

**EVALUATION OF THE VITAMIN A  
DEFICIENCY PROJECT**

by

Dr. John I. McKigney, Chairman  
Dr. Larry C. Clark  
Dr. James Allen Olson  
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April 1988

This evaluation has been carried out for the Office of Nutrition, Bureau for Science and Technology, Agency for International Development under contract PCD-0262-I-00-7150-00



JOHN SNOW, Inc.

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## EXECUTIVE SUMMARY

An external evaluation of project 931-0045 "Nutrition: Vitamin A Deficiency Program Support" of the Office of Nutrition, Bureau for Science and Technology, A.I.D., was held April 12-16, 1988 in the Washington, D.C. area. The evaluation committee was comprised of Drs. John I. McKigney, Chairman, Larry C. Clark, James Allen Olson and Susan T. Pettiss. The Committee evaluated progress and experience gained from the project since its inception in 1975, with particular emphasis being placed on activities during the period 1984-1988. Suitability of the current project design was assessed and an initial determination made on future directions of a follow-on project.

The Committee concluded that the project has successfully met its objectives, and that the achievements of the two major contractors are impressive. It was also noted that the availability of substantially increased funding during the current project period has permitted enlarging of geographical outreach and the scope of activities through partnerships with numerous academic institutions, private and international agencies.

It was recommended that the project be extended for at least a five-year period with adequate funding to meet the challenge of vitamin A as a significant factor in child survival, in child well-being, and in the prevention of nutritional blindness. The Committee further recommended continued funding of the two major entities; continuation of research studies of the relationship between vitamin A status and mortality, morbidity and other nutrients; and that a new resource center specializing in program management and evaluation be established.

Evaluation of Project Number 931-0045  
"Nutrition: Vitamin A Deficiency Program Support"

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## I. CONCLUSIONS

1. The vitamin A project has successfully met its objectives during the period of this review (1984-1988).
2. Because a marginal as well as a deficient status can influence nutritional blindness, child development, and child survival, an inadequacy of vitamin A may adversely affect the health of a significant proportion of children in the third world. In this regard, current studies and projects may well indicate the need for new directions and increased attention on the prevention and control of vitamin A inadequacy.
3. In this project, the interaction of vitamin A and other nutrients has heretofore not been emphasized as a significant factor in child survival and well-being.
4. The achievements of IVACG in meeting project objectives are impressive. Its world-wide recognition as an authority on vitamin A by UN agencies and other groups is well deserved.
5. The achievements of ICEPO in meeting project objectives are impressive. Its world-wide recognition as a center of excellence in vitamin A research and in the design of survey and intervention strategies is well deserved.
6. Substantially increased funding during the current project period has enabled A.I.D. to extend its geographical outreach and to enlarge its scope of activities through partnerships with numerous academic institutions, private and international agencies.
7. Mechanisms within A.I.D. for the handling of the current level of proposals and for the monitoring and evaluation of funded projects are inadequate and uncoordinated.
8. The funding period and administrative procedures for vitamin A activities have not always been in keeping with the planning and operational requirements of specific projects and of host country needs.

## II. RECOMMENDATIONS

1. The vitamin A project should be extended for at least a 5 year period.
2. Adequate funding should be provided to meet the challenge of vitamin A as a significant factor in child survival, in child well-being, and in the prevention of nutritional blindness.
3. IVACG should be encouraged to expand its role in organizing meetings, workshops, and regional conferences. Their valuable widely disseminated publications in the areas of scientific information, developing and established analytical methods, summaries of intervention programs, and specific recommendations should be continued. Additional appropriate funding should be provided to this end. A 5 year funding period is both appropriate and necessary.
4. ICEPO should be funded adequately to meet its current program of activities. An additional 5 year funding period is both appropriate and necessary.
5. A new center of excellence, which would develop new institutional arrangements and would be equivalent to, but different in focus from, ICEPO, should be established. Activities of this center might well include the planning, management, and evaluation of programs, evaluation of the short-term and long-term impact of social marketing projects, assessment of the effectiveness of projects that promote food production, and the provision of technical assistance to A.I.D.-funded field activities of PVOs.
6. Replicate studies of the purported relationship between vitamin A status and mortality and morbidity should be conducted in different countries by different groups of investigators. In these studies:
  - a: Increased attention should be given to the development and use of indicators of marginal vitamin A status.
  - b: Blinded interim analysis should be performed so that the feasibility of modifying or extending a particular study might be assessed in a timely manner. This function should be performed by an external safety and monitoring committee.
  - c: In the initial replicate trials, children involved in the study should not be immunized if the intent of the trial is to retest the original hypothesis, since immunizing children in the trial will dramatically change the nature and interpretation of the hypothesis being tested.
  - d: Emphasis should primarily be placed on morbidity assessment.

