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THE IVACG GUIDELINES FOR THE DEVELOPMENT OF A SIMPLIFIED DIETARY ASSESSMENT TO IDENTIFY GROUPS AT RISK FOR INADEQUATE INTAKE OF VITAMIN A:

A REVIEW OF FIELD EXPERIENCE

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LIST OF ACRONYMS

ASIVITA	A collaborative vitamin A project between the Gadjah Mada University (Indonesia) and Cornell University
CENISMI	Centro Nacional de Investigaciones en Salud Materno Infantil
CeSSIAM	Center for Studies of Sensory Impairment, Aging and Metabolism
CI	Consumption Index--score that reflects the consumption (over a 24-hour period) of foods containing vitamin A and its precursors
CRDN	National Center for Research and Development in Nutrition (Bogor, Indonesia)
CRF	Carotene-rich foods
CSF	Community Systems Foundation (Michigan)
FAO	Food and Agriculture Organization of the United Nations
Guidelines	*Guidelines for the Development of a Simplified Dietary Assessment lines to Identify Groups at Risk for Inadequate Intake of Vitamin A*
HKI	Helen Keller International
HPLC	High-pressure liquid chromatography
IVACG	International Vitamin A Consultative Group
JHU	Johns Hopkins University (Dana Center for Preventive Ophthalmology)
MORVITA	A collaborative project on vitamin A and morbidity between the government of Indonesia and the Institute for International Programs of Johns Hopkins University
PAHO	Pan American Health Organization
PATH	Program for Appropriate Technology in Health
PVO	Private Voluntary Organization

RE	Retinol Equivalents
UNICEF	United Nations Children's Fund
UPF	Usual Pattern of Frequency--score that reflects the consumption of foods containing vitamin A and its precursors over an extended period of time
VHW	Village Health Worker
VITAL	Vitamin A Field Support Project
WHO	World Health Organization

EXECUTIVE SUMMARY

The Vitamin A Field Support Project (VITAL) and the International Vitamin A Consultative Group (IVACG) have been collaborating to support efforts to improve the vitamin A status of vulnerable groups in developing countries. One such effort called for the collection of information on the use of the IVACG *Guidelines for the Development of a Simplified Dietary Assessment to Identify Groups at Risk for Inadequate Intake of Vitamin A*, published in July 1989.

The three-fold purpose of this assignment was to identify persons and institutions worldwide that have used (or are using) the *Guidelines*, to learn about users' experience in applying the *Guidelines*, and to elicit suggestions for revising the *Guidelines*. It was also important to learn why others chose not to use the *Guidelines* in their dietary assessments. Using the Delphi method, a questionnaire was developed to gather preliminary information from users and non-users; the consultant then completed the data collection through in-person or telephone interviews.

The final sample consisted of 20 projects in 14 countries where the *Guidelines* have been in use. The regional distribution of the projects was 55 percent Asia, 35 percent Latin America, and 10 percent Africa. Only 45 percent of the projects had completed at least one round of dietary analysis at the time of the survey. The projects represented a wide range of study approaches, including national surveys of vitamin A deficiency, evaluations of the effect of vitamin A on morbidity, and other interventions where vitamin A consumption was monitored over time. The professionals directly involved in applying the *Guidelines* included nutritionists as well as biochemists, epidemiologists, and physicians.

The types of problems experienced by the user group were fairly evenly distributed among five categories: conceptual concerns, presentation of the narrative, development of the dietary questionnaire, implementation of the questionnaire, and evaluation and interpretation of the results. The user's level of satisfaction in applying the *Guidelines* did not appear to be related to the breadth and depth of the problems encountered but rather was attributable to other factors such as previous experience in dietary assessment and resources available for the study. The non-user group provided the following reasons for selecting another dietary assessment method: availability of technical assistance from other groups (i.e., HKI and CeSSIAM) that use different methods, disagreement with conceptual aspects of the *Guidelines*, complexity of the required steps, and difficulty in following the narrative.

Despite the problems noted above, most users agreed that the *Guidelines* do fill an important need in the area of dietary assessment methodology. In particular, the *Guidelines* are useful for rapid screening of population groups to assess their risk of inadequate intakes of vitamin A and are well suited to the field conditions of developing

countries. They are adaptable to a wide variety of study contexts and can be tailored to each project's objectives and research environment. Further, the *Guidelines* offer training opportunities that can help expand the number of field personnel qualified to undertake dietary assessments.

Based on their extensive field experience, almost all of the persons surveyed (whether users or non-users) offered suggestions for revising the *Guidelines.* These suggestions, organized into 14 recommendations, focus on clarifying the proper use of the *Guidelines*, rethinking the content, improving the presentation, and addressing the validity of the *Guidelines*. In sum, however, the *Guidelines* represent an important advance for field use with populations vulnerable to vitamin A deficiency.

INTRODUCTION

The specific and general roles of vitamin A in the diet have long been known. Vitamin A's best-understood function relates to vision, although severe vitamin A (and other nutrient) deficiencies can lead to death. More recently, the increased risk of mortality and morbidity among children with subclinical vitamin A deficiency has been documented (1,2). To develop effective interventions to prevent these serious health consequences, children and other vulnerable groups must be screened to identify inadequate intakes of vitamin A.

The biochemical, histological, functional assessments of vitamin A status are complex and costly endeavors. Further, current laboratory methods do not lend themselves to the field conditions in which most vulnerable populations live. Dietary assessments, therefore, serve as proxy indicators of vitamin A status and are more easily adapted than other assessment methods to the village environment in a developing country. However, dietary assessment methods, too, are limited by their own methodological handicaps that prevent widespread application. The major difficulty relates to the ability of any assessment method (other than liver biopsy) to measure the "true status" of vitamin A for the individual. In particular, dietary assessments are "one step removed" in that they measure one of the risk factors (diet) of vitamin A deficiency, not status per se.

Within this context, the International Vitamin A Consultative Group (IVACG) developed a new dietary assessment method as described in the document entitled *Guidelines for the Development of a Simplified Dietary Assessment to Identify Groups at Risk for Inadequate Intake of Vitamin A*. Published in July 1989, this method was designed to simplify some of the steps involved in earlier, well-known dietary assessment procedures, which usually focus on the whole diet. For researchers and others already trying to identify groups at risk of inadequate vitamin A intakes, the new IVACG method represents an alternative technique. For practitioners and field workers concerned about vitamin A deficiency but as yet unable to quantify the extent of the deficiency, the IVACG methods offers a potential tool for a systematic assessment of their target populations.

The IVACG method is innovative in that

- it focuses on only one nutrient (vitamin A);
- it is semiquantitative (one score represents retinol intake for the past 24 hours and another score represents retinol intake for a longer time frame);
- it does not depend on a computer for analyzing the results;
- it provides information for potential program planning;
- it permits field workers without extensive training in nutrition to administer a questionnaire fairly rapidly (i.e., within 30 minutes); and

- it is designed specifically to identify children as groups at risk of inadequate vitamin A intake rather than to classify particular children into a specific risk category for vitamin A status.

In consultation with IVACG, the Vitamin A Field Support (VITAL) project hired a consultant in March 1991 to identify and contact all persons and institutions that have applied the *Guidelines*; to obtain information about the users' experience in implementing the method, as well as their recommended modifications and their advice for future users; to summarize the users' experience and suggestions; and to make recommendations to VITAL and IVACG vis-a-vis any necessary revisions to the *Guidelines*. The following sections of this report summarize the data collection, interpretation, and recommendation process.

I. METHODS

I.1 Overview

The review of the *Guidelines* involved identifying and gathering information from those who had been involved in using the document. In addition, individuals who were familiar with the *Guidelines* but decided not to use them represented another important source of data.

The data collection process followed two steps:

- identification of as many users as possible and collection of information through a written questionnaire; and
- follow-up with a subset of the users to gather in-depth information.

Once users had responded to the initial questionnaire, the second step called for following up with an interview or at least with a second round of specific questions sent by mail. The assumption was that users would be willing to take the time needed to provide information conveyed through a personal medium, i.e., telephone or in-person interview. Further, the consultant would have the opportunity to ask the respondent to offer examples, details, clarification, or the rationale for any given response. It should also be noted that, as each user's situation was sufficiently different from the others, the initial questionnaire had to be limited to key items shared by all users. Subsequent data collection, through an interview or the mail, could be tailored to the context disclosed by the responses on the initial questionnaire.

I.2 Sampling Method

With the overall project strategy defined, the first step in sampling involved developing lists of persons who were already known to have used the *Guidelines*, who had decided against using them for some reason (the "non-users"), and who might be able to help identify users. (The last group was termed the "detectives.")

The consultant met with representatives of the following organizations to develop the contact lists:

- IVACG Secretariat
- IVACG Task Force, which developed the *Guidelines*
- VITAL staff
- Technical Assistance Group of VITAL
- AID's Office of Nutrition
- PATH.

In addition to specific individuals recommended by these representatives, the consultant reviewed the

- organizations that had received FY 90 vitamin A grants from the Office of Nutrition;
- participants at the XIII IVACG Meeting (Nepal, November 1989); and
- persons who filled out the "Registration" form at the back of the *Guidelines* document and returned it to IVACG.

To create a manageable contact roster from the total number of people represented in the above groups, the consultant applied the following criteria:

- persons (or institutions) that had already been identified through earlier discussions were automatically included;
- at least one representative from each country was included;
- only one representative from each institution was included; and
- all persons with U.S. addresses were included.

The final mailing list of users is found in Appendix A and that of detectives, non-users, and other contacts is found in Appendix B.

I.3 Development and Distribution of Initial Questionnaire

The second step was to develop the package of materials sent to known users and to the detectives. The Delphi method was used to design the initial questionnaire. Members of the Delphi panel included representatives of the IVACG Task Force, VITAL staff, PATH, and VITAL's A.I.D. Project Officer. The consultant believed that closed-ended questions would maximize the response rate and yield a common base of information from all respondents. These questions were supplemented by some open-ended questions, which allowed the respondents to provide more in-depth information. Sample questions were prepared by the consultant and reviewed by the Delphi panel members.

The consultant prepared introductory letters for the packages sent to users and detectives. All of these materials were then translated into Spanish for the subset of Spanish-speakers. The questionnaire and its introductory letter for users is found in Appendix C. The introductory letter for detectives is found in Appendix D. Spanish-language versions of these materials are found in Appendix E (user letter and questionnaire) and Appendix F (detective letter).

Each user was asked to complete the initial questionnaire and return it to VITAL. Each detective was asked to pass on the user package (letter, questionnaire, and return envelope) to users or other detectives and to return a form to VITAL, indicating to whom the user package had been sent. All persons on the user and detective lists with overseas addresses received their initial contact by mail or facsimile transmission. All

those with U.S. or Canadian addresses were contacted by telephone or mail.

I.4 Development and Implementation of Interview Guide

VITAL and IVACG recommended topics for the interview guide that would trigger discussions of the rationale for choosing the *Guidelines* and that would describe the overall study context. The interview guide was pretested with the first face-to-face interview and then revised.

The interview guide for users is presented in Appendix G; the Spanish-language version, in Appendix H. The consultant used this guide either over the telephone (for users living or traveling in the United States) or in person (for users in the United States or at the XIV IVACG Conference in Ecuador, held June 17-21, 1991). Interviews with non-users were unstructured and took place in person (in the United States or Ecuador) or by telephone.

