

**MOST, The USAID Micronutrient  
Program**

**FINAL REPORT**

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The opinions expressed in this document are those of the author(s) and do not necessarily reflect the views of the U.S. Agency for International Development.

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## I – OVERVIEW

MOST, The USAID Micronutrient Program, is a Cooperative Agreement between USAID and the International Science and Technology Institute (ISTI) designed to achieve measurable results at country level in the reduction of vitamin A deficiency, anemia and iodine deficiency. The MOST sub-recipients working in partnership with ISTI are Johns Hopkins University (JHU), Helen Keller International (HKI), and the Academy for Educational Development (AED).<sup>1</sup> At the outset, the MOST team also included resource institutions, CARE, PATH, and Population Services International (PSI) but, where circumstances dictated, other organizations were brought into the team to manage country programs including Makerere University in Uganda, the Reproductive Health Association of Cambodia (RHAC), and the University of Western Cape in South Africa.

Conceived as a results-oriented program by USAID, MOST developed a strategy that placed primary emphasis on supporting USAID missions with programs calling for the reduction of micronutrient deficiencies and elected from the outset to become a global leader by disseminating the successful country approaches to the international development community and among other MOST supported countries. In accordance with USAID’s historic emphasis on vitamin A as a means to better child survival, the MOST team placed highest priority on assuring that countries had a successful vitamin A supplementation program for children 6 to 59 months of age.

Lacking a proven “magic-bullet” to address anemia, MOST developed a strategy calling for an integrated approach to anemia that addressed the multiple causes of the condition simultaneously. With the exception of its anemia program in Nicaragua, MOST was unable to support integrated anemia programs in countries for a sufficient period of time to prove the feasibility and viability of the integrated approach; however, confidence that this approach is needed remains high.

In countries with successful vitamin A supplementation programs, MOST turned its attention to food fortification as a longer-term measure to reduce vitamin A deficiency as well as a potentially effective means of increasing iron intake in the diet. Food fortification programs were given a boost throughout the developing world with the arrival of the Global Alliance for Improved Nutrition with its stated emphasis on funding food fortification programs designed to reach segments of the population most in need.

MOST did not get deeply involved with food-based solutions to micronutrient deficiency other than food fortification owing, in part, to the high priority given to proven short and medium term approaches and, in part, due to the structure of USAID that separates intervention in the agricultural sector from those related to health. Nutrition education, including messages concerning dietary practices were often administered along with messages about vitamin A and food fortification and MOST did oversee a successful activity to introduce orange fleshed sweet potatoes in Uganda.

In its sixth year, USAID added the management of programs to counteract childhood blindness to the MOST portfolio. A number of new partners joined MOST in its effort to expand eye care services in developing countries.

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<sup>1</sup> Initially the International Food Policy Research Institute was a primary sub-recipient but recognition on their part that MOST was a field oriented project without a research component led to their withdrawal as an active partner.

In its final year, following recommendations by WHO and UNICEF that zinc supplements be given along with oral rehydration therapy to children with diarrhea, MOST took a number of steps to introduce zinc supplementation in a number of countries but were unable in the time remaining to see programs emerge in any of those countries. However, a number of the tools needed to introduce zinc were developed under MOST and widely disseminated.

In the pages that follow, the achievements of MOST in each of these major program areas will be enumerated followed by considerations for future programs growing out of the MOST experience. Each of 29 country or regional initiatives will be described.

## II – ACCOMPLISHMENTS

With field support funds<sup>2</sup> originating from USAID country Missions, MOST managed twenty-five country programs and two regional programs. One additional country program (Senegal) and one regional program (West Africa) were funded with core funds<sup>3</sup> during the last two years of MOST after activities funded previously under a Cooperative Agreement between USAID and Helen Keller International were consolidated into MOST. One other country was supported for activities related to eye health. Table 1 gives a brief overview of the types of activities supported in each of these programs.

Table 1: Overview of MOST Country-level Activities

COUNTRY	VITAMIN A SUPPLEMENTATION	ANEMIA	FORTIFICATION	IODINE	EYE HEALTH (core funds)
<b>AFRICA</b>					
D.R. Congo	X	X			X
Eritrea		X	X		
Ethiopia	X		X		
Ghana	X	X (core+reg)	X		X
Guinea	X				
Madagascar	X				
Mozambique	X				
Rwanda	X				
Senegal	X (core funds)				X
Sierra Leone	X				
South Africa	X				
Tanzania	X				X
Uganda	X	X	X		
Zambia	X		X	X	
<b>ASIA</b>					
Bangladesh			X		
Cambodia	X				X
India	X	X			
Nepal	X				X
Philippines	X		X		
Tibet					X
<b>NEAR EAST</b>					
Morocco	X		X		
West Bank/Gaza			X		
<b>LATIN AMER.</b>					
Haiti	X			X	
Honduras		X			
El Salvador		X			
Nicaragua		X	X		
<b>EASTERN EUR.</b>					
Ukraine			X		
<b>REGIONAL</b>					
Europe & Eurasia				X	
East Africa			X		
West Africa (core)	X		X	X	

<sup>2</sup> Field Supports funds are transferred to centrally-funded, Washington-based technical assistance projects by USAID country Missions to support the Strategic Objectives of those Missions. In principle, all activities at country-level are supposed to be carried out with USAID Mission funds.

<sup>3</sup> Core funds are funds available to Washington originating in the Bureau for Global Health. In principle, core funds are used to support global leadership activities and to maintain the basic infrastructure of the project. In practice, core funds are used to stimulate Mission-based programs or to jump start those programs in anticipation of the receipt of field support funds.

## A. Vitamin A Supplementation

In 17 of the 19 countries where MOST supported vitamin A supplementation, some form of periodic distribution to all children 6 to 59 months of age, en masse, was the preferred mode of delivery. In the jargon adopted by MOST, these mass distributions are called ‘Child Health Weeks’. In the other two countries, South Africa and Mozambique, the distribution was done through the “routine” system; that is, children showing up at health clinics for some form of treatment or “well-baby” visits who had not received a capsule for six months were given a supplement.

Many of the countries had, at one time or another, administered vitamin A supplements along with vaccinations during national immunizations days (NIDS) but, in general, the vitamin A was given to the children without any explanation of its benefits passed on to the mother and without any instruction as to how to continue to receive vitamin A outside of the NIDS. In 9 of the 19 countries (Guinea, Madagascar, Rwanda, Sierra Leone, Senegal, Uganda, Zambia, Morocco and Haiti), MOST helped introduce vitamin A supplementation as a national program in its own right rather than as a part of NIDS. In 2 countries (the D.R. Congo and Ghana), MOST worked to scale up programs already in place in a limited geographic area. In 2 countries, (Ethiopia and India), MOST supported efforts to restart programs that had been suspended owing to alleged adverse events in which suspicions had been raised that children had died as a result of the vitamin A distribution. In 2 other countries (Nepal and Tanzania), MOST support was used to sustain and strengthen programs that had already achieved a high degree of success prior to MOST’s entry on to the scene. In the Philippines, MOST role was linked to the monitoring of the program and in Cambodia, MOST initiated a pilot program in a limited geographical area to explore the feasibility and safety of marshalling community support and the use of volunteers to improve the program. And, as noted above, 2 countries did not adopt the Child Health Week model (South Africa and Mozambique).