- e: At least one trial should be conducted with immunized children to assess the relative effects of vitamin A status and immunization on morbidity.
  - f: At least one trial should be conducted in a population where clinical signs of vitamin A deficiency are rare, but where the prevalence of generalized malnutrition among young children is significant.
  - g: At least one study should attempt to define the relative risk of an inadequacy of several other nutritional factors, e.g. zinc, iron, selenium, and vitamin E, in addition to vitamin A on morbidity.
7. Mechanisms within A.I.D. for reviewing, monitoring and evaluating vitamin A proposals and project activities should be improved and coordinated.
  8. The relation of the funding period to project needs should be carefully assessed at the initiation of a project. A longer period, even at a lower annual rate of funding, is necessary for most third world projects. As a corollary, the funding procedure should be streamlined to facilitate project planning and execution.
  9. Before a significant allocation of new funds is made to social marketing activities, the efficacy of short-term and long-term interventions that are now being tested should be evaluated.
  10. Before a significant allocation of new funds is made to projects that promote the growing and utilization of vegetables and fruits, e.g. home and market gardens, the efficacy of short-term and long-term interventions that are currently being tested should be assessed.
  11. Attention should be given in this project to the unique biological actions of carotenoids, such as their activities as antioxidants and as stimulators of the immune response, apart from their activity as precursors of vitamin A. The findings might well have implications in the selection of most appropriate intervention strategies and the interpretation of the proposed intervention trials.
  12. Support for the Xerophthalmia Club Bulletin, currently edited by Prof. Donald S. McLaren at the Univ. of Edinburgh, Scotland, U.K., which is disseminated to 1500 - 2000 health professionals in third world countries, should be continued.

### III. BACKGROUND

The vitamin A deficiency project serves as the Office of Nutrition's mechanism for assisting developing countries in the prevention and control of vitamin A deficiency. The project assists participating countries to:

- a: Define the geographic distribution, public health and economic significance of vitamin A deficiency and xerophthalmia;
- b: Formulate the conceptual framework and appropriate strategies for intervention approaches;
- c: Design, implement and evaluate vitamin A programs;
- d: Train vitamin A program staff.

The project was initiated in FY 1975. The International Vitamin A Consultative Group (IVACG) was created in early 1976 to function as a worldwide catalyst by marshalling international expertise, collecting and disseminating knowledge of the problem and preventive methods, and providing a forum for international coordination, discussion and exchange of knowledge and experiences.

During the early years of the project, training and field activities were carried out through a number of individual grants and contracts. Examples of these activities include a customized training program to develop a cadre of specialists, vitamin A deficiency surveys in several countries, initial support of capsule distribution activity, development and testing of sugar and MSG as vehicles for distribution of vitamin A, and a large multi-faceted research program in Indonesia (including a national survey) which greatly expanded the sum of knowledge of the etiology, treatment and prevention of nutritional blindness.

With the availability of the Cooperative Agreement mechanism in 1980, AID decided to share in funding the International Center for Epidemiologic and Preventive Ophthalmology, Johns Hopkins University (ICEPO) to develop a "center of excellence" in xerophthalmia control, to channel scientific and technical expertise to collaborating host country institutions, and to institutionalize this capability. Thus, from 1980-1986 IVACG and ICEPO served as the two operational arms of the project. Both organizations have been extremely effective both in eliciting coordination and collaboration from various international and bilateral agencies and from the private sector and in fulfilling their respective mandates.

The last external review of the project was carried out in 1984 under the auspices of the National Science Foundation. Although the review committee recommended an increased level of funding so that additional activities could be initiated, funding constraints compelled the Office of Nutrition to retain the previous operational structure based solely on IVACG and ICEPO activities. However, the project design was sufficiently

broad to accommodate greatly increased funds from the Child Survival Initiative and congressional earmarks late in FY 1985 and in subsequent years. The project is currently approved through September, 1988.

