

Nutritional Surveillance Project

for Disaster Preparedness and Prevention of Nutritional Blindness

Mid-Term External Evaluation

May 19-June 2, 1992

Evaluation Team

John McKigney Jonathan Gorstein

*Helen Keller International
Dhaka, Bangladesh*

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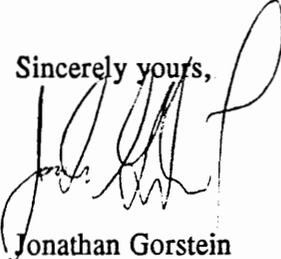
David Piet, Director (A), OPH
USAID/Dhaka
Dhaka, Bangladesh

28 September, 1992

Dear Dr. Piet,

Enclosed please find a copy of the final draft of the mid-term evaluation for the Nutritional Surveillance Project recently completed by myself and John McKigney. It has only been in the past weeks that we have had the opportunity to collaborate on this, as we have both been rather busy through the summer months. We have incorporated many of the comments and suggestions which you shared with us, especially with regard to the issue of sustainability. Again, we wish to thank you for the time and effort you have invested, ensuring that the evaluation would be as helpful as possible.

Sincerely yours,



Jonathan Gorstein

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Executive Summary

I. Introduction

Bangladesh has a history of periodic, recurrent natural disasters which cause extensive distress to a population that is already quite marginal, living close to the survival line. There have been several recent disasters including the floods of 1987 and 1988 which caused widespread damage to much of the country. In 1991, there was a devastating cyclone in the coastal areas which resulted in a massive loss of life and property. The impact of such disasters is especially pronounced in Bangladesh due to the generally poor health status of people even in times when conditions are stable. The morbidity and mortality levels among young children and mothers are among the highest in the world. The situation worsens following natural calamities due to an increased risk of infection as a consequence of exposure to poor water quality, crowding and poor sanitation. These manifestations are further exacerbated by a decreased access to food arising out of crop and employment losses.

As resources are greatly limited, it is crucial that the effectiveness of implemented relief activities be maximized. By identifying those areas which are under most stress prior to the onset of an insult, it is possible to prioritize those areas most likely to require immediate relief assistance should a disaster occur. Following the implementation of interventions in response to such natural calamities, it is important to assess the degree to which relief and rehabilitation efforts have been effective in relieving distress.

In developing countries the nutritional status of children has been found to be a reasonable gauge of the general health status and well-being of communities, reflecting acute changes in food supply and increasing rates and severity of infection. The monitoring of child nutritional status in disaster-prone communities serves as an important tool providing information critical for the assessment, planning and coordination of responses to disasters. In this way, the collection and analysis of timely and reliable nutrition data as well as other indicators of socioeconomic distress is a means of improving the effectiveness of relief activities.

The Nutritional Surveillance for Disaster Preparedness and Prevention of Nutritional Blindness Project (NSP) commenced in October, 1989 with the intention of establishing a permanent monitoring system of nutrition and health status. The project was initiated by Helen Keller International (HKI) in collaboration with a number of non-governmental organizations (NGOs), the Institute of Public Health and Nutrition (IPHN) and UNICEF. The project receives financial and technical support from the United States Agency for International Development (USAID) and is coordinated by HKI.

The project is presently operational in sixteen rural areas (sentinel points) and four urban slum areas and has already completed twelve rounds of bimonthly data collection as of the time of this midterm evaluation. The data collection procedures have been standardized, as have the data entry, analysis and report generation operations.

The format used for data reporting has been modified over the course of the first two years of the project in accordance with recommendations made by technical advisors, USAID, NGOs and other users of the surveillance information. The NSP was requested to expand its role to include data collection in areas particularly impacted by the cyclone in April, 1991, and again extended its operations to undertake an ongoing monitoring of the health and nutritional status of the Rohingya refugees from Myanmar at the beginning of 1992.

II. Goal of the NSP

The overall goal of the NSP is to minimize the incidence of nutritional blindness, protein-energy malnutrition, morbidity and mortality among Bangladeshi children through the production, analysis and use of child health and nutrition data in disaster preparedness and relief.

III. Methodology

In the rural regions of the country, data is collected from disaster-prone sentinel points which correspond geographically to Upazilas. A map of Bangladesh is included in Appendix 1, along with details of the location of the sentinel points presently covered by the NSP. The selection of disaster-prone sentinel points was based key distress indicators as described in section 1.1.b. The availability of an NGO able to participate in a given Upazila was also a consideration. In Dhaka, Chittagong and Khulna, slums were selected in urban areas where NGOs were already implementing development programs and were able to incorporate a monitoring component for the NSP. Most of the NGOs involved with the NSP are each responsible for the collection of data in two sentinel points or urban slum areas.

At two-month intervals, data is collected on four aspects relevant to disaster preparedness and the prevention of nutritional blindness including: nutritional status, health status (morbidity), socioeconomic status and degree of distress. The justification for the inclusion of these variables, and the specific indicators employed in the system are discussed in section 1.4.b.

IV. NSP Information Dissemination

Every two months, the NSP compiles and publishes reports based on the data collected in the previous surveillance round. During times of disaster, as in the case of the recent cyclones, reports are prepared on a monthly or weekly basis, as deemed necessary. On occasion, special reports are generated presenting important results or analyses generated from the NSP. Nearly 600 copies of the most recent bi-monthly summary reports are now being produced and distributed by HKI throughout the Government of Bangladesh (GOB), to UN agencies, donor groups and NGOs.

V. Mid-Term External Evaluation

The midterm external evaluation was carried out in Bangladesh during the period 19 May-2 June, 1992. The evaluation team activities included briefing and debriefing meetings with USAID and HKI/Bangladesh staff; interviews with officials and staff of WFP, UNICEF, the Australian High Commission, IPHN, National Nutrition Council (NNC), Primary Health Care, MOH and NGOs (CARE and UKCHP). In addition, a visit to a NSP urban slum area in Dhaka, and a rural sentinel point in the North Central Region (Mirzapur) were undertaken to gain some insight into the data collection procedures and field conditions. The team also observed one of the bi-monthly training sessions of the field data collection teams which was ongoing during the evaluation period.

A proposed visit to the Rohingya refugee camps in the South East Region was canceled due to logistic and time constraints. The evaluation scope of work is presented in appendix 3, while a detailed work time table is included in appendix 4.

VI. Summary Conclusions and Recommendations

It is remarkable that only four months after the initiation of the NSP, collection of high quality data is underway in twenty sentinel points, and that in the intervening two years, all rounds of data collection, processing, analysis and reporting have been completed on schedule, and over thirty reports disseminated. It should be noted that this was accomplished in the face of disruptions due to the Gulf war and political unrest in the country. Furthermore, during the course of the initial stages of the NSP, the system has been extended successfully to mount rapid monitoring on an emergency basis for the population affected by the 1991 cyclone and for the Rohingya refugees.

HKI deserves great credit for having conceived and successfully implemented this unique approach to nutritional surveillance which incorporates NGOs into the data collection procedures in those regions where they are operational. This structure greatly enhances the quality of data collection and facilitates the rapid use of information. It would have been difficult to carry off such a surveillance system, on schedule, providing such credible data in any country, let alone Bangladesh. The collaborating NGOs are also to be congratulated for their spirit of cooperation and dedication to the task.

Now that it has been shown that such a model for nutritional surveillance system is feasible, other countries may wish to consider including NGOs as partners who can make major contributions to sustainable surveillance activities.

There are few situations in the world in which such high quality data is routinely collected, and this has led to the NSP being considered a highly credible source of information on nutritional status and the characteristics of communities vulnerable to disasters. The NSP data has achieved such a high level of quality due to the tireless efforts of HKI in standardization and repeated training and supervision of data collection teams. In addition, many of the NGOs have gained valuable expertise in nutritional status assessment which will complement their own monitoring activities in addition to those carried out in conjunction with the NSP.

Two series of recommendations are presented in section 2, first for the short-term, and followed by long-term suggestions. The first set corresponds to activities which may be implemented within the funding provided by the present grant and supplemented by further resources already allocated by AID/Dhaka for a fifth year of the NSP, while the latter set projects future activities which would require additional funding.

Over the course of the final years of the current project grant, more emphasis will be placed on measurement of the impact of interventions and analysis of trends in nutritional status of disaster-prone areas over time. Further to this, as the protocol is now well established, increased efforts should be put towards the identification of appropriate governmental institutions to take over responsibility for the system. This should be done gradually through increasing the awareness of the importance of surveillance activities, training of personnel to enhance technical capabilities, gain commitment and ultimately lead to the establishment of a sustainable program within the indigenous infrastructure.

1. Project Performance

1.1. Developing the Capacity for Continuous Data Collection by NGOs in Bangladesh

1.1.a. General Description / Findings

The first objective of the NSP is to establish baseline health and nutrition status information and to identify seasonal trends among children under five years of age in disaster prone areas. Through collaboration with several NGOs, the NSP aims to develop a system in which data is collected on health status, socioeconomic variables and key indicators of economic distress in areas at high risk for disaster. This data collection leads to an ongoing monitoring of the general situation in these areas, as well as provide a mechanism to identify early, acute changes in these variables which could be taken as indication of some impending disaster. The data generated from this system are useful to identify population groups at high risk of malnutrition and its concomitant consequences on morbidity and mortality, so that appropriate actions are rapidly implemented.

HKI provides direct support to the NGOs for the procurement of equipment, salaries for surveillance teams (consisting of a team leader, three field officers and a data entry clerk), training, supervision, transportation and data analysis. The surveillance teams are recruited exclusively for work with the NSP and spend alternate months either in the field collecting, editing, and processing data, or participating in training courses. A ratio of three field workers to one team leader is maintained to ensure the highest level of supervision and work quality.

The NSP is a unique system in which HKI collaborates directly with NGOs working in both urban and rural areas of the country. Presently, the NSP is operational in twenty sentinel sites, of which sixteen are in rural regions, and four are located in urban centers. These sentinel sites, representative of what were previously referred to as Upazilas, are distributed in four of the five major regions designated in the Flood Action Plan (the North-East Region is not represented).

Each NGO team is responsible for data collection in two geographical areas where they are currently operational. There, the teams measure all children between the ages of 6 and 59 months within selected households every two months. Two distinct sampling methodologies have been developed for urban and rural areas due to the distinctive characteristics of these populations. The sampling techniques are further described below.

By following the Flood Action Plan classification, data from the NSP are consistent with other data collection schemes, including agricultural forecasts, etc. Still, the data in the NSP are only representative of the Upazilas sampled, and are not representative of the region as a whole. In table 1, the rural and urban sentinel points included in the NSP are listed along with the NGO responsible for monitoring activities in these areas.

Table 1 : Rural and Urban Sentinel Sites in NSP, with Responsible NGO *

Region	Rural Sentinel Point (Upazila)	NGO Responsible
North West	Pirganj	RDRS
	Chilmari	RDRS
	Kazipur	ICDDR,B
	Raiganj	ICDDR,B
	Santia	BRAC
North Central	Saturia	BRAC
	Mirzapur	CARE
	Shakipur	CARE
South West	Morelganj	IPHN
	Mirzaganj	IPHN
	Rajoir	GUP
	Gopalganj	GUP
South East	Matlab - MCH-FP	ICDDR,B
	Matlab - extension	ICDDR,B
	Moheshkhali	BDRCS
	Teknaf	BDRCS
Region	Urban Slum Sentinel Point	NGO Responsible
North Central	Dhaka Ward 60	AKCHP
	Dhaka Ward 62	AKCHP
South West	Kulna	CONCERN
South East	Chittagong	CONCERN

* Listing of NGOs included in Appendix 1

1.1.b. Selection of high-risk areas

One of the first steps taken by the NSP was to identify upazilas considered to be particularly susceptible to natural disasters, and thus 'disaster-prone'. The selection of these areas was based on previous studies of disaster patterns. By focusing on these areas, the most vulnerable populations could be monitored both prior to and during a disaster so that activities could be rapidly implemented to alleviate or prevent any negative impact on health status. A classification scheme measuring the extent that an upazila is disaster-prone was developed based on the following four sets of indicators:

- * *Distress factors* determined by the World Food program (WFP) in 1983
- * *Liability to famine* as categorized in 1978 by Johns Hopkins University in a project supported by USAID for the Ministry of Relief and Rehabilitation
- * *Crop damage* as assessed by CIDA, FAO, UNDP, USAID and WFP in 1988
- * *Proportion of agricultural labor households* based on the 1983/84 Agriculture Census

For each of these four sets of indicators, cut-off points were set in order to stratify the upazilas into various degrees of risk. Of the 460 upazilas distributed throughout the country, fourteen were considered to be most disaster-prone (type I), while 36 upazilas met three of the four criteria (type II). Another 72 upazilas were classified as moderately vulnerable meeting two of the criteria (type III). Thus, there was a total of 122 upazilas identified as being at high-risk and were considered for inclusion in the NSP.

Discussion

Of the sixteen rural sentinel sites currently covered by the NSP, six are of type I risk, five are type II risk, and five others are classified by this system as being type III risk. Although this is a reasonable distribution, it would be beneficial in the future to accommodate other upazilas of the highest risk category given that the aim is to focus monitoring activities on the most disaster-prone areas of the country.

The selection of disaster-prone upazilas for the project was greatly facilitated by the availability of key indicators. However, it is unclear to what extent the classification of disaster-prone communities changes over time, especially as the level of response provided to communities following disasters differs, and consequently the rate of rehabilitation and adaptation varies. It seems necessary to reconsider the classification used to designate those areas at highest-risk of disaster on a periodic basis.

1.1.c. Sampling

Two different sampling designs are carried out for urban and rural sites. In both designs, a total number of 400-500 children are measured within each area (upazila) selected making it possible to compare results between sites at each point in time, and to evaluate the changes occurring in health status over time within sites.

For urban slum areas, where the populations are considered to be homogeneous, a multi-stage random cluster sampling technique has been adopted. Data is only collected from those slum areas where NGOs are implementing programs. At the beginning of each round of data collection, a household is randomly selected from a list maintained by the NGO, and all children measured in that household. Once completed, the team moves to the next household, and continues systematically until the required number of children have been measured.

For rural areas, a two-stage stratified random cluster design has been used for the sample selection. In each targeted upazila, half of the unions (the next lowest administrative level) are randomly selected. Then, from lists of all villages in the selected unions, twenty-five are identified, and field teams visit these villages every two months, randomly selecting twenty children for measurement. On each field visit, the team selects a household from a list maintained by the EPI program and visits that household. As with the urban areas, all children within the first household are measured, and upon completion, the team visits the nearest household, and repeats the procedure until the required number of children for the village have been measured. Thus, for each upazila, a total of twenty children are measured in each of twenty-five villages (clusters) for a total of approximately 500 children.

Discussion

The sample design employed in the NSP takes careful consideration of the different characteristics in both urban slums and rural sentinel points, and as such has opted to employ two different sampling techniques. However, given the potentially highly clustering nature of many of the outcome parameters which are being measured, it is imperative to consider whether any design effect is introduced into the surveillance system, and the extent to which 'clustering' is fully accounted for, or indeed, if there are too many clusters being visited within each rural sentinel area.

The sample design ensures the representiveness of data the upazila level, permitting comparisons to be made between upazilas, but aggregation for regional level analysis remains impossible. Most of the reports have been presented without any statistical measures of differences, and it would be helpful to compute the extent to which certain areas are indeed more at-risk than others, and whether these differences are statistically significant.

It should be noted that the sample size requirements differ for each parameter of interest and the cut-off point selected. In the case of MUAC, which the NSP has begun to focus a great deal of attention on, the sample requirements may be higher than for other indicators since a smaller proportion of the population falls below the 125 mm cut-off point.

1.1.d. Data variables

Data variables are included for different community characteristics, including nutrition, morbidity, vitamin A deficiency and vitamin A supplementation (capsule) coverage, socioeconomic status and distress factors. For nutritional status, five measures are taken; weight, height and mid-upper arm circumference (MUAC), in addition to the age and sex. From these measures, several indices are created, including weight-for-height (WFH), height-for-age (HFA) and weight-for-age (WFA), and are expressed both as percent-of median values and as standard deviation scores from the international reference population recommended for international use by the World Health Organization. As the precise date of birth is often unknown, children's age children is estimated using a local events calendar.

The use of MUAC has become an important addition to the NSP. It has been demonstrated that this measure is more closely associated with social distress and is more sensitive to acute changes in nutritional status and predictive of early mortality than the other anthropometric indicators, including WFH. Past problems with the use of MUAC have occurred due to its poor precision when collected under field conditions, but through rigorous quality controls incorporated into the NSP, this problem has been limited.

For the other three anthropometric parameters, data are presented in terms of the prevalence of wasting (low WFH), stunting (low HFA) and underweight (low WFA). These are calculated based on the proportion of children falling below a cut-off point, most commonly < -2 SD or < -3 SD.

For the assessment of morbidity and vitamin A deficiency, the point prevalence of diarrhea, acute respiratory infections (ARI) and the history of night blindness are measured. There are clear definitions used for diarrhea and ARI. In the case of vitamin A, information is also gathered on the proportion of children who have received vitamin A capsules.

Discussion

In the NSP standardized questionnaire, the question regarding vitamin A capsule coverage had originally referred to the previous six months, and has since been revised to refer only to the last two months. This change was made in order to evaluate more critically the relationship between vitamin A supplementation and morbidity. However, this alteration will lead to a bias due to the fact that there is a universal vitamin A distribution program in Bangladesh that distributes VAC two times during the year, and consequently, in some rounds the response to this question will be very high, while other rounds will show low coverage.

This is a critical consideration and must be clearly emphasized in all analyses, especially when undertaking trend analyses and evaluations. Perhaps only two rounds of VAC coverage information per year are required in the period immediately following the national VAC distribution, rather than asking the question over the entire period.

For socioeconomic status, a series of indicators are used to assess the general welfare level of communities and households. These variables include family size, number of children under 5 years, occupation, previous week salary, education levels, house type, amount of land owned, etc. In addition to these primary characteristics, a set of 'distress' variables are measured to monitor economic pressures felt by the community. These include the market prices of major foods and other goods, the sale of household assets to fulfill basic needs categorized into four groups; household items, jewelry, livestock and land, as well as information concerning food loans.

1.1.e. Training and Standardization (data quality)

The NSP planned from its onset to incorporate an extensive training program for the initial implementation of activities, as well as refresher training throughout the project. The initial training sessions of the data collection teams were held in March, 1990 and were organized into four one-week periods. Separate protocols were designed for the field supervisors and the assistant field officers. The field workers received detailed instructions regarding the measurement of anthropometry and implementing the questionnaire, including socioeconomic, distress and market price information. Emphasis was placed on ensuring that the workers were aware of the objectives and importance of the surveillance system.

In addition to the initial training sessions, field manuals were prepared and printed both in English and in Bengali. Although the first of these manuals focused on anthropometry, manuals covering other details of the NSP have been projected. Completion of these manuals will become very critical to guarantee sustained data consistency. Bimonthly refresher training courses have been undertaken in which the field teams come to Dhaka to interact with HKI trainers and share experiences from the field. During these sessions, the results from the data collection are presented and any problems associated with data quality are shared and, where necessary, the source of problems identified and resolved.

One of the most important attributes of the NSP is the high level of attention placed on data quality. For each round of data collection, a HKI monitoring team visits the field sentinel points for each NGO. Each HKI monitoring group is responsible for 2-3 NGOs checking the equipment (including calibration), and supervising the data collection and anthropometric measurements. Detailed monitoring check lists are maintained which verify if appropriate techniques are being employed for each component of the data collection.

In addition, during each round of data collection by the NGOs, a quality control team conducts random, unannounced visits to the sentinel points. The teams select a 5-10 % sub-sample of the children who were measured and repeat the measurements the day after. The data collected by the HKI anthropometrist is compared with the NGO field worker, and the differences in observations are registered. The average difference for each of four measurements, weight, height, MUAC and age, are detailed for each of the NGO teams. The mean error (for each team) and standard deviation (across all NGO field teams) are compared each month for the four measurements. With the exception of the first data collection round, which was experimental, the accuracy of the measurements has been well within acceptable ranges of variability.

In the earlier stages of the project, certain teams were identified as having larger mean errors for some measures relative to the other teams. This was quickly identified and improved in subsequent rounds. It is of interest to note that a problem in data quality occurred in several teams in the October, 1990 data collection round, but was rectified. This experience underscores the need to maintain continuous data quality exercises over time, and ensures the quality of the data results.

Discussion

There has been tremendous advancement in the quality of data in the NSP, which is presently at a state well beyond the quality of many other surveillance systems. The observed coefficients of variation generated from routine standardization exercises are well below limits established for the different measures included in the NSP. In addition to the anthropometry variables, standardization tests have been undertaken for other variables, including the assessment of night blindness and morbidity, as well as general questions administered to gather information concerning socioeconomic status and economic distress factors.

All standardization exercises have assessed the accuracy of measures, but no consideration has been paid to the precision of the various measures: the intra-observer variability. This would be especially important for MUAC which has had problems associated with its measurement in other situations. As the integrity of the information generated in the NSP is dependent on the extent to which it is considered by others to be credible, it would be helpful to add occasional precision estimates to the refresher training sessions, and to report these alongside of the present details concerning the measurement accuracy to reflect the high quality of data collected.

1.1.f. Summary Conclusions

The collection procedures have been well defined and the methodologies standardized over the first twelve rounds. Manuals have been developed which detail the specific data collection methods and the NGO field teams are provided with refresher training on a regular basis. The quality of the data collection has been shown to be very consistent, and through a continuation of measurement standardization exercises, small aberrations in data quality observed in the surveillance system could be quickly identified and rectified.

Perhaps one of the most important attributes of the system has been its capacity to quickly be modified and adapted to emergency situations, as was the case in response to the April, 1991 cyclone and the influx of Rohingya refugees.

The NSP has now collected an adequate amount of data, not only to establish reasonable baseline estimates of the magnitude and distribution of malnutrition and associated health status indicators, but to assess trends occurring over time. Over the next three to four data collection rounds, it will become possible to identify the seasonal fluctuations of these indicators which occur in the different areas, and distinguish from these, changes which may be attributable to other factors, such as response to disaster and impact of program interventions.

1.2. Data Processing and Analysis

1.2.a. General Description/Findings

A key component of the NSP, the timely reporting and dissemination of data, is heavily dependent on the development of mechanisms for the rapid processing and analysis of data. For the NSP this has been no small task given that the data collection involved a number of independent NGOs, each operating in different regions of the country. To facilitate the process of data processing, a standardized data entry/management software package was developed by HKI, and all data entry operations are undertaken by data entry clerks hired exclusively for the NSP in the field offices of the associated NGOs.

The data entry programs have been developed with a number of quality controls, including validity checks, duplicate detection and verification procedures. These programs are written in dBASE III PLUS, and were provided to each NGO at the time of the data entry clerk training when all programs were introduced and standardization exercises performed. A series of five database files which are prepared for each round of data collection for each NGO, QDAT.DBF (quality control), REENTRY.DBF (data entry control), NUTRIDAT.DAT (nutritional status indicators), SESDAT.DBF (socioeconomic information) and PRICEDAT (distress and price data). Once completed, the data files are translated to ASCII files and then stored on diskette before being transferred to the HKI office in Dhaka. In Dhaka, the nutritional status file is used to calculate anthropometric indices using the CASP software and the files are then converted to SPSS system files from which all analyses are executed.

Once in the central office, the data files are all joined into a single flat file for each round of data collection and are submitted to another series of verification checks to ensure that the proper coding of upazila and union identification information have been recorded. If any combination of these codes are incorrect or any other data variables are in error, the data are edited and the NGO teams responsible for the problems are notified.

The prevalence of undernutrition is computed for the various disaster-prone areas using cut-off points for each of the four anthropometric variables. The proportion of children falling more than 2 and 3 standard deviations below the NCHS reference median are computed for each of the three indices, WFA, HFA and HFA. The proportion of children with MUAC values below 125 mm is also calculated. Results are presented for each sentinel area for all children between the ages of 6 and 59 months. In addition, the percentage of children receiving vitamin A capsules, and the point prevalence rates for night blindness, diarrhea and ARI are tabulated. For each round of data collection, a series of socioeconomic variables are summarized for both urban slum areas and rural sentinel sites including education, salary, distress sales and values of sales, food expenses and food loans. Finally, data are analyzed concerning the market prices of four basic foods; rice, wheat flour, lentils and soybean oil for each of the sentinel points included in the NSP.

Data for other socioeconomic characteristics and distress factors are also maintained in the analysis files and may be used for special presentations in supplementary analyses of the causes of undernutrition. After data have been analyzed for the summary reports, the files are stored on high density diskettes, appropriately labeled and are stored in a series of catalogued diskette boxes.

1.2.b. Calculation of Anthropometric Indicators

The CASP program used for calculating anthropometric data has a number of limitations associated with it, particularly in the way that it handles extreme values. In addition, it requires that files first be converted to an ASCII format before running the BATCH procedure. A number of advances have been made in the software available for the calculation of anthropometric indices. A software package called ANTHRO has been jointly developed by the WHO Nutrition Unit and CDC which can rapidly process dBASE files quickly and compute SD scores, percent-of-median values and percentiles for each of the three anthropometric indices. The program also establishes a series of outlier values for range checks based on extreme SD scores which can easily identify errors from data miscoding or improper field measurement.

Presently, the method used to identify errors is based on extreme values for weight (3.0 - 25.0 kgs) and height (45 - 130 cm). However, the use of S.D. scores allows for an age-standardization of anthropometric information, and it may be more appropriate to select a series of range values to identify potential outliers. Following interviews with Save the Children/UK, the following set of ranges are recommended for use in the NSP based on data from the nutrition rehabilitation clinic. It is assumed that any value falling outside of these ranges would not be biologically plausible, and is likely to be an error.

<u>Indicator</u>	<u>Minimum value</u>	<u>Maximum value</u>
Weight-for-Age	- 6 SD	+ 4 SD
Height-for-Age	- 7 SD	+ 4 SD
Weight-for-Height	- 4 SD	+ 4 SD

The algorithms used to produce the ANTHRO software are available for distribution by the authors of the software in a number of computer software languages, including dBASE. It would be very advantageous to incorporate these into the data entry procedures so that as data are being entered from the questionnaires, the anthropometric indices could be calculated and errors immediately identified. In this way, the data entry clerk could ascertain if the problem was due to a miscoding error. If this was the case, he/she could quickly make the appropriate changes, but if it was due to measurement error, it could be noted and presented to the field teams to better improve their performance.

1.2.c. Data on Socioeconomic status and distress factors

The data collected on socioeconomic status, and distress are particularly useful to elucidate upon the causes of undernutrition, and may provide considerable insight into possible modes of intervention. For example, changes in food prices may indicate fluctuations in food availability and where there may be increased requirements. However, to better understand the relationships between data variables, some time series analyses should be conducted which consider the lag time between the change in a socioeconomic or distress indicator and a change in nutritional status or morbidity.

It is anticipated that the relationships between the socioeconomic variables and measures of nutritional status will be different in the various upazilas, given distinct population characteristics, levels of infrastructure and availability of health services. It is therefore critical to consider upazila-specific analyses when evaluating these relationships. From these analyses, suggested interventions and actions may be recommended which could be implemented either by the NGOs in the area or through other Government channel. The NSP data lends itself not only to the identification and description of problems, but also to the monitoring of changes in health status which occur over time. Indeed, this is of utmost importance in the evaluation of interventions and activities implemented in the various regions.

1.2.d. Preparation of data files / analysis

The present protocol requires that the dBASE files be first translated to ASCII format before being read into SPSS-PC. However, the current version of SPSS-PC can translate dBASE files directly without having to prepare batch files which can sometimes cause errors. The NSP has prepared a manual of operations which describe the various procedures undertaken for the preparation of the data files for analysis and for the analysis itself. These have been well thought out and provide the necessary summary results for each round of data collection. The results of the analysis are presented in tabular format by a series of special commands, and generates basic statistics for each upazila for the different variables.

1.2.e. Summary Conclusions

The data processing procedures have been advanced to a state where the system is being maintained, and data is quickly entered, checked for any validation problems, then analyzed rapidly upon receipt in Dhaka. The procedures for all stages of the process have been completely documented, and a series of check lists have been devised which are followed diligently at each stage of data processing. This has not only led to a functional data management system, but should also be very helpful in the future accessibility of the system when it is adopted by another institution.

As the data processing should be adequate for the next rounds of data collection, some efforts should be made to consider enhancing the system's capability to allow for more analysis to be executed at the time of data entry. This should make results immediately available to each of the NGOs working in collaboration with the NSP, and will no doubt lead to some efficiencies in terms of improved data collection and data utilization. The development of such systems should be accomplished following discussions with the NGOs and other local agencies for whom the data could be useful. Through this, it will be possible to determine the exact needs and reporting requirements, both at the central level and in the field.

1.3. Reporting and Dissemination of NSP Data

1.3.a. General Description / Findings

The reporting and dissemination section of the grant agreement states that reports would be prepared every two months under normal circumstances, and more frequently during times of disaster. HKI would submit the completed reports to UNICEF, and at the same time preliminary copies would also be submitted to USAID. UNICEF had agreed to be responsible for the prompt dissemination of these reports to the GOB, other UN agencies, donors and NGOs.

The grant agreement and detailed implementation plan anticipated that the reports would include:

- * description of current conditions
- * identification of trends
- * identification of changes
- * elucidation of underlying causes of the situation, and appropriate recommendations

The reporting and dissemination requirement calls for a single reporting format which has been followed with only minor modifications to date. This format has been found to be useful by donor organizations (see section 1.4) and fulfills their needs adequately. However, the data output and information available to the NSP would permit preparation of a variety of reports which might further enhance utility of the NSP data within Bangladesh. For example, separate reports might be prepared, perhaps annually or semi-annually, for the health, agriculture, relief and community development sectors. Such focused reports could be eminently more useful to policy makers, planners and program managers within each sector.

In addition to such sector reports, the managers of the two NGOs visited (CARE and AKCHP) and one NGO interviewed (RDRS) all stated that a semi-annual report or quarterly report providing feedback on conditions, changes, trends and results, with discussion, based on analysis of the data specific to their respective collection areas would be extremely helpful. They expressed that such specialized reports would assist in program management, planning, discussions with national and local government officials and community leaders, as well as for their project staff members. Furthermore, the positive psychological effect, i.e. demonstrating the usefulness of data collected, as realized through this feedback to field staff should not be overlooked. It would also provide the participating NGOs with a product to provide to their headquarters offices, thus further justifying their involvement in the national data collection effort.

These reports could be of considerable value to other NGOs and intervention groups participating in activities in the same regions. However, such reports prepared on a semi-annual basis represents a requirement for the preparation of twenty additional reports annually (with the assumption that ten NGOs are involved in the NSP) which could cause some strain on resources, both financial and human. Still, it is anticipated that a highly standardized analysis/reporting facility could be developed for this purpose, thus requiring greatly reduced staff time after the first few issues.

1.3.b. The Role of UNICEF in dissemination

HKI and UNICEF have collaborated in blindness prevention activities in Bangladesh since 1978. Conceptually, the HKI plan for NSP is based on UNICEF-funded emergency nutritional status monitoring which was carried out in the areas most severely affected by the floods of 1988. UNICEF coordinated the collection of data by NGOs which were already operating in the target areas. Though not standardized, the data collected through this mechanism provided some basis for prioritization of relief efforts. NGOs which had been involved in that effort, and which had continued close collaboration with UNICEF, were given priority consideration for involvement in the NSP. Nine of these organizations had expressed interest in participating in the NSP prior to the preparation of the project proposal.

In addition to having this historical involvement, the project planners considered it best that dissemination of NSP information be done by UNICEF, rather than HKI. It was felt that as a multilateral UN agency with a mandate of child survival advocacy, UNICEF would be the most effective agency to perform this function. In addition, it was judged that UNICEF would be best able to promote follow-through dialogue with the government to target and sustain relief efforts.

Further to the dissemination/advocacy roles, the grant document stipulates that UNICEF is to work with IPHN and HKI to develop a plan for transferring long-term funding support for nutritional surveillance to the GOB or other indigenous sources.

The evaluators were informed that there was an oral agreement between HKI, UNICEF and USAID as to the role of UNICEF, and both HKI and USAID have agreed to this through the grant agreement. However, there is no written agreement between the three parties, between USAID and UNICEF, nor between HKI and UNICEF.

UNICEF has not participated in the distribution of NSP reports but has been supportive of NSP in other ways. UNICEF consultant Dr. John Rhode assisted HKI/IPHN staff in drawing the sampling frame for the system. UNICEF is also providing partial funding of costs which IPHN incurs for logistics and salaries of its two data collection teams.

Furthermore, UNICEF is fulfilling its advocacy role by providing NSP information to government officials whose statements have a direct impact on policy makers. This was evidenced by the fact that NSP data was referenced by Prime Minister Begum Khaleda Zia during an address on the Prevention of Child Malnutrition in Bangladesh during the evaluation teams visit. The team was also informed that UNICEF regularly uses NSP data to guide the MOH in anticipating and responding to the health needs of populations in high-risk areas.

UNICEF expressed a willingness to serve as an advocate for the establishment of an adequately staffed and equipped nutritional blindness and nutritional surveillance unit within IPHN. It was indicated that there was a need for long term assessment of the disaster prone communities, and that IPHN would be the most appropriate institution within the Government to carry out this function. Furthermore, World Bank project funds could be used toward this end. UNICEF is also prepared to make direct contributions to the effort, such as funding IPHN staff training outside of the country designed to strengthen skills and knowledge concerning nutritional surveillance. In the future, such commitments would be best confirmed and accounted for through written agreements.

1.3.c. Evolution of reporting formats and presentations of data

There has been considerable thought put into the preparation of reports by the NSP. The initial bi-monthly reports were quite lengthy, and provided a great deal of information on a wide range of issues, as extracted from the available data. In addition to the reporting of prevalence and incidence data which gave an overall impression of the conditions in the areas covered by the NSP, these reports also provided some discussion concerning the relationship between vitamin A capsule coverage and rates of night blindness and other analyses.

Through discussions with the NGOs involved in the NSP and other groups using the reports, HKI decided to condense the reporting format and present only summary information concerning the major characteristics of communities. These data are represented in graphical formats, as bar charts, which makes the data very easily accessible, both to assess the magnitude of the different indicators, as well as for comparing data between the different upazilas. Another positive quality of the revised reporting format is that reports for several months are included together in a folder in the rear of a booklet produced providing all pertinent details regarding methodology. Through such a presentation format, it is possible for users curious about technical details to be able to refer to appropriate sections for clarification, while it also allows other users to access only the summary data.

The present format also makes a much greater effort to elucidate upon the findings, and is more interpretive than the earlier reports. Although this is a difficult task given the wide range of interests and technical comprehension in the targeted audience for the NSP reports, the efforts have been quite successful thus far.

The NSP has convened a series of meetings with the WFP, other UN agencies and the NGOs in order to discuss the findings and results of the data collection. Through this interaction, it has been possible to obtain valuable qualitative information concerning events or situations which may be influencing nutritional status in the different areas covered by the NSP, and these observations have been shared in the reports to enhance interpretation.

Given the varied interests of different users, it may be reasonable to consider the production of a series of specialized reports which deal with specific issues related to the NSP data, and could be tailored to the interests and requirements of various groups. In addition, it should be pointed out that the present reports are very useful for making comparisons between upazilas at the national level, and to a lesser extent at the regional level. However, for the individual upazilas, and for the NGOs operational in those areas, the data presentations may be more helpful if more attention were paid to expressing trends and changes in the indicators. Through an enhanced reporting system integrated into the data entry/processing operations, such information may be more easily obtained, but in addition, it may be useful for the NSP to prepare bi-annual reports which includes some special analysis on trends, and provide interpretation concerning the implications of the various changes.

1.3.d. Summary Conclusions

The NSP has provided reports for each round of data collection on schedule, which has led to the rapid dissemination of information. The reports have been very useful in describing the general nutritional situation of the different upazilas covered in the surveillance system, and have helped to identify groups with the highest rates of undernutrition and where there were high levels of economic distress. In addition, the earlier reports paid careful attention to the methodology employed by the NSP, and in turn has helped to increase both the visibility of the system, and to inform users of the high quality and reliability of the data collected.

Presently, there are over 600 copies of the bi-monthly reports which are printed and distributed to groups throughout the country, and there is an increasing awareness of the value of NSP data. Many groups who are not directly involved with the NSP have gained access to the reports and have been able to incorporate the results and observations into their own program planning. For the cyclone relief efforts, many organizations which were responsible for the procurement and distribution of food aid, referred directly to the NSP reports to help reallocate resources to those areas in greatest need, and as such their interventions were made more effective.

Indeed, as more groups become aware of the NSP reports, it will become increasingly critical for HKI to identify the different reporting needs required, and where resources permit, to accommodate these in future publications. For all rounds of data collection, the NSP maintains standard tables of data output in addition to the reported summary information, and these data can be made available and modified to satisfy the needs of different groups. Finally, it is making data as readily accessible and widely disseminated as possible which lies at the very foundation of the NSP.

1.4. Usefulness of Data Collected by NSP

1.4.a. General Description / Findings

The classical definition of nutritional surveillance is "keeping watch over nutrition in order to make decisions that will lead to improvement in the nutritional status of populations". Thus, nutritional surveillance is aimed at providing timely and relevant information for policy makers to better take nutritional considerations into account, and for program planners and managers to better design and implement interventions to protect nutrition.

HKI has designed NSP so that data is collected and reports produced regularly in two-month intervals and more frequently during disaster periods. Data is thus collected in a timely manner with regards to providing an ongoing assessment of the situation, whether stable, deteriorating or improving. Information is also produced in a timely manner for decision making at the policy or program level. NSP has likewise been designed so that information which is relevant to the Bangladesh situation is produced, and in turn is meaningful to officials and program staff at all levels, as well as for lay persons. It is well known that assessing the nutritional status of children between the ages of 6 and 59 months of age is the best means of rapidly estimating the degree of distress in a community. The specific measures selected for use in the NSP are relatively easy to obtain, can be highly standardized, are sensitive indicators of food availability and are also predictors of childhood mortality.

The NSP measures of health status are particularly relevant for the Bangladesh situation. Diarrhea is a leading cause of mortality among preschool children, and is closely related to malnutrition. Acute Respiratory Infections (ARI) are similarly a major cause of death among preschool children, and have been found to be increased in children with vitamin A deficiency. The measurement of vitamin A capsule (VAC) coverage indicates the degree to which this age group may be protected from developing vitamin A deficiency, and consequently, nutritional blindness. In addition, the provision of vitamin A improves child growth, and through enhancement of the immune system, improves child survival.

Many studies in Bangladesh have demonstrated an important relationship between socioeconomic status and nutritional and health status. The socioeconomic markers and indicators of distress included in the NSP provide an ongoing assessment of the level of family welfare and degree of household crisis in disaster-prone communities and urban slum areas, especially in times preceding, during and immediately following calamities.

1.4.b. Involvement of NGOs in the Use of NSP Data

It is noteworthy that the NSP is set up on the premise that HKI, as coordinator, could develop a working arrangement with NGOs which are responsible for data collection at sentinel points within their respective areas of current operation. These NGOs would thus be the most immediate users of NSP information for problem identification and program management/evaluation purposes. To enhance chances for the NSP to provide useful information to these primary users, as well as to the broader community of users, HKI has developed questionnaires through interactive collaboration with the participating NGOs. The questionnaires, after being field tested were modified based on feedback from the NGOs. The retraining sessions provide a mechanism for this feedback from the field staff to be a continuous process.

The involvement of NGOs is an important characteristic of the project. Through this structure, the NSP involves those organizations in its surveillance activities which are instrumental in assisting the Government in the provision of preventive and therapeutic services to communities. It is anticipated that such an arrangement could greatly increase the general awareness among the NGOs and donors of both the magnitude and distribution of different health indicators, along with some insight into the factors influencing the health situation, which taken together would enhance the implementation of program activities.

The NSP initially worked with six NGOs and subsequently has expanded this to a group of ten organizations as of the mid-term evaluation. The NGOs were selected based on a number of criteria which were established prior to the implementation of the project, and have contributed to the initial success of the NSP, including;

- * Willingness to participate
- * Location in high-risk areas
- * Involvement in health-related activities
- * Organizational structure capable of supervising staff for the project
- * Good reputation in Bangladesh
- * Prior participation in nutritional surveillance activities
- * Good prospect for continued work with project

1.4.c. Usefulness and Flexibility of NSP in Exceptional Circumstances

The NSP has demonstrated the capability of responding quickly to unexpected needs of users brought about by special circumstances. At the request of and under a supplemental grant from USAID, HKI extended surveillance activities to coastal areas devastated by the April 29, 1991 cyclone. Special teams were rapidly recruited and trained to carry out continuous monitoring in the area, using key indicators which provided information for establishing effective allocation of relief and food aid. During this period, the NSP produced weekly reports, which were distributed to NGOs, donors, the GOB and other groups involved in the relief efforts so that each could keep aware of changes occurring in the situation.

A follow-on grant was received from the European Economic Commission (EEC) which permitted that extended surveillance be continued in the worst affected of the coastal areas beyond the period of the immediate crisis. Data generated from the sustained surveillance demonstrated that there was actually a deterioration of health status following the withdrawal of many of the relief efforts, and pointed to the importance of both continued monitoring, as well as sustained intervention efforts and the provision of services.

The evaluation team was able to review documentation regarding the use of NSP information by the Ministry of Relief and Rehabilitation (MOR) for purposes of coordinating relief efforts in the coastal areas following the cyclone. USAID used these data to apprise the Department of State and AID/Washington, and relevant organizations in Geneva (WHO) and Rome (FAO) of the extent of the devastation and ongoing assessment of the post-cyclone situation. The World Food Program (WFP) and the United Nations High Commission on Refugees (UNHCR) are coordinating food assistance on the basis of NSP reports and UNICEF used the NSP information to provide guidance to the Ministry of Health in responding to changing health problems in the affected areas.

Extended surveillance of the entire country is one of the nutrition activities being contemplated within the World Bank funded Nutrition Action Plan for 1993-94 which is presently being planned. The evaluation team also reviewed over fifty letters received from multilateral and bilateral organizations, NGOs operating in the country, as well as from several Bangladeshi institutions attesting to the usefulness of NSP reports.

1.4.d. Summary Conclusions

The first NSP data collection round was conducted in April, 1990. On the basis of interviews and documentation reviewed, the evaluation team is convinced that during a period of less than two years, the NSP reports have become widely accepted as the primary source of timely, credible information on nutritional, health and household welfare status of populations living in the disaster-prone areas of Bangladesh. These data have been utilized in the allocation of resources and services to areas at highest risk, and have been helpful in assessing changes which have taken place over the course of relief efforts.

In the post-cyclone period last year, the HKI surveillance project was able to quickly identify those regions which were most severely impacted by the flooding, both in terms of nutritional status and other distress indicators. This information was made available to WFP and other groups which were requested to focus efforts on those areas most severely affected. Responses ranged from replenishing of food stocks to the development of plans for the distribution of income-generating assets in destitute fishing communities.

The reclassification of upazilas into the five regions used by the Flood Action Plan should facilitate general conclusions, but it should be emphasized that the upazila-specific data provide distinct results and insights. It would seem, and indeed the data demonstrate, that there are differential responses within each upazila to disasters and acute changes in food availability and rates of infectious diseases. It will become very critical to undertake time series analysis to evaluate the rates at which different areas were able to adapt to conditions of distress, and the extent to which food aid and other interventions had an impact on the communities. As such information becomes available, it may be possible to streamline the modes and levels of responses required for different communities, and should go some way to make more efficient use of limited, strained resources available for disaster relief.

1.5. Sustainability and Strategies for the Institutionalization of the NSP

1.5.a. General Description / Findings

Achieving progress toward the development of a sustainable NSP within the GOB is one of the specific objectives of the USAID grant to HKI for this project. The grant document states that sustainability of the NSP could be attained "through the involvement and training of counterparts at the IPHN, to gradually develop within the government the capacity to design, conduct and analyze such surveillance data".

IPHN has historically been the group responsible for the Bangladesh Program for the Prevention of Blindness (BPPB), in which HKI has been heavily involved since the onset. IPHN and HKI collaborated in carrying out the national Bangladesh Nutritional Blindness Survey in 1982-83. This survey included assessment of nutritional status, dietary intake and socioeconomic factors influencing nutritional status. Since that time, HKI has continued to provide technical support to IPHN and other NGOs in the prevention of nutritional blindness and vitamin A capsule distribution activities. IPHN monitors the national coverage of the VAC distribution program.

For NSP to become sustainable over the long term within IPHN, the following changes will be required:

- * NSP should be extended to include all other disaster-prone areas in the country
- * Technical improvements will be acquired in data analysis and interpretation
- * A long term strategy for marketing of the product needs to be developed, and this strategy implemented
- * The surveillance system will have to be based in an IPHN unit with some autonomy, containing staff with sufficient experience, depth and authority
- * Assured funding

The first two of the requirements have been discussed in sections 1.1.b. and 1.1.c. of this report, and could be achieved during the remaining sixteen months of the current grant. The third requirement - marketing strategy - could be implemented and fine-tuned in perhaps another three year period. However, the evaluation team considers that an additional four year period, beyond September, 1993 would be required to satisfy and fulfill the last conditions. Even if things move forward rapidly and smoothly, it will be at least late 1994 before IPHN could develop the necessary expertise and visibility to be considered a credible permanent base for the GOB surveillance system. At that point, serious consideration of stable, permanent funding could be addressed, but there would be a minimum three year lead time before all necessary conditions could be satisfied. For example, if NGOs were to commit themselves to fund data collection in their operational areas on a long-term basis, most would each require 2-3 years time before the necessary initial funding could be secured.

The recent restructuring of the NSP staff from a mode of dependence on a single project coordinator to a more collaborative, team approach has been a major advance with regard to sustainability. Before, the departure of a single individual would have, at least, placed the NSP in jeopardy and could have caused its demise. Now, the NSP could proceed with barely a falter even if the director and a second senior staff member were to depart simultaneously. The prior organizational structure seriously overburdened the director, while the present structure based on shared responsibilities is considerably more efficient and effective. It should serve as the model for developing the surveillance unit staff in IPHN.

1.5.b. Involvement of IPHN in the NSP: Present and Future

With the assistance of UNICEF, HKI obtained formal approval of the NSP project by the GOB in late 1990, i.e. one year after the activities had already been initiated. The IPHN director and staff on several occasions have stated and demonstrated interest in being involved with the NSP. Training of field data collection teams from the six initial collaborating NGOs was done in IPHN facilities. IPHN started data collection at two rural sentinel points (Morelganj and Mirzaganj) in the South West region in February, 1991 on their own initiative in collaboration with the NSP. There was no HKI financial remuneration of IPHN for this work, as is distinct from the arrangement established with other NGOs involved with NSP. Normal contact between IPHN and HKI was disrupted shortly thereafter when the HKI country director was forced to be evacuated due to the Gulf war, and during the periods when much of the HKI staff attention and efforts were diverted from base NSP operations to mounting the cyclone and Rohingya emergency responses.

Two professional staff members of IPHN started coming to HKI periodically for training in surveillance methodology and report writing at the beginning of 1992. However, their visits became quite infrequent after a few months due to their work load at IPHN and it is hoped that contact can become more consistent in the future. More recently, a data entry clerk hired by IPHN has received training from the NSP, and will undertake all data processing for the rural sentinel points covered by IPHN in the project. IPHN and HKI staff have jointly provided training to staff responsible for the distribution of vitamin A capsules following the 1991 cyclone in the worse affected areas.

1.5.c. Summary Conclusions

Based on the available information, the evaluation team concurs with the original decision that IPHN will be the best permanent agency within the GOB structure for the institutionalization of nutritional surveillance activities. It seems clear that IPHN is currently interested and could be willing to assume permanent responsibility for the national system, whether confined to disaster-prone areas or expanded to cover the total population.

It is critical to consider the available resources in IPHN, and to assess the level of institutional commitment to a long-term surveillance activity. The evaluation team believes that what is most essential is that the permanent home for the NSP be an institution centrally located within the GOB with adequate capability, as well as the authority and mandate from the government to successfully implement the work. In moving forward, HKI needs to carefully outline the steps which will be followed to strengthen and support IPHN so that it will be able to meet these requirements, or to identify another organization within the GOB which could serve the role of coordinating a sustainable surveillance system.

It is difficult to argue that, of all the countries in the world, Bangladesh does not need a national nutritional surveillance system. There is strong rationale for the more frequent monitoring of disaster-prone areas and for issuing reports on the situation in these areas separate from reports concerning the overall population. First, because such reports need to be issued more frequently so that appropriate actions and responses may be taken quickly. Second, because the words "disaster-prone" undoubtedly elicit more attention in the minds of Government officials and donors, mandating rapid response.

HKI staff have devised a plan whereby surveys representative of all children between the ages of 6 and 60 months in the country could be carried out with the present NGO data collection teams, without disrupting the current operations of the NSP. For example, the teams presently involved with the NSP could be utilized during months when not in the field to undertake a national prevalence survey on vitamin A deficiency or iodine deficiency disorders. This would be far more cost-effective than recruiting and training new enumeration teams and would assure high data quality. National nutritional surveillance is one of the activities to be developed under the World Bank (WB) nutrition plan. Thus, through designating IPHN as the institution responsible for surveillance the allocation of funds from the WB loan should be justifiable to develop IPHN capabilities if the NSP is shown to have the flexibility to accommodate not only crisis situations but also periodic national surveillance.

Considering that ten years of sustained technical assistance were provided to the Government of Indonesia in developing its nutritional surveillance system, it seems clear that at least as long will be required before IPHN can assume full responsibility for the system which evolves from NSP. Staff development will require the longest period of time and that process has really yet to begin. One way to initiate this process would be to convince IPHN that two professional staff be designated as NSP counterparts. The evaluation team suggests that this might be facilitated by providing IPHN "ownership" through:

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- * giving IPHN equal billing with HKI on the cover page of all reports, stating that NSP is a collaborative IPHN/HKI project
 - * encouraging the IPHN counterparts to participate with HKI staff in strategizing, planning and the execution of all routine operations of the project
 - * arrange for an IPHN counterpart to accompany HKI staff members to presentations of NSP information
 - * when the counterparts are prepared, encourage them to assume the lead position for NSP before the public

Once this transfer of ownership process is underway, USAID and UNICEF can pursue the issues of official GOB designation of IPHN as the institution responsible for nutritional surveillance and arranging for assured funding so that IPHN can carry out this function on a sustained basis.

The evaluation team is of the opinion that the chances for sustainability could be further enhanced if USAID were to assist IPHN/HKI in establishing a working relationship with the Food and Nutrition Monitoring Project of the Office of Nutrition, AID/Washington. The function of this project is to assist collaborating countries to strengthen institutional capabilities in food and nutritional monitoring. Through this working relationship, IPHN, other Bangladeshi institutions, and collaborating NGOs would have access to a variety of technical assistance and other support services. These could vary from short-term technical or training support from U.S. or Asian experts, funding of collaborative research addressed to a particular problem or issue in Bangladesh, or assistance in organizing national workshops or regional conferences. The Food and Nutrition Monitoring Project can carry out many activities with its own funds or could be accessed through regional bureau or mission buy-ins. Particularly for the long-term, an important benefit from this relationship would be the stimulus provided to Bangladeshi individuals responsible for the permanent surveillance system by ongoing contacts with other practitioners in the field.

2. Recommendations for NSP

2.1. Short-term recommendations

Data Collection Procedures

- * HKI should calculate the sampling requirements necessary for detection of statistically significant differences between upazilas with regard to proportion of children with acute undernutrition (low MUAC) and chronic undernutrition (stunting), and for the importance of changes in rates of undernutrition over time both within upazilas and between upazilas.
- * HKI should analyze the possible effect of clustering on variance of different variables for each round of data collection.
- * HKI should execute intra-observer standardization exercises in refresher training periods to assess precision of replicate measurements and intra-observer variability. Include results from these exercises in subsequent publications concerning methodology employed in NSP.
- * HKI should recruit one or more NSP field team(s) to routinely carry out special analyses and to serve as a training/supervision cadre in emergency situations.

Processing and Analysis

- * HKI should incorporate anthropometric sub-routines into data entry programs for the immediate calculation of anthropometric indicators in the field.
- * HKI should review all validity checks and data entry routines to identify outliers for all continuous measures, especially for anthropometry.
- * HKI should undertake trend analyses of data to provide results concerning the baseline characteristics of different populations, which would help to separate seasonal effects from other changes which may be due either to interventions or crises in subsequent analyses.

Reporting and dissemination of data

- * HKI should revise the front page of the bi-monthly reports so that IPHN is clearly indicated as an implementing agency with HKI in the NSP.
- * Arrange for the NNC, in addition to USAID and UNICEF to be identified as a collaborative group in NSP.
- * HKI should focus greater attention in bi-monthly reports on trends which have been occurring over time in the different indicators.

Usefulness of data Collected

- * HKI should establish a communications unit within the NSP which will have the responsibility of both identifying user needs, in terms of reports and analyses, and develop appropriate strategies which will make prospective users of NSP data aware of the value of NSP information for all levels of the affected communities, upazila government offices, NGOs, donors and the central government.
- * HKI should prepare periodic reports dealing with specific issues related to the NSP findings which are targeted to different sectors, i.e. food availability for Agriculture, food assistance and market prices for Disaster Relief and Food Aid, infectious diseases and VAC coverage for Health, etc.

Sustainability and strategies for the institutionalization of the NSP

- * HKI should identify two technically competent IPHN staff members to serve as full-time NSP counterparts who will be involved with all stages of project operations.
- * HKI should encourage the IPHN counterparts to participate with HKI at meetings where NSP information is presented and discussed.

2.2. Long-term recommendations

Data Collection Procedures

- * NSP should expand data collection to other upazilas in the country, in order to make surveillance information representative of the entire country, since many of the areas may be at risk of flooding, or other disasters.
- * HKI should further recruit NSP and NGO field teams both to accommodate the expansion of the NSP, and to be available in the case of emergency situations.

Processing and Analysis

- * HKI should convene meetings of NGOs and other users of the data to consider reporting formats which could be more useful at the Upazila level, including data variables, analyses and presentations.
- * HKI should prepare integrated data entry/data analysis package which may be used by the NGOs in the field, that will not only prepare data files for transfer to the central office, but also permit quick execution of a series of standard analysis, particularly for trend evaluations of nutritional status and an assessment of process indicators for direct use by NGOs.

Reporting and dissemination of data

- * HKI should prepare a standardized protocol for the analysis and presentation of NSP data which is documented and easily transferred.
- * UNICEF and USAID should either equip IPHN directly, or identify appropriate facilities for printing and disseminating NSP reports.

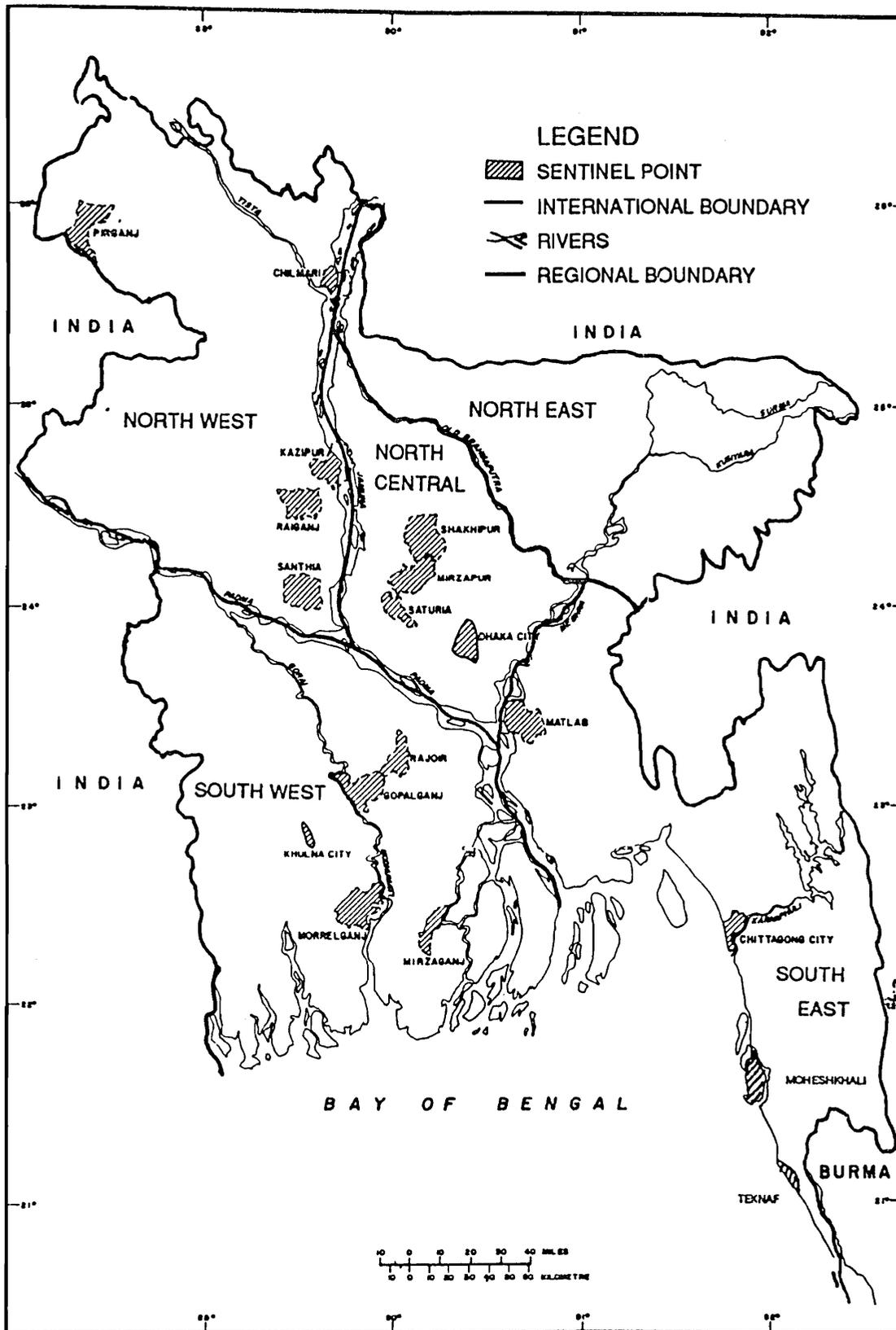
Usefulness of data Collected

- * HKI should undertake periodic meetings, perhaps under the auspices of the NNC, with NGOs, UN agencies, governmental groups and donors to discuss the needs of users regarding nutritional surveillance information, and how the data is being and can be further used to improve program delivery and the prevention of disasters.