The indicator of the success of a vitamin A supplementation program is the coverage attained among children 6 to 59 months of age. As each child is intended to receive a supplement every six months, the generally accepted indicator is the proportion of children 6 to 59 months of age who have received a high dose vitamin A supplement in a six month period<sup>4</sup>. Clearly, this indicator is a highly unstable one in that coverage could be very high in one six month period and very low in the next as a result of program failure or supply problems. Currently, this proportion can be estimated in one of two ways. Tallies can be maintained of the number of children receiving a supplement during a Child Health Week or any six-month period where records are kept at health clinics and the total number of doses distributed divided by an estimate of the number of children in the target population. Or, a survey can be carried out where mothers are asked to confirm (or deny) that their child had received a supplement within the six months prior to the survey. High coverage rates are typically observed following Child Health Weeks but, where the distribution is through the routine system, rates have not been observed that exceed 50%. Table 2 presents the final coverage rates reported in selected countries during the period covered by MOST support.

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<sup>4</sup> As introduced during a special session of IVACG in November 2004, the indicator of choice would be the proportion of children who are fully covered with vitamin A supplements throughout their first five years of life where the first six months is covered by a post partum supplement given to a mother who breastfeeds. It is not practical to apply this indicator at this time as record keeping systems are inadequate.

Table 2: Vitamin A Coverage Rates in Children in National Programs

COUNTRY	METHOD OF DISTRIBUTION	TALLY OR SURVEY	DATE	COVERAGE
D.R. Congo	Child Health Week	Tally	May 2005	87.4
Ghana	Child Health Week	Survey	May 2002	89.2
Guinea	Child Health Week	Tally	Nov. 2004	102%*
Madagascar	Child Health Week	Tally	Oct. 2003	91%
Mozambique	Routine System	Health Statistics	2004	30%-50%**
Rwanda	Child Health Week	Tally	Nov. 2003	103%*
Senegal	Child Health Week	Tally (Preliminary)	Sept. 2005	86%
Sierra Leone	Child Health Week	Tally	April 2005	107%*
S. Afr. (Eastern Cape)	Routine System	Health Statistics	Oct. 2003	60%
Tanzania	Child Health Week	Survey	End 2004	85%
Zambia	Child Health Week	Survey	June 2003	87.3%
India-Uttar Pradesh	Child Health Week	Tally (18 districts)	Dec. 2004	28.1%
India-Jharkhand	Child Health Week	Tally	Dec. 2004	70.4%
India-Uttaranchal	Child Health Week	Tally	Dec. 2004	55.3%
Nepal	Child Health Week	Survey	Oct. 2004	96%
The Philippines	Nutrition Week	Survey	2002	86%
Haiti	Child Health Week	Tally	Dec. 2004	39%
* Tally sheets frequently produce estimates that are clearly too high as a result of inaccurate estimates of the denominators used (number of children 6 to 59) months of age.				
** Mozambique reports 27% coverage in the first half of 2004 and 30% in the second half. As there is no record of the number of children receiving two doses, the true coverage is somewhere in the range shown.				

In almost all instances, MOST worked not only with local government officials but with other partners on the ground, especially UNICEF and the Micronutrient Initiative who had the resources and mandate to furnish the vitamin A capsules with funds provided by the Canadian government. At the IVACG meeting held in Peru in November 2004, the success of the joint efforts to introduce Child Health Weeks led to the convening of a special session on vitamin A supplementation in which UNICEF, the Micronutrient Initiative and MOST were joined by WHO and Helen Keller International in a public endorsement of the concept of relying on the distribution of vitamin A to children using some form of Child Health Week rather than relying on the routine system.

## B. Anemia

In Latin America, MOST supported anemia programs primarily by strengthening ongoing iron/folate supplementation programs. In El Salvador, Honduras and Nicaragua, this support took the form of improving educational and communications materials to increase compliance with policies and programs already in place and revamping the logistics systems to assure a continuing supply of supplements at the periphery.

In Nicaragua, MOST developed a community-based model in the El Cua region to improve iron supplementation using community health volunteers, called *brigadistas*. The project confirmed that by improving the knowledge and skills of health professionals and *brigadistas* the demand for and acceptance of iron supplements by mothers could be achieved, largely through improved counseling and follow-up. The success of this model in El Cua led to the scaling-up of the model nationwide. Anemia prevalence in women of childbearing age, which reached 33.6% in 1993, consistently came down to 23.7% in 2000, 15.6% in 2003 and a remarkable 9.6% in 2004. And, the anemia rate in children 12-59 months, which was as high as 28.5% in 1993 and showed no change up to 2000, dropped to 23.1% by 2003 and continued so in 2004, with a 16.6% national prevalence.

In Africa, programs to address the multiple causes of anemia, especially, malaria control and deworming, are less mature than those in Central America and therefore, call for the application of a more complex challenging strategy. In Ghana, MOST provided technical assistance to the government in a) the development and approval of a comprehensive strategy to address anemia, b) the creation of a national anemia coordinating committee, c) the development of a communication plan and materials to promote the program to implement the strategy, and d) monitoring the early in implementation. In Uganda, formative research into the obstacles to a successful program led to a series of recommendations for program development; however, MOST support to the anemia program was terminated when USAID/Uganda transferred responsibility for micronutrient programming to its new bilateral program, UPHOLD. In Eritrea, a formative assessment by MOST identified a major supply problem. MOST worked with its partners to remedy this problem and, then, to work with health care providers to improve their knowledge and incentive to implement the program. In the D.R. Congo, MOST supported the development of a strategy but did not get the chance to work toward program implementation.

In Asia, near the end of its tenure, MOST introduced a program in the State of Jharkhand in India designed to improve the anemia status of women health workers as a first step in convincing those workers to pass on their knowledge and behaviors to the community. None of the programs in Africa or the one in Asia had sufficient time to evolve to the point where impact on anemia status could be measured.

### **C. Food Fortification**

Using field support funding, MOST engaged directly in fortification programs in eleven countries and two regions, Eastern and Southern Africa and Europe and Eurasia. Using core funds or funding from other sources, MOST provided short-term technical advice to two other countries (Nigeria and South Africa) not marked in the table above and to one the remaining regional initiative in West Africa. Foods are currently being fortified that were not fortified at the outset of MOST's involvement in 4 of those 10 countries, Nicaragua, Morocco, the Philippines and Uganda. Six of those countries are poised to initiate fortification activities, Eritrea, Ethiopia, Ghana, Bangladesh, West Bank/Gaza and Ukraine. In both West Bank/Gaza and Eritrea, microfeeders were shipped to wheat millers in the very last month of the project, paving the way for fortification to begin as soon as the means to procure pre-mix are found. In Zambia, steps were taken to sustain sugar fortification with vitamin A begun under OMNI. MOST provided technical assistance for the preparation of proposals to the Global Alliance for Improved Nutrition to introduce or expand fortification programs in seven of the eleven countries.

In Nicaragua, MOST served as the catalyst in the final stages of collaborating with the sugar industry to join the other countries in Central America in the regional effort to fortify all sugar with vitamin A. In Morocco, MOST funds and technical assistance supplemented funding provided by the Micronutrient Initiative through the Eastern Mediterranean Regional Office (EMRO) of the World Health Organization (WHO) to stimulate the cooking oil industry to fortify with vitamin A and the wheat flour millers to fortify with iron, folic acid and b vitamins. In the Philippines, the local MOST team served as the secretariat to the National Fortification Alliance as it prepared for the implementation of legislation mandating the fortification of rice with iron, wheat flour with vitamin A and iron, sugar with vitamin A and cooking oil with vitamin A. Shortly after the legislation went

into effect in November of 2004, those wheat millers not yet fortifying joined the others bringing the total number of large millers fortifying to 12 and 34 large oil refiners have the technology to fortify and are expected to fortify soon. In Uganda, during the deliberations to prepare a GAIN proposal, the largest cooking oil producer initiated fortification with vitamin A following a small investment by MOST to procure the mixing equipment required.