The purposes of the current review are to (1) evaluate the progress, and experience gained from the project to date, with particular emphasis on activities since the last project review (1984), (2) assess the suitability of the current project design, and (3) make an initial determination on future directions of a follow-on project, if continuation is merited.

The evaluation committee consisted of the following persons:

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All members of the committee are expert in various facets of vitamin A and in the design and management of international programs, Dr. McKigney was in charge of vitamin A activities at the Office of Nutrition, U.S. AID, Washington D.C. for many years. He consequently has a broad understanding both of international activities in nutrition and of their funding and management by governmental agencies. Dr. Clark, an epidemiologist with broad experience in Ethiopia and China, contributed particularly in areas of program design and evaluation. Dr. Olson, who has made many contributions to our understanding of the metabolism, storage and function of vitamin A, also has extensive international experience in Asia, South America and Europe, Dr. Pettiss, a key figure in the development of national vitamin A intervention programs over the past decade as director of the nutritional blindness program for Helen Keller International, has keen insight into the administration and management of

international programs, into the crucial interface between host governments and international agencies, and into the approaches and capabilities of private volunteer agencies (PVOs).

As a team, therefore, the approaches, expertise and experience of all members were highly complementary in the evaluation of the broadly based vitamin A programs of A.I.D. Their review was conducted in Washington, D.C. during the period of April 12 - 16, 1988. Those groups and individuals interviewed during that period are listed in Annex II.

#### IV. PROBLEMS AND ISSUES ADDRESSED BY THE EVALUATION

ISSUE I: Is the project design consistent with the following objectives:

- A. Catalyze worldwide efforts toward the prevention of vitamin A deficiency?

During the early years of the project, this objective was pursued largely through annual meetings of IVACG and development of Task Force reports on issues pertaining to the recognition, treatment and prevention of vitamin A deficiency. When these approaches failed to elicit interest in Africa, the project provided funds to WHO with which preliminary surveys were carried out in seven African countries, of which five were identified as having a vitamin A deficiency problem. The survey results were presented at the 1980 IVACG meeting in Nairobi, which was attended by representatives from seven African countries. Representatives of nine African countries attended the 1982 IVACG meeting in Senegal. Since then, AID-funded assessments of vitamin A status have been conducted in Malawi, Tanzania and five Sahalian countries. Fourteen African countries were represented at the 1987 IVACG meeting in Ethiopia.

Response by ICEPO to requests for technical assistance has also been an effective catalyst in Africa. Collaborative activities with Tanzania provided an opportunity for ICEPO to organize a training seminar attend by health officials from four neighboring countries. Likewise, an ICEPO training seminar in Malawi was attended by health officials from five countries in the area.

Nearly 53,000 copies of eight IVACG Task Force reports have been widely distributed, particularly in developing countries where vitamin A deficiency is or may be a problem. The reports are initially mailed directly by the IVACG secretariat to key officials in the countries, followed by distribution at the program level through the AID, WHO, PAHO, UNICEF and FAO systems. Several of the reports have been translated into Spanish, French, Portuguese and Indonesian. Three additional Task Force reports are currently in preparation. The IVACG reports, which are recognized as authoritative by the international agencies and scientific community, have unquestionably served as extremely effective reference documents and guidelines to standardize approaches in staff training, intervention methods, program development and evaluation.

There has been a notable increase during the current project period in the number of U.S., international and indigenous PVOs interested in initiating vitamin A activities in countries where vitamin A has been confirmed to be a public health problem. It would thus seem important to promote means of defining vitamin A status in the remaining countries on the WHO list of probable sites (See Annex I). Considering the current level of interest in vitamin A deficiency within the development community, intervention activities will almost certainly be initiated shortly after the problem is defined in each country.

B. Expand the sum of knowledge regarding vitamin A deficiency and methods for its control?

Total knowledge concerning vitamin A deficiency has expanded greatly during the past four years, of which this vitamin A project has contributed a significant portion. The annual meetings of IVACG, held in countries where vitamin A deficiency is endemic, have provided state-of-the-art information and concepts for participants, most of whom were professionals from third world countries. New important developments include the interactive effects between vitamin A and other nutrients, the relation of vitamin A to infection and immunity, the importance of vitamin A in child survival, and determining perceptions of vitamin A and carotenoid-containing foods in many cultures. The concept of vitamin A status has been defined in an appropriate scientific framework, and various new methods for assessing vitamin A status, e.g. the relative dose response, the modified relative dose response, conjunctival impression cytology and simplified dietary assessment, have been developed.

