (usually part of a "MOVIPREP" Project as well as well as of a "BOBI" Project)	)	Wherever these activities are carried out (in fixed settings such as health facilities, or in homes or the community itself, which is preferable), an
IMMUNIZATION OF SMALL CHILDREN (usually BCG, Measles, Polio, Tetanus, and Triple Antigen)	)	"advance agent" is needed to organize children who are to be weighed or shot

Both these activities require extensive organization and record-keeping. Frequently these activities are carried out by paramedicals in fixed settings such as clinics and health centers, and mothers bring their children at stated times for weighing (often once a month, at which time the health facility staff will check to see if the child is also due for an immunization). Children's growth records in many LDC countries at present involve the use of weight charts in plastic covers which are kept at home by the mothers and brought to the health facility each time the child is to be weighed. Immunization records, on the other hand, are invariably kept in the clinic or health center (a duplicate record may also appear on the weight card held by the mother), a reflection perhaps of the fact that physicians and medical workers continue to take immunizations more seriously than growth-monitoring.

A second method for carrying out both growth-monitoring and

immunizations is via special mobile teams which make periodic visits to communities. A feature of the Mothercraft Centers in Haiti was the touring "Monitrice" who made once-a-month visits to villages to weigh the children. Large immunization programs often involve touring teams of specially trained para-medicals who systematically cover population groups, an advantage of this system being the better transport and maintenance of the vaccines (virtually all immunization programs in LDCs have experienced problems in maintaining the cold-chain; in rural areas, mobile teams probably handle this problem somewhat better because refrigerators in the fixed facilities in rural areas have a history of failing at the wrong moment, causing vaccines to spoil).

It is clear that either method benefits greatly from the presence of some form of "advance agent" who organizes mothers and children in advance for the weighings and immunizations. In fixed facilities such as clinics and health centers, this role can be performed in part by health workers at the facility, through reminding mothers at one visit to come back for the next one, and more advantageously through the help of clinic extension workers who make home visits. But extension workers are an expensive addition to rural health facilities and usually are not available. Mobile teams in many instances do not have satisfactory "advance agents" of any type.

From the point of view of this Report, the greatly-preferred method for handling both growth-monitoring and immunizations is through the medium of the village para-professional working in conjunction with a mobile team (a single mobile unit for both activities) which visits each community on a set schedule, probably once each month. Required weighings and immunizations take place concurrently on each visit to a given village, the para-professional acting as "advance agent" and also performing the following roles:

(1) Making sure that weights are properly recorded, checking for proper weight gain in each child, identifying children who appear to be at risk, counselling mothers as indicated, reminding mothers of the date of the next visit, and so forth. Some advantage may accrue if the mobile unit brings the scales for the weighings, (a) because one set of scales may then serve a number of villages, thereby saving a little money and possibly enabling the use of a better quality scale; (b) because someone on the mobile team may then be more familiar with the set of scales used and help the para-professional to read the scales (two heads are always better than one); and (c) because even the best-maintained scales break down very easily under the wear and tear of village children, and the mobile unit is in a better position to keep scales repaired and also to keep a reserve set of scales on board. Finally, the mobile unit makes it possible for the para-professional to send a set of monthly

records back to headquarters to be joined together with records from other villages so that a continuing "built-in" evaluation of the project can be conducted (it goes without saying that the knowledge that the mobile unit will arrive on a given date will inspire the village para-professional to get the records prepared on time).

(2) With respect to immunizations, the village para-professional performs a similar set of roles, being sure that records are properly kept, counselling mothers and children as indicated, reminding mothers of the next date for immunizations, and sending a set of monthly records back to headquarters to be joined with the records from other villages for continuing project "built-in" evaluation. With respect to immunizations, the writer of this Report subscribes to the view that these are best given by a specially-trained cadre of para-medicals attached to the mobile units, and that the mobile units provide the best mechanism for transporting vaccines to rural places and for maintaining the cold-chain.

Growth-monitoring normally forms an integral component of HOVIPREP-type projects and provides the only normally-available means by which parents can "see" improvement in the nutritional status of their children, i.e. consistent weight gain as a result of using the new weaning diets. But the time required for parents to make this association may be months long, and until this association is made the para-professional worker has no argument to offer the parents in favor of adopting the new diets, other than reliance on his or her own word. Motivating parents to take part in the weighing exercise is as difficult as motivating parents to take part in most of the other elements of HOVIPREP and GOBI projects (i.e. to adopt new weaning practices, to prolong breast-feeding, to adopt sanitation and hygiene measures). For the most part, the project community must accept the word of the para-professional worker on faith alone.

Immunizations offer the one real exception to this rule. People all over the world seem to like immunizations and to place great faith in them. The para-professional worker derives status and a considerable degree of rapport with the project community simply by being associated with the immunization program.

ORAL REHYDRATION THERAPY	)	Requires 24-hr presence
	)	of para-professional as
	)	"monitor", plus factor
	)	of "education-by-doing"

This critically important component of the projects we have been discussing in this Report has a somewhat different character from

the other five components. ORT's major contribution lies in rescuing children from a crisis situation which if untreated may be fatal to the child. To the extent that parents recognize this, the para-professional worker who promotes ORT gains a measure of status and rapport. The job is difficult because traditional methods of dealing with diarrhea are violated, and because the slow and patient introduction of still another set of "education-by-doing" activities is required.

Having briefly described these analytical elements of the six components of what we are calling HOVIPREP-plus-GOBI interventions in homes and villages, we now must address the central question:

"Assuming that it may be QUICKER and CHEAPER to carry out these six project components through the medium of a single para-professional worker who is specially recruited and trained from within the project area, why nevertheless should it be BETTER to do it in this way (i.e. why should the project have a better chance of gaining momentum, of becoming self-sustaining, and of achieving self-replication in other communities)?"

There are two principal answers to this question, one involving the status and rapport attained by the para-professional in the project community; and one involving the problem addressed in the previous section, that of closing successive "links in the chain" leading to project success.

(1) STATUS AND RAPPORT OF THE PARA-PROFESSIONAL

The para-professional trained to perform in the key role of "agent of behavioral change" in the six activities we have been discussing, must gain status in the community and rapport with community residents, in order to motivate these project participants to follow his lead in bringing about long-term behavioral change. Each of these six activities contributes to the sequential development of his status and rapport, as follows (the para-professional is referred to as "he" but may be either male or female):

(a) IMMUNIZATIONS. Involvement in this activity conveys immediate status to the para-professional and a measure of rapport with community residents, because immunizations have a positive image throughout virtually all of the Third World. This involvement has a crucial relationship to the success of the rest of the project.

(b) ORAL REHYDRATION THERAPY. This activity, when successful, gains success and is seen to be successful within a short time-span, normally 24 to 48 hours. This adds to the status of the para-professional as a medical worker, and also provides legitimacy for his role as a multi-faceted worker and as an initiator of "education-by-doing" activities, elements of his job which might have been previously unfamiliar to community residents and hence slow to be accepted.

(c) PROMOTION OF BREAST-FEEDING AND IMPROVED WEANING DIETS. The para-professional must to a large extent rely on status and rapport gained through the two previous interventions, in order to introduce these two "education-by-doing" activities which so directly affect the growth and health of the young child.

(d) GROWTH-MONITORING. This activity gains from being introduced in tandem with the immunizations. If successfully continued over a number of months, it provides the strongest element of support for the para-professional, because it enables parents to "see" the benefits of breast-feeding and improved weaning diets through the continued weight-gain of the child. Without the HOVIPREP element, it is doubtful that breast-feeding alone would provide such a result. No other component of the set of HOVIPREP-plus-GOBI activities provides this tangible measure of project success (i.e. the record of weight-gain). The growth-monitoring activity is therefore central to the entire operation. The periodic growth-monitoring plus immunization sessions in the village substantiate the para-professional's position, link him visibly to the larger nutrition and medical professional world through the visits of the mobile units (which further contributes to his status in the community), and gives him one of his most useful vehicles for forging the "links in the chain" of project success discussed in the next section. If the project reaches the stage of continued periodic growth-monitoring plus immunization sessions in the village, then it is probably on its way to self-sustaining success.

(e) SANITATION AND HYGIENE. This critically important yet often thankless element of HOVIPREP-plus-GOBI activities must usually rely, like the promotion of breast-feeding, on the status and rapport which the para-professional has derived from other elements of the project. Only in the longer run may community residents come to appreciate the value of these interventions in the interests of better sanitation and hygiene. And some communities may not come to appreciate them even then. One side-remark which might be entered here is that in many LDCs a ready and willing cadre of para-professional workers is available in the existing corps of sanitation and hygiene workers. This frequently well-motivated, under-utilized, and much-abused group is usually delighted to be inducted into some more positive and rewarding line of work, -- for example as the multi-purpose

workers in the HOVIPREP + GOBI Projects. And they are already on the government payrolls!

(2) THE PARA-PROFESSIONAL WORKER, AND "LINKS IN THE CHAIN" OF PROJECT SUCCESS

The reader will recall the comments made earlier in this Report likening a HOVIPREP intervention to "links in a chain". The links make their appearance sequentially, each representing some new element or some new problem. Each new link must normally be dealt with on an ad hoc basis as it appears, and a solution to each of these new problems found (each new problem link must be closed, so to speak) until successful completion of the project is achieved. One link left open and the entire chain will fall, even though all of the other links have been successfully closed. (In the example given in the section above, a nutritious weaning mixture composed of locally available foods and prepared in the acceptable traditional manner of a fermented wet gruel is identified, introduced, and initially accepted by the community; but in the course of time one batch of the new weaning mixture is prepared by the mother in the morning, becomes contaminated by late afternoon after standing for a day in the tropical heat, and as a result one child becomes sick and dies. The community responds by abandoning the new mixture. The project team views this event as a new "problem link" in the chain, and seeks to identify a special dry weaning mix for use in the late afternoons).

Three comments are in order here, linking the cadre of village para-professionals to the problem of sequential "links in the chain" of project success:

(a) Being always present in the villages, the para-professionals are in the best position to deal with "problem links" as they arise, and to identify ad hoc solutions;

(b) Because it is in homes and villages that problems usually arise, rather than in health centers or clinics or other fixed facilities away from the homes, the basing of projects in communities rather than in fixed facilities has the greater potential for long-run success;

(c) Finally, the problems which arise in home and village projects must ultimately be solved by the villagers themselves, not by outside professionals (the latter may offer solutions, but it is the villagers who must accept them). Projects guided by para-professionals resident in project villages are therefore preferable on still another level to projects centered in fixed facilities such as health centers and clinics.

(D) SOME REMARKS ABOUT "EDUCATION-BY-DOING"

This is the critical element of both HOVIPREP-type and GOBI-type projects, and as noted elsewhere in this Report is best done by lower-trained para-professional cadres specially inducted into these projects. Ideally these para-professionals are recruited from and are resident in project villages. Sometimes they are mothers themselves. Supervision in such projects often may be done by higher-trained professionals who may be employed in a variety of tasks in the area. But the actual work of promoting new behavior patterns in the community is done by the para-professionals. In the Indonesia project cited earlier in this Report, for example, family planning workers attached to a national program supervised the formation of mothers' clubs in village communities; the mothers' clubs through periodic meetings promoted better maternal and child health practices in the communities including the introduction of improved weaning diets.

The requirements of "education-by-doing" are:

(1) Time and patient work, by the para-professionals, in the community;

(2) Careful training of the para-professionals, by the project's professional staff, in the project communities to the extent that is possible, otherwise in training centers located as close to the project communities as possible. This too takes time.

(3) Joint effort by the project's professional staff, the project's para-professional staff, and community residents themselves, to close problem "links in the chain" of project success as they arise. This means day-to-day efforts to identify problems and to create solutions. Often these solutions are AD HOC and situation specific. General principles for the solution of HOVIPREP problems may be indentified in time; at present, as pointed out elsewhere in this Report, for the most part they do not exist. This element of a project is the most time-consuming of all, and requires the continuing presence of professional staff at all levels. Once again it must be emphasized that future HOVIPREP projects should include experimental projects and some HOVIPREP staff in the field on a long-term basis.

(E) SUMMATION

Based on these remarks, recommended activities for future HOVIPREP projects include the following:

(a) Experimental projects in different countries to improve the present meager "state-of-the-art", and to weave new "links in the chain" of project success in different countries. Through such effort, general principles for the successful conduct of HOVIPREP projects will in time arise.

(b) Professional staff must be prepared to spend extended periods in project areas, to train and supervise the para-professional staff and to be present when any link in the "chain" gives way, in order to assist in closing the link and creating a new solution. Short-term consultancies are in effect powerless to make important contributions to HOVIPREP projects, and will remain so until a better "state-of-the-art" is developed through a series of experimental projects in different countries.

(c) The key element of "education-by-doing" is carried out by social cadres of para-professionals who ideally are recruited from and are resident in project communities. The para-professionals are trained by the project professional staff and require continuing monitoring, supervision and support by the project professional staff, up to the time when a new intervention reaches the stage of self-propulsion in a community. In traditional Third World societies, reaching this stage normally requires a long time period, usually at least a year and sometimes much longer.

(d) Many of these same remarks apply to the GOBI set of projects being undertaken by UNICEF (growth-monitoring; ORT; Breast-feeding Promotion; and Immunizations). The Report makes the strong recommendation for the linking of HOVIPREP and GOBI activities at the home and village level, to be carried out in a community by a single specially-trained para-professional worker who ideally is recruited from the project community or who is resident in the project community. HOVIPREP and GOBI activities are shown in the Report to be complementary and mutually reinforcing, at the home and village level.

The high levels of mortality among children of weaning age in LDCs, the important contribution made by weaning period malnutrition to this mortality, the particular potential for HOVIPREP projects to reach the majority of children of this vulnerable age and particular those children in rural and lower class urban families who may not be reached by other large projects, and the relatively few HOVIPREP projects in existence at present as detailed in this Report, suggest the urgent need for much greater project activity in this critical area.