MOST provided technical assistance in the preparation of GAIN proposals to Eritrea, Ghana, Uganda, Zambia, Bangladesh, the Philippines and Morocco. GAIN made award to Ghana, Zambia and Morocco. Proposals from Bangladesh and Uganda are pending. The Philippines will resubmit its proposal in January 2006. Owing to withdrawal of USAID support in Eritrea, it is not certain that they will be able to complete their proposal and submit it in January.

#### **D. Zinc in Treating Diarrhea**

Following a recommendation made by UNICEF and the World Health Organization, USAID initiated efforts during MOST's final year of operation to introduce zinc supplementation as an additional treatment for diarrhea to be administered along with oral rehydration therapy. As its primary contribution to this effort, MOST developed materials for subsequent field-testing including the Guidelines for Clinic-based Health Workers (in Spanish and French as well as English) and a series of presentations and documents to be used with other donors, governments and USAID Missions.

Several attempts to initiate programs to test the manuals and develop a knowledge base regarding implementation issues fell by the wayside as, despite marked enthusiasm, governments exhibited caution in approaching a new program in order to prepare correctly the policies and local protocols for this new initiative.

#### **E. Iodine Deficiency Disorders**

Implementation of salt iodization programs, the recommended approach for eliminating iodine deficiency disorders, is generally the province of UNICEF. Historically, USAID's role has been to provide funds for UNICEF and to provide technical assistance in the area of monitoring and evaluation. MOST continued that trend.

With funds from the Europe and Eurasia Bureau of USAID, MOST conducted three national level evaluation missions and mounted two regional workshops using the design of the monitoring system as the stimulus for participating countries to review the progress and remaining obstacles to achieving universal salt iodization.

As part of its technical assistance in fortification, particularly regarding the monitoring and evaluation component of fortification programs MOST conducted training in monitoring salt iodization programs in Zambia and the Philippines and supported an assessment of the salt iodization program in Haiti.

MOST also participated in a West Africa Universal Salt Iodization Consultation organized by UNICEF and WAHO and provided technical assistance to the salt producing countries of Ghana

and Senegal to assure that salt produced in those countries for both domestic consumption and export was iodized.

## **F. Eye Care**

During its last two years, MOST was given the opportunity by USAID to support a number of organizations with a history of working with the visually impaired in both the treatment of conditions affecting eye health and in helping those already visually impaired to lead better lives. The focus of these programs was the delivery of services in geographical areas where few or no services were readily available. For the most part, these programs were service oriented rather than experimental using the funding made available to accelerate or expand geographically programs that were already in place using techniques known to be effective.

The Centre de Formation Ophtalmologique pour L'Afrique Centrale (CFOAC): (3/1/2005 – 9/15/2005, \$101,384) Working in three geographical regions of the D.R. Congo, the CFOAC trained community workers, teachers and nurses to screen for eye diseases and organized sessions to perform cataract surgeries for those in need. Ten nurses, 45 teachers and 200 community workers were trained, 3,067 adults and 25,567 children were screened and 879 surgeries performed.

The Crystal Eye Clinic: (7/1/2004-8/31/2005, \$300,000) The Crystal Eye Clinic provides eye care, education to prevent blindness and rehabilitation services in Ghana. Over 4,000 individuals were screened, 1,760 people were treated, 782 surgeries were performed, 12 blind patients were rehabilitated, several hundred pairs of eye glasses were distributed, 20 primary eye care workers were trained and educational materials developed for current and future use. MOST was instrumental in forging a link between the Unite For Sight program described below and the Crystal Eye Clinic where patients in the program operating in the Buduburam refugee Camp are now referred for surgical services.

Helen Keller International: (10/1/2004 – 8/31/2005 in Tanzania, Senegal and Nigeria and 1/1/2005 in Niger, \$108,640, \$106,765, \$100,000 and \$199,845) The funding of the HKI programs in Tanzania, Senegal and Nigeria was envisioned as support for the first year of a longer program. Each program featured training of local staff, strengthening the local infrastructure, increasing demand for surgeries through outreach and education and provision of needed surgical and eye care supplies. In Tanzania, 2 teams (surgeon, examiner, optician, counselor and nurse) were trained, 226 cataract surgeries performed, and 153 spectacles distributed. In Nigeria, 2,698 health workers were trained and 367 surgeries performed. The program was a little slower in starting in Senegal where 112 nurses have been trained and needed equipment procured. In Niger, the major thrust has been to improve the quality of cataract surgery as well as the quantity. 234 surgeries were performed using far better technique and the links forged between primary health care providers, 99 in all, and the surgical teams.

Loyola Marymount University, California: (3/1/2005 – 8/31/2005, \$56,000) A professor at Loyola Marymount, Dr. Jok, explored the causes and potential for responses in war-torn Southern Sudan. Apart from the identification of the importance of vitamin A deficiency in this geographical region, this study identified a number of behavioral factors contributing to eye disease that could be addressed in subsequent intervention.

The Perkins School for The Blind: (7/1/2004 – 8/31/2005, \$555,246) The Perkins School for the Blind specializes in working with the sight impaired to give them the skills to lead productive lives. Working through its network of international trainers and professionals, The Perkins School provided service, either directly or indirectly through partners, to 7,000 blind or deafblind children in 41 countries in all regions of the world. Perkins donated 468 Perkins Braille devices (a device that enables the sight impaired to both read and write) to 84 schools and provided training to school teachers in their use and in their maintenance and repair.

The SEVA Foundation: (8/31/2003-7/31/2005, \$479,382) The SEVA foundation implemented community-based programs in Cambodia and Nepal designed to help improve the quality of eye care services and increase access to services for women and children. This was accomplished by training medical professionals and community outreach workers in diagnosis and treatment of eye conditions, nurses and outreach workers, running diagnostic screening and treatment camps in the communities, and referring surgical cases to partner hospitals.

The Terma Foundation: (12/1/2004-8/31/2005, \$221,000) The Terma Foundation provided culturally-adapted community education to 30 villages in central and eastern Tibet, screened the population in those villages for eye problems and referred at-risk individuals for more advanced treatment, equipped the local clinics serving the 30 villages and trained community health workers, doctors, nurses, midwives and traditional doctors in the prevention, diagnosis, referral and treatment of blindness. The direct beneficiaries of the program numbered 8,764 of which 3,386 were children who received eye care and health education. Through the outreach program, the project reached 141,000 beneficiaries.

Unite For Sight: (2/7/2005-9/7/2005, \$144,358) Unite for Sight provided funding to expand work done by volunteers in the Buduburam Refugee Camp in Ghana to empower the local community to improve eye health and eliminate preventable blindness. Children and adults were screened for eye problems, trainers and school teachers were trained to educate and work with students to address eye disease, tested the use of the focometer in a refugee camp for determining prescriptions for glasses, refer patients needing surgery and establish a microenterprise program to enable families with lost income due to blindness to become economically self-sufficient. Approximately 6,200 people were screened, 116 received cataract surgery, 48 were operated on for pterygium, 93 individuals were tested for glaucoma, 7,229 pairs of glasses were distributed, 37 teachers were trained. MOST funds were also used to expand a program in Sierra Leone where 753 people were screened, 23 cataract surgeries were performed and 200 pairs of glasses distributed.