Methods for the control of vitamin A deficiency, e.g. interventions involving nutrition education, the periodic distribution of large doses of vitamin A to preschool children, the fortification of commodities, the growing and ingestion of carotenoid-rich foods, and socio-economic measures, have been refined as indicated below. Therefore, the project design fulfills this objective.

C: Develop and test intervention approaches?

There has been demonstration and testing of new approaches and refinement of existing interventions. Also, vitamin A interventions in clinical (i.e. ORT, measles) as well as community settings have been expanded through project activities. The major interventions being carried out in a number of countries, largely in Asia and more recently in the African regions, are capsule distribution (large dose administration), nutrition education through the social marketing technique, home gardening and fortification. During recent years there has been a tendency to use several simultaneous approaches, encouraged by the proliferation of vitamin A components in child survival programs.

Capsule distribution, although initially considered a short term measure, continues to be the most widely used intervention. Systems for distribution have become more sophisticated and effective with computerized reporting, monitoring and improved management as demonstrated in Indonesia and Bangladesh through AID-funded HKI projects. Experimentation with different methods of administration of the mega-dose of vitamin A is being tested. Integration of capsule distribution is more frequently being phased into health programs, such as maternal and child care, primary eye care and immunization. The major source of the capsules has been UNICEF, with increasing input from PVOs. A continuing need to upgrade the program management of AID-supported capsule distribution activities was recognized by the Committee, and increased attention should be given to expand them to urban areas in countries where the vitamin A deficiency problem has been identified.

The long term intervention of home gardening has received increasing attention. The establishment in Niger of an AVRDC gardening center, funded by the project, is expected to provide a resource of expertise in adaptive research, training and outreach support to PVOs and other organizations in the region. Other home gardening activities in Asia, encouraged by AID and PVOs, are utilizing anthropological studies as a basis for practical and feasible progress. However, to date insufficient documentation and evaluation over a period of time leaves inconclusive estimates of the efficacy of the programs.

Nutrition education is now most frequently undertaken with social marketing techniques which rely on sophisticated anthropological research in order to improve the effectiveness of media messages. An AID contractor, Manoff International, has been providing technical assistance to countries (Philippines, Thailand) and to PVOs such as HKI (Bangladesh and Indonesia). Methodologies and country experience in this intervention approach will need to be evaluated over time to assure the value of replication and/or expenditure of additional substantial funds.

There has been a surge of increased activity in fortification efforts. The USDA/OICD through funding from the project has continued to provide technical assistance in conjunction with ICEPO and in collaboration with HKI and the respective governments of Indonesia and Bangladesh. The plan for fortification of MSG with vitamin A in Indonesia has moved to a level where the fortified product is ready for a trial marketing in a province as a final step before national coverage. In Bangladesh the same group of organizations is in the process of assisting the Bangladesh government to demonstrate and test the impact of fortifying donated wheat with vitamin A for distribution to low income (high risk) groups.

The Committee suggests that IVACG consider establishing a Task Force to review experience in vitamin A fortification as a basis for a publication on the planning and technology which is needed to identify an appropriate commodity, the feasibility of fortification, the enlistment of policy support, processing, and marketing. More attention should be paid as well to assure that foods, which are donated in cases of disaster and famine, are both appropriately chosen and are fortified with vitamin A.

Mention should be made of the importance of training in all the interventions discussed above. This training program should incorporate basic knowledge about the causes of vitamin A deficiency, its symptoms, preventive methods, and treatment schedules. Specific training in the roles or tasks to be performed in the intervention are essential to maximize the results.

D: Encourage and assist affected countries to define and attack the problem of vitamin A deficiency?

In the early years of the project, surveys of vitamin A deficiency in Sri Lanka, the Philippines, Haiti, Nepal, North Yemen, Cameroon, Central America and Bolivia were either funded directly or assisted by this project. During the prior project period, surveys of two Near East countries, seven African countries and Bangladesh were AID-supported. Five Sahelian countries were surveyed during the current project period.