II. RESULTS

The questionnaire was short enough and the sample small enough that closed-ended questions could be tabulated manually. Responses to open-ended questions were tallied separately. The interviews were analyzed by reviewing each one for data that responded to a specific issue (e.g., study context, problems with applying the *Guidelines*, and suggestions for their use). Conclusions were developed by a manual tabulation that indicated the sample consensus. The recommendations are based on a review of the findings from the samples of users and non-users as complemented by information gained from other sources throughout this study.

This chapter contains results that reflect general experiences in using the *Guidelines*, including differences in study context, in field application, and in degree of satisfaction. Then, the discussion presents specific problems associated with the application of the *Guidelines*, along with suggestions for addressing those problems. Final sections of this chapter discuss the non-users, the strengths of the *Guidelines*, and unintended benefits.

II.1 Sample

Table 1 presents a list of the sample surveyed, the location of the projects, and the projects' current status as of July 1991. The questionnaire in Appendix I reveals the responses to the questions and presents the results as raw totals and as percentages. The following discussion makes reference to specific sections of the questionnaire when appropriate.

The process of identifying users yielded a sample of 20 projects. Of these, 35 percent were located in Latin America and the Caribbean, 10 percent were in Africa, and 55 percent were in Asia. In addition, only 45 percent represented completed projects; the balance of the sample consisted of projects that are currently underway or will be initiated in the near future.

Most respondents were familiar with the *Guidelines* in that they were applying them at the time of the study (Question #1). Therefore, their responses were based on recent experience. However, as 55 percent of the respondents had not yet completed their studies, their responses were somewhat limited. Nevertheless, most of these studies had progressed to the point of field administration of the dietary questionnaire at least once.

Seven of the 20 projects were being implemented as joint collaborative efforts between an institution located overseas and one based in the United States (either a university, PVO, or VITAL). In addition, many of the interviewees mentioned that a member of the IVACG Steering Committee or the IVACG Task Force, which had developed the *Guidelines*, had been directly involved in the development of their project.

TABLE 1.
DESCRIPTION OF SAMPLE

COUNTRY	LOCATION	PROJECT OR SPONSOR	QUESTIONNAIRE	INTERVIEW
LATIN AMERICA				
Brazil	Bahia	Fed. Univ. of Bahia	x	x
Brazil	Caruaru	Fed. Univ. Pernambuco	x	x
Bolivia	Nationwide	Ministry of Health	x	x
Dominican Republic*	Regions IV & VI	CENISMI		x
Guatemala	S. Marcos & Quetzelt'ango	Project HOPE	x	
Haiti*	Maissade	SAVE the Children	x	x
Mexico	6 states	National Institute of Nutrition	x	
AFRICA				
Malawi*	Lower Shire Valley	FAO	x	
Zambia*	Ndola	Tropical Diseases Research Center	x	
ASIA				
India	Panchmajals & Chandragar	Indian Government & CSF		
India	Andrah Pradesh	National Institute of Nutrition	x	x
India*	Tamil Nadu	Arvind Children's Hospital	x	x
Indonesia	Bandung	JHU (Dana Center)	x	x
Indonesia	East Java	CRDN, Bogor & Royal Tropical Institute	x	x
Indonesia	Yogyakarta	MORVITA	x	x
Indonesia	Yogyakarta	ASIVITA	x	
Nepal*	Nationwide	Ministry of Health	x	x
Pakistan*	Karachi	Aga Khan Univ.		x
Thailand*	Northeast	Mahidol Institute of Nutrition	x	x
Vietnam*	Nationwide	National Institute of Nutrition	x	
			—	—
*Study completed		Total	17	13

II.2 Variability in Study Context and Use of the *Guidelines*

Context

About one-quarter of the sample already had some experience with the *Guidelines* (Question #2). The *Guidelines* were used in almost all of the projects (88 percent) to "develop a dietary assessment and use it for collecting vitamin A-related information in the field" (Question #3). For some, this was a one-time activity; others planned to repeat the dietary assessment at specific intervals during the study or in different parts of their country.

Most (71 percent) of the projects were regionally or locally defined efforts aimed at identifying groups at risk of vitamin A deficiency (Question #4). Table 2 lists the different objectives for which individual researchers used (or are using) the *Guidelines*.

In some cases, the projects used another method (besides IVACG) to collect dietary information. Based on the objectives of each study, the projects in the sample included a variety of other assessment measures for vitamin A status and other variables.

Adaptations

Because the *Guidelines* do not provide detailed instructions for carrying out each step of the assessment process, users developed specific substeps as they proceeded. As a result, considerable variation occurred in ascertaining portion sizes (see page 11).

One adaptation that represented a major deviation from the *Guidelines* was the elimination of the calculations of Consumption Index (CI--a score that reflects the consumption [over a 24-hour period] of foods containing vitamin A and its precursors), Usual Pattern of Frequency (UPF--a score that reflects the consumption of foods containing vitamin A and its precursors over an extended period of time), or both. Two investigators designed their questionnaires to permit a calculation of total RE consumption instead of developing risk categories based on CI or UPF.

According to information obtained from the interviews, the three main factors that influenced the nature and amount of adaptation of the IVACG *Guidelines* in any given project were

- project objectives;
- availability of computer hardware and software for data analysis; and
- number and skill level of personnel available to assist in developing and implementing the questionnaire and analyzing the results.

Other examples of adaptations are presented below in the form of suggestions posed by various investigators for dealing with the specific problems they encountered.

TABLE 2.
OVERALL CONTEXT OF PROJECTS SURVEYED

	COUNTRY	CONTEXT
LATIN AMERICA		
1.	Brazil	Longitudinal evaluation of the impact of vitamin A on diarrhea
2.	Brazil	Study of the effects of socioeconomic status and income on the consumption of vitamin A
3.	Bolivia	Nationwide prevalence survey of vitamin A deficiency
4.	Dom.Rep.	Regional prevalence survey of vitamin A deficiency
5.	Guatemala	Evaluation of the prevalence of low vitamin A consumption in a region in which vitamin A food fortification has ceased
6.	Haiti	Determination of the baseline level of a region's vitamin A consumption for the subsequent development of interventions
7.	Mexico	Determination of groups at risk of low vitamin A intake
AFRICA		
8.	Malawi	Comparison of vitamin A consumption among farmers' groups
9.	Zambia	Determination of groups at risk of low vitamin A intake and subsequent development of interventions
ASIA		
10.	India	Data not available
11.	India	Determination of baseline consumption of vitamin A and subsequent monitoring in a horticulture study
12.	India	Determination of vitamin A consumption in three districts participating in a morbidity study
13.	Indonesia	Determination of vitamin A intake in children enrolled in a clinical trial for xerophthalmia
14.	Indonesia	Comparison of current vitamin A intake of the target area as compared to 10 years ago
15.	Indonesia	Vitamin A consumption and morbidity in children
16.	Indonesia	Determination of vitamin A consumption by lactating women in a clinical trial of vitamin A supplementation
17.	Nepal	Determination of vitamin A by three groups receiving different intervention strategies to reduce xerophthalmia risk
18.	Pakistan	Effect of vitamin A consumption on diarrhea and acute respiratory infection in children
19.	Thailand	Comparison of two methods for evaluating vitamin A intake in preschool children
20.	Vietnam	Nationwide survey of prevalence of vitamin A deficiency

II.3 Degree of Satisfaction and Influencing Factors

Degree of Satisfaction

Of the 15 respondents who revealed their level of satisfaction to date in using the *Guidelines*, six were very satisfied, eight were somewhat satisfied, and one was not satisfied (Question #5). Reasons for dissatisfaction were varied, and only a few respondents checked off reasons for dissatisfaction that were anticipated at the time the initial questionnaire was developed (Question #6):

- the *Guidelines* are written in English (1 respondent or 6 percent);
- even though written in English, the *Guidelines* are complicated (2 respondents, or 12 percent); and
- the *Guidelines* require considerable effort to be applied (4 respondents, or 23 percent).

Factors Associated with Satisfaction

There was no clear relationship between the breadth and depth of specific problems encountered in using the *Guidelines* and the expressed degree of satisfaction. For example, some of the "very satisfied" users experienced several difficulties with the *Guidelines* while others encountered few. On the other hand, some of the "less satisfied" users did not provide much detail about their problems.

Results of the data analysis identified five different factors that seemed to provide a better explanation of a user's or investigator's "satisfaction" or "dissatisfaction" than merely the nature and/or number of specific complaints disclosed by the questionnaires or interviews. These five factors were:

- **Previous experience with dietary assessments.** Less user experience in the field of dietary assessment translated into a higher level of user satisfaction with the *Guidelines.*

- **Objectives of the study.** The more the *Guidelines* were used to provide dietary information about populations at risk of inadequate intake of vitamin A as opposed to the vitamin A status of individuals, the more likely that users were satisfied with the *Guidelines.*

- **Expectation of effort needed to apply the *Guidelines.*** The more that users considered the *Guidelines* as a flexible guide to developing a dietary questionnaire, the more they expressed satisfaction with the *Guidelines.* Therefore, if users approached the assessment task with the expectation that they would have to adapt the *Guidelines* to fit the project environment and discovered that such adaptations were indeed needed, they were still

likely to express satisfaction at the end of the assessment task.

- **Resources available.** Users were more likely to express satisfaction with the method if the project had access to one or more of the following:
  - at least one computer, with appropriate software;
  - an open-minded nutritionist to help design the questionnaire;
  - interviewers (even with minimal formal training) to implement the questionnaire; and
  - laboratory equipment (especially HPLC) for analyzing food samples.

- **Training opportunities for members of the team.** The skill level among members of the project teams varied considerably; teams included various combinations of high school, university, and medical students; volunteer community health workers; and paid government health workers. The several steps involved in applying the IVACG *Guidelines* (e.g., the market survey, developing portion sizes, food analyses, interviewing) can provide useful training opportunities for team members. Project investigators were more likely to express satisfaction with the whole process if they had an interest in training and were able to use the *Guidelines* as a training opportunity.

II.4 Specific Problems and Suggestions

The following is a comprehensive list of the problems identified and suggestions offered by respondents as reported in the initial questionnaires and/or in interviews. Where relevant, information obtained from non-users is included. No attempt was made to quantify the results because the interviewees were not necessarily those who had responded to the initial questionnaire for any given project. Thus, while the interviews provided more opportunity for describing particular problems and suggestions, interviewees were not necessarily the persons who had worked most directly with the *Guidelines*. In these cases, interviewees might have mentioned problems in addition to the ones reported by a colleague on the questionnaire. Chapters III (Conclusions) and IV (Recommendations) indicate the problems mentioned most often by respondents.

As much as possible, the problems and suggestions are described in the words of the respondent, even when the actual response was translated or transcribed. Verbatim responses from either the written questionnaires or interviews are presented as direct quotations. (In some cases, the responses are grouped by subject and are not necessarily the remarks of one person.) The five categories of problems reflect the steps that might be followed in applying the *Guidelines*. Within each category, the items are presented in random order. Even if a given problem represents a misreading or misunderstanding of

the *Guidelines*, it is included in the list as it represents a problem encountered by at least one respondent.

Conceptual Concerns in Using the Guidelines

- It is not clear why the factors 1,3,5 are used for calculating CI and 6,9,12 for UPF.
- "In the vitamin A scoring system for recipes, the range for moderate is very wide (i.e., 50-250 RE)." "Since the numerical ranges of L,M, and H are so broad, in between categories should be established."
- The average values for RE for Low (L), Medium (M), and High (H) foods seem to have disproportionately low weights, i.e., 50(L), 150(M), and 250 (H). The average value of 250 RE is given for the H category, yet foods in this group all have 250 RE or greater. Therefore, 250 represents only the lowest end of this category.
- "The CI doesn't give reliable results, therefore it is better to calculate this index on the basis of a one-week recall."
- The CI and UPF are too imprecise as measures of vitamin A intake; therefore, RE is calculated directly on the food frequency questionnaire. One investigator said, "It's too complicated to have to calculate CI; why not just use RE scores directly?"
- There is a lack of data that show the validity of the CI and UPF as compared to other dietary methods or to other methods of vitamin A status assessment. In the sample surveyed, one project reported a weak correlation between dietary data collected by the IVACG method versus the 24-hour recall method. This and another project noted a weak correlation between the dietary results (IVACG method) and serum retinol.
- In places where carotene-rich foods (CRF) are available all year round, more reliable results would be obtained by using 24-hour recalls from the population rather than food frequencies.
- The *Guidelines* have to be included as one component in the context of a larger study because of the time, resources, and physical infrastructure necessary to implement them.
- The questionnaire focuses only on foods that contain vitamin A and its precursors, although interviewees provide information about other foods. The *Guidelines* do not suggest what the community health worker should do with this other information.

Presentation of the Narrative

- Confusion results from using the same words to describe different conditions: vitamin A scores are Low(L), Medium (M), and High(H); risk categories are Low(L), Medium(M), and High(H); and portion sizes are Small(S), Medium(M), and Large (L).

- Due to the compact (i.e., dense) presentation of the text, the *Guidelines* resemble a scientific article.

- The *Guidelines* need an improved layout and graphic organization, more subheadings to introduce new sections and concepts, different type sizes to enhance the document's visual appeal, and, perhaps, boxes to set off key steps and formulae. In short, the *Guidelines* could be put into a more user friendly format.

- "The *Guidelines* need an Executive Summary. This would introduce the reader to the new terms and the idea that the *Guidelines* provide a series of steps that must be taken, with various calculations along the way (i.e., vitamin A score, CI, UPF). If a narrative summary isn't feasible, then a one-page flow chart of sorts would be useful: first, determine x; second, calculate y; third, develop databank, etc. The reader needs to know, up-front, just how many steps are involved and then, as s/he proceeds through the *Guidelines*, s/he knows exactly how far there is to go."

- Major concepts such as CI and UPF need to be introduced much earlier in the text--perhaps in a summary and/or introductory section.

- "The *Guidelines* needs a glossary of terms, including key formulae."

Development of the Dietary Questionnaire

Food composition data

The types of problems encountered at this level are discrepancies in RE values as based on the use of two different tables; two different biochemical assessment methods (column chromatography versus HPLC); two different forms of expression of the same data (total carotenoid versus beta-carotene); raw versus cooked forms of the same food; two different varieties of the same food species (e.g., spinach); and the same botanical variety grown in two different soils. In addition, mothers often cannot identify the correct species of a CRF for which the values differ by species and variety.

The respondents agreed that these problems are inherent in any dietary method which uses food composition tables, not just the IVACG *Guidelines*. These problems must continue to be addressed because they affect an investigator's overall attitude and willingness to include dietary considerations in their assessments of vitamin A status.

Establishing portion sizes

"What is the sample size for determining portion sizes? How do you determine a 'small portion size'--is it half the 'average portion size'? Do you need to estimate an average portion size for each age, or can you group two- and three-year olds together, for example? Is the mean or the median a better estimate in these cases?"

One investigator had difficulty using pictures to help determine portion size; another found the use of pictures satisfactory. Most used standard local equipment or actual foods to determine portion sizes.

- The *Guidelines* suggest that medium and large serving sizes are two and four times greater, respectively, than the small size. These proportions need to be investigated for each setting to account for any variation.

- A considerable amount of time must be invested by data collectors to obtain relevant data on child feeding practices, i.e., type and quantities of food fed to young children, usual recipes, and typical portion sizes of CRF, before designing the dietary questionnaire. Focus groups were useful for eliciting some of this information, but the more laborious and time-consuming method of direct household observation of mothers was also necessary. It was difficult for the nutrition "monitrices" (female community nutrition workers) to understand and accept the novelty, complexity, and thoroughness of the method as well as its potential boredom.

- "In the UPF, a calculation is made of the number of times a particular food is consumed in a certain period of time (daily, weekly, monthly). The food could have a Low, Moderate, or High amount of vitamin A. But, the serving size is not considered each time the child consumes the food. The child might eat the same food twice a day, but the amount it consumes may vary between the morning and the evening. So, the portion size eaten by the child each time the food is consumed should be determined for calculating UPF."

Other considerations

- The size of the paper on which the questionnaire is printed could limit the list of foods to be included in the survey. In one of the projects surveyed, approximately 24 to 30 foods could be listed on one page.

- Recipes that contain CRF varied considerably among households and, therefore, were hard to standardize. Some investigators did not include recipes in their dietary questionnaire.

- "Infant formula (containing vitamin A) fed to infants below one year of age should be investigated and included on the questionnaire."

- "The IVACG *Guidelines* do not suggest a column for staple items containing low amounts of vitamin A. These can be given under a separate heading."

- "The 'seldom' column in the UPF does not give useful information. A 'never' column was added because some of the vitamin A foods are not included in the diet of the children nor of the family."

- The foods listed on the questionnaire should be grouped into logical categories such as fruits and vegetables, staples, etc., to help the interviewees.

- The *Guidelines* should contain more examples of questionnaires developed by investigators.

- The interview must include questions about consumption of vitamin A capsules. The *Guidelines* need to explain that consumption of these capsules--even three weeks before the interview--needs to be determined.

Implementation of the Questionnaire

- Recording portion sizes was extremely difficult due to high levels of intra- and interhousehold variation and differences among age groups.

- Some project personnel experienced difficulty in convincing coinvestigators and interviewers that the food frequency questionnaire is not a standard 24-hour recall. Perhaps coinvestigators and interviewers were unable to differentiate between a "24-hour recall" and "recall of CRF over past 24 hours." In any event, they did not evidence resistance per se to applying a new method.

- To obtain reliable data, the interviewer should start with a 24-hour recall to accustom the interviewee to the questions and then ask about the usual pattern of intake over the last two weeks.

- "It is not realistic to ask frequency of consumption over a one-month period because mothers just cannot remember well enough."

- "A better explanation is needed for daily, weekly, and monthly, e.g., is three times per week considered daily or weekly?"

- "There needs to be more guidance about specific questions to use to help determine the seasonal consumption of foods."

- "There needs to be a better explanation of the interview method to assess food intake of children under 12 months."

- The interviewer needs to inquire about consumption of fat at the same point in the interview when asking about CRF intake, not just at the end of the interview when the topic appears at the bottom of the questionnaire.

- If a mother has not mentioned a specific CRF when providing consumption information for the past 24 hours, she may do so when the same CRF is explicitly brought up in the recall about UPF. This apparent contradiction could result from the mother's not remembering while responding to the 24 hour recall that she had fed her child the particular CRF. On the other hand, the mother may be giving an answer that she feels would please the interviewer. Some effort needs to be made by the interviewer to resolve this contradiction.

Evaluation and Interpretation of Results

- "Infants 0-4 months old who are wholly breastfed score 'moderate risk' (score of 6). This assessment is not in agreement with general nutrition education messages about the benefits of exclusive breastfeeding."

- "It is not clear how you take cooking method into account if you do not have food composition data for the cooked forms of the CRF in question."

- "It is not clear how you take fat consumption, breastfeeding information, and vitamin A capsule intake into account as these factors are not included in the risk equations."

- "There are no guidelines for integrating information from the CI and UPF and for dealing with discrepancies between these two indices." One source of discrepancy could be related to the fact that portion sizes are not required for the UPF calculation. This omission may result in an underestimate of the UPF relative to the CI and would shift children out of the low- and moderate-risk categories into the moderate- and high-risk categories, respectively.

- "The high consumption of mangos during the survey season could overestimate CI and UPF and make it hard to establish a relationship between them. The result will be a number of false positives--i.e., children who, solely because of their consumption of mangos, appear not to be at risk when in fact they are."

- The *Guidelines* provide information for classifying individuals into the low-, moderate-, or high-risk categories, depending on their CI or UPF scores. However, once the population is distributed among these three risk categories, there are no cut-off points to determine the significance of the problem. That is,

what percentage of children must be classified as high-risk in order to constitute a public health problem?

- "The identification of at-risk children for targeting purposes can be obtained by hand tabulation with regard to age, sex, and breastfeeding duration. However, risk factors related to morbidity, socioeconomic status, vitamin A coverage, etc., need a computerized analysis."

- Once the score (of CI or UPF) is calculated for an individual child, the data about the foods consumed by that child are no longer available. The richness of the data is lost by compiling the information into a composite score, unless a computerized analysis is used to identify each food consumed by quantity per child.

- "The scores allotted for each risk category level, especially moderate risk, could be modified because sometimes the score and retinol equivalents do not go hand in hand. For example, two preschool children with an intake of 180 mg RE and 332 mg RE are classified under the moderate risk category with a similar score of 7."

II.5 Additional Suggestions

- The IVACG *Guidelines* suggest that the nutritionist should conduct the original market survey. But, as a practical matter, a nutritionist who is not from the study area might be suspect among food purveyors who, as a result, quote artificially inflated prices. Thus, it is entirely possible for a local teenager, trained by the nutritionist, to conduct the survey.

- The title, *Guidelines for the Development of a Simplified Dietary Assessment to Identify Groups at Risk for Inadequate Intake of Vitamin A*, should be reconsidered. The word "simplified" implies ease of use, although "simplified," as used in the title, actually means "simpler than some other dietary assessments." Thus, the title sets up unrealistic expectations in the minds of readers.

- "The *Guidelines* should provide a statistical base for sampling framework, sample size, survey design, etc."

- "A set of operations research trials should be carried out in different countries and settings to explore the potential of this methodology for monitoring changes in CI, using different time intervals. This will enable one to assess the amount of variability in vitamin A intake over time and the sensitivity of the instrument to pick up small changes in vitamin A intake over these periods of time."

- "Another way of adapting this instrument for monitoring is to amplify/magnify the

variability of vitamin A intake or to limit the 'discreteness' of this variable by transforming categorical data into semicontinuous data for CI/UPF. This means using a continuum of risk intervals instead of the three risk categories: High, Medium, and Low."

- The *Guidelines* should point out that assessing risk and monitoring changes in CI or UPF do not need the type of detailed analysis that is necessary when the *Guidelines* are used for nutrition education and message development (for groups).

- Potential users need to be warned about the huge amount of data that can be generated by applying the *Guidelines*. The *Guidelines* should discuss the various options for data analysis, interpretation, and application made possible by computers and software packages of varying capacity.

- "After this preliminary evaluation [i.e., once this consultant report is available], a small group should work on a total revision before more translation and dissemination."

- "Develop a training course or manual for users."

- "The *Guidelines* are great for college-educated staff, but need to be revised for people with less formal training."

- "There is a need for integration of various health issues, but we have separate groups (e.g., VITAL, PAHO, UNICEF) focusing on separate topics--e.g., vitamin A, iron, cholera. How could the *Guidelines* be adapted to help predict when families have multiple health risks?"

- "To be taken seriously, the *Guidelines* need to be able to distinguish between children with and without xerophthalmia. One way to design such a study is to find a situation where approximately 100 children who are identified with xerophthalmia (such as in a clinic) can each be matched with a control case. Dietary information using the *Guidelines* would be obtained from both and then compared."

- "Once HKI has finished its pretesting of its new food frequency instrument, it would be very informative to compare the results of using their instrument and the IVACG *Guidelines* in the same population."

II.6 Non-Users

The non-user sample comprises 19 persons, including seven individuals who represent non-US institutions involved in dietary assessment studies, 10 representatives of ten U.S.-based PVOs, and two independent reviewers.

The reasons for non-use of the IVACG *Guidelines* fall into three categories as discussed below.

Basic disagreement with conceptual aspects

The *Guidelines*'s conceptual basis for assigning risk is derived from the FAO/WHO-recommended dietary intake of vitamin A for preschool children. Accordingly, the *Guidelines* reflect the generally accepted concept that "intakes habitually less than two-thirds of the recommended intake will cause depletion and place a child at high risk" (IVACG *Guidelines*, page 26). In disagreeing with this approach to assigning risk, some non-users point out that recommended dietary intakes are based on consumption figures that equal or exceed those of 97.5 percent of the population. They argue that the mean of a normally distributed population is the appropriate basis for assigning risk, not the upper end of the distribution (as embodied in the concept of recommended dietary intake).

The other issue associated with risk concerns the concept of "excess risk." That is, what percentage of the population must fall into a certain level of risk before health officials declare that a public health exists? The IVACG *Guidelines* establish cut-off points to classify individuals into each risk category but do not provide information to judge whether the percentage of individuals in any given category constitutes a public health problem.

Another area of disagreement expressed by non-users concerns validity. The *Guidelines* have not yet undergone extensive comparison either with other dietary methods (e.g., time-consuming methods such as food weighing or streamlined methods such as non-quantitative food frequencies) or with biochemical or clinical methods for measuring vitamin A status. Until such data are available, some investigators will not consider using the *Guidelines*.

Rejection due to the complexity of steps and the difficulty in following the narrative

One of the most common responses from the non-users was that the *Guidelines* were "complicated." "The 'simplified' dietary assessment tool seemed unnecessarily complex, especially since it is only semiquantitative anyway, and especially for countries where the diet is very monotonous and with little variety."

Some respondents did not understand why the *Guidelines* took the user through the process of assigning vitamin A scores and then calculating CI and UPF when, in their study contexts, it was possible to assess RE consumption. These same respondents used alternative dietary assessment methods that better served their study objectives.

Two of the non-users reported that their institutions had started to use the *Guidelines* but abandoned the document during the process of dietary questionnaire development. In both cases, difficulties were related to the process of estimating portion sizes.

The case of U.S.-based PVOs

Ten of the 12 U.S.-based PVOs in the sample reported that they were not currently using the IVACG *Guidelines*. In fact, most of the PVO non-users knew of the *Guidelines* only vaguely or not at all. The PVOs involved in dietary assessments of vitamin A consumption most commonly requested technical assistance from HKI. HKI's assessment techniques focus on a food frequency tool combined with information about other risk factors that affect vitamin A status.

Even if the PVOs did not have the option of obtaining free technical assistance from HKI, many of them would have discovered that they did not command the resources (especially time, funds, and access to a qualified nutritionist) to apply the IVACG *Guidelines*.

II.7 Strengths and Unintended Benefits

Both the initial questionnaire and the interviews yielded information about the strengths and unintended benefits of the IVACG *Guidelines*. The strengths are best presented in the form of the following quotations from the respondents.

- "The strength of this methodology resides in its specificity, the level of data reliability and accuracy that can be obtained when it is properly done, its quantitative aspect within a relatively low cost/low technology, and its great potential for use by VHW and community-based personnel; adaptation; modifications and changes; and extending the range of usage: risk assessment, monitoring, evaluation, and nutrition education."

- "The *Guidelines* are not only useful for investigating the consumption of vitamin A, but could also be adapted for other nutrients such as iron."

- "Once the local foods inventory is defined and portion sizes worked out, the *Guidelines* are very useful and simple."

- "This method is very rapid and simple to tabulate; it gives good results when they were compared with existing information about the area." "You don't need

individual intakes to describe the community consumption profile, so the *Guidelines* are appropriate for this purpose."

- "One advantage of using the *Guidelines* is the ability to use local village women with eighth grade schooling as interviewers and just one nutritionist to supervise the work." "The *Guidelines* provide an opportunity for screening by community health workers and using them is faster than 24-hr. recalls."

During the interviews, respondents were asked if use of the IVACG *Guidelines* yielded any unexpected benefits. Those who responded affirmatively commented on the improved attitude of local nutritionists and/or staff interviewers. In particular, the nutritionists, who typically spend most of their time in urban settings, evidenced a positive attitudinal change as they got out of their offices and into the field and, thus, became more familiar with their clientele and their living conditions.

In one project, the interviewers were community nutrition workers who also were involved in developing the dietary questionnaire. Their attitudes underwent a positive change as they learned new skills: how to observe, not just preach; how to be more rigorous in data collection; and how to communicate more effectively with mothers.

III. CONCLUSIONS

Before July 1989, when the IVACG *Guidelines* were first formally published and distributed, they had undergone at least four pretests coordinated by the IVACG Task Force. Pretests were, in effect, studies commissioned for the main purpose of testing the *Guidelines* under field conditions in various countries. Pretest results provided the basis for revising the *Guidelines* before their initial publication.

Since July 1989, the *Guidelines* have been used to varying degrees in at least 20 additional applications throughout the world (as reported in this document) in situations that typify the field conditions under which the document was intended for use. These experiences can be viewed as a logical extension of the pretest phase. In contrast to the pretests, though, the 20 experiences reported here did not fall under the IVACG Task Force's mandate. Therefore, it is important to note that the *Guidelines* are still in a stage of evolution that calls for improvements to be incorporated into the document based on field use.

In keeping with the IVACG Task Force's expectations, the *Guidelines* have been used for a variety of objectives: to identify groups at risk of inadequate intakes of vitamin A; to develop, monitor, and/or evaluate interventions related to improving consumption of vitamin A-rich foods; and to provide descriptive information to complement and explain results of non-dietary assessment methods of vitamin A status.

The data collected from the 20 projects suggest that the accumulated experience of using the IVACG *Guidelines* has been at least satisfactory, if not generally positive, among most users. For the most part, project investigators made their own decision to use the IVACG *Guidelines* and adapted them to their specific projects' objectives and field conditions. The results presented in this report show wide-ranging uses of the *Guidelines* as well as an extensive list of questions associated with diverse field experiences. The *Guidelines* already appear to have made a major contribution to the field of dietary assessment as evidenced by

- the total number of worldwide applications (i.e., at least 20 in 14 different countries);
- the number of countries with multiple experiences coordinated either by one principal investigator (e.g., Mexico) or by several investigators (e.g., five separate experiences in Indonesia);
- the number of investigators who have gained multiple experiences in their own country or in different countries;
- the different types of target audiences to which the *Guidelines* have been applied (e.g., lactating women in Indonesia versus preschool children in most projects); and

- the increasing amount of information about application of the *Guidelines* that is now or will soon be available for review and possible incorporation into a revised document.

III.1 Characteristics of Users

One unexpected finding of this survey is that the profession of the user (i.e., nutritionist, physician, biochemist, epidemiologist) seemed to be related to the user's stated objectives for applying the *Guidelines* and to subsequent satisfaction with the document. The non-nutritionists who were relatively unfamiliar with the field of dietary assessment but who applied the IVACG *Guidelines* in their first dietary assessment project tended to specify study objectives that were consistent with those described in the *Guidelines*. That is, they used the *Guidelines* to help gather data about the vitamin A consumption of target populations and the populations' risk of inadequate vitamin A intakes. By contrast, investigators who evidenced a high level of experience in dietary assessments and were more interested in describing the vitamin A intake of individuals (rather than of populations) were less satisfied. The non-nutritionists were more flexible and realistic in their expectations and use of the IVACG *Guidelines* and did not bring to their respective projects biases and preferences vis-a-vis dietary assessments.

Reactions of nutritionists did not follow any single pattern. Some non-nutritionist respondents reported trying to work with local nutritionists who were unwilling to follow the *Guidelines*. These respondents then had to extend their search to find the necessary technical assistance to help them develop the dietary questionnaire. On the other hand, some nutritionists with considerable international experience participated in this survey as users. In contrast to their non-nutritionist colleagues, the nutritionists seemed to experience more difficulties in and overall dissatisfaction with using the *Guidelines*. However, they invested considerable effort in using the *Guidelines* as presented, made several adaptations, and, in the process, identified problem areas in need of resolution. Their frustrations did not seem to be so much related to inappropriate use of the *Guidelines* per se as to overcoming subtleties or problems for which the *Guidelines* provided little, no, or sometimes conflicting information.

III.2 Degree of Satisfaction and Identified Problems

There was no indication that degree of satisfaction in using the *Guidelines* was in any way related to the project type. Rather, satisfaction seemed to be related to the ability to adapt the *Guidelines* to particular study objectives and field conditions (whatever they might be). The satisfied users seemed able to make adaptations that were viable and acceptable in their study context. The less satisfied users identified problems for which solutions were neither readily identifiable nor otherwise acceptable given project objectives.

In general, the users adapted the *Guidelines* to make them more specific. Examples of these adaptations are

- calculations of RE consumption from the list of foods on the dietary questionnaire; and
- inclusion of portion sizes for determining the UPF.

For the future, users expressed interest in

- knowing how to incorporate data about breastfeeding, vitamin A capsule consumption, and fat intake;
- knowing how to deal with cooking methods when no specific data are available;
- creating more (e.g., five instead of three) categories for content of vitamin A-rich foods; and
- creating more (e.g., eight total) response categories for the frequency of consumption of a given food during the month.

The respondents did not suggest that they would abandon the IVACG *Guidelines* upon completion of their project. Even when they encountered problems with the document, the respondents wanted to continue working with the method and to learn about others' experiences. Almost all respondents reported interesting anecdotes and adaptations that could be useful to others.

III.3 Non-Users

Most of the concerns raised by non-users (see Section III.F) could be addressed by revising the *Guidelines*. A revised document could provide more detailed information, underscore the *Guidelines*'s flexibility by referencing users' actual experiences, and address the issue of validity of results although not necessarily present data about it. (See Section III.4 below for further discussion of validity.)

Nearly all non-user PVOs contacted during the course of the survey were barely familiar with the IVACG *Guidelines*. This result suggests the need for aggressively marketing a revised document that could, in turn, increase PVO awareness of IVACG's alternative dietary assessment method. Even if the *Guidelines* were revised, many U.S.-based PVOs may, for various reasons, continue to request assistance from HKI. However, if a revised document included examples from the two PVOs that applied the *Guidelines*, other PVOs might consider the *Guidelines* an acceptable option in the future.

III.4 Validity

Several studies that have used the *Guidelines* have collected or plan to gather data for evaluating the validity of the IVACG assessment method based on one or more points of

view: validity of CI and UPF compared to absolute RE intakes, to biochemical parameters, or to clinical parameters. The results (when available) can be incorporated into the revision.

Some of the respondents have amassed unpublished data from comparing the results obtained from the application of the IVACG *Guidelines* with the results from other dietary assessment methods and other vitamin A assessment methods. These data could well be of interest to the larger group of 20 projects. In addition, the survey planned for Bolivia will include full 24-hour recalls, but these recalls will not be analyzed for RE consumption due to the lack of appropriate computer hardware and software. If analyzed, the Bolivian results could add useful information to the validity discussion.

Given that every vitamin A assessment technique is based on different principles, the results from two or more techniques can yield varying indications of vitamin A status. The IVACG *Guidelines* were designed to measure the risk of an inadequate intake of vitamin A, not the risk of vitamin A deficiency per se. Therefore, dietary results from applying the IVACG *Guidelines* should be compared for validity purposes only with other techniques that measure the adequacy of intake of vitamin A.

IV. RECOMMENDATIONS

Given the current and growing number of *Guidelines* users, it is likely that the *Guidelines* will find increasing application, even in the absence of revisions. However, experience to date under varying field conditions indicates that the *Guidelines* could be improved. The reasons for undertaking the revision include the following:

- Many of the problems cited by the users can be addressed without compromising the methodology; further, the users provided numerous practical suggestions to this end;
- A revision will make the *Guidelines* more attractive (conceptually and visually) to a wider audience;
- A revision will strengthen the claim that the *Guidelines* are flexible; and
- The firmly stated original intent was to revise the *Guidelines* if necessary.

The surveyed users generally agreed that a revision is warranted and encouraged. The rest of this chapter presents 14 recommendations for revising the IVACG *Guidelines*. Appendix J offers additional suggestions for IVACG.

IV.1 Addressing General Areas of Dissatisfaction

The five categories of dissatisfaction described in Section III.3 identify general topics to be addressed in a revision of the IVACG *Guidelines*. For the purposes of this discussion, these five categories are summarized into two recommendations. All recommendations in this chapter are numbered sequentially, regardless of category.

RECOMMENDATION 1

Provide more explicit guidance on the proper use of the *Guidelines*.

Experience suggests that the potential is great for incorrectly selecting the *Guidelines* for application in some dietary assessments. As a result, investigators have developed unrealistic expectations about the data generated by implementing the *Guidelines*. Although the "Foreword" to the *Guidelines* explains that the document is intended for "identifying children as groups at risk of inadequate vitamin A intake" and not for assessing an individual's vitamin A status, this point needs to be underscored more directly and emphatically. The *Guidelines* should ask the investigator to pose the following questions: "Why do I want to collect dietary data in this study? How will the results be influenced by compiling the dietary data? What decisions will be made on the basis of the dietary data?"

A section in the revised document should be called "Use and Misuse of the *Guidelines*." The discussion would list all appropriate applications known to date, including

- assessing groups (not just children) at risk for inadequate intakes of vitamin A;
- monitoring nutrition interventions or change brought about by some anticipated event during the project;
- introducing behavior change related to consumption of CRF; and
- training students or others in dietary assessment methods.

The "Misuse" discussion would caution against

- assessing the vitamin A status of individuals; and
- classifying a particular individual into a specific risk category for vitamin A status.

RECOMMENDATION 2

Provide more information, options, and examples from past experiences to explain the expected level of effort needed to apply the Guidelines, the resources needed for developing the dietary questionnaire and for undertaking different levels of related data analysis, and for using the *Guidelines* as a training opportunity.

Many of the complaints about "vagueness" in certain parts of the *Guidelines* can now be addressed by drawing from specific project examples.

IV.2 Addressing Specific Problems and Suggestions

Specific problems encountered in using the *Guidelines* were presented in five categories outlined in Section II.4, along with various respondents' suggestions for addressing them. The recommendations below are organized into the same five categories.

Conceptual Concerns

RECOMMENDATION 3

Topics for re-evaluation in the revision include the number of categories in the vitamin A scoring system and the ranges for each category, the time periods to be covered by the CI and UPF, study contexts in which CRF are available all year round, and how to take advantage of other dietary information collected.

Presentation of the Narrative

RECOMMENDATION 4

A technical editor should be employed to introduce appropriate organization, spacing, and formatting to complement the authors' work.

If the next IVACG Task Force approaches the document as a training effort more than as a scientific communique, the language and format should be revised to make the

document more "user friendly."

Development of the Dietary Questionnaire

RECOMMENDATION 5

The *Guidelines* should provide more information on developing portion sizes and using them to assess UPF.

RECOMMENDATION 6

The questionnaire should investigate ingestion of vitamin A capsules and consumption of infant foods by children under 12 months.

RECOMMENDATION 7

Different layouts of the questionnaire should be considered for grouping foods in logical categories.

Implementation of the Questionnaire

RECOMMENDATION 8

The narrative should better explain the similarities and differences between implementing the IVACG *Guidelines* and a standard 24-hour recall.

RECOMMENDATION 9

More guidance is needed on inquiring about and recording information on fat intake and food intake of children under 12 months.

Evaluation and Interpretation of Results

RECOMMENDATION 10

The methods for calculating and interpreting CI and UPF scores should be reviewed.

Users who calculate both CI and UPF need more information about interpreting findings that appear contradictory (e.g., high levels of risk according to CI but low levels of risk according to UPF or vice versa). Assuming that there are logical explanations for these contradictions, the outcomes could be presented in a 2 x 2 matrix (Table 3) that shows the various combinations of different pairs of CI and UPF.

TABLE 3
A COMPARISON OF POSSIBLE OUTCOMES OF UPF AND CI

Consumption Index (CI)	Usual Pattern of Frequency (UPF)	
	LOW	HIGH
LOW	Area of agreement	Why do individuals fall into this category and how great a percentage is tolerable
HIGH	Why do individuals fall into this category and how great a percentage is tolerable	Area of agreement

IV.3 Additional Suggestions

RECOMMENDATION 11

The 13 ideas presented in Section II.5 should be considered in the process of revising the *Guidelines*.

IV.4 Addressing Validity

RECOMMENDATION 12

The revised document should address the question of validity.

The document should point out the appropriate and inappropriate types of comparisons that determine the *Guidelines*'s validity. The difference between assessing actual and proxy vitamin A status and assessing risk factors for vitamin A status needs to be clearly stated. In addition, the results of available and appropriate studies of the validity of the IVACG *Guidelines* should be summarized as part of the revision. Furthermore, because some first-time users of the *Guidelines* believe that they must calculate total RE consumption (as a "security blanket" in the event that the IVACG method proves unworkable), the revision should provide guidance about the conditions that require calculation of RE consumption.

IV.5 Decision Points

RECOMMENDATION 13

The revision needs to provide more information at key decision points in the implementation of the *Guidelines*.

Some investigators reported difficulties with key decision points in the IVACG *Guidelines* (e.g., how to develop portion sizes; how to decide the lowest amount of RE/100g for including a certain food on the questionnaire). Even though the intent of the original document was to avoid any "cookbook" directions, it seems that more information could be provided without compromising the document's flexible approach, all the time ensuring that the *Guidelines* provide the road map for developing an instrument, but not the instrument itself. For example, in the discussion about interpreting CI and UPF, the following options might be discussed:

- "If you are working in an area in which CRF are available all year round, you might want to consider placing more emphasis (explain how) on the CI"; or
- "If you are working in an area in which CRF are absolutely not available at certain times of the year, you might want to place more emphasis on obtaining information related to UPF (explain how) and/or on planning a follow-up survey when CRF are available."

In general, users wanted more information and guidance to deal with the sections they claimed were "vague" (e.g., determining portion sizes; incorporating information about breastfeeding and fat intake). No one complained or even commented about the length of the current document. Therefore, increasing the length of the *Guidelines* does not seem to be a major consideration in a revision. Besides providing information about specific options, the *Guidelines* could cite information from other specific projects.

IV.6 VITAL Consultants

RECOMMENDATION 14

Any VITAL consultant who is working in the field of vitamin A deficiency, prevalence assessment, intervention, etc., should be well informed about different dietary assessment methods.

The consultant needs to be armed with a variety of possible options, given the objectives of a particular dietary assessment and the prevailing conditions in the country under study. The IVACG *Guidelines* and the food frequency methods of HKI and CeSSIAM are the current dietary assessment methods for determining inadequate vitamin A intakes that merit VITAL's close attention.

REFERENCES

1. Sommer A, Katz J, Tarwotjo I. Increased risk of respiratory disease and diarrhea in children with pre-existing mild vitamin A deficiency. Am J Clin Nutr 1984;40:1090.

2. Sommer A, Tarwotjo I, Kjunaedi E, et al. Impact of vitamin A supplementation on childhood mortality. Lancet 1986;ii:1169.

APPENDICES

APPENDIX A
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16. Ms. Rebecca Stoltzfus, Project Supervisor, Project ASIVITA, Division of Nutritional Sciences, Savage Hall, Cornell University, Ithaca, NY 14853-6301.

17. Dr. Robert Tilden, Research Investigator, Department of Population and International Health, University of Michigan, School of Public Health, Ann Arbor, MI 48109. Tel: 313-763-5566; home fax: 313-429-2735. In Indonesia: c/o Hidayrat Syarief, GMSK Faperta, Campus IPB, Darmaga, Bogor, Indonesia. Fax: 011-62-251-311-868.

18. Dr. Ayesha Molla, Aga Khan University Medical Centre, Stadium Rd., P.O. Box 3500, Karachi - 74800, Pakistan. Tel: 92-21-420051; Telex: 23667 AKHMCPK; fax: 92-21-414294.

19. Dr. Emorn Udomkesmalee and Mr. Pongtorn Sungpuag, Institute of Nutrition, Mahidol University at Salaya, Puttamonthon 4, Nakhon Chaisri, Nakhon Pathom, 73170 Thailand. Tel: 662-441-9035-9; Telex: 8484770 UNIMAHITH; fax: 662-441-9344.

20. Dr. Ha Huy Khoi, Deputy Director, Institute of Nutrition, 48 Tang Bat Ho Street, Hanoi, Vietnam.

APPENDIX B
MAILING LIST OF DETECTIVES, NON-USERS AND OTHER CONTACTS

1. Dr. Roberto del Aguila, Institute de Investigacion Nutricional, Ap. Postal 18-0191, Lima 18, Peru. Tel: 36-7671; 36-7558.

2. Dr. Luthfor Ahmed, Institute of Nutrition and Food Science, University of Dhaka, Dhaka 1000, Bangladesh.

3. Dr. Olivier Amedee-Manesme, INSERM U 56, 78 Av. du General Leclerc, Hospital de Bicetre, Bicetre 94270, France.

4. Ms. Laurie Lindsay Aomari, R.D., and Dr. Timothy A. Morck, IVACG Secretariat, The Nutrition Foundation, Inc., 1126 Sixtenth St., N.W., Washington, D.C. 20036. Tel: 202-659-9024; fax: 202-659-3617; telex: 6814107 NUFOUND; cable: NUTRITION WASHINGTONDC.

5. Dr. Guillermo Arroyave, 2520 Clairmont, San Diego, CA 92117. Tel: 619-276-6161.

6. Mr. John Barrows and Mr. Jack Blanks, International Eye Foundation, 7801 Norfolk Ave., Bethesda, MD 20814. Tel: 301-986-1830; fax: 301-986-1876.

7. Dr. Hagos Beyene, Assistant Professor, Ethio-Swedish Pediatrics Hospital, Addis Ababa Univ., P.O. Box 1768, Addis Ababa, Ethiopia.

8. Dr. H.K. Biesalski, Institut fur Physiologische Chemie, Johannes Gutenberg Univ., Mainz Postach 3890, D 6500 Mainz, Federal Republic of Germany.

9. Dr. Provash Chandra Biswas, M.B.B.S., Darmanga, Harat, Iran.

10. Dr. Helen Bratcher, Nutrition Advisor and Sumali Ray, Asst. Desk Officer, Eurasia Region Catholic Relief Services, 209 W. Fayette St., Baltimore, MD 21201. Tel: 301-625-2220 or 800-235-2772; fax: 301-685-1635.

11. Ms. Linda Bruce and Mary Beth Moore, .PATH, Suite 700, 1990 M Street, N.W., Washington, DC 20036. Tel: 202-822-0033; fax: 202-457-1466; telex: 6502486820MCI UW.

12. Dr. Gordon Buhler, Associate Professor, Loma Linda University, School of Public Health, Room 1313, Loma Linda, CA 92350. Tel: 714-824-4902.

13. Ms. Anna Burgess, Nutritionist, Graiglea Cottage, Glenisla Blairgowrie, Scotland PH11 8PS.

14. Dr. Ritva Butrum, Chief, Diet and Cancer Branch, NIH, EPN 212A, 9000 Rockville Pike, Bethesda, MD 20892-6130. Tel: 301-496-8573.

15. CARE's Regional Technical Advisors for Primary Health Care: Dr. Salvador Baldizon (Latin America); Ms. Catharine McKaig (West Africa); Dr. Sherry Guild (East Africa); c/o PHC Unit, CARE, 660 First Ave., NY, NY 10016. Tel: 212-686-3110.

16. Ms. Jenny Cervinskas, Program Officer, Health Sciences Division, and Mr. Richard Young, Coordinator, Nutrition Unit, Agriculture Division (x2210), IDRC, P.O.Box 8500, 250 Albert Street, Ottawa, Canada K1G 3H9. Tel: 613-236-6163.

17. Dr. Umaru Charles, Public Health Superintendent, Main Campus Clinic, Ahmadu Bello University, Zaria, Kaduna State, Nigeria.

18. Dr. Moses Chirambo, Chief Consultant Ophthalmologist, Kamuzu Central Hospital, P.O. Box 149, Lilongwe, Malawi.

19. Mr. Filippo Cortale, Project Officer, Vitamin A Child Survival Project, P.O. Box 335, Kathmandu, Nepal.

20. Dr. Paul Courtright, Project Director, International Eye Foundation, P.O. Box 2273, Blantyre, Malawi.

21. Dr. Joanne Csete, Department of Nutritional Sciences, University of Wisconsin, 1415 Linden Drive, Madison, WI 53706. Tel: 608-268-1082.

22. Mr. Gabriel Daniel, Pharmaceutical Specialist and Phyllis Jones, AFRICARE, 440 R St., NW, Washington, DC 20001. Tel: 202-462-3614.

23. Dr. Omar Dary, Instituto de Nutricion de Centro America y Panama, Apdo. Postal 1188, Guatemala City, Guatemala. Tel: 502-272-3762; Telex: 5696 INCAP; fax: 502-273-6529.

24. Dr. Frances Davidson, AID Office of Nutrition. Tel: 703-875-4118; fax: 703-875-4394.

25. Dr. Varma Lennox Deyalsingh, 4 St. Lucia Avenue, Federation Park, Port of Spain, Trinidad, West Indies.

26. Dr. Greet Dijkman, Ophthalmologist, University Hospital, Rijnsburgerweg 10, Leiden, Holland, The Netherlands.

27. Ms. Mary Dirac, 49 Round Hill Road, Poughkeepsie, NY 12603. Tel: 914-462-1952.

28. Dr. William Drake, Director, Community Systems Foundation, Tel: 313-761-1357; fax: 313-761-1356.

29. Mr. Ken Flemmer and Ms. Lindy Wolf, ADRA, 12501 Old Columbia Pike, Silver Spring, MD 20904. Tel: 301-680-6380; fax: 301-680-6090.

30. Dr. Alix Y. Fleury, Eye Care PROVAX, 92 Chemin des Dalles, Port-au-Prince, Haiti. Tel: 509-458-686; fax: 509-458-686.

31. Dr. Wilma Freire, CONADE, Manabi y Vargas, Casa Vivanco 2ndo Pisa, Quito, Ecuador. Tel: 593-251-6483; Telex: 2114; fax: 593-256-3002.

32. Ms. Donna Fujiwara, Eye Care Inc., Tel: 202-628-3816.

33. Dr. Fe Garcia, World Vision Relief and Development Organization, 919 West Huntington Drive, Monrovia CA 91016.Tel: 818-357-7979, ext.2719; Telex: 675341; fax: 818-358-2896.

34. Mr. Michael Gerber, AMREF, Nairobi, Kenya. Fax: 011-254-2-506112.

35. Dr. Phyllis Gestrin, OTAPS/Health, Peace Corps, 1990 K St., NW, Washington, DC 20526. Tel: 202-606-3100. Also: Ben Way, OTAPS/Agriculture, tel: 202-606-3402.

36. Dr. Peter Greaves, Senior Advisor, Micronutrients, UNICEF, Program Division H8F, 3 UN Plaza, New York, NY 10017. Tel: 212-326-7389; Telex: 391-611181 UNCF BR; fax: 212-326-7336.

37. Dr. Geeta Gupta, International Center for Research on Women, 1717 Massachusetts Ave., NW., Suite 302, Washington, DC 20036. Tel: 202-797-0007.

38. Dr. J. Michael Gurney, Regional Nutrition Advisor, WHO Regional Office, SE Asia, Indraprastha Estate, New Delhi, India. Tel: 91-11-331-7804; Telex: 81-31-65031; fax: 91-11-331-8607.

39. Dr. Jean Hankin, Epidemiology Program, Cancer Research Center of Hawaii, 1236 Lauhala St., Honolulu, HA 96813 (808-548-8452).

40. Dr. Abraham Horwitz, President Emeritus, PAHO, 525 23rd St., N.W., Room 1012, Washington, DC 20037. Tel: 202-861-3181; Telex: 440057; fax: 202-223-5971.

41. Dr. E. O. Idusogie, Reg. Food Policy & Nutrition Office, FAO Regional Office for Africa, P.O. Box 1628, Accra, Ghana.

42. Dr. Mohammed Mushtag Kahn, House 3, Street 72 Sector Y6/4, Islamabad, Pakistan.

43. Dr. Festo Patrick Kavishe, Tanzania Food and Nutrition Centre, P.O. Box 977, Dar-Es-Salaam, Tanzania. Tel: 255-51-296223; fax: 255-51-28951.

44. Dr. Wilson K. Kisubi, Director, Evaluation & Research Division, AMREF, P.O. Box 30125, Wilson Airport, Nairobi, Kenya.

45. Dr. Chris Kjolhede, Department of International Health, Johns Hopkins University, 615 North Wolfe St., Baltimore, MD 21205. Tel: 301-955-2786; fax: 301-955-7407.

46. Dr. Benny Kodyat, Director of Community Nutrition, Ministry of Health, Jl. Pondok Hijau V/13, Jakarta 12310, Indonesia.

47. Dr. Gopa Kothari, Project Director, Xerophthalmia Project, Bombay Slums, Kusum-Kunj, 3rd Floor 10th Road, Kar Bombay - 40052, India.

48. Dr. Michael Latham, Professor and Director, International Nutrition Program, Division of Nutritional Sciences, Cornell University, Ithaca, NY 14853. Tel: 607-255-3041; Telex: 6713054; fax: 607-255-1033.

49. Ms. Karen Leban, SAVE the Children, 54 Wilton Rd., Westport, CT 06881 Tel: 203-221-4095.

50. Dr. Louise Little, Department of Nutrition, 234 Alison Hall, University of Delaware, Newark, DE 19711. Tel: 302-738-8055 (direct); 8976 (dept. office).

51. Dr. Jay McAuliffe; Project Director, Projeto HOPE, C.P. 3151, Rodolfo, Teofilo, Fortaleza, Ceara 60.414, Brazil.

52. Dr. John McKigney, 4434 S.E. 19th Ave., Cape Coral, FL 33904. Tel: 813-542-5923.

53. Dr. Donald McLaren, Intl. Center for Eye Health, Univ. of London, 27-29 Cayton Street, London, ECl V9EJ, United Kingdom

54. Ms. Julie McLaughlin, FSP and PCI, P.O.Box 85710, San Diego, CA 92186. Tel: 619-279-9820; PCI general 619-279-9690; fax: 619-694-0294.

55. Dr. Michelle Lloyd-Puryear, Truk State Hospital, Truk State Dept. of Health, Caller Box PPP599, Saipan Moen Truk, Caroline Islands, FSM 96942.

56. Ms. Lucie Malaba, Nutrition Biochemistry Researcher, C/o INR, University of Oslo, P.O. Box 1046, Blindern, 0316 Oslo 3, Norway.

57. Dr. Kamal Mohamed, Director, Ministry of Health, Nutrition Department, P.O. Box 303, Khartoum, Sudan.

58. Dr. Andre-Dominique Negrel, CDS/PBL, Room 6118, World Health Organization, Avenue Appia, 1211 Geneva 27, Switzerland.

59. Dr. Rachel Novotny, University of Hawaii, School of Public Health, 1960 East West Road, Honolulu, HI 96822. Tel: 808-956-3848.

60. Dr. A. Omololu, Professor of Human Nutrition, Department of Human Nutrition, University of Ibadan, Ibadan, Nigeria.

61. Dr. Adrian Pointer, PLAN International, Tel: 401-826-2500.

62. Dr. Gloria Rivera, S.I.S. de Chiriqui, Apartado 26, David, Chiriqui, Panama. Fax: 507-742412.

63. Mr. Chris Roesel, Asst. Country Director, CARE-Ecuador, c/o CARE, 660 First Ave., NY, NY 10016.

64. Mr. David Rosen, VITAP Manager, and Lauren Blum, Helen Keller International, 15 W. Sixteenth St., New York, NY 10011. Tel: 212-807-5800; Telex: 668152; fax: 212-463-9341.

65. Dr. David Ross, Ghana VAST, BP 57, Po, Burkina Faso.

66. Dr. James Sheffield, AMREF, 420 Lexington Ave., New York, NY 10170. Tel: 212-986-1835.

67. Dr. Roger Shrimpton, Senior Project Officer, UNICEF/Indonesia, c/o UNICEF/NY.

68. Dr. Franz Simmersbach, Food & Agricultural Organization, Via Delle Terme Di Caracalla, 00100 Rome, Italy. Tel: 396-57-973014; Telex: 61181 FAOI; fax: 396-57-973152.

69. Dr. Kenneth Simpson, Professor, Food Science Research Center, University of Rhode Island, 530 Liberty Lane, West Kingston, RI 02892. Tel: 401-792-2466.

70. Dr. Tee E. Siong, Head, Division of Human Nutrition, Institute for Medical Research, 50588 Kuala Lumpur, Malaysia.

71. Dr. Nancy Sloan, Population Council, Tel: 212-644-1820.

72. Dr. Noel Solomons, Scientific Director and Coordinator, Dr. Jesus Buleux Hernandez (Asst. Director) and Ms. Julieta Quan de Serrano, CeSSIAM, Hospital de Ojos y Oidos, Dr. Rodolfo Robles V., 19 calle y Diagonal 21, Zona 11, Guatemala City, Guatemala. Tel: 5022-730375; Fax: 5022-733906.

73. Dr. Alfred Sommer, ICEPO, Wilmer Ophthalmological Institute, Room 120, Johns Hopkins Hospital, 600 North Wolfe Street, Baltimore, MD 21205. Also Dr. Keith West, ICEPO, etc. Rm. 118, Tel. 301-955-2061.

74. Dr. Dory Storms, PVO Child Survival Operations Support, The Johns Hopkins University School of Hygiene and Public Health, Institute for International Programs, 103 East Mount Royal Avenue, Baltimore, MD 21202. Tel: 301-659-4100; fax: 301-659-4118.

75. Ms. Joan Sullivan, IFPRI, Tel: 202-862-8184.

76. Dr. Moe Moe Sunn, Nutrition Research Division, Dept. of Medical Research, No. 5 Ziwaka Road, Diagon P.O., Yangon, Myanmar Burma.

77. Ms. Peggy Thorpe, CIDA, Tel: 613-997-0943.

78. Dr. Barbara A. Underwood, Assistant Director for International Programs, National Eye Institute/NIH, Building 31, Room 2B-13, 9000 Rockville Pike, Bethesda, MD 20892. Tel: 301-496-4876; Telex: 248232 NIH UR; fax: 301-480-3246.

79. VITAL staff: Mr. Robert Pratt, Director; Ms. Charlotte Johnson-Welch and Dr. Jose Mora, VITAL, 1601 N. Kent Street, Suite 1016, Arlington, VA 22209. Tel: 703-841-0652; Telex: 272785 ISTI UR; fax: 703-841-1597.

80. Dr. Carol Waslien, Head, Public Health Nutrition, School of Public Health, Univ. of Hawaii, Honolulu, HI 96822. Tel: 808-956-8577.

81. Dr. Keith West, Johns Hopkins University Dana Center, Wilmer Room 120, Johns Hopkins Hospital, Baltimore, MD 21205. Tel: 301-955-2061; fax: 301-955-2542.

Appendix C. Letter of Introduction and Questionnaire for Users

VITAL

1601 N. Kent Street, Suite 1016, Arlington, VA 22209
Tel 703/841-0652 Fax 703/841-1597 Telex 272785 ISTI UR

VITAMIN A FIELD SUPPORT PROJECT

Dear _____:

I am writing to you because of your experience with the *Guidelines for the Development of a Simplified Dietary Assessment to Identify Groups at Risk for Inadequate Intake of Vitamin A*. The *Guidelines* were published in 1989 by the International Vitamin A Consultative Group (IVACG). IVACG is interested in up-dating and modifying the *Guidelines* based on feedback from those people who have used, or considered using, the *Guidelines* in their work. We are as eager to learn why someone chose not to use the *Guidelines*, as we are to learn why others did.

In cooperation with IVACG, the Vitamin A Field Support Project (VITAL), supported by the United States Agency for International Development's (USAID) Office of Nutrition, is undertaking this review. The first step is to contact people who have used the *Guidelines* and ask for their general feedback. The second step will be to follow-up with a smaller group of the users and gather more in-depth information about their actual experiences.

We would like to ask you to assist us in our review by:

1. Filling out and returning the enclosed one-page questionnaire.

2. Giving a copy of this letter and questionnaire to anyone whom you know who has used, is using or considered using IVACG's *Guidelines*. If you do pass it on, please let us know to whom by completing the last section of the questionnaire.

In addition, if a report has been written on the assessment, as designed and executed using the *Guidelines*, we would greatly appreciate your sending us a copy.

We would like to thank you in advance for your help and hope that others can learn from your experience. You will receive a copy of the report that we prepare for IVACG.

Sincerely,

Robert Pratt

Robert Pratt
Project Director

Attachment: IVACG Questionnaire

QUESTIONNAIRE TO ASSESS EXPERIENCE WITH IVACG'S *Guidelines for the Development of a Simplified Dietary Assessment to Identify Groups at Risk for Inadequate Intake of Vitamin A*

1. IN WHAT WAY(S) ARE YOU FAMILIAR WITH THE *GUIDELINES*? (Check all that apply)

___ a. I am currently using them in some way.
___ b. I reviewed a draft of the *Guidelines* when they were being developed.
___ c. I was involved in a pre-test of the *Guidelines* in the field.
___ d. I have used them in the past, but am not using them now.
___ e. They were given to me but I haven't had time to read them.
___ f. I've just looked through them but haven't done anything else.
___ g. I gave them to a colleague.
___ h. I put them in our library.
___ i. I have read them thoroughly and intend to use them in the future for [give purpose]_____
___ j. I thought I might like to use them, but then I changed my mind. Why?

___ k. Other - please explain:

2. WHAT IS YOUR EXPERIENCE WITH THE *GUIDELINES*?

___ I am currently using the *Guidelines*
___ I have used the *Guidelines*

3. The *GUIDELINES* CAN BE USED FOR A VARIETY OF OBJECTIVES. WHAT WAS YOUR OBJECTIVE(S) IN USING THE *GUIDELINES*? (Check all that apply)

___ a. To develop a dietary assessment for collecting Vitamin A-related information.
___ b. To develop a dietary assessment and use it for collecting Vitamin A-related information in the field.
___ c. To develop an intervention for groups at high-risk of Vitamin A deficiency.
___ d. To teach others how they can develop a dietary assessment in the future.
___ e. To teach students (or others) about a new dietary assessment technique.
___ f. Other - please explain:

4. WHAT IS THE GEOGRAPHICAL AREA(S) AND CONTEXT(S) IN WHICH YOU ARE/WERE USING THE *GUIDELINES*? (Check all that apply)

___ a. Nationwide general nutrition survey
___ b. Nationwide survey to assess the prevalence of Vitamin A deficiency
___ c. Regional or local survey to identify groups at risk of Vitamin A deficiency [specify location]
___ d. Fieldwork for students learning how to do dietary assessments
___ e. In the classroom
___ f. Other - please explain:

5. HOW HAVE THE *GUIDELINES* ASSISTED YOU IN ACHIEVING YOUR OBJECTIVE(S)?

__ a. I was VERY satisfied and have few, or no, suggestions to make for revisions.
__ b. I was SOMEWHAT satisfied, but have many suggestions to make for revisions.
__ c. I was NOT satisfied.
__ d. Other - please explain:

6. IF YOU WERE (ARE) NOT TOTALLY SATISFIED, WHY? (Check all that apply)

__ a. The *Guidelines* are written in English.
__ b. Even though I understand English, the *Guidelines* were too complicated.
__ c. I was not prepared for the time and effort needed to adapt the *Guidelines* for my purposes.
__ d. I did not have a trained nutritionist to help me with the initial steps before applying the questionnaire in the field.
__ e. I do not agree with the scientific basis upon which the *Guidelines* were developed.
__ f. Other - please explain:

7. IF YOU HAVE SUGGESTIONS TO IMPROVE THE *GUIDELINES*, WHAT ARE THEY? (Check all that apply)

__ a. Translation into [name language]_____
__ b. Better explanation of their purpose(s)
__ c. Simpler language
__ d. Modified format, such as having more sub-headings or less-condensed text
__ e. Revise a specific section [name section]_____
__ f. Add a section on [specify]_____
__ g. Include illustrations
__ h. Do a complete revision - please explain:

__ i. Other - please explain:

8. PLEASE MAKE ANY ADDITIONAL COMMENTS ON THE *GUIDELINES*, INCLUDING WHAT YOU THINK ARE THEIR MAJOR STRENGTHS.

9. WOULD YOU BE WILLING TO PROVIDE MORE DETAILED INFORMATION IN A SECOND INQUIRY BY LETTER, TELEPHONE OR A PERSONAL INTERVIEW?

__Yes __No Comments:

WHAT IS THE EASIEST AND QUICKEST WAY TO CONTACT YOU?

Telephone?_____
Fax?_____
Telex?_____

10. DO YOU PLAN TO ATTEND THE XIV IVACG MEETING IN ECUADOR (June 18-21, 1991)?

Yes___ No___ Maybe___

11. PLEASE GIVE US YOUR NAME AND ADDRESS SO THAT WE CAN KEEP IN CONTACT WITH YOU:

Name _____
Title: _____
Address: _____
_____
Tel: _____ Fax _____

IF YOU HAVE PASSED THIS QUESTIONNAIRE ON TO SOMEONE ELSE WHO MAY HAVE USED THE *GUIDELINES*, please complete the following form, noting her/his name, address, telephone and fax numbers. Return the questionnaire in the attached envelope.

NAME _____

TITLE _____

ADDRESS _____

_____

Tel No. _____ FAX No. _____

THANK YOU FOR YOUR TIME IN PROVIDING THIS INFORMATION. YOU WILL RECEIVE A COPY OF THE REPORT WE PROVIDE TO IVACG.

Appendix D. Letter of Introduction for Detectives

VITAL

1601 N. Kent Street, Suite 1016, Arlington, VA 22209
Tel 703/841-0652 Fax 703/841-1597 Telex 272785 ISTI UR

VITAMIN A FIELD SUPPORT PROJECT

Dear

I am writing to you to solicit your help in identifying people who are familiar with the *Guidelines for the Development of a Simplified Dietary Assessment to Identify Groups at Risk for Inadequate Intake of Vitamin A.* These *Guidelines* were published in 1989 by the International Vitamin A Consultative Group (IVACG).

IVACG is interested in up-dating and modifying the *Guidelines* based on feedback from those people who have used, or considered using, the *Guidelines* in any way in their work. We are as eager to learn why someone chose not to use the *Guidelines* as we are to learn why others did.

In cooperation with IVACG, the Vitamin A Field Support Project (VITAL), supported by the United States Agency for International Development's (USAID) Office of Nutrition, is undertaking this review. The first step is to identify and contact people who have used the *Guidelines* and to ask for their feedback. These people may be researchers, government officials, teachers or field workers who have applied the *Guidelines* in different ways. The second step of the review is to follow-up with a smaller group of users by gathering more in-depth information about their actual experiences.

Would you please help us by:

1. Giving copies of the attached letter, questionnaire and envelope to anyone you know who may be familiar with the *Guidelines* and, if necessary, assisting them in filling out the questionnaire?

2. Sending us the name, address, phone and FAX number(s) of anyone to whom you have given the enclosures. The form attached to this letter and enclosed envelope are for your use in providing us with this information.

We appreciate your assistance in this task so that others will benefit from uses of the IVACG *Guidelines* and their adaptations. Please let us know if you would like a copy of the report we prepare for IVACG.

Sincerely,

Robert Pratt
Project Director

Attachments: Letter to User and Questionnaire
Pass-form
2 pre-addressed envelopes

I forwarded the letter, questionnaire and envelope about the assessment of the IVACG *Guidelines* to the person(s) named below:

NAME _____

TITLE _____

ADDRESS _____

_____

Tel No. _____ FAX No. _____

NAME _____

TITLE _____

ADDRESS _____

_____

Tel No. _____ FAX No. _____

Please return this entire page to the VITAL Office, Attn. Charlotte Johnson-Welch, by fax (703-841-1597) or by using the enclosed, pre-addressed envelope.

APPENDIX E. Interview Guide

Interview Topics

1. Review answers from the questionnaire and obtain more details if necessary.

PLANNING

2. Where did you hear about the Guidelines in the first place?

3. Have the Guidelines replaced anything - what other methods did you consider before deciding upon dietary assessment, and the Guidelines for that assessment?

4. How were the methods of the study determined (how chosen and by whom) for the assessment of nutritional status? of Vit A status? (e.g. ocular, serum, weighing, total 24-hr recall)

IMPLEMENTATION

5. What was the process of putting the IVACG Guidelines into someone's hands to point of finishing data collection in the field?

   a. Who were the people involved - # and level of training?

   b. What training did they need subsequently?

   c. How much time required for each phase?

   d. Effort - hard to find food composition data? any special convincing needed of anyone to do the study? extra steps? have to get any foods analyzed? hard to find a "trained nutritionist"? delays?

6. Amount of adaptation required -

   to develop the questionnaire

   to apply the questionnaire

7. Did you have to do anything in your adaptation what wasn't predicted in the Guidelines?

8. Which food composition table(s) used?

RESULTS

9. Did you calculate both CI and UPF? Did you compare the results using each one? Do a cross-tab of the two risk systems with each other? How did you deal with any discrepancies? Decisions made based on the results?

10. What did you (or your colleagues) intend to do with the information gathered? What has been done so far? Still planned?

REFLECTIONS ON THE WHOLE STUDY

11. Satisfaction of achieving objectives by using the Guidelines?

12. Are they an improvement over _____ method that you've used before to achieve the same objective? E.g., the promotors of the method point out that the Guidelines offer the following:

a. Once the questionnaire is developed, all further calculations can be done in the field, without a computer

b. Can be used for nutrition education (Chapters V and VI)

c. Forces local nutritionists to get out into the field to look at the local market and food practices

d. They are designed specifically to focus just on Vitamin A (not the whole diet)

e. Results obtained are quick and accurate enough to contribute to decision-making without biochemical or clinical data

13. Intended and non-intended benefits (e.g. changed attitudes of interviewers; results being used to generate something else - e.g. start capsule distribution)

14. Know anyone else who has used them? Using them now? Do your colleagues from this study intend to use them again?

15. Are you inclined to recommend the Guidelines to others? If so, in what context? If not, why not?

16. The Guidelines are supposed to make it easier to assess the dietary status of Vitamin A so that dietary interventions can then be developed for high risk groups. Do you think they make a contribution to this end? What other major impediments are there to developing long-term dietary solutions?

17. Most important step in the whole thing (e.g. determining portion size; finding the right food composition data?). Most difficult step (trying to determine frequency of breastfeeding? determine Vitamin A foods out of season)?

18. Any other suggestions for using it - e.g. should IVACG develop a training course (or at least a manual) for the users to go along with the actual Guidelines?

19. Can you give me copies of: full report, food composition table created, questionnaire developed, any discussion of protocol?

20. What are your complete mailing address, phone & fax?

Each figure represents the % of questionnaire respondents (total N=17) who gave that particular answer. The actual number of respondents is given in ( ). Totals for a given section may be greater than 100% (or 17) because of multiple responses.

QUESTIONNAIRE TO ASSESS EXPERIENCE WITH IVACG'S *Guidelines for the Development of a Simplified Dietary Assessment to Identify Groups at Risk for Inadequate Intake of Vitamin A*

1. IN WHAT WAY(S) ARE YOU FAMILIAR WITH THE *GUIDELINES*? (Check all that apply)

82% (14) ___ a. I am currently using them in some way.
29% (5) ___ b. I reviewed a draft of the *Guidelines* when they were being developed.
29% (5) ___ c. I was involved in a pre-test of the *Guidelines* in the field.
18% (3) ___ d. I have used them in the past, but am not using them now.
0% (0) ___ e. They were given to me but I haven't had time to read them.
0% (0) ___ f. I've just looked through them but haven't done anything else.
12% (2) ___ g. I gave them to a colleague.
12% (2) ___ h. I put them in our library.
23% (4) ___ i. I have read them thoroughly and intend to use them in the future for [give purpose]_____
___ j. I thought I might like to use them, but then I changed my mind.
Why? Information for all non-users appears in a separate section of the report.

6% (1) ___ k. Other - please explain: Information from all open-ended questions is incorporated into Chapter III. Findings.

2. WHAT IS YOUR EXPERIENCE WITH THE *GUIDELINES*?

82% (14) ___ I am currently using the *Guidelines*
47% (8) ___ I have used the *Guidelines*

3. The *GUIDELINES* CAN BE USED FOR A VARIETY OF OBJECTIVES. WHAT WAS <u>YOUR</u> OBJECTIVE(S) IN USING THE *GUIDELINES*? (Check all that apply)

41% (7) ___ a. To develop a dietary assessment for collecting Vitamin A-related information.
88% (15) ___ b. To develop a dietary assessment and use it for collecting Vitamin A-related information in the field.
41% (17) ___ c. To develop an intervention for groups at high-risk of Vitamin A deficiency.
47% (8) ___ d. To teach others how they can develop a dietary assessment in the future.
12% (2) ___ e. To teach students (or others) about a new dietary assessment technique.
23% (4) ___ f. Other - please explain:

4. WHAT IS THE GEOGRAPHICAL AREA(S) AND CONTEXT(S) IN WHICH YOU ARE/WERE USING THE *GUIDELINES*? (Check all that apply)

12% (2) ___ a. Nationwide general nutrition survey
29% (5) ___ b. Nationwide survey to assess the prevalence of Vitamin A deficiency
71% (12) ___ c. Regional or local survey to identify groups at risk of Vitamin A deficiency [specify location]
6% (1) ___ d. Fieldwork for students learning how to do dietary assessments
0% (0) ___ e. In the classroom
18% (3) ___ f. Other - please explain:

5. HOW HAVE THE *GUIDELINES* ASSISTED YOU IN ACHIEVING YOUR OBJECTIVE(S)?

35% (6) ___ a. I was VERY satisfied and have few, or no, suggestions to make for revisions.
41% (7) ___ b. I was SOMEWHAT satisfied, but have many suggestions to make for revisions.
6% (1) ___ c. I was NOT satisfied.
12% (2) ___ d. Other - please explain:

6. IF YOU WERE (ARE) NOT TOTALLY SATISFIED, WHY? (Check all that apply)

6% (1) ___ a. The *Guidelines* are written in English.
12% (2) ___ b. Even though I understand English, the *Guidelines* were too complicated.
23% (4) ___ c. I was not prepared for the time and effort needed to adapt the *Guidelines* for my purposes.
0% (0) ___ d. I did not have a trained nutritionist to help me with the initial steps before applying the questionnaire in the field.
0% (0) ___ e. I do not agree with the scientific basis upon which the *Guidelines* were developed.
53% (9) ___ f. Other - please explain:
35% (6) g. Not applicable

7. IF YOU HAVE SUGGESTIONS TO IMPROVE THE *GUIDELINES*, WHAT ARE THEY? (Check all that apply)

23% (4) ___ a. Translation into [name language]_____
6% (1) ___ b. Better explanation of their purpose(s)
12% (2) ___ c. Simpler language
23% (4) ___ d. Modified format, such as having more sub-headings or less-condensed text
29% (5) ___ e. Revise a specific section [name section]_____
12% (2) ___ f. Add a section on [specify]_____
12% (2) ___ g. Include illustrations
18% (3) ___ h. Do a complete revision - please explain:

59% (10) ___ i. Other - please explain:

8. PLEASE MAKE ANY ADDITIONAL COMMENTS ON THE *GUIDELINES*, INCLUDING WHAT YOU THINK ARE THEIR MAJOR STRENGTHS.

59% (10)

9. WOULD YOU BE WILLING TO PROVIDE MORE DETAILED INFORMATION IN A SECOND INQUIRY BY LETTER, TELEPHONE OR A PERSONAL INTERVIEW?

___Yes ___No Comments:

WHAT IS THE EASIEST AND QUICKEST WAY TO CONTACT YOU?

Telephone?_____
Fax?_____
Telex?_____

APPENDIX G. Suggestions for IVACG

I. Options

There are multiple options available to IVACG regarding the decision to revise the *Guidelines.* Among them are:

1. Decide not to revise the *Guidelines* and make no specific plans for addressing questions raised to date. (This is the "do nothing" option.)

2. Through various channels, address some or all of the questions raised, but do not revise the actual *Guidelines.*

3. Make revisions in the actual *Guidelines*, ranging from a limited scale (e.g. just format), to comprehensive (i.e. considering all suggestions identified in this survey).

4. Be open to all types of revisions in the *Guidelines* and plan to address questions raised to date either through the revision and/or other means. (This is the combination of #3 and #4).

II. Parameters for a revision

If the decision is made to proceed with a revision, some of the parameters which should be considered are, inter alia,

Why? What is the rationale for a revision? Some examples for this are given at the beginning of Recommendations chapter.

What? These are the types of issues raised in Section 2 on Content.

How? Via a strategy developed as soon as possible, with key stakeholders involved (e.g. Office of Nutrition, VITAL, IVACG, a representative user).

When? The strategy needs to be developed now in order to take advantage of travel plans of interested persons to countries using the Guidelines and conversely, of users who might be coming to the USA. Examples of questionnaires from various projects could also be collected now. The actual revision should not begin until a reasonable number of results from projects in progress (12 of the 20 surveyed) can be incorporated. By the end of 1991, many of these projects will have progressed to the point that their experience with the IVACG Guidelines could be reviewed advantageously.

Who? The group of authors should include representatives of

the original Task Force and users, with an appropriate role for VITAL and an editor at the end.

Where? Given communications facilities in the USA, it seems that the headquarters of the newly constituted Task Force should be in this country.

III. Future dissemination

Audience

Most of the interviewees included in this sample had had a fairly direct personal connection with some member of the IVACG Task Force or Secretariat which explained how they had become familiar with the IVACG *Guidelines*. In order to go beyond this "inner circle" of users, there are two main channels to be explored in the next round of dissemination, in the USA and overseas:

a. Mainstream nutrition channels - academic institutions, international development agencies (USAID, World Bank, some PVOs), etc.

b. Allied specialities - anthropologists (interested in rapid assessment methods), public health professionals (interested in community nutrition), physicians (interested in community medicine and those US students who will take a rotation overseas), biochemists (interested in community nutrition). These non-nutritionists are a particularly important audience in countries where traditional training for nutritionists does not encourage experimentation with new dietary methods nor field work in rural areas.

Channels

Different ways to disseminate information about a revision of the IVACG *Guidelines* are through:

a. IVACG's publication list with particular emphasis on those persons on file who requested any future revisions of the current document;

b. Keeping in touch with the investigators working on the 20 projects in this sample. There is much more data to be obtained about using the IVACG *Guidelines*. These professionals would probably be glad to share it and to also promote the *Guidelines*. They could be helped to share information among themselves. However, this has to be made exciting and productive for them, as studying methods per se is not really a high priority item for the majority of their projects;

c. A summary of the results of this review, published in

VITAL's newsletter, other vitamin A newsletters and a professional journal;

d. The next SLAN meeting;

e. The next IVACG meeting;

f. Meetings of allied professionals - e.g. anthropologists, APHA; and

g. Appropriate reference in IVACG's document which will review all assessment methods for vitamin A.