## **G. Global Leadership**

From the outset, MOST framed its strategy to become a global leader on the premise that the first step to becoming recognized as a leader was the implementation in countries of programs that were effective, efficient and replicable in most countries on their own or working with the assistance of other donor organizations. By documenting and sharing its successes, MOST believed that it could influence the approach taken to the reduction of micronutrient deficiencies globally.

This strategy worked best in the arena of vitamin A supplementation. In February 2001, at the IVACG meeting in Hanoi, MOST organized a special evening session to allow representatives of the governments implementing the Child Health Week model for delivering vitamin A to address their

colleagues from other countries. Anticipating 50 attendees, the MOST team was pleasantly surprised when better than 75 people attended the meeting and many of them expressed disappointment when the facilitators of the session closed the discussion that followed because of the lateness of the hour.

After initiating successful programs in a number of African countries, MOST collaborated with another USAID project, BASICS, to conduct a meeting in Goree Island, Senegal in June 2001 where the MOST government counterparts in countries experiencing success with the Child Health Week model were asked to promote and explain that model to representatives of other African countries not yet exposed to this mode of delivering vitamin A supplements to children. At the 2003 IVACG meeting in Morocco, the MOST Supplementation Advisor presented the results of a study that demonstrated that the Child Health Week approach was the only one achieving consistently high coverage rates throughout the world.

And, as noted above, at the 2004 IVACG meeting in Peru, the donor community publicly endorsed this model as the preferred means to reach out to the largest number of children.

Recognizing concerns over the alleged high costs of Child Health Weeks, MOST initiated cost studies of three variants of the Child Health Week model: a pure vitamin A distribution in Ghana, a Child Health Week model in Zambia and a combined Child Health Week/routine service model in Tanzania. These studies developed the evidence that the distribution of vitamin A to all children in a well-defined time period was affordable. In addition to the cost studies, MOST authored other papers, available on the MOST web site, to describe the model and the factors underlying its success.

In the arena of fortification, success came too late in the life of the project to allow for the realization of a similar strategy to promote successful models of fortification. The insertion of GAIN into the picture with its promise (real or imagined) of large sums of money to support fortification programs, further disrupted this strategy as countries diverted efforts to implement fortification in favor of efforts to write proposals.

Nonetheless, MOST has collaborated on or written a number of important publications establishing global norms for fortification. Collaborating with Roche Vitamins (now DSM Nutritional Products), MOST help produce the Fortification Basics series. MOST also completed a set of manuals on wheat flour fortification and detailed descriptions of the efforts to fortify sugar with vitamin A in Central America and Zambia. Although not heralded as a MOST report, MOST made a major contribution to the forthcoming guidelines for fortification to be released shortly by the World Health Organization.

In its final months, MOST became engaged in a debate with colleagues from other organizations concerning the process by which safe but effective levels of micronutrients can be determined for fortification programs. In brief, the debate addresses the issue of delivering enough of the desired micronutrient(s) through fortification to those with the greatest deficiency without placing others with adequate intakes at risk of consuming potentially harmful excesses of those same nutrients.

As noted above in the areas of zinc as a treatment for diarrhea and the implementation of programs to combat anemia, MOST was unable to complete and document programs that were successful owing to a shortage of time and resources. Nonetheless, MOST published a number of basic

documents for use in implementing zinc programs once the various obstacles are removed to their initiation and to explain its strategy for approaching anemia through an integrated program.

All MOST documents have been made available through its web site.

Whether categorized as a global initiative or a regional program, MOST support to the West African Health Organization, a part of the Economic Community of West African States (ECOWAS), has stimulated participating countries to launch vitamin A supplementation programs and to consider fortifying cooking oil with vitamin A. MOST also has provided support through its partner the East, Central and Southern Africa Health Community (ECSA) to establish an environment conducive to food fortification in other regions of Africa.

Also as part of its program to provide global leadership, MOST undertook a study to test and validate newer methods of measuring the prevalence of vitamin A deficiency in countries. The initial study completed in 2002 using samples from Nicaragua indicated that additional refinement of the methods was needed before MOST could endorse them. Since that study, MOST has provided continuing input to PATH, the developer of a test to measure deficiency in a population by measuring the protein that carries the retinol throughout the body. In certain situations, that test may now be ready for more widespread application, especially where non-invasive techniques are required or cost becomes a major factor.

The caveat regarding “certain situations” arises as a result of an effort to measure the impact among children of several years of vitamin A supplementation and the fortification of sugar with vitamin A. This study raised a serious question regarding the need to measure infection in that population of children in order to understand the nature of the deficiency. High levels of infection contribute to the appearance of high levels of vitamin A deficiency, even in the presence of programs to reduce that deficiency.

### **III – OBSERVATIONS RELEVANT FOR FUTURE PROGRAMS**

Programs in different countries frequently have unique characteristics that set them apart from similar programs in neighboring countries. This section of the report is an attempt to distill the common elements of MOST’s country programs that may help guide the design, implementation and evaluation of similar programs in the future.

#### **A. Vitamin A Supplementation**

Given the mandate to deliver vitamin A in some form to 80% of children in 5 to 8 countries, MOST reviewed several ongoing programs that were already reporting high coverage (Nepal, Bangladesh, the Philippines, and Nicaragua) in an effort to determine how to meet the challenge of achieving this result. The common feature of these programs is the delivery of high-dose vitamin A supplements to all children in two highly publicized mass distributions. The specifics of each program were developed to fit the local context; however, it proved feasible in each instance to achieve high coverage by adapting an approach relying on the distribution of the supplements to all children during a limited, well-defined time period, twice each year. As a fat-soluble vitamin, vitamin A is particularly suited to a twice-yearly distribution as the body has the capacity to store the vitamin A for period of 4 to 6 months.

Experience with this approach was limited in Africa but as the need there was greatest, MOST set about establishing programs based on mass distributions in several African countries to test the viability of this approach. In general, the steps followed to initiate a program entailed:

- Identification of a lead agency or Task Force to take ownership of the program on behalf of the national government
- A review of the policy, if any, for distributing vitamin A and an adjustment of that policy where needed or the development of that policy where it was absent altogether
- An assessment of the performance of any program already in place
- Advocacy with high-level decision makers if resistance to the notion of focusing on vitamin A supplementation was not readily endorsed
- Design of the delivery model appropriate for the context of the country (preferably some form of mass distribution rather than “routine” distribution)
- A review of the supply system for vitamin A including recommendations as to how to assure availability of supplements when needed given the delivery model envisioned above
- Design and implementation of a training program (including training manuals, job aids, etc) for the individuals (volunteers or health staff) designated to administer the supplements to children as well as for the supervisory and administrative personnel charged with overseeing implementation

- Development of a communication strategy to assure that caretakers are aware of the time and place to obtain supplements for their children
- Development of a monitoring system capable of generating estimates of coverage attained and, if surveys are to be used to corroborate those estimates, design of the questionnaires so as to inform program managers of strengths and weaknesses of the program
- Implementation of a survey following the distribution to estimate or corroborate coverage figures generated during the distribution as well as to attain relevant information regarding the knowledge and attitudes of caretakers to assist in the design of modifications to the program in subsequent rounds

The early experiences in Zambia and Ghana suggested the need to broaden the range of services provided during the mass distributions to justify the expense and effort. Although relatively inexpensive in absolute terms, governments and donors view the expense of a periodic distribution as an add-on cost stealing resources from the primary function of the health sector, the development of a human and physical infrastructure capable of providing curative and preventive services in response to client (patient) demand. To counteract this prevailing belief, MOST encouraged the evolution of the mass distribution of vitamin A supplements into what is now known as the Child Health Week model. In this model, the period set aside for distribution of vitamin A is used to deliver a package of health services including such things as catch-up immunizations, the administration of de-worming medication, re-dipping of bednets used in malaria prevention, and nutrition/health education. MOST introduced the Child Health Week early on in Zambia, Ghana, Uganda, and eventually extended its work to the D.R. Congo, Rwanda, Ethiopia, and throughout West Africa. Although not in Africa, Haiti also adopted the model.