Whenever vitamin A deficiency was found to be a problem of public health magnitude, the project has promoted and made available technical assistance to develop appropriate intervention strategies and program management protocols. The effectiveness of this sponsorship and assistance was demonstrated at the recent IVACG meeting in Addis Ababa, where fourteen African countries described their current programs to reduce the incidence of vitamin A deficiency.

Information from these project sponsored or assisted surveys have greatly facilitated the inclusion of vitamin A components in child survival projects. It also stimulated a substantial number of new U.S., international and indigenous PVOs to become involved in vitamin A intervention programs in Africa, Asia and Latin America.

Project-supported surveys, operations research and field investigations have directly stimulated (1) the WHO/UNICEF Joint Nutrition Support Program to fund an IVACG Task Force Report on "Control of Vitamin A Deficiency Through Primary Health Care" and (2) a recent WHO recommendation of vitamin A treatment of all children with measles. Thus, the project has successfully fulfilled its mandate in this regard.

E: Disseminate new knowledge and experience relating to the control of vitamin A deficiency?

Besides its actions in seeking consensus among experts dealing with new aspects of vitamin A nutrition and deficiency and in informing participants of these developments at its meetings, IVACG has provided state-of-the-art information about vitamin A deficiency and its control to more than 50,000 recipients of a host of publications dealing with various aspects of these issues. These publications have been distributed free of charge. ICEPO has published its new findings in refereed scientific journals, written reviews for the United Nations and other agencies, and developed and distributed lay publications concerning vitamin A deficiency and its control. Private volunteer agencies, and HKI should be particularly mentioned in this regard, have developed an excellent series of information brochures and teaching aids relative to this subject. A reference library at ICEPO contains a wealth of information, much of it unpublished and rarely available elsewhere, on vitamin A studies in various countries. In conjunction with IVACG meetings, training courses have been set up for local participants and other professionals interested in vitamin A problems. Courses in the use of the new indicator, conjunctival impression cytology, have also been held at ICEPO. Thus, the project design fulfills these objectives.

ISSUE II: Is the project making an impact consistent with the resources available? If so, has the rate of progress been satisfactory?

Since 1986, project support has increased 6 to 9-fold as a result of the Congressional earmark of funds for vitamin A. This large influx of funds has attracted groups into the field that have not previously been engaged in such activities. Furthermore, the need for additional personnel within the Office of Nutrition and other AID offices to handle the increased load of administration and evaluation has not been met. Finally,

a mechanism to handle the review, funding and monitoring of new project proposals, many of which are unsolicited, has not been established. Because of internal constraints, USAID project managers often do not have travel funds to visit projects in foreign countries for which they are responsible.

Despite these drawbacks, the increased level of funding has allowed the development of new initiatives, the expansion of the program to include more countries with vitamin A problems, and the provision of funds to the regional bureaus for needed activities in their regions.

Thus, the impact of the project has increased significantly with increased funding and progress is satisfactory. Nonetheless, the efficiency of this process could be improved.

ISSUE III: Are the needs of developing countries being adequately responded to within the constraints under which the project operates?

A programmed function of the IVACG meetings has been to identify potential sources and avenues of assistance for affected countries. A segment of each meeting has been devoted to a description of vitamin A activities conducted or supported by the international, bilateral, PVO and private agencies in attendance. For example, presentations of activities in Tanzania have acknowledged a pooling of support from AID (through ICEPO), WHO, private, German and Dutch government sources. Vitamin A activities in Malawi were identified as being assisted jointly by WHO, AID (through ICEPO, HKI and IEF), UNICEF, the German government, HKI's own funds and PVOs. Likewise presentations of experiences and results from Indonesia at several IVACG meetings have listed multiple sources of financial and technical assistance in each case. Such presentations before substantial numbers of host government officials and program staff have been made at IVACG meetings in several affected countries (India, Senegal, Haiti, Brazil, Ethiopia, and Indonesia). Thus, with adequate resolve and willingness to collaborate within an affected country, sufficient resources can be marshalled to mount a serious attack on the vitamin A deficiency problem in any geographical and political setting.