Sustainability and strategies for the institutionalization of the NSP

- * USAID should fund the project for a fifth year, plus an additional three years so that HKI can continue development of the NSP, and to ensure the transfer of capability to GOB to assume complete responsibility for the national nutritional surveillance system.
- * USAID, UNICEF and HKI should negotiate with GOB for a permanent nutritional blindness and nutritional surveillance unit to be established within IPHN.
- * USAID should promote a long-term working relationship between IPHN and the Food and Nutrition Monitoring Project of the Office of Nutrition, AID/Washington so that continued technical support is readily available after the completion of the NSP.
- * USAID, UNICEF and HKI should negotiate with GOB for long-term funding support of IPHN nutritional surveillance activities.
- * USAID and UNICEF should take the necessary steps to equip IPHN with necessary hardware for sustaining the nutritional surveillance activity, including data processing, analysis and report production.
- * IPHN, HKI, UNICEF and USAID should negotiate with NGOs for long term nutritional surveillance data collection, and seek to extend the coverage of surveillance activities to the entire country to ensure national representation.

Appendix 1: Map of Bangladesh Showing NSP Regions and Sentinel Points



Appendix 2: List of Organizations Involved with NSP

AKCHP	Aga Khan Community Health Project
BBS	Bangladesh Bureau of Statistics
BRAC	Bangladesh Rural Advancement Committee
BDRCS	Bangladesh Red Crescent Society
CONCERN	Irish Development NGO
GOB	Government of Bangladesh
GUP	Guno Unnayan Prochesta
HKI	Helen Keller International
IPHN	Institute for Public Health and Nutrition
ICDDR,B	International Center for Diarrhoeal Disease Research, Bangladesh
MOF	Ministry of Food - Government of Bangladesh
MOR	Ministry of Relief - Government of Bangladesh
NNC	National Nutrition Council
RDRS	Rangpur Dinajpur Rural Service
SCF	Save the Children
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WFP	World Food Program

Appendix 3. The Mid-Term Evaluation Scope of Work

1. ACTIVITY IDENTIFICATION

The activity to be evaluated is the Helen Keller International, Nutritional Surveillance for Disaster Preparedness and Blindness Prevention project, under the grant No. 388-0083-G-SS-9127-00.

2. PURPOSES OF THE EVALUATION

To enable USAID and HKI to assess the progress and examine the results of the project to date in relation to the project goal and objectives.

To assist USAID and HKI to identify those short-term and medium-term changes to project strategy, areas of focus and implementation activities which are essential to the improvement of the dissemination of the data collected.

To assist USAID and HKI in considering longer-term directions and options to its support of developing sufficient interest and technical expertise within the Institute of Public Health Nutrition or to institutionalization of the project through other agencies or modalities.

3. BACKGROUND

Helen Keller International (HKI) has been working in the nutritional field since 1978 at the request of the Government of Bangladesh and UNICEF. HKI originally came to Bangladesh to help the Bangladesh Programme for the Prevention of Blindness (BPPB) to develop reporting systems for the vitamin A capsules distribution and to assess its effectiveness. It then helped the BPPB/Institute of Public Health Nutrition (IPHN) and the Government of Bangladesh to undertake the Bangladesh Nutritional Blindness Study (BNBS) 1982-83 and analyze the results. HKI is still providing technical support to IPHN and NGOs in nutritional blindness prevention and VAC - distribution activities.

In 1987, Bangladesh experienced one of the worst and longest floods in its history. The flood covered 36 percent of the country and caused widespread damage which had been only partially repaired by mid-1988. However, in 1988, there was an even more severe flood that affected 61 districts out of 64, covering 84 percent of the national territory and directly affecting 45 million people.

The general health situation in Bangladesh is very poor; morbidity and mortality, especially among young children and mothers are extremely high. The frequent floods, droughts, cyclones, etc., which affect Bangladesh invariably result in a deterioration of the already poor health status of its people, particularly women and young children, through exposure to contaminated water, crowding and poor sanitary conditions, and, above all, through decreased access to food due to crop and employment losses.

The nutritional status of young children is a very sensitive indicator of sudden changes in food supply and health conditions. It is also a forerunner of changes in child mortality. The monitoring of children's nutritional status in disaster-prone communities is thus a vital tool to assess, plan, and coordinate the response to on-going and unforeseen crises related to floods and other natural disasters.

Cyclic floods in the past, and particularly the one which occurred in August 1988, and other natural calamities, underline the need for strengthening the capacity to collect timely and reliable nutrition data and early-warning information on which to base appropriate responses to acute food shortages. After the floods of 1988 there was no such information on health and nutritional status for effective allocation of relief programs.

Since October 1989 Helen Keller International (HKI) has been coordinating a Nutritional Surveillance Project for Disaster Preparedness and Prevention of Nutritional Blindness in 18 disaster-prone areas in Bangladesh. The NSP is a collaborative effort by NGOs, the Institute of Public Health and Nutrition (IPHN) and UNICEF.

The overall goal of the project is to create an interactive mechanism for planning, monitoring and evaluation of multisectoral development and relief activities in order to increase their effectiveness. Specific objectives are:

1. To develop a system of continuous data collection within the NGO community in Bangladesh.
2. To identify regions of the country at highest risk of malnutrition during times of flooding and other natural disasters.
3. To establish baseline health and nutrition indicators against which changes can be assessed.
4. To develop standardized definition of terms, methods of data collection and criteria for assessing child health and nutritional status in Bangladesh.
5. To provide an on-going database for planning and evaluating interventions in the areas of blindness prevention and disaster preparedness.
6. To gradually develop within the government the capacity to design, conduct and analyze the surveillance activities on an on-going basis through the involvement and training of counterparts at the Institute for Public Health and Nutrition (IPHN).
7. To strengthen the collaborative ties between HKI and the various participants (NGOs, IPHN, UNICEF) in the project.

The activities to achieve the goal and objectives have been as follows:

Data had to be obtained through existing channels. Priority was identified using past surveys of patterns of disaster in Bangladesh. Meetings were held with interested NGOs and a mapping exercise was conducted to identify which agencies were operating in the high risk areas. An initial group of 6 NGOs were selected for participation based on: a) geographical location, and b) willingness to participate. The first experimental round was carried in April 1990. Since then every two months data has been collected. In February 1992, the 12th round of data collection will be carried out.

On April 29, 1991 Bangladesh experienced one of the most severe cyclones of the century, resulting in an extensive loss of life and property. An efficient allocation of food aid and relief efforts had to be established to minimize subsequent mortality in the affected areas.

Immediately after the cyclone, HKI expanded the surveillance activities into the devastated cyclone-affected areas. A special team was recruited to carry out continuous distress and relief monitoring and to provide essential information for establishing an effective allocation of relief and food aid. The monitoring finished at the end of November 1991.

4. STATEMENT OF WORK

4.1. The evaluation shall examine project performance in the following areas:

4.1.1. Developing the capacity of continuous data collection by NGOs in Bangladesh.

Assess the effectiveness of HKI NSP-project in strengthening NGOs' capacity to collect reliable data and istandardize the definitions of the indicators collected.

Assess the quality of the data collected.

4.1.2. Data Processing

Assess the effectiveness of HKI NSP-project in rapid transfer and analysis of data collected during disaster periods.

4.1.3. Reporting and Dissemination

Assess the capacity of HKI NSP-project to prepare bimonthly reports under normal circumstances; and a more frequent production during times of disaster.

Assess the role of UNICEF in dissemination of these reports to the GOB, other UN organizations, donors, and NGOs. Review additional or alternate methods or strategies improve the effectiveness of dissemination (i.e., alternative format, etc.)

4.1.4. Usefulness of the data collected

Asses the capacity of the project to identify regions of the country at highest risk of malnutrition during flooding and other natural disasters: consider the degree to which this information has been used by policy makers to take action, and request strategies to enhance awareness of the value and use of information generated by the project for policy makers.

4.1.5. Sustainability

Assess the effectiveness of the HKI NSP-project to develop sufficient interest and technical expertise within IPHN so that responsibility for the activity could be assumed by the IPHN upon completion of the project period. Consider additional strategies for institutionalization of the project in the long term

4.2. RECOMMENDATIONS

Based on 1) the detailed findings and conclusions of the evaluation team with respect to project performance in each of the above areas, and with 2) consideration to the overall context, needs and opportunities to improve the NSP-project, the team shall develop:

4.2.1. A set of recommended necessary actions, with priorities, for USAID and HKI to improve the shortrun performance of the NSP-project in Bangladesh, i.e. indicate what significant changes should be undertaken in the next six months to one year to strengthen the project within the present scope of work.

4.2.2. A set of recommendations, with priorities, fro USAID and HKI to improve the effectiveness of the project in the long-term. An indication is expected of the significant changes in strategy, areas of focus or emphasis, mix of activities and implementation methods which would strengthen the sustainability of the project.

5. METHODOLOGY

5.1. The team shall be responsible for determining the appropriate evaluation methodology. The Mission and HKI suggest that the study approach include the following:

5.1.1. Review of project reports and relevant documents.

HKI, Project proposal, attachment 2 388-0083-G-ss-9127-00

HKI, Detailed Implementation Plan, February 1990

HKI, Identification of High Risk Areas, 1990

HKI, Nutritional Surveillance newsletters, Number Vol 1, 1-3

HKI, Nutritional Surveillance Technical Reports, Vol 1, 1; Vol 2, 1-6

HKI, Training manual (Bangla)

HKI, Project Proposal, An extension of Distress Monitoring to the Cyclone Affected Areas, May 1991;

HKI, DMS-weekly reports June,

HKI, DMS-monthly report 1-6.

5.1.2. Interviews with USAID, HKI, UNICEF, IPHN, WFP, NGOs.

6. TEAM COMPOSITION

USAID suggests a team composed of two expatriate professionals, with a local Bangladeshi expert. The proposed team members and their skills are as follows:

Team Leader: an epidemiologist with extensive experience in planning and conducting epidemiological research in developed and developing countries. Should possess skills appropriate to assist the project in assessing technical and hardware input for future strategic options.

Health and Nutrition Research Specialist: a senior social scientist with extensive experience in planning and evaluating health and nutrition programs in developing countries. Should possess skills appropriate to assist the project in assessing future strategic options.

7. TIME FRAME

The evaluation should begin in o/a May 19, 1992, with a draft report to be submitted to the Mission and HKI for comments by May 31, 1992. In-country work will be completed by May 31, 1992, with the draft final report to be submitted to the Mission on that day. A 6 day work week is authorized.

8. REPORTING REQUIREMENTS:

8.1. Report Format: Written Report shall contain the following sections:

8.1.1. Executive Summary: Approximately 3 to 5 pages, single-spaced.

8.1.2. Statement of findings, Conclusions and Recommendations:

Findings and conclusions should be short and succinct, with the topic identified by a short sub-heading related to the areas of investigation identified in the statement of work. Recommendations shall correspond to the major findings, shall be prioritized, and specify who or which agency should take the recommended action. Recommendations shall be provided for the short-term and for the long-term.

8.1.3. Body of the Report: The report should provide the evidence and analysis to support the findings and conclusions. It should not exceed 40 pages, single-spaced, in length.

8.1.4. Appendices: These are to include at least the following:

1. The Evaluation Scope of Work
2. A description of the methodology used to obtain and analyze the information.
3. Selective presentations of supplementary qualitative information.
4. A bibliography of documents consulted.
5. A list of persons/agency representatives interviewed.

8.1.5. Completed sections of the A. I. D. Evaluation Summary: H: Evaluation Abstract, and J: Summary of findings, Conclusions and Recommendations.

8.2. Submission of Report:

The evaluation team shall submit a work plan on 3rd day of arrival in Bangladesh. A report outline (i.e., table of contents) shall be provided to USAID and HKI approximately 10 days after the beginning of evaluation activity. Ten copies of the draft report shall be provided to USAID and HKI for comment by May 31, 1992.

Thirty copies of the final report shall be provided to USAID and HKI on May 31, 1992.

8.2. Team Meetings and Debriefing:

8.2.1. The Deputy Director, Office of Population & Health (OPH), will arrange a briefing meeting on Day 1 of arrival in Bangladesh to include the evaluation team, the Director, OPH, the Deputy Director OPH, the Evaluation Officer, Country Director of HKI, and other OPH staff. The purpose of this meeting will be to brief the team with respect to the HKI NSP-Project, its purposes, key components and activities and to discuss key evaluation issues, concerns and needs.

8.2.2. The evaluation team shall also meet with the Country Director of HKI on the first day. The purpose of this meeting will be to conduct a host-country briefing for the evaluation team with respect to the NSP-project and to discuss key host-country evaluation issues, concerns and needs.

8.2.3. The evaluation team shall meet frequently with the Deputy Director, OPH, and the Country Director of HKI to report on the progress of the evaluation.

8.2.4. One formal evaluation team debriefings shall be conducted, including USAID management and staff and HKI Country Director, to be arranged on suitable dates during the end of the evaluation period.

9. LOGISTICS:

9.A. The team is responsible for organizing the logistics with respect to conducting the evaluation. This includes lodging, office space, computer rental, secretarial, professional and other support services transportation within Dhaka and for field trips, and scheduling interviews. USAID and HKI staff will try to provide advice and assistance wherever possible to facilitate logistics.

Appendix 4. Time Table and Work Plan for Evaluation

DATE	TIME	ACTIVITIES.	PLACE
19/5/92	1200		Arrival
	1300-1600	Debriefing and Review of NSP	HKI
20/5/92	0930-1100	Debriefing and Plan of Evaluation	USAID
	1130-1300	Review of Evaluation Scope of Work	HKI
	1400-1700	Overview and Discussion of NSP	HKI
21/5/92	0900-1300	NSP: Future Directions/Sustainability Institutionalization	HKI
	1400-1600	Discussion of NSP Sustainability	HKI
23/5/92	1000-1200	Expansion of NSP to Cyclone areas	HKI
	1300-1600	Expansion of NSP for Rohingya refugees	HKI
24/5/92	1000-1400	Visit to urban Sentinel Area: Dhaka slum area: Ward 60/62. Meeting with NSP (team & Director (AKCHP)	AKCHP
	1430-1800	Organizational Issues in NSP	HKI
25/5/92	0900-1600	Field visit in one sentinel rural area: Meeting with local NSP team.	CARE Mirzapur
26/5/92	1200-1330	Data Processing/Analysis Issues	HKI
	1400-1500	Meeting with UNICEF.	UNICEF
	1500-1600	Meeting with World Food Program.	WFP
27/5/92	1000-1100	Meeting Director IPHN.	IPHN
	1100-1200	Meeting with NNC	NNC
	1200-1400	Meeting with USAID/OPH	USAID
	1400-1500	Meeting with Director, PHC	PHC
	1500-1600	Meeting with Save the Children (UK)	SCF
28/5/92	1400-1600	Meeting With USAID	USAID
30/5/92	1200-1700	Presentation of recommendations for future directions and NSP sustainability	HKI
31/5/92	0830-1000	USAID - Final Debriefing	USAID

Appendix 5. Bibliography of Documents Consulted

Helen Keller International. **Child Health/Nutritional Surveillance for Blindness Prevention and Disaster Preparedness in Bangladesh. Project Proposal.** Dhaka: HKI, 1989.

USAID. **Grant Document issued to HKI.**

Helen Keller International. **Child Health/Nutritional Surveillance for Blindness Prevention and Disaster Preparedness in Bangladesh. Detailed Implementation Plan.** Dhaka: HKI, February, 1990.

NSP. **Identification of High Risk Areas.** Dhaka: HKI, 1990.

NSP. **Newsletter - Round 1, Vol. 1, No. 1.** Dhaka: HKI, April, 1990.

NSP. **Newsletter - Round 2, Vol. 1, No. 2.** Dhaka: HKI, June 1990.

NSP. **Newsletter - Round 3, Vol. 1, No. 3.** Dhaka: HKI, August, 1990.

NSP. **Technical Report - Round 4, Vol. 1, No. 4.** Dhaka: HKI, October, 1990.

NSP. **Technical Report - Round 5, Vol. 2, No. 1.** Dhaka: HKI, December, 1990.

NSP. **Technical Report - Rounds 6 and 7, Vol. 2, No. 2/3.** Dhaka: HKI, February and April, 1991.

NSP. **Technical Report - Round 8, Vol. 2, No. 4.** Dhaka: HKI, June, 1991.

NSP. **Technical Report - Round 9.** Dhaka: HKI, August, 1991.

NSP. **Technical Summary Report - Round 10.** Dhaka: HKI, October, 1991. (*new format*)

NSP. **Technical Summary Report - Round 11.** Dhaka: HKI, December, 1991.

NSP and Patwary, Y. **Report on the Assessment of Needs in the Cyclone Affected Upazilas of Bhola, Patuakhali and Barisal Districts.** May 3, 1991.

NSP. **Weekly Report - An extension of disaster and relief monitoring to the cyclone affected areas: Number 1.** Dhaka: HKI, June 1991.

NSP. **Weekly Report - An extension of disaster and relief monitoring to the cyclone affected areas: Number 2.** Dhaka: HKI, June 1991.

NSP. **Monthly Report - An extension of disaster and relief monitoring to the cyclone affected areas.** Dhaka: HKI, June 1991.

NSP. **Operation Tools: Nutritional Surveillance Project.** Dhaka: HKI, 1991.

NSP. **Operation Tools: Extension of Distress and Relief Monitoring to the Cyclone Affected Areas.** Dhaka: HKI, 1991.

NSP. **Proposal for the Funding of Two NSP Teams in the Coastal Belt of Bangladesh.** Dhaka: HKI, August, 1991.

NSP. **Handbook 1992.** Dhaka: HKI, 1992.

NSP. Operation Tools: Extension of Distress and Relief Monitoring to the Rohingya Refugee Camps in Cox's Bazar District. Dhaka: HKI, April, 1992.

NSP, Swapan Kumar Das, Md. Abdul Hye and Lyne Paquette. Computer Applications and Data Management System. Dhaka: HKI, May 1992 (modified version).

NSP. File of responses and feedback provided to HKI concerning the NSP. Compilations of letters, telexes and other messages received over the first eighteen months of the project. Updated May, 1992.

Appendix 6. Persons/Agency Representatives Interviewed

Helen Keller International/Dhaka

Dr. Martin Bloem, Country Director
Dr. Habibur Rahman, Senior Technical Advisor
Dr. Marijke Wijnsoks, Technical Advisor
Dr. Jill Kenna, Technical Advisor
Mr. Mir Baba Ali, Head, Communications
Mr. Nael Islam, Communications Advisor
Mr. Swapan Kumar Das, Statistician

Institute for Public Health and Nutrition (IPHN)

Dr. Md. Jahangir, Director

USAID/Dhaka

Mary Kilgore, Mission Director
Frank Young, Deputy Director
William Goldman, Director OPH
David Piet, Deputy Director, OPH
Janice King, Evaluation Officer
David Hessen, Agriculture Development Officer
Ali Noor, Technical Officer
Shiril Sacar, Technical Officer

UNICEF/Bangladesh

Phillip O'Brien, Coordinator, Health and Nutrition Section

National Nutrition Council

Mr. Md. Abdul Mannan, Secretary

Australian High Commission

Christopher Kenna, First Secretary for Development Assistance

Aga Khan Community Health Project

Dr. Mizan Siddiqi, Director

World Food Program

Gaston Eyben, Country Representative

Gemmo Lodesani, Field Coordinator

CARE/Mirzapur

Mr. Abdus Sabhan, Director

Save the Children, U.K.

Dr. Sultana Khanum, Medical Director, Children's Nutrition Unit