The following observations emerge from the experience in these many countries.

**Observation 1:** *In most of the countries adopting the mass distribution of vitamin A to children, it was possible to introduce the program from the outset as a national program without first implementing a demonstration or pilot project in a limited geographical area. Scale-up was unnecessary.* Several factors contributed to this time and money saving leap to a national program. Countries had familiarity with the mass distribution of vitamin A in conjunction with National Immunization Days reducing the need for verification of program feasibility through a pilot. Vitamin A distribution is relatively simple minimizing the need to refine training methodologies or protocols. And, finally, donors were willing and ready to fund the program on a national scale. In one country where a pilot project was initiated as the first step, a review of the costs of that pilot when imagined multiplied for a national program prompted the government to discard the whole notion as being too expensive. Some pointed advocacy to demonstrate the economies of scale working at national level did, in the end, save the program. This suggests that, as a general rule, where needed, pilot programs should be implemented to test the design of what is both affordable and technically feasible when envisioned on a national scale.

**Observation 2:** *In all of the countries except India where MOST suggested introduction of the Child Health Week model, resistance centered around cost rather than concept.* (India is unique in that a number of leaders in the nutrition community still question the scientific findings concerning the impact of vitamin A on child survival. However, at State level in India, despite vocal opposition to the concept from the nutrition community, acceptance of the importance of vitamin A was high.) Thus, donors should be

prepared to back up suggestions of distributing vitamin A through a Child Health Week with funding. As noted above, national governments view Child Health Weeks as an add-on expense competing for resources with maintenance and/or expansion of the fixed-site health infrastructure. Over time, as most countries are now decentralized, the path to financial sustainability in those countries lies in convincing the decentralized governmental units that they derive sufficient benefit from the Child Health Week to include the local costs in the budgets for their administrative units. In several countries, convincing the local governments hinged on broadening the scope of services delivered during the Child Health Week beyond just the distribution of vitamin A (see Observation 3). Many local officials came to realize that the opportunity to make contact with so many of the people in a short time was beneficial not only for the services delivered during the Child Health Week but also to develop a rapport with the people that carries over to the delivery of other services throughout the year.

**Observation 3:** *Donors and governments become more willing to finance mass vitamin A distributions when the delivery of vitamin A is coupled with the delivery of other preventive services.* In order to establish a sound basis for a discussion of the true costs of mass vitamin A distribution, MOST carried out cost studies of the programs in Ghana, Zambia and Tanzania. Costs were partitioned into three categories, program specific costs (incurred especially to implement the Child Health Week such as the costs of vitamin A capsules, supplies, transportation, etc.) personnel costs (payments to workers and volunteers devoting time to the planning, implementation and evaluation of the vitamin A distribution) and capital costs (outlays for goods whose operating life exceeds a single year such as vehicles, computers, etc.) The three programs were quite different: Ghana implemented a straight vitamin A program, Zambia implemented a Child Health Week and Tanzania combined a Child Health Week with routine distribution. Generalizations across the three programs are therefore tenuous. We can say, however, that the program costs associated with a Child Health Week are small, in the order of 25 to 50 cents per child. Nonetheless, in a country with several million children, the total outlay is substantial. By combining the delivery of vitamin A with other services such as de-worming, catch-up vaccinations, re-dipping of bednets to prevent malaria, and nutrition/health education, the costs rise only by the cost of the inputs to the services provided such as the vaccines. The promotional and training costs go up little if at all. The added benefit of delivering the other services, especially catch-up vaccinations, makes the added expense more attractive.

**Observation 4:** *One hurdle to be overcome in implementing a national Child Health Week is the geographical fragmentation among donors and non-governmental organizations working in countries.* Among others, USAID bilateral projects and child survival grantees work in limited geographical areas. In many countries, other donors such as UNICEF or other bilateral donors also select their geographical area of focus. Implementing national programs when individual donors are including their vitamin A services in whatever package of services they are supporting is a challenge, especially if that package is something like the Integrated Management of Childhood Illness that focuses first on strengthening services at the clinic level and, therefore, provides an inhospitable environment for the Child Health Week. The keys to overcoming this obstacle are the cultivation of a strong government commitment to override the objections of its donors and the promotion of the Child Health Week model with those individual donors using cost and benefit data.

**Observation 5:** *Data from coverage surveys carried out following distributions demonstrate that a majority of mothers of young children are already aware of the importance of vitamins and minerals for the health of their child.* They may not be able to distinguish between vitamin A and vitamin C but the general value of good nutrition is well known. This awareness accounts for the relative ease in attaining high coverage

during child health weeks. This suggests that resources need not be spent on convincing mothers of the value of good nutrition; mothers are prepared to do those things that they can do for their children if those things are possible given their economic status and cultural environment.

**Observation 6:** *The biggest opposition to vitamin A supplementation comes from health professionals who for a number of reasons, often unstated, warn of toxicity or of the diversion of resources from curative service.* This opposition often peaks when the suggestion that volunteers as opposed to health professionals be empowered to deliver vitamin A. As noted, the reasons for the opposition are often unstated but seem to be more related to the loss of the “healer” image when it is shown that a non-health professional can do what the professionals have been doing or to the loss of resources to an activity that does not promote the continued extension and improvement of the fixed health infrastructure.

**Observation 7:** *Success in distributing vitamin A paves the way for other nutrition interventions.* In a number of countries, demonstration that the nutrition community could mount a successful intervention helped overcome the image held for so many years that nutritionists were good at identifying a problem but not so good at offering solutions. MOST was able to introduce anemia programs more easily after demonstrating success with vitamin A distribution. Similarly, fortification was considered in a number of countries only after vitamin A supplementation was well established. This suggests that country programs be designed with a specific sequence of intervention in mind, starting among interventions addressing equally serious public health problems with those more likely to produce visible results rapidly to pave the way for more complex ones that may be more challenging.

**Observation 8:** *The determination of actual coverage attained in any vitamin A supplementation program is problematic.* MOST relied on two independent methods of estimating the proportion of children covered with vitamin A: tally sheets (counts of children receiving vitamin A during a mass distribution) and coverage surveys (two-stage randomized cluster sampling of households a month or so after a distribution). The first set of estimates is only as good as the estimates of the denominators, the number of children in the geographic region covered. Typically, these are not very good, often generating estimates above 100% or, at best, estimates known to be distorted owing to large population movements such as those associated with emergency situations. The surveys are expensive and, generally limited in geographic scope to a purposefully selected geographic area. Because the survey generates much additional valuable data, MOST suggests that the surveys be continued despite their cost to validate the tally sheet data as well as to provide feedback to the program designers as to the attitudes and impressions of the recipients of services to the mechanism for distributing vitamin A.

## **B. Anemia**

When MOST began in 1998, many of the world leaders in anemia programming, particularly those working in Sub-Saharan Africa, had come to believe that anemia programs needed to address the primary causes of anemia rather than just the anemia resulting from iron deficiency. This belief reflected a) the commonly held perception that iron-folic acid supplementation (IFA) programs were ineffective, and b) a growing understanding that factors such as malaria and hookworm were in many places, major determinants of anemia.