The evaluation panel recognizes that AID, as a single U.S. government agency, and that the Office of Nutrition, as only one section of AID, must often operate under severe constraints with regards to where, when, what and how fast specific actions can be taken in response to country requests. However, in almost every case, AID can provide some inputs into the required package of outside assistance. AID can often serve as the prime mover, even if the agency is constrained to work behind the scenes. Considering the exponential increase in country activities, intervention approaches being tested, and participating groups during the current project period, it is essential that the S&T/N vitamin A project manager make periodic visits to key field sites in order more adequately to assess the appropriate AID response to each country's needs and to facilitate AID's role in the pooling of resources required to address these needs in each setting.

**ISSUE IV:** Should changes be made in the emphasis which is placed on each of the project components: basic research - operations research - intervention program management? Is there more need currently for systemization and training meetings or greater information collection and dissemination?

All components are necessary in any project, even though the practical field application of well-known concepts for the prevention of vitamin A deficiency is the primary objective. Different programs will have different mixes of these components, but it is always important that information be available on the effectiveness of a program and the reasons contributory to its success and failures.

Currently, a large proportion of the resources are being used on basic and operational research. Support of basic research is very appropriate, in as much as new indicators of vitamin A status and new intervention strategies are greatly needed. New indicators will be of particular importance in interpreting morbidity and mortality studies. Results of the latter studies and new intervention strategies will provide the justification for establishing an increased priority for vitamin A programs within the international community. An example of operational research in Africa which has recently been funded by the project is the development of home gardening and market gardening.

To date basic research and operational research have been complementary to and strengthening of, each other. For example, the capsule distribution program has components of program management as well as a basic research component.

It is the feeling of the group that the current balance is appropriate to the current commitments of the project. However, the recent stress on private sector funding will demand an increased emphasis on program management, technical support and program evaluation, all of which will need to be provided by the Office of Nutrition. Because several private sector groups are now starting to work in a new complex subject area in which they have limited technical and program management expertise, appropriate advice and training should be available to them.

The committee feels that the current high level of awareness of vitamin A deficiency, both in the developing countries and within the development community, decreases the need for emphasis in the project on sensitization but continues the need for the transfer of information regarding effective intervention approaches and increases the need for sustained program management efforts.

**ISSUE V:** Has the balance between research, training and technical assistance provided to collaborating countries been supportive of project objectives?

As near as the Committee could assess, the balance provided to each country has been sufficiently supportive of project objectives. The Committee is aware that the relative amount of research, training and

technical assistance provided has varied greatly from country to country and within a given country at different points in time. This is to be expected, particularly in view of the impressive amount of melding of project resources with resources available from international, other bilateral, and private agencies in each country. In-country training and short-term specialized training in the U.S. provides a cadre of individuals for current and future activities in the host country. This type of training should continue to be an important commitment within each activity sponsored under the project.

ISSUE VI: Have AID resources been adequate to support the planned activities?

AID funding was clearly inadequate in most years prior to FY 1985. Late in that fiscal year, \$3.5 million of child survival funds were made available to S&T/N vitamin activities in addition to the regular project budget of \$0.450 million. These funds, plus congressional earmarks of \$3.0 million annually for subsequent years, have permitted S&T/N to fund the following activities in addition to IVACG and ICEPO:

- A: Research in several countries on the importance of vitamin A in child survival and the relationship of vitamin A to infection and immunity;
- B: A National Academy of Sciences oversight committee for review of the replicate field study protocols, interim and final review of study results;
- C: Testing of fortified MSG in Indonesia and fortified wheat in Bangladesh as vitamin A interventions;
- D: Testing of social marketing as an intervention approach in three countries and technical assistance in social marketing to several other countries;
- E: Development of a nutrition-oriented garden development and training center in Niger to support this intervention approach in Africa;
- F: Grants to ten U.S. PVOs to initiate various vitamin A interventions approaches within the context of public health and community development projects in Africa, Asia and Latin America.

In addition, substantial sums from the congressional earmarks have been made available to other offices within AID for vitamin A activities. Thus, the current situation appears to be one of adequate resources, considering the operational and staffing constraints under which the project functions.

ISSUE VII: Are there management issues or practices which may be adversely affecting progress of the project?

Greatly enhanced funding for vitamin A activities has finally permitted the project to fund adequately its two long-term components (IVACG and ICEPO). In addition, new components in food fortification, scientific oversight, social marketing, home gardening and ten grants to PVOs were funded in FY 1987. The project design, terms of reference and funding arrangements for each component permit considerable flexibility and provide for the project manager to be sufficiently involved in programming of activities. However, the rapidly growing number of countries, participating organizations and intervention approaches will require even greater efforts to maintain adequate coordination and greater selectivity in committing finite resources (particularly staff at the present time) to new endeavors, as important, innovative and promising as they may be.

Through the congressional earmarks, substantial funding for vitamin A activities have also been made available to several AID offices apart from the Office of Nutrition. This has resulted in a sizeable number of U.S. PVOs without vitamin A experience initiating intervention activities within what are usually new public health projects. Some agencies are initiating projects in several countries concurrently and in some countries, three or more agencies are initiating projects concurrently.

Also, other AID offices are already funding or reviewing proposals for vitamin A activities which might either complement or overlap with project activities administered by the Office of Nutrition.

It is not necessary to emphasize further at this time the importance for the establishment of some type of a coordinating mechanism within the agency for efficient programming, allocation of resources and the development of effective and standardized monitoring and evaluation of AID-supported field activities. If overly formalized, however, the coordination activity might place additional demands of time on already overcommitted staff rather than reducing overlap and improving efficiency.

ISSUE VIII: Should interaction with United Nation's Agencies and other international assistance agencies be made more active/effective?

The interaction between AID and the UN and other international assistance agencies has continued to strengthen and to become more mutually productive. This is due in large part to the heightened possibility of program activity in the vitamin A deficiency field as more global concentration has been directed to it. For instance, WHO, UNICEF and FAO in 1983 agreed that the next decade should be set as a global attack on vitamin A deficiency.

As mentioned, UNICEF was one of the earliest agencies to embark programmatically on prevention of nutritional blindness caused by vitamin A deficiency. UNICEF introduced the dosage of 200,000 IU vitamin A in the capsule form and continues to provide capsules to governments in many areas of the world. Additionally, UNICEF and AID-funded PVOs have collaborated

closely in assisting governments in their capsule distribution systems, preparation and production of educational materials and training. WHO and UNICEF through their ACC/SCN (Advisory Committee on Coordination/Subcommittee on Nutrition) funded an IVACG report on "Control of Vitamin A Deficiency through Primary Health Care."

IVACG has collaborated closely with WHO in the sponsorship of a number of workshops, seminars and meetings bringing together not only representatives of American organizations and but also those from the international community. The project funded WHO surveys of vitamin A status in seven countries in Africa in the previous project period. The results and the experience laid the groundwork for the gradual increase of interest in African countries in further identifying the degree of the problem and attacking it. Subsequently, IVACG sponsored three meetings in Africa. In the current project period, for instance, IVACG held its annual meeting in Addis Ababa at which fourteen African countries presented reports of their current vitamin A activities. An important development in nutritional blindness prevention was the recent recommendation by WHO on the administration of the large dose of vitamin A in the treatment of measles, which was a result of research carried out under this project.

FAO has been involved in the promotion of interest and knowledge of home gardening techniques which is of interest to AID and PVOs. FAO has also expressed interest in assuming a major role in promoting the production and consumption of vitamin A-rich foods. IVACG has been asked to serve as a technical advisor on vitamin A issues by FAO.

It should be mentioned that the seed funding by the project through ICEPO and by other offices of the Agency has enabled PVOs to attract funding to support intervention and survey activities from other international and bilateral agencies and to draw their units in developing countries to join in similar efforts.

Perhaps more linkages at the field level can be made between PVOs supported or partially supported by AID, AID country missions and UN country offices to enhance results.

ISSUE IX: Do the project achievements appear to justify its continuation?

The project achievements have been impressive, particularly because of the outstanding contributions made by IVACG, ICEPO and their associated PVOs. The demonstration of significant levels of vitamin A deficiency in countries that have not been well surveyed in the past, and particularly in Africa, and the implication that marginal vitamin A status may well predispose children to an increased incidence of infection and of death, greatly expands the scope of the vitamin A project. The importance of vitamin A in child survival is becoming increasingly clear. Vitamin A is consequently not only of central importance in the prevention of nutritional blindness, but also a significant factor in the growth, development and survival of hundreds of millions of children throughout the less industrialized world. With justified increased funding, new groups from universities, PVOs and the private sector are developing new initiatives to reduce the incidence of vitamin A inadequacy. Awareness of

the problems of vitamin A nutrition throughout the world among policy makers in many countries and among the congress and people of the United States has also greatly increased, in no small measure as a result of this project's activities.

Thus, project achievements and projections justify its continuation.

## ANNEX 1

COUNTRIES CLASSIFIED BY DEGREE OF PUBLIC HEALTH SIGNIFICANCE OF  
VITAMIN A DEFICIENCY, XEROPHTHALMIA AND NUTRITIONAL BLINDNESS  
(June 1987)

	Class 1*	Class 2**	Class 3***
Africa	Benin Burkina Faso Chad Ethiopia Ghana Malawi Mali Mauritania Niger Nigeria U.R. Tanzania Zambia	Angola Kenya Mozambique Uganda Rwanda Burundi	Algeria Botswana Lesotho Madagascar Senegal Zimbabwe
Americas	Brazil El Salvador Haiti Mexico		Bolivia Ecuador Jamaica Peru
South-East Asia	Bangladesh India Indonesia Nepal Sri Lanka	Burma Bhutan	Thailand
Eastern Mediterranean	Somalia Sudan	Afghanistan Pakistan	Egypt Iran Iraq Jordan Morocco Oman Syria Yemen
Europe			Turkey
Western Pacific	Philippines Viet Nam	Dem. Kampuchea Lao People's Dem. Rep.	China Fiji Malaysia
* Class 1	Significant public health problem in part or whole country.		
** Class 2	Insufficient information but high probability of significant public health problem in part or whole country.		
*** Class 3	Sporadic cases but prevalence is not such that it constitutes a significant public health problem.		

Source: Dr. E.M. DeMaeyer, WHO, Geneva, October 1987.

ANNEX II

PERSONS INTERVIEWED

1. International Center for Epidemiologic and Preventive Ophthalmology, Johns Hopkins University, Baltimore.

Dr. Alfred Sommer, Director 301-955-2770  
Dr. Hugh Taylor, Assoc. Dir.  
Dr. Keith West, Asst. Professor  
Dr. James Tielsch, Asst. Professor  
Joanne Katz, Asst. Professor  
Lisa Mele, Research Associate  
Joseph Connor, Research Associate  
Jean Humphrey, Research Associate

2. Department of Immunology and Infectious Diseases, Johns Hopkins University, Baltimore.

Dr. Alan Scott, Associate Professor  
Dr. Richard Semba, Instructor

3. Institute of International Programs, Johns Hopkins University, Baltimore.

Dr. Chris Kjolhede, Child Survival Fellow 301-955-2786

4. Nutrition Foundation, Secretariat for the International Vitamin A Consultative Group (IVACG), Washington

Dr. Clinton Chichester 202-659-9024  
Ms. Laurie Lindsay

5. Agency for International Development

- A. Office of Nutrition, Bureau for Science and Technology

Dr. Frances Davidson, Vitamin A Project Manager  
703-235-9087

Mr. Ike Hatchimonji, Garden Project Manager  
703-235-9087

- B. Office of Technical Resources, Africa Bureau

Ms. Neen Alrutz, Nutrition Advisor (202-647-8105)

- C. Office of Food and Voluntary Agencies, Bureau for Private Voluntary Cooperation (FVA/PVC).

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D. Office of Technical Resources, Bureau for Latin America and the Caribbean

Ms. Julie Klement, Nutrition Advisor  
202-647-5136

E. Bureau for Program Planning and Coordination

Ms. Nancy Pielemier, Nutrition Advisor  
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F. Office of Technical Resources, Asia and Near East Bureau

Ms. Linda Lou Kelly, Nutrition Advisor  
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G. Office of Health, Bureau for Science and Technology

Ms. Pamela Johnson, Child Survival Program Coordinator  
703-235-8926

6. Office of International Coordination and Development, U.S. Department of Agriculture

Mr. Paul Crowley, Director 202-653-8663

7. Manoff International, Washington Office

Ms. Marsha Griffiths 202-265-7469  
Mr. Mike Favin

8. Academy for Educational Development, Health and Population Projects

Ms. Margaret Parlato, Program Officer 202-862-1900  
Dr. Claudia Fishman