REVIEW OF SIDA-FINANCED VITAMIN A DEFICIENCY CONTROL PROGRAMS

IN BANGLADESH

by

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Revised, 14 February, 1992

Abbreviations Used

BRAC	Bangladesh Rural Advancement Committee
EPI	Expanded Programme of Immunization
HKI	Helen Keller International
IPHN	Institute for Public Health Nutrition
IU	International Units
NBPP	Nutritional Blindness Prevention Programme
NGO	non-governmental organization
ORS	oral rehydration salts
SIDA	Swedish International Development Authority
T	Taka
VAC	vitamin A capsule
WIF	Worldview International Foundation
XN	night blindness

Executive Summary

This report is based on a SIDA consultancy assignment to Bangladesh to examine the extent to which the Worldview International Foundation (WIF) Nutritional Blindness Prevention Programme and other programs show promise in solving the vitamin A deficiency problem in the country. The other major issues were (a) the need to establish a system for surveillance of the vitamin A status of the vulnerable group, including diet, and (b) the importance of establishing a system for withdrawing the national "universal" vitamin A capsule distribution program district by district if and when such a surveillance system showed that the need for it no longer existed.

The WIF program has covered five of the country's 65 districts, with a total population of over 5 million, combining mass media and face to face educational messages with efforts to encourage home and school gardening. The cost of this approach is about US one dollar per family per year. Evaluations done in 1989 and 1990 in two districts suggest that the program substantially increased the numbers of carotene-rich foods grown in household gardens and probably have led to increases in consumption of these foods and a reduction in the prevalence of night blindness. A more carefully designed study was planned and has already been set in motion in the SIDA-funded Gaibandha District and a near-by control area to determine more accurately the impact of the WIF approach.

The distribution of vitamin A via the Expanded Programme of Immunization is now being extended throughout the country. The distribution of vitamin A capsules (VAC) to children presenting with certain diseases to health workers has not yet made much progress. In fact, VAC has been removed from the Essential Drug kits distributed to sub-district (upazila) health centers. However, it is to be included in other kits to be distributed for use by Family Health Workers. Unfortunately, the possibility of fortifying food aid commodities or imported foods such as cooking oils with vitamin A does not seem to be under active discussion in the country.

"Universal" VAC distribution in Bangladesh (two rounds of distribution annually to all children 6 months to 6 years of age) has been conducted by the Government, assisted by UNICEF, since 1973, with major support from SIDA since 1981. This "universal" capsule distribution program is still referred to by all involved as a "temporary solution" to the problem of vitamin A deficiency. However, this approach has proven to be neither temporary nor effective in reducing the problem of vitamin A deficiency below the level defined by WHO as a public health problem. Nor is the program "universal." Despite intensive efforts to improve it in recent years, coverage still appears to be only 35-45% of the target group. The most vulnerable children are not likely to be among the minority who are reached by the program.

"Universal" VAC distribution may lull the Government and donors into believing that at least something useful is in place even

if too little is being done to develop better approaches. In fact, the greatest danger in not pressing for setting up a system for withdrawal from "universal" VAC distribution may be that the status quo will continue to inhibit the development of more effective approaches, and unnecessary child suffering and death related to vitamin A deficiency will continue.

It would appear to be an opportune time for SIDA to initiate discussion with relevant Government, donor and NGO institutions in Bangladesh on how to establish a surveillance system to determine if and when gradual withdrawal of universal VAC distribution might be justifiable. If there is interest in exploring how this can be achieved, it is recommended that SIDA continue its role as the major financial supporter of this program. If not, serious consideration should be given to other alternatives. For example the IDA (World Bank) has expressed its willingness to loan the required funds to the Government. Since governments tend not to like to borrow money for such "soft" purposes, this might actually encourage a more active exploration for more effective, inexpensive and sustainable approaches toward solving the vitamin A deficiency problem in the country.

The assignment

This report presents findings relevant to the Bangladesh Government/UNICEF Nutritional Blindness Prevention Programme (sponsored by the Ministry of Health and Family Planning and implemented by its Institute for Public Health Nutrition, IPHN) conducted by this consultant on behalf of the Swedish International Development Authority (SIDA) from January 8-24, 1992. This is the second review of the NBPP since SIDA began to finance it in 1981. It was meant to focus particularly on issues related to possibilities for gradually replacing "universal" distribution of vitamin A capsules (VAC) with more long-term approaches.

This paper also represents a mid-term review of the Worldview International Foundation (WIF) Nutritional Blindness Prevention Programme[1] financed in Gaibandha District by SIDA. It includes a brief review of the Dinajpur District project (financed by the Dutch NGO NOVIB) and of the Lalmonirhat District project (financed by the Norwegian NGO, Strömme Memorial Foundation), as requested by their representatives at a donor meeting with WIF in Stockholm on September 2, 1991. The terms of reference for this mission are attached (Appendix 1).

Previous reports

The first review of NBPP by SIDA was done in 1989 by Lotta Ekström and me, and reported more in detail then on vitamin A deficiency and how it is manifest in Bangladesh, reviewing the capsule distribution situation at that time, including the "universal" vitamin A capsule (VAC) distribution program that SIDA has been funding via UNICEF since 1981. We also reviewed alternative approaches being tested or for which funding was sought by others working in the field in the country, including the Bangladesh Rural Advancement Committee (BRAC), Helen Keller International (HKI), the Ministry of Agriculture/FAO, and WIF. After our 1989 mission, SIDA chose to fund a WIF request for expanding its work to Gaibandha District which then began in January, 1990. In part this was seen as a way of broadening SIDA involvement in the vitamin A deficiency control efforts as well as seeking successful alternatives to "universal" VAC distribution.

Another more in depth paper covering many of the issues involved is a paper I wrote for the World Bank in October, 1991, entitled "Lessons learned and issues emerging from experience with universal distribution of vitamin A capsules in Bangladesh." This had been distributed to most of the interested parties in Bangladesh shortly before the present mission.

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[1] IPHN changed the name of its national program a few years ago, making it be identical to WIF's, Nutritional Blindness Prevention Programme. To simplify, I refer to the IPHN project as NBPP and the to WIF project simply as the WIF project or as WIF NBPP.

Vitamin A deficiency in Bangladesh

It has been known for several decades that vitamin A deficiency is a public health problem in Bangladesh. The national survey in 1981-2 found a prevalence among preschool children of 3% night blind (XN) and estimated that 30,000 went blind from this cause annually. HKI in 1991 estimates that 40,000 a year go blind from vitamin A deficiency (and UNICEF in 1990 estimated 36,000) and that 1 million a year are affected.

In 1982, it was estimated that only 10% of families achieved the recommended intake of dietary vitamin A (including its precursor in the body, carotene), and the average consumption was 38% of the requirement. HKI has recently estimated that production of foods high in vitamin A reaches only 25% of what is required.

A national evaluation of NBPP by BRAC in 1989 found that XN had decreased to about 2% and several other studies in recent years also have found XN prevalence at 1-2% of children 6 months to 6 years old. The reason for this possible decline is unclear.

Government vitamin A deficiency control programs

The Nutritional Blindness Prevention Programme

Health Assistants in Bangladesh have been distributing high-dose VAC (200,000 IU) since 1973. This type of VAC distribution is referred to as a "universal" approach, though "untargeted" would probably be a more accurate term to use. Distribution is to occur twice a year and the target group is all children 6 months to 6 years of age and children with XN or other signs of vitamin A deficiency up to the age of 15. In some areas, women are given VAC immediately after delivery.[2] UNICEF currently purchases about 22 million VAC per round.

The program has had difficulty achieving high coverage rates continuously throughout the country and even in monitoring coverage accurately. Government monitoring for most distribution rounds suggest that 70-90% of the target group is reached, but the national survey in 1981-2 by IPHN and HKI estimated coverage at 46%, with lower levels in urban areas (not served by government health workers) as well as in the poorer and more inaccessible rural areas.

UNICEF then assisted the government in its attempts to improve coverage rates by training health workers, attempting to engage

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[2] One factor inhibiting implementation of this aspect is that women return for a check-up six weeks after delivery and in one study in Matlab, 9/3600 were found to be pregnant at that time (when high doses of vitamin A are contraindicated). UNICEF is considering providing traditional birth attendants with VAC as a way around this problem, since they have contact with mothers at an earlier stage postpartum.

Family Health Workers also in VAC distribution,[3] engaging non-governmental organizations (NGOs) to assist in distribution in the large cities (where government health services have low coverage)[4], and providing assistance in various aspects of monitoring. Several thousand new health workers have been recruited to fill vacancies and improve supervision.

While these efforts have achieved process goals to a large extent (e.g., health worker knowledge improved), they have not so far seemed to have much impact on coverage. An evaluation by BRAC in 1989 found a coverage rate of 35% in the target ages, but estimated it would have reached 45% if all the VAC given to children (and adults) outside the target age had gone to target age children. Smaller studies in recent years by BRAC, HKI and WIF in various areas usually find 35-50% coverage rates. A study was done by UNICEF in Chittigong immediately after a recent distribution round to determine what happened to all the capsules. Seventy-two per cent were found to still be in store, often in health workers' houses.

In discussion on these issues, UNICEF staff nevertheless felt that future efforts, particularly more health worker training, will achieve higher coverage rates. They still hope it will prove to be possible to engage the Family Health Workers to a greater extent in VAC distribution than has been possible so far.

UNICEF has also been attempting to strengthen the nutrition education aspect of the VAC distribution program, which has never been thought to work very well.[5] They (and USAID) funded social marketing approaches to message development by HKI with assistance from Manoff International over a period of a few years and new materials and messages are beginning to be disseminated both via health workers and the mass media.

According to UNICEF's Sixth Progress and Utilization Report to SIDA, dated June 1991, US $3.2 million of SIDA funds have been

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[3] This effort has largely failed, since personnel working for the other wing of the health ministry, the Directorate General of Health Services, have responsibility to account for drugs and do not believe they can delegate this to Family Health Workers, even though they were trained a couple years ago to be able to participate in VAC distribution.

[4] NGOs distributed VAC in 42 of the 64 district towns as of mid 1991, resulting in higher coverage in many cities than in rural areas.

[5] The BRAC evaluation in 1989 found that 46% of women surveyed had received no information from health workers on nutritional blindness prevention and only 3% had received education messages on Vitamin A and xerophthalmia. Nearly 90% had no idea regarding target age and frequency of VAC distribution; regarding prevention of XN, 13% mentioned food and 7% mentioned VAC.

used for VAC purchase and other assistance to NBPP via UNICEF from allocations made in 1984 and again in 1990. For the two-year period 1991/92-1992/3, a further SEK 5 million (about $850,000 currently) has been budgeted for the program. One UNICEF staff estimated that the SIDA contribution has covered some 75% of the costs of VAC purchase for the country in recent years.

Distribution of Vitamin A via EPI

The Expanded Programme on Immunization, EPI, has begun (since mid-1990) to administer 50,000 IU vitamin A[6] to infants at each vaccination, starting at six weeks of age. There are many advantages in reaching young infants, including increasing liver stores of vitamin A among those with low weight at birth or whose mothers have somewhat low levels of vitamin A in their breast milk.[7] A February, 1991 survey showed that EPI has reached high coverage rates in early infancy, 86% for BCG and 67% for DPT3, though only 54% received measles. Since the measles vaccination is administered later in infancy, and given the important interaction between measles and vitamin A deficiency, improvement in its coverage, linked to vitamin A administration, will have a big impact on vitamin A deficiency (and recent research suggests that improved vitamin A status in infancy may also reduce morbidity and especially mortality).

There could also be a savings in time and money obtained by reducing the target group for universal VAC distribution to children aged 1-6 years of age (rather than 6 months to 6 years), since health workers would then not need to cut open capsules to administer half doses to infants. However, this possibility does not appear to have been discussed yet. New EPI cards for mothers were produced which include a space for recording vitamin A doses given. (However, in one rural and one urban clinic where we checked, personnel were not aware that a new EPI card had became available a year ago.) Preliminary analysis of a UNICEF study which was just completed appears to show that VAC has no side effects when administered this way, but to the contrary may reduce the side effects of simultaneously administered vaccinations.

Disease-targeted distribution of VAC

Since vitamin A deficiency increases the severity of some

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[6] Two of the eight drops contained in the VAC now available universally in the country are currently administered. A new dispenser has recently been tested in Bangladesh, as well as elsewhere, which would reduce time spent in cutting capsules, reduce spillage, and provide a better calibrated dose.

[7] Breast-fed children of malnourished mothers still receive most of their vitamin A from breast milk, even if levels are lower than in the milk of well-nourished mothers.

diseases and some diseases greatly increase requirements for vitamin A, children with these diseases should receive VAC whenever they come in contact with health care services, unless they very recently received it. Previously, VAC was included in the Essential Drug kits provided to Upazila (sub-district) Health Centres (and even in minikits provided on a pilot basis to some Health Assistants). VAC is no longer included in the Upazila kits. However, new types of kits are starting for the Family Health Workers and VAC is included in them. It is one of 14 drugs included in the Satellite Clinic Drug Kit. There are 100 VAC in each kit. VAC are also included in the so-called DDS kits provided for various health centers. Disease-targeting of VAC offers many advantages and should be a cost-effective way of obtaining many of the benefits of vitamin A for many of the highest risk children. A future increase in levels of clinic coverage and attendance, accompanied by an expansion of the categories of disease to be covered could, along with EPI VAC distribution and dietary improvement, facilitate phased withdrawal of "universal" VAC distribution.

The Worldview International Foundation NBPP

Summary of the program[8]

WIF, the Worldview International Foundation, is a Sri Lanka based international NGO specializing in communication. In Bangladesh WIF has several activities, including its Nutritional Blindness Prevention Programme, NBPP. The WIF NBPP began with an experiment in Pirgonj Upazila (sub-district), pop. 240,000, in Rangpur District, pop. 1.5 million. Six different communication approaches toward motivating people to solve the problem of vitamin A deficiency were tested from 1984-86. An approach based on schools (including providing funds to establish school gardens) and one based on hiring traditional folk singers to tour villages with songs relevant to vitamin A deficiency were found to be the most effective in interim and final evaluations conducted by Dhaka University Institute of Social Welfare and Research and Helen Keller Institute (HKI) respectively. The use of mass media, including television, radio, film showings in villages and posters were also found to be effective. The use of health workers and of NGOs for face to face communication was found not to be intensive enough and also resulted in lower awareness in women than in men.

Later it was decided to develop a complementary "women volunteer" face to face communication approach. Women volunteers visit all households in an entire half-union, about 10 villages over about 2-3 square miles; their villages were chosen to be in the middle of this area. They advise families on the causes and cure of night blindness, XN, and on how to grow their own carotene-rich

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[8] More details on the program can be obtained from Worldview International Foundation, House No. 76A, Road No. 12A, Dhanmondi, Dhaka-1209, Bangladesh.

foods. In addition to messages related to diet and XN, women volunteers convey messages related to diarrhea (boiling of drinking water and use of ORS), thought to harm the vitamin A status of young children.

A combination of all these approaches (except use of health workers and NGO workers) was then applied throughout Rangpur District for three years, from 1987-1989 with funding from Strömme Memorial Foundation and in 8 of the 13 upazilas in Dinajpur District from 1988-1990 funded by NOVIB (with extensions for two years through 1992).

In 1990, the WIF NBPP was expanded to Gaibandha District with support from SIDA and to Lalmonirhat District with support from Strömme Memorial Foundation. Gaibandha differed from the previous projects in that SIDA requested that the health worker approach be added to increase awareness of the government health sector of the approaches being utilized by WIF and to help ensure sustainability. Lalmonirhat was also somewhat different in being a women's project, with an all-woman staff and focusing more on the women volunteer component.

WIF has gradually changed its approach, relying increasingly on the power of face to face communication via their women volunteers. This was based in part on the evaluation studies done by themselves and others. During a three-month trial period at the end of 1991, the women volunteers were asked to focus on only their own villages[9] in order to establish a "green bank." This consists of a demonstration garden at her own home, seedlings, saplings, manure, and sometimes insecticide for sale, as well as her advisory capacity. This was intended not only to strengthen the program, but also to assist the women volunteers to have a source of income when the project is over.

Seed is provided free to families with XN children. women volunteers also provide information on why these foods are important to eat (protection of children's eyes). women volunteers are increasingly working to establish groups of women gardeners. This provides a number of additional advantages. For example, there will be economies of scale for purchased items, and a greater chance of attracting the attention of extension agents who thereby reach more women with less effort. Without a link such as the women volunteers many women would find it difficult to establish gardens, as there are constraints in the culture hindering them from obtaining information and purchasing inputs. By growing her own garden and earning money from it, the women volunteer also sets an example and proves to nearby women that there are opportunities they may not have realized were available.

Women volunteers sign a contract agreeing to visit 20 households a day, 20 days a month and are paid 600-700 T/month. In recent

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[9] This was done in Lalmonirhat but in Gaibandah 350 households and in Dinajpur 450 households were focused on.

months, WIF has eased up on this requirement; now they can design their own routine as long as Upazila officers and others can find them when they come for a visit.

Comments on the WIF approach

WIF began its NBPP by utilizing a relatively sophisticated approach toward the difficult task of developing a large-scale communication project in a very poor country. They have attempted to base their approach on studies of the target groups and their existing beliefs and practices. This information, though not comprehensive, was then applied rather rapidly on quite a large scale. This is approach may be preferable to the more common one in which small scale research provides ever deeper insights which never seem to be applied on a large enough scale to benefit many people.

However, WIF's messages could be better honed and focused in ways likely to achieve optimal impact. Although they have utilized some important aspects of the social marketing approach in their message design and testing, their knowledge and application of relevant concepts has been incomplete. They could do more focus group interviewing in pretesting and evaluating messages; in certain cases they should track message impact over time--this would give them a chance to adapt messages to changing audience awareness and the changing socioeconomic climate.

NOVIB has already utilized a Manoff International consultant in order to strengthen this aspect in WIF's work. Continued efforts in strengthening this aspect should be part of any continuation of the WIF project. Cost effective ways of strengthening WIF's social marketing capability must be sought, perhaps in dialogue with the local office of HKI. If necessary a key staff member might be sent for advanced training in this subject or WIF could be linked to a "sister" institution with social marketing experience for some time.

The operational cost of the WIF program is calculated to be 30-40 Taka (At this time, 1 US$ = 38 T)/family/year; it costs about 300 T/person/year for the foods necessary to cure and prevent XN; it was estimated by Sight Savers in Bangladesh that their cost for a one-year rehabilitation program for a blind person is 12,000 T and they can only reach less than 1% of those in need.

Impact of the WIF program

A baseline survey was done in 1987 in Rangpur and Dinajpur Districts by Institute of Social Welfare and Research, and final evaluations were done in those districts in 1989 and 1990 respectively by the Dhaka University Institute of Nutrition and Food Science. The baseline and evaluation surveys were not conducted on identical upazilas in the districts, nor in identical seasons of the year, making comparisons between them of doubtful validity.

In Rangpur the baseline prevalence of XN was 3.2% of children under 15 years of age (48/1511).[10] The XN rate "per household" was 4.8% (45/996). For the evaluation, the XN rate for children "under five" was 0.95% (17/1796) and per household it was 2.8% (57/2011). There is every possibility that the XN rate had declined, but because of the obvious methodological problems, these studies cannot be cited as providing any more than a general suggestion of this.

In Dinajpur, the baseline found XN among 3.9% (60/1592) of children 0-15 to be XN and 5.9% of households (57/1014). The evaluation study in 1990 found an XN prevalence of 1.1% (27/2394) of children aged 1-6, 1.3% (66/5185) of children 1-15, and 3.2% (64/2044) of households. Since comparison is possible for almost identical age groups, the differences are large, and the sample size in the evaluation study was larger, the inference that XN has gone down in Dinajpur is, though unproven, less hazardous. (Neither evaluation study did statistical tests of any comparisons.)

Since there were no control areas, and XN appears to be declining generally in the country, it cannot be inferred with confidence that these apparent reductions in XN were due to WIF activities. Such an inference would have been strengthened if the evaluations could have shown increases in production and consumption of carotene-rich foods and improvements of knowledge of key issues. Unfortunately the baseline and evaluation surveys did not always use identical approaches,[11] making such comparisons impossible in most cases.

In poor rural areas such as these, there is no doubt that consumption is closely related to production, even to a small extent for cash crops. The extent to which the foods promoted by WIF can be sold for cash varies from food to food and from area to area. WIF encourages sales of foods grown, but only after meeting own consumption needs. Most of its stress on income-earning is focused on seeds and seedlings. In both areas, approximately 20% of the households studied both at baseline and evaluation were landless and grew little if anything. Nearly all who had land cultivated some fruits and vegetables already at baseline, but WIF strove to increase production of high-carotene foods (and to some extent to increase variety and seasonal

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[10] Since the age distribution of the sample was not provided, the more commonly cited prevalence rates for children under six years old cannot be calculated.

[11] For example, the baseline survey asked an open-ended question regarding the causes of night blindness, while the evaluation surveys asked respondents to agree or disagree with a list of possible causes. A BRAC study in 1988 in Manikganj and Joypurhat shows the fallacy of comparing these two approaches: 37% spontaneously mentioned "shak" (dark green leafy vegetables) as good for night blindness, but 79%, when directly asked, agreed that shak would be good.

availability). Regarding production it is also not straightforward to compare baseline and evaluation survey results, but a recalculation of the findings to make them fairly well comparable shows the following:

- In Rangpur, the only high-carotene foods widely grown at baseline were (followed by per cent of sample households which grew it) pumpkin (52%), green leafy vegetables (napa, 36%), mango (45%) jack fruit (41%), and papaya (10%). The evaluation found the following: green leafy vegetables (colocassia, 58%; pui, 64%; lal, 44%; lau, 45%), pumpkin (75%), mango (56%), jack fruit (51%), papaya (36%).

- In Dinajpur, the baseline found pumpkin (25%), green leafy vegetables (pui, 28%), mango (29%), jack fruit (21%), and papaya (7%). At evaluation: pumpkin (53%), green leafy vegetables (pui, 62%; red amaranth, 56%; amaranth, 51%; colocassia, 39%) mango (50%), jack fruit (42%), papaya (18%), and guava (26%).

Thus in both areas a substantial increase in household garden production of a wider variety of high-carotene foods occurred. This adds some greater credibility to the inference that WIF's project activities may have been at least partly responsible for the decline in XN which appeared to have occurred in the project districts.

Nevertheless, SIDA felt that a more convincing study was required, and thus surveys were designed for the Gaibandha District to meet this need.

Planned Gaibandha surveys

In a video recently produced with funding from SIDA, WIF cites data showing that XN declined from 5% in Gaibandha in 1989 to 2% in 1992. However, these data are apparently from small studies and should not be cited as valid for the whole district. In fact, no baseline study was done in Gaibandha before the project began. However, good survey data are necessary if we are to have any objective evidence as to whether the WIF approach actually has an impact.[12]

Data are needed not only on levels of night blindness, but also on household production and consumption of relevant foods and knowledge of relevant issues. Other data would need to be kept to a minimum to allow the survey to be planned and fielded at short notice, that is, in March, before this season's vegetables disappear completely from gardens and markets. This will then

[12] A national survey is meant to take place in 1993, but plans are still only vague and funding yet to be secured. Data from it would not be able to replace the evaluation survey in Gaibandah in 1993. Even if the national survey took place in the correct areas at the correct time with an adequate sample size, it would not ask all the necessary questions in the same way.

allow the one-year follow-up survey to be done before the end of the SIDA agreement period. The use of exactly a one-year interval will control for seasonal differences. The disadvantage of this time period is that Ramadhan begins on about March 5, and lasts for nearly a month, when most Muslims fast during the day and eat and drink at night. Food habits are somewhat altered, so an extra question would have to be asked to determine whether foods high in vitamin A were being consumed more or less than usual. Since Ramadhan occurs about 10 days earlier each year, the 1993 survey would have to begin that much sooner. Both surveys should aim to be complete before the end of Ramadhan to avoid including a mixture of normal and Ramadhan diets in the findings.

Data on these variables, along with a minimum of information on family socioeconomic status, should allow us to discriminate between the impact of WIF's project and the national NBPP. A control area of approximately equal size will also be surveyed, an equal number of upazilas close to Gaibandha in districts just to the south, Joypurhat and Bogra. WIF intends to undertake a similar program in these districts starting in 1993, assuming donor support. This will increase the chance that the population studied eventually gets some benefit and the repeat survey can perhaps serve as a baseline survey for the proposed new districts.

The attached "Request for bid" (Appendix 2) to do these surveys was worked out together with SIDA and WIF and after consultation with four likely bidders (Institute for Nutrition and Food Science, BRAC, HKI, and Mitra and Associates).[13] As explained in that document, WIF will not be involved in the study apart from having the right, along with SIDA, to ensure it is done properly. WIF will not be informed in advance of exactly where the sample areas are located.

Other relevant projects

HKI

HKI have been active in NBPP and other vitamin A deficiency control efforts in Bangladesh since 1978. They provide personnel and computer services stationed at IPHN. Together with UNICEF

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[13] HKI suggested that nutritional status (attained growth) also be measured, as vitamin A deficiency is influenced differently by growth stunting and wasting and these in turn can vary in prevalence during the project period. However, it is extremely expensive to measure stunting and time would be too short to include it. Arm circumference would perhaps be a feasible approach toward measuring wasting, but even this would add a large burden on the study if it were to be done properly, since additional training and supervision would be required. It would also be only a partial indicator, since stunting would still not be measured. Therefore nutritional anthropometry was not included in the survey plan.

they take part in the training of health workers. HKI headed the comprehensive Bangladesh Nutritional Blindness Study in 1982-83. Since 1989, HKI has coordinated nutrition surveillance activities in many parts of the country, gathering data on vitamin A deficiency and VAC distribution. They have consistently played a leadership role in Bangladesh in terms of research on many aspects of the problem.

HKI research has determined which high-carotene foods can be grown around the year, such as mint, which can be grown near ring wells. One goal in their gardening project is to always have at least six vegetables growing in each season. They find, as have others, that variety plays an important role in increasing vitamin A consumption. Their efforts, like WIF's appear to have been successful in increasing production of high-carotene foods, and their measurements of consumption before and after a project focusing on 1000 households were good enough to show that this, in turn, resulted in increased consumption. This sample size is too small to determine if there was any impact on XN however.

Another HKI research project has utilized social marketing methods to develop better ways of communicating relevant messages.

BRAC

BRAC has been assisting the government in systematizing its VAC distribution in 148 upazilas as part of its primary health care programs. Their coverage statistics for these areas show 80-90% coverage in 18 districts. Its independent Research and Evaluation Division has conducted four studies related to vitamin A deficiency including the 1989 NBPP evaluation, a study of dietary practices of young children in Manikganj and Joypurhat the same year, perceptions of XN in the same districts in 1988, and an action research project on home gardening started in December, 1991.

FAO

FAO assists the ministry of agriculture in horticultural research and development and in seed production. Most of the crops it is working on are not high in carotene, however, and the joint project it developed for control of vitamin A deficiency in the country was never funded and implemented.

Project coordination

There is a good framework of coordination among donors to the health sector in Bangladesh. Formally, some of the relevant NGOs communicate with each other via various steering committees and cooperation on certain projects. However, in practice they are missing many opportunities to learn from each other. IPHN complained that the NGOs do not provide it with enough

information on their activities.

Perhaps a solution to both problems would be for IPHN to establish some kind of national task force or consultative group on vitamin A deficiency, including most national experts and relevant NGOs and donors. In meetings, say quarterly, IPHN could ask each in turn to explain its work and share papers it has produced. Meetings could also be called to discuss and debate relevant issues and to advise the government on technical issues.

Fortification

Mr. A. Drexler, ex-head of the local HKI office, had initiated discussion of fortification of wheat many years ago. He believes this would be simple and effective, a good complement to other approaches. Wheat would be somewhat self-targeting, since it has lower status than rice in Bangladesh.

However, the issue of fortification received little support when discussed with HKI, UNICEF and World Bank staff. It was pointed out that only a small proportion of food aid wheat reaches target groups only through a few projects such as food for work and vulnerable group feeding. It was said that much of food aid never gets past army officers and government employees and that fortification implies dependency in the same way that nutrient supplementation does.

No doubt fortification should not be relied upon as the sole solution of the vitamin A deficiency problem. However, it could be a partial solution and contribute to the combination of approaches needed to effectively replace "universal" VAC distribution in some areas. It could also be argued that, unlike in the case of iodine fortification of salt, there is no need to find any single vehicle that reaches all the target population; that many products could each make partial contributions to solving the problem; and that additional costs for vitamin A fortification of at least food aid and imported foods would be small. It would be simple and cheap to require, for example, that all imported cooking oil be fortified and no more dependency on food aid or imports would be created than already exists.

Replacement of "universal" VAC distribution with more effective approaches

"Universal" vitamin A capsule (VAC) distribution has been estimated to prevent some 6000 to 8000 new cases of blindness each year. Thus a precipitous withdrawal of "universal" VAC distribution clearly would be unwise and even unethical unless there was assurance that it was no longer necessary.

Furthermore, substantial effort would be required to establish a large-scale program capable of solving the vitamin A deficiency problem in other ways. In addition to the social marketing and home gardening project efforts required to achieve this, other

interventions should be given attention: (1) to strengthen health worker awareness; (2) to strengthen EPI distribution of vitamin A[14]; (3) to ensure that VAC was given to mothers after delivery, presumably by TBAs; and (4) to reinforce, through health worker training, the distribution of VAC to various categories of sick children whenever they present to health workers.[15]

Even once all this were accomplished, a surveillance system capable of indicating that VAC was no longer needed in certain areas, would require some investment because it would have to be based on data on children's vitamin A status as well as dietary consumption. (An NGO named VITAP together with HKI are currently testing a simplified dietary assessment method in three countries which may provide a more feasible approach than has previously been available.[16])

In spite of the difficulties involved, at least two reasons can be put forward for not just complementing the "universal" VAC distribution program but replacing it: (1) The presence of "universal" VAC distribution actually may inhibit efforts to find an effective solution to the problem of vitamin A deficiency. It may provide a false sense of security that, while a permanent solutions are yet to be found, at least a temporary one is in place. Sadly, far from being a "temporary solution", after nearly two decades of implementation, "universal" VAC distribution has proven to be neither temporary nor capable of reaching most of the vulnerable group. (2) "Universal" VAC distribution is not sustainable; in requiring health workers to distribute it twice a year to households, it places an extra burden on the health care system[17]; and it reinforces dependency on external donors for something (vitamin A) that even the poor could largely provide for themselves.

Vitamin A is important and thus this second problem would be acceptable for a limited period of time. Since effective complementary and even alternative approaches to it are being

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[14] A strengthening of EPI, ARI, and CDD programs in such a district would also help reduce the contribution these diseases make to vitamin A deficiency.

[15] This might be an opportunity to test an expanded approach toward disease-targeted VAC distribution, including more diseases and perhaps even children with growth failure, especially as growth monitoring expands.

[16] Rosen, D. and Sloan, N. Protocol for the development of a vitamin A assessment tool for use by PVO's. VITAP/HKI, October 8, 1991.

[17] Here VAC distribution via EPI and disease-targeted distribution have major advantages. They add little extra cost or work burden to existing health sector activities, while having the potential to reach many more at-risk children than the universal VAC distribution system has been able to do.

developed, there is a need to plan for how to eventually replace or phase out the "universal" VAC distribution program when it is no longer needed, both by the government and by donors and NGOs active in the field.

The following is a possible model for how the withdrawal of "universal" VAC distribution could take place, district by district: (1) When consumption of key foods rose above a certain level and the prevalence of XN sank below a given level throughout a district, the decision to skip, on a trial basis, one round of VAC distribution in that district (or other area) would be triggered. (2) VAC distribution would then be resumed during the next round while the effects of the skipped round were carefully analyzed to determine whether any increase in vitamin A deficiency occurred as a result. (3) If so, VAC distribution would continue and a more demanding "trigger level" would be established for again attempting to skip a round in the future. If, instead, the skipped round had no impact on vitamin A deficiency, "universal" VAC distribution would cease in that district, but surveillance of vitamin A deficiency would remain intensive and "universal" VAC distribution would be reinstated if there were any dangerous increase in vitamin A deficiency in the future.

Increases in production and consumption of carotene-rich foods would have to take place before the process could be triggered. It will take a fairly long time per district for widespread changes in diet to take place, but social marketing and gardening promotional efforts will achieve this more quickly and sustainability than by simply relying on messages now given from health workers in connection with "universal" VAC distribution.

Due to the very low costs for labor in Bangladesh, the actual costs of applying on a national scale a women volunteer approach such as the one used by WIF would be quite reasonable. The use of mass media would of course still be valuable to give more status to women volunteers and as a way of ensuring that the messages disseminated around the country are fairly reliable and uniform.

All of these efforts might appear to be cumbersome, but may be necessary if the phasing out "universal" VAC distribution is to be possible. The greatest danger in <u>not</u> pressing for setting up a system for withdrawal from "universal" VAC distribution is that the status quo will continue to inhibit the development of more effective approaches, and unnecessary child suffering and death due to vitamin A deficiency will continue.

Recommendations to WIF

WIF should compare its experiences in Dinajpur with the other areas in order to determine whether three years is an adequate period of time for achieving its goals. Would a longer period be necessary or would it yield small additional benefits for the costs involved (including the opportunity cost to other districts

which might have to wait longer before benefitting from any future project)? Discussions should be held with the donors accordingly.

Possible adaptations of the current WIF approach that might be tried, at least in future projects, include:

- greater use of a social marketing approach, including use of target group segmentation and of focus group discussions for message and materials design and pretesting, better evaluation of messages and materials, etc. WIF should discuss with possible future donors possible ways to increase their social marketing expertise;

- ensuring that treatment or referral of night blind cases is "aggressive,"

- providing free or subsidized cooking oil for poorer families for use in the night-blind child's food until it is cured (and free or subsidized high-carotene foods until the family can grow its own);

- more focus on carotene-rich foods which grow during seasons when gardens are normally not producing;

- inclusion of peanuts, soy beans, mustard, cashews or other oil-containing foods in the program, depending, among other things, on what grows well in each area; and

Since the school is a key institution for teaching the future generation about vitamin A and other nutrition issues as well as practically about gardening, it would be worth continuing to explore what is needed to help schools to keep up with their gardening after the WIF assistance stops.

WIF and its donors should consider extending its approach to other high-risk districts. Unless the national survey finds Bogra, Joypurhat and the remaining districts of Dinajpur to be no longer at high risk, these areas would be reasonable places to expand into, as well as a few others if WIF can handle a larger scale project and funds are available.

Recommendations to SIDA

1. The Government's Nutritional Blindness Prevention Programme (NBPP) is currently being implemented according to its Plan of Action for 1988-1993. The end of this period coincides approximately with the timing of SIDA decision-making regarding a new agreement period in Bangladesh. SIDA should engage in a dialogue with UNICEF and/or relevant government officials regarding its continued support to NBPP. While SIDA should be prepared to continue its support to NBPP, it should encourage further steps to make NBPP more effective and to gradually phase into more long-term, sustainable, and effective approaches than "universal" vitamin A capsule (VAC) distribution.

2. If it appears that there is resistance toward establishing a system for phasing out "universal" VAC distribution, SIDA should explore the possibility of including this as a conditionality in future support. If this is not acceptable to UNICEF or the Government of Bangladesh, it appears that other donors may be available to take over the SIDA support to NBPP.[18] In this case, the SIDA funds currently going toward "universal" VAC distribution should be reallocated toward better alternatives, based on a review of needs and possibilities.

3. SIDA should be open to the possibility of continuing to support the Worldview International Foundation (WIF) project when the current agreement period comes to an end, giving due attention to the issues raised in the recommendations to WIF, above, as well as to the outcome of the surveys planned for Gaibandha. By the time the second Gaibandha survey is completed in March, 1993, it should be possible to determine whether the Gaibandha project will need some continued support before moving into another district.

List of persons met

SIDA

Mr. Hugo Herm, First Secretary (Development Cooperation)

Worldview International Foundation, Head office, Dhaka

Mr. Donatus de Silva (from head office, Sri Lanka)
Mr. Nazrul Islam, Country Director
Mr. Serajul Islam, Member, Central Council; Chairman, Coordinating Committee
Dr. A.M. Chowdhury, Director, Nutritional Blindness Prevention Program
Mr. Mosharraf Hossain, Deputy Director

Gaibandha District

Mr. Mustafizur Rahman, District Coordinator
Dr. Md. Abdul Matin, Addl. Dist. Coordinator
Mr. Mizanur Rahman, Trainer
Mr. Md. Abdul Aziz Miah, Upazila Officer, Sadar
Mr. Shahidur Rahman, " " , Palashbari
Mr. Sheikh Monawar Ali, " " , Gobindagonj-A
Mr. Abdur Rozzaqe, " " , Gobindagonj-B
Mrs. Nurun Nahar, Female Volunteer
Mrs. Mofakhera Begum, " "
Mrs. Afroza Begum, " "

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[18] The World Bank (IDA) is prepared to loan Bangladesh funds for this purpose. Since this would be less appealing to the Government than the grants it has been receiving from SIDA, it might actually stimulate government efforts to find a better alternative.

Lalmonirhat District

Ms. Sayeeda Begum, District Coordinator
Mrs. Akhtar Fateema, Trainer
Ms. Nassima Akhtar, Upazila Officer, Sadar
Ms. Mahmuda Khanam, Upazila Officer, Aditmari
Ms. Shahana Begum, Upazila Officer, Hatibandha
Mrs. Anita and other Women Volunteers

Dinajpur District

Mr. Md. Akhteruddin Ahmed, District Coordinator
Mr. Asif Ali, Upazila Officer, Sadar
Mr. Emdadul Hugue, Upazila Officer, Chirirbandor
Ms. Robina Akhtar, Female Volunteer
Mrs. Shafali Begum, " "
Mrs. Monowara Begum, " "
Mrs. Rahia Begum, " "

Institute for Public Health Nutrition

Dr. Nijami and three other staff

National Nutrition Council

Dr. Kamaluddin Ahmed, Chairman, Steering Committee

Dhaka University, Institute for Nutrition and Food Science

Dr. Abdullah, Assistant Professor
Dr. Aminul Bhuyan, Assistant Professor

Helen Keller International, Bangladesh Office

Dr. Martin Bloem, Director
(Anthony E. Drexler, Previous Director)
Dr. A. Tabibul, N. Sultana, and Aminuzzaman, project officers, home gardening project

UNICEF, Dhaka Office

Mr. Philip O'Brian
Ms. Flora Sibandah, Project Officer for NBPP
Dr. Kamal Islam, Project Officer, Health Services Development
Mr. Selim Ahmed, Programme Officer, Health and Nutrition Section

World Bank, Dhaka Office

Dr. Philip Gowers, Chief, Population and Health Office

FAO, Dhaka Office

Mr. Peter Myers, Representative
Ms. Else Ollgaard, Programme Officer

Bangladesh Rural Advancement Committee (BRAC)

A. Mushtaque Chowdhury, Research and Evaluation Division

Strömme Memorial Foundation, Dhaka Office

Grantham Fernando, Resident Representative

Mitra and Associates

S. N. Mitra, Executive Director

New Life Health Clinic, Dhaka

Lena Bäckdahl, Nurse

Appendix 1. TERMS OF REFERENCE

SIDA Review of Blindness prevention projects in Bangladesh

1. Review progress to date in both the National Nutritional Blindness Prevention Programme (NBPP), the Vitamin A Capsule (VAC) distribution program supported via UNICEF, and the Worldview International Foundation (WIF) program in Gaibandha which is attempting to solve the problem via communication to families regarding foods to feed their children.

2. In discussions with WIF, focus on the following issues:

   - follow up of the issues raised in the September Stockholm meeting

   - progress and problems with health worker involvement in the Gaibandha project

   - efforts being made to increase sustainability, especially the possibility of increasing the number of schools with which the project cooperates and increasing the depth of their involvement

   - progress on the video tape documenting WIF's project approach in Bangladesh

3. Discuss the issues surrounding possible changes and eventual phase-out of "universal" VAC distribution with the various interested parties: the Institute for Public Health Nutrition, UNICEF, Helen Keller International (HKI), appropriate officials in the Ministry of Health (e.g., EPI, EDP) and others. The following aspects should be explored:

   A. General attitude toward and plans for changing to a targeted approach (by high-risk area or via the immunization (EPI) and Essential Drugs programs or some other approach).

B. General attitude and plans for phasing out "universal" VAC distribution.

C. The possibility/need for establishing a surveillance system which will indicate which areas of the country no longer need "universal" VAC distribution.

   i. What administrative unit of the country would be involved? Could phase-out be done by district?

   ii. What would the indicator and cut-off point be for identifying areas to phase out? Would it have to be based on a dietary indicator? If so, what would this be, who would provide the technical expertise (University of Dhaka Nutrition Department?), who would have responsibility for maintaining it, and what would it cost?

   iii. What government authority would have the responsibility for taking the official decision to phase out a given district?

D. If the idea of basing phase-out on a surveillance system is seen as impractical, what approach can be taken and who will take responsibility?

E. Is the 1992/93 national NBPP evaluation still planned? Will it be able to indicate whether vitamin A deficiency is at a low level in WIF-supported areas and whether they have improved more relative to other districts? If so, would this be adequate to negotiate an agreement to change gradually from VAC distribution to communication programs throughout the country? Would the donor agencies be willing to change and if necessary increase their financial assistance temporarily to support this change? Would the government agree to this?

4. Discuss planning for the final evaluation of the WIF Gaibandha project. How will it be effected by the NBPP evaluation?

5. Discuss with appropriate officials of the government whether there is yet any interest in the issue of fortification of foods with vitamin A.

Appendix 2. Request for bids, Gaibandha surveys

The Swedish International Development Authority (SIDA) hereby requests the submission of bids for conducting two surveys related to the Nutritional Blindness Prevention Programme of the Worldview International Foundation (WIF) in Bangladesh. These surveys are to be conducted in March, 1992 and again in

March, 1993[19] on true probability samples of the population[20] of all seven Upazilas in Gaibandha District (1991 population: 1,856,000) as well as a comparison area comprising the entire population of the following seven Upazilas in Bogra and Joypurhat Districts: Panchbibi, Khetlal, Kalai, Shibganj, Gabtali, Sonatala and Sariakandi.

Sample sizes must be large enough that a difference of one percentage point in rates of night blindness among children between 1-6 years old over time or between experimental and control areas is statistically significant at the 95% level.[21] The exact sampling sites are to be kept secret until just before the survey begins at which time SIDA and WIF will be provided with listings of the sites and will have the right to observe, to re-interview, to examine completed questionnaires and in general ensure data quality to their satisfaction.

These are to be household interview surveys based on a questionnaire intended to provide data on the questions listed below. The successful bidder will develop and pretest a questionnaire, discussing an English translation of the final draft with SIDA before proceeding with the survey. Interviewers and respondents are only to be informed that the purpose of these surveys is to gather information generally on health and agriculture. Only at the analysis stage will the focus sharpen on vitamin A.

Bids should estimate costs associated with:

- development of supervisors' manuals for the questionnaire, training of supervisors and of interviewers, pretesting, revision, and printing of the questionnaires;

- conducting the surveys with proper supervision and quality control;

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[19] In each case, the surveys are to be completed within the period of Ramadhan, which starts on about March 5, 1992 and some ten days earlier than this in 1993.

[20] Interviews will be conducted only with households containing at least one child 1-6 years of age. Questions will be asked of the mother or other guardian most involved in caring for young children. One attempt will be made on another day to obtain interviews with families not at home or unavailable at the first visit. The two surveys will be done on separate samples, not repeat visits to the same households. Confidentiality to respondents must be ensured. Interviewers should be instructed to advise parents of night blind children to take them to a health worker to receive VAC.

[21] For example, if the rate of night blindness changed from 4% to 3% of children under 15 years of age. Bidders should calculate sample size required according to the sampling method they propose to use.

- analyzing the data to provide easily understood and properly analyzed tables and graphs showing, among other things, difference by gender, and including appropriate statistical analyses to determine whether differences between the two populations or in the same population over time are statistically significant [frequency tables by Upazila (without statistical testing) should be presented in an appendix];

- writing and publication in 5 copies to be delivered to SIDA of scientifically sound and well-written English language reports of the surveys by July 1, 1992, but more quickly, by May 1 in 1993.

Cost estimates should show breakdowns for salary, travel, per diem, stationery, statistical consultation, computer time, overhead, etc. Bidders should submit their estimates of the numbers and types of personnel that they will use and train, a time table showing each of the tasks involved. Bidders should submit their credentials, especially evidence of any similar survey work they have conducted previously, including at least one example of a survey report.

SIDA, in consultation with WIF, will base its choice of bidder on likely quality of work to be done as well as cost.

Questions can be addressed to, and bids should be delivered (in two copies) to Development Cooperation Office, Embassy of Sweden, attention Hugo Herm, 73 Gulshan Avenue, Dhaka (ph. 884761-4) by **February 2, 1992.** Bidders may contact SIDA regarding its decision on February 6.

Data to be gathered:

- two measures of socioeconomic status such as land ownership; type of roof on the house

- mother's education

- for each child between the ages of one and six years (12-71 months):

Age, sex. Had measles vaccination? Had measles in the last year?

What foods does the family grow?

[If there are no "special"[22] foods:] Why do you not grow more vegetables and fruits? Did you grow these foods previously?

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[22] The foods to receive special attention are green leafy vegetables, yellow fruits and vegetables, and oil-bearing plants such as peanuts, mustard seed.

[For each general type of "special" food grown:] How long have you been growing it? Is it for consumption, for sale, or both?

How many harvests per year do you get from your garden?

Are foods growing: __ in a separate garden __ in a strip of land beside the house __ on the roof? [mark multiple answers]

Estimate the number of fruit trees and the size of area planted in gardens for "special" foods.

Ask the mother what foods the family ate yesterday and last night (between sunrise yesterday and sunrise today). List all of them, requesting the respondent to include even foods used in small quantity, spices, snacks, drinks, etc. Do not ask or record what quantities were consumed. However, you should indicate how many <u>times</u> each food was consumed during the day. [If she has a hard time remembering, it may help to be begin with the foods eaten before sunrise today and proceed backwards in time.]

Then ask the respondent, for each child from age 1-6, exactly what that child ate during this period. [The list you already have may assist in ensuring accuracy. If the mother says the children ate what the family ate, then attempt to ensure that this holds true even regarding all spices and foods normally consumed mainly by adults. If there was a long period between certain meals, then ask whether the child was given any drink or snack during this time. Check whether the child may have been with someone else during this day who gave food to it that the mother does not know about. Siblings older than about 12 may be able to help, but the young children themselves should not be asked to remember what they ate.]

Regarding the children's diets, ask how this was different from what they were eating before Ramadhan.

If the mother did not already mention breastfeeding, ask whether any of her children still receive breast milk and if so which ones. Ask her how many times the child received the breast yesterday.

Ask which of her children, if any, had received colostrum at birth [include even infants under one year in this question].

Are any of your children night blind?

How do you know this? For how long has the child been night blind?

Have any of your children been night blind in the past? When did they get better?

Did you give any treatments for night blindness? List them:

What do you think causes night blindness?

Where have you heard this?

Have you heard anything about how to prevent it?

Where did you learn this?

Show the mother a vitamin A capsule and ask if she has seen one before. Does she know what it is? Has it been given to any of her family in the past six months? Which members received it? Did they receive drops from one capsule, one entire capsule, or more than one capsule? [List all family members who received, their age, and the dose received for each]