Anemia strategy: MOST developed an anemia strategy that focused on anemia as a health issue rather than a nutrition issue. This strategy emphasized the need to address the preventable causes of

anemia and was thus labeled a ‘comprehensive approach’. For each country, the approach was flexible enough to modify interventions to fit the unique policy and programming context of the country. Iron and folate deficiencies were always a critical component of the strategy calling for improved implementation of ongoing supplementation programs, but interventions to control and prevent malaria and parasitic worms were also incorporated where appropriate and feasible as key components. This aspect of the strategy made building partnerships with reproductive health/safe motherhood and malaria control programs a central principal of program development. The strategy identified pregnant women as the primary target group while anemia in young children was addressed primarily by advocating the incorporation of twice annual de-worming into Child Health Weeks.

With the exception of its anemia programs in Latin America where anemia is largely related to nutritional issues and supplementation programs were in place but implemented poorly, the MOST supported programs did not have a sufficiently long life to enable the MOST team to make observations fully grounded in empirical evidence. The most significant observation is that a systematic planning process is critical to develop a multi-faceted approach to anemia, especially since most countries believe they have addressed anemia by establishing a policy calling for the administration of iron/folate supplements to pregnant women during their last trimester.

Thus, MOST instituted a classical planning process in nine steps in its countries. The observations that follow refer to each of those nine steps.

- Formation of task force or committee made up of representatives of the relevant programs for a coordinated approach to take ownership of the program and to link to and energize those programs
- Conduct a situational analysis to establish the starting point for developing a comprehensive strategy
- Development the strategy to approach anemia
- Assure that the logistics system for delivering supplies is functioning
- Develop communication materials and training curriculum
- Develop an implement an advocacy plan
- Implementing the refresher training required to prepare service providers to implement a comprehensive program
- Implement the Program
- Design and Implement a Monitoring and Evaluation Plan

**Observation 1:** *Whereas the nutrition section of the Ministry of Health typically provides the impetus for addressing anemia, the empowerment of a multi-sector task force or committee is essential to bring the diverse programs addressing the causes of anemia together.* The task force provides the forum where various stakeholders can discuss ideas and concerns and coordinate actions regarding message development, the promotional campaign, pre-service and in-service training and other logistical concerns.

**Observation 2:** *To overcome problems such as a lack of awareness of the consequences of anemia, a lack of a sound policy, a poorly functioning antenatal care/counseling program or a poorly articulated program, programs designers should complete a solid situational analysis, including formative research.* A thorough review of the situation is useful for advocacy purposes as well as to inform the program design process.

**Observation 3:** *To assure that all relevant program managers are “on the same page” regarding the program, it is especially important to have a strategy that articulates clearly the rationale for the program, its objectives, activities to be pursued and responsibilities of various agencies in the program.* If the process to develop the strategy is itself designed to engage all of the stakeholders, considerable time might be lost while securing input and approvals but the degree of buy-in by the stakeholders at time of implementation is likely to be greater.

**Observation 4:** *Inadequate supplies of supplements proved to be an important barrier in all MOST programs.* Although the tablets are inexpensive, procurement is often delayed or forgotten in favor of the procurement of drugs used for treatment of common infections. Attention to the logistics is a major feature of MOST supported programs in Ghana, Uganda, El Salvador, Honduras and Nicaragua.

**Observation 5:** *Standard IEC materials (posters, job aids, etc.) are necessary but not sufficient to assure program success.* To overcome the major barriers to pregnant women complying with iron folic acid tablets, stimulating women to remember to take the tablets and deal with side effects, a program should improve the counseling skills of health providers and furnish them with communication materials tailored to the perceptions and practices of local women. In the long run, strengthening training curricula reduces the need for in-service training regarding the program.

**Observation 6:** *Continued advocacy is needed to assure that decision/policy makers at national and district levels understand the serious adverse consequences of anemia and, more importantly, the existence of effective programs to reduce anemia.* All the “tricks” of advocacy have a place in anemia programming including the use of tools such as Profiles (a model to inform decision/policy makers about costs and benefits of addressing anemia), champions (in Ghana, Miss Ghana agreed to be a spokesperson for the program), the use of media, convening meetings, etc. In decentralized environments, advocacy should take place at the level where resources are allocated to programs as well as the level where policies are set and programs defined.

**Observation 7:** *Opportunities for integrating training with other planned training exercises are usually available and should be sought in the name of efficiency.* For any new program training is essential. One of the issues in many countries is finding a way to keep both the costs and time spent in training to a minimum. In Ghana, where district health staff were concerned that multiple trainings for separate components of antenatal care were removing staff from their duties for too long, the integration of the training regarding anemia was much appreciated.

**Observation 8:** *As a new program likely to encounter unforeseen difficulties, monitoring is of critical importance.* In general, each of the components of the comprehensive anemia program has its own set of

indicators for performance monitoring. And, since the inclusion of the measurement of the prevalence of anemia in women and children has been incorporated into the core module of the DHS, the prevalence of anemia will be recorded every few years. The key is to establish a means of collating data from the various programs and establishing procedures to enable program managers to analyze and react to the data from the various program components with an anemia lens.

### **C. Food Fortification**

Food fortification is an attractive mechanism for delivering a range of micronutrients to entire populations. Fortified foods, especially staple foods such as wheat flour, cooking oil and sugar, are generally eaten in sufficiently large quantities by a substantial proportion of most populations to be good vehicles for the delivery of micronutrients. In the case of mandatory fortification of staple foods, little or no behavior change is required. Where fortification is voluntary, consumers have to be convinced to pay a little extra for the more healthy, fortified food products. Nonetheless, MOST has encountered some major obstacles to be overcome in introducing fortification in developing countries. These obstacles grow out of the need to maintain a level playing field for industries especially in the absence of viable mechanisms to assure adherence to standards and laws. In addition, in developing countries where food industries are less well developed than in industrial societies, technological issues, packaging problems and the existence of informal markets can pose additional problems.

In broad strokes, in designing and implementing food fortification programs, the steps followed are as follows. The order in which the steps are carried out may vary depending on the information available when the design is conceptualized.

- Select one or more food vehicles
  - The food should be centrally processed
  - The food should be consumed regularly and in predictable amounts
  - The bio-availability of the micronutrients should be high in the local context
  - The food should not change color, taste or appearance as a result of fortification
  - Confidence in the economic feasibility of fortification should be high
- Analyze food consumption patterns for consumers on both the low and high ends of the consumption spectrum (in cases where no consumption data is available, a survey may be in order, even before selection of the food vehicle)
- Analyze the structure of the industries for the selected food vehicles including marketing practices
  - Consider the technical feasibility given industry practices
  - Determine the economic feasibility of fortification including potential impact on consumer behavior
  - If necessary, conduct a technology/stability trial in the local context
- Establish a multi-sectoral Task Force, including representatives of industry and civil society to take ownership of the program and provide the necessary direction and leadership

- Review or create sanitary or food laws to establish the framework for food fortification in the country. Where possible, develop “umbrella” food laws that empower a line ministry such as the Ministry of Health to identify candidate foods for fortification without having to revisit the legislation
- Design the process for regulating the program
  - Establish standards and/or regulations
  - Develop the enforcement mechanism
- Introduce the technology for production
  - Apply appropriate technology, using equipment and procedures that mesh with the production capacity of the industry
  - Install quality assurance/quality control techniques
- Develop a coordinated marketing strategy with a mix of generic and brand advertising as appropriate
- Initiate production
- Introduce reliable food control and enforcement
- Implement a monitoring and evaluation program to observe program performance at its critical control points and periodically assess its nutritional impact

The interest in food fortification throughout the developing world escalated dramatically in 2001 with the announcement of the advent of the Global Alliance for Improved Nutrition (GAIN). Funded primarily by the Gates Foundation with USAID as its second largest donor, GAIN stimulated countries to consider food fortification far more seriously than ever before. Based on experiences with other Gates Foundation initiated development programs, officials and industry representatives saw GAIN as an opportunity to bring into their countries substantial external funding.

This first set of observations applies to fortification programs in general. A second set will address the MOST experience in working with GAIN.

***Observation 1:*** *Ministries of Health have several roles to play in fortification programs: advocacy, policy development and monitoring and evaluation.* Typically, the initial impetus for food fortification comes from the Ministry of Health as a means to realize anticipated health benefits by reducing micronutrient deficiencies in selected populations. MOST has observed in a number of countries that these programs become recognized as being the province of the health ministry, possibly to the detriment of the program as other ministries (Industry, Trade, Finance, Agriculture and the ministry responsible for setting standards) have a role to play as well. One way to circumvent the jealousies and turf battles that too often crop up among Ministries is to form an effective multi-sectoral Task Force to coordinate the inputs from the various ministries. Even where such a Task Force exists, one ministry typically takes on the role of lead ministry. Whether that is the Ministry of Health or, say, the Ministry of Industries (as it is in Bangladesh), any donor supporting the program should

work with that lead Ministry to be sure it understand that its role is one of coordination, not implementation and that each of the other partners knows its specific role in the program.

**Observation 2:** *Typically, ministries with a support function in a fortification program do not understand and/or embrace their roles in a food fortification program.* Too often, government officials think of fortification as a simple activity carried out by the food industry, overlooking the complex government role in setting policies, in establishing standards regarding aspects of the program such as labeling, in sustained enforcement of standards and laws, in program monitoring and evaluation. The diverse ministries in a program need to learn their roles and need to make resources available to enable them to carry out those roles. Donor seed money and external technical assistance may be required to stimulate appropriate action by some ministries but the long-term viability of any fortification program depends greatly on enhancing the appreciation of those ministries for the program so that they come to consider maintenance and supervision of the program as a part of their mandate.

**Observation 3:** *Fortification depends on the existence of viable, commercial food enterprises producing foods that are consumed regularly in substantial amounts by populations most at risk.* Early in the initiation of a fortification program, the designers should commission a study of the market structure for potential food vehicles for the purpose of estimating the costs to industry of fortification, cost and feasibility of an efficient enforcement mechanism, as well as the potential of nutritional benefits to designated target populations based on actual consumption patterns.

Agencies working in partnership with USAID in promoting and developing food fortification programs have, at times, advocated for small-scale fortification, the addition of micronutrients to a food commodity milled at community-level in low-volume mills such as hammer mills. Often, the clients of these mills bring their whole grain to the mills where it is milled in exchange for a portion of flour produced. Small-scale fortification has been shown to be biologically efficacious in controlled settings in technology trials but, as yet, no evidence exists that small-scale fortification is economically viable without continuing subsidy from government or donors or technically viable without the development of a logistics system to maintain a steady supply of potent pre-mix at the small mills. Moreover, monitoring small-scale fortification given the number of mills involved in most countries is extremely difficult as is the quality assurance required to assure permanent compliance by all of the mills participating in the program.

**Observation 4:** *Food fortification does not end with the launching of the process and acceptance of the necessary investment by the industry; it requires a continuous supervision and oversight by the public sector.* As a food fortification program evolves, a number of events may occur or situations arise that threaten the program. These include, a distortion in the level playing field sought by industry due to non-compliance to the laws or standards by one or more producers and changes in the economic environment prompting structural shifts in the market.

One of the more intractable problems in developing food fortification programs in developing countries is enforcement of laws and regulations where mandatory fortification is applied or of standards where fortification is voluntary. Manpower shortages, inadequate laboratory equipment and/or trained laboratory technicians, and lack of resources to support the recurrent costs of enforcement (sampling and analysis of the samples) threaten the ability to monitor programs. Breakdowns in the regulatory monitoring system disrupt fair competition among producers and can cause compliant producers to abandon fortification in order to remain competitive. In developed countries, food producers monitor each other looking for the opportunity to gain a comparative

advantage in the marketplace by demonstrating unethical behavior by the competition. This approach can work in developing countries where their large industries are often members of associations that can help with the monitoring function as is being tried in the Philippines. Even where industries are willing to take on the function of monitoring each other, government has to be prepared to act decisively to verify alleged violations and to mete out appropriate sanctions.

Where markets are open, especially in situations where commodities can cross borders freely, small changes in the pricing structure within a domestic industry due to fortification may alter import/export patterns to the overall detriment of the domestic industry. This is particularly true for commodities like sugar with relatively long shelf life and ease of transport. Where possible, these disruptions can be anticipated and minimized through regional acceptance of common standards. This approach has helped preserve sugar fortification programs throughout Central America and efforts are underway throughout Africa to adopt this same strategy.

**Observation 5:** *Laboratory capacity in countries should be geared to the basic and simple analyses and assays to measure quantities of the few nutrients selected as the basic indicators of quality.* Frequently, countries pay undue attention to acquire sophisticated laboratory equipment rather than to strengthen their inspection and enforcement capabilities. In practice those laboratories can be far more effective if they respond to the fundamental needs of the program and develop the capacity to process samples rapidly and with sufficient accuracy to guide program management.

**Observation 6:** *There is a role in most countries for both mandatory and voluntary food fortification.* Mandatory fortification is applicable in countries with established and well-developed industries where enforcement at the level of the factory and in the market place is possible. Mandatory fortification helps assure that those most in need derive the benefits of the program by eliminating the possibility that the target populations shift from fortified brands to unfortified brands. During the design phase of a fortification program, consideration should also be given to the existence of non-fortified alternatives to the fortified product; for example, the substitution of sorghum for fortified maize meal.

Voluntary fortification is often considered for more highly processed “luxury” products to fill particular gaps in nutrient intake. For example, for clearly identified target audiences such as school children or children making the transition from breastfeeding to solid foods, voluntary fortification of a food commodity especially for that audience may be an attractive means to deliver micronutrients. However, voluntary fortification can prove to be quite useful for staple foods where production is decentralized but where systems are in place to verify fortification claims on labels.

In both mandatory and voluntary fortification programs, labeling is key for enforcement; a mechanism to verify labels must exist before the introduction of a food fortification program.

**Observation 7:** *Fortification programs have the potential to become financially sustainable when industry is able to factor the costs of fortification into the price of the commodity.* Eager to initiate programs to eliminate micronutrient deficiency, public health officials and donors elect on occasion to subsidize both the capital and recurrent costs associated with fortification. GAIN, for example, has awarded grants to countries including substantial funding for the purchase of pre-mix. Especially as regards to recurrent costs, this leads to situations where the removal of subsidies may slow or kill ongoing programs. GAIN has not been in place long enough to assess the implications of subsidizing recurrent costs.

In its efforts to initiate sustainable fortification programs, MOST has attempted to work with industry to develop a clear plan to phase out any subsidies in a reasonable time period before any subsidies are granted. Invariable, industry opens the discussion of their potential participation in a fortification program by demanding subsidies. Program designers should be aware of this negotiation strategy by industry and, if possible, avoid those subsidies. A number of the successes in fortification in the developing world to date have not required subsidies for recurrent costs.

**Observation 8:** *It is advisable to draft legislation and/or regulations, especially where fortification is made mandatory, in a manner that allows for exceptions for industries operating under conditions where fortification might disrupt basic business model.* In several instances, MOST has encountered situations where fortification causes particular problems for some industries; for example, where the fortified product is exported to countries where fortification is not the norm. Also, given the industrial processes of selected industries such as cola manufacturers, the use of a fortified input such as sugar or salt may be nothing more than an added expense without nutritional benefit as the added micronutrient is lost in further processing. Opposition to fortification can be reduced if these special situations are acknowledged and addressed.

**Observation 9:** *Attention must be paid to assuring safe levels of fortification.* Certainly, the provision of adequate levels of micronutrients in the diet is critical for the health of at risk populations. Often forgotten is the risk associated with over consumption of micronutrients in selected populations. When designing a fortification program, it is important to remember that the fortified food products are available to the entire population, including people whose normal diet may be adequate in the absence of the fortified foods. For many micronutrients, these people are at risk of a variety of chronic ailments from consuming too much of a “good thing”. If safe levels of micronutrients are provided, supplementation of certain risk groups may continue to be necessary, as those safe levels may not fill the entire micronutrient gap. For example, vitamin A supplementation of the very young children has remained in place throughout Central America despite the fortification of sugar with vitamin A.

## **GAIN**

The Global Alliance for Improved Nutrition (GAIN) was formed in response to a promise of substantial funding from the Gates Foundation with the major funding from USAID as the second largest donor. MOST was called upon at times by USAID to offer advice regarding the design and, later, the implementation of GAIN. When GAIN began soliciting proposals from countries to access this funding, MOST was approached by colleagues in seven countries and two regions for technical and financial assistance in preparing proposals.

The relationship between the newly formed secretariat of GAIN and the MOST technical team became strained in June of 2003 when GH/HIDN/NUT threatened to cancel the participation of three of MOST’s technical advisors in the first GAIN Program Development Workshop unless GAIN reconsidered changes in the approach taken for conducting that workshop. Until the Executive Director of GAIN stepped down at the start of 2005, that relationship did not improve. As MOST drew to a close, its association with GAIN had, in part, been restored. Many of the issues prompting the breakdown of the relationship between MOST and GAIN are now being reconsidered within the GAIN secretariat. These are discussed here.

**Observation 1:** *In the interest of getting underway rapidly, GAIN issued a Request for Proposals that was flawed and the process of modifying that proposal for subsequent bidding rounds created problems for the countries and their consultants.* Each iteration of the RFP was more complicated than the one before as the format of the proposal was modified to help the reviewers compare proposals rather than to facilitate the preparation of good proposals. The complexity of the RFP prompted the countries to use external consultants to write the proposals, often provided by the alliance partner seeking to control the resources coming into the country. Each revised RFP was shared with the countries after considerable effort was made to develop a response to the earlier RFP. To complicate matters further, GAIN sends assessment teams to the countries that have received awards with the mandate to make additional judgments regarding the program design and to request that the design be changed rather than to provide guidelines and technical assistance.

Based on its experiences working with countries, MOST felt that a process where a simple RFP prompted concept papers from the countries that could then be reviewed for technical content and program feasibility by alliance members familiar with the country. The concept papers and informed reviews could then be considered either by an independent review panel or by the Board of Trustees with the better ones designated as candidates for awards. GAIN could then send teams to the countries to help the Fortification Alliance develop the detailed plans for the program rather than to tear down the plans so painstakingly developed during the proposal process. Those plans could then serve as the basis for the final awards.

**Observation 2:** *Although MOST had staff with experience working with countries in the design and implementation of food fortification programs, the GAIN secretariat did not take full advantage of that expertise.* The relationship between MOST and GAIN can best be understood within the context of the relationship between USAID and GAIN. Although USAID was and continues to be the second largest donor to GAIN, the first GAIN Executive Director attempted to divorce GAIN from its donors while forging links with U.N. agencies and seeking technical advice from his former U.N. colleagues rather than his other partners. One example of this failed relationship emerges from the process of designing the first (and subsequent) Requests for Proposals. Before the GAIN secretariat was in place, a committee that included the MOST Fortification Advisor was working on the development of the RFP. After the Executive Director assumed his position, the Committee was ignored.

The failure of the GAIN secretariat to take full advantage of the technical expertise in MOST resulted in GAIN promoting programs that would have been discouraged had there been a better dialogue between the GAIN secretariat (and its consultants) and the MOST technical advisors. For example, GAIN came out in support of the Universal Flour Fortification initiative (now the Flour Fortification Initiative) while the U.S. Government, USAID and MOST were against it. GAIN also continues to advocate using small-scale fortification as a means to reach the rural poor while the MOST technical team believes that problems with the distribution of pre-mix, quality assurance and cost would render the approach ineffective.

To assure high-quality technical input reaches GAIN, USAID might negotiate with the new GAIN Executive Director a strategy in which the consultants now working for GAIN are replaced by the technical team in its micronutrient project.

## MULTINATIONALS

Prior to the start of MOST, USAID orchestrated the formation of the VITA Alliance, an alliance established to bring multinational firms with the potential of having an impact on micronutrient deficiencies together with bilateral and multilateral donors. Ultimately, the VITA Alliance was phased out in lieu of GAIN; however, one interesting attempt to form a partnership between MOST and a multinational grew out of the VITA Alliance.

Having experienced difficulties introducing a fortified, powdered drink product in the Philippines, Proctor & Gamble (P&G) approached USAID to form a partnership designed to introduce the same (or a similar product using the same technology) as a learning experience in another developing country. On behalf of USAID, MOST initiated a dialogue with Proctor & Gamble in February of 2000 that concluded in February 2004 in something of a pyrrhic victory. At first, CARE was supposed to be a partner as well and Nicaragua was chosen as the country for the experiment owing to the presence of both a strong CARE office and a strong MOST presence. The interested party in CARE left the organization shortly after the selection of Nicaragua and the CARE office in the country, although interested, claimed to be over committed and unable to play a major role.

Much of the delay over the four-year dialogue arose because of internal uncertainty within P&G. At one point, a drop in their stock value led to the resignation of the CEO followed by a management review to determine the fate of its drink division. This led to plans to form a joint venture with Coca Cola destined to take over the project in Nicaragua that ultimately dissolved after almost a year of negotiations. During that period, MOST and P&G supported a consumer survey and conducted a joint mission to meet with potential local partners to handle the production and distribution of the product. In the second half of 2003, P&G conducted its due diligence regarding the local partner and was well-positioned to initiate production using a pre-mix manufactured in Mexico.

At this point, MOST reviewed the micronutrient content of the product and, based on data from a series of consumption surveys in Nicaragua, recommended changes in the formulation as the virtual elimination of vitamin A and iodine deficiency in the country in response to other programs meant that individuals consuming multiple glasses of the fortified drink product would be at risk of consuming more than the upper tolerable limits of those micronutrients. MOST also felt that the proposed advertising thrust for the product as one that promotes growth was somewhat exaggerated. The micronutrients contained in the drink were necessary for the growth of children but, in the absence of adequate caloric intake, would not produce growth. P&G was willing and able to drop iodine from the pre-mix but, given their internal mandate for high quality testing of the pre-mix, could not make further changes in the formula without long periods of testing.

While this discussion between the MOST and P&G technicians was in progress, a decision within P&G to divest itself of its drink division and to license the technology rather than to franchise the powdered drink in practice dissolved the partnership as any further negotiations about packaging, labeling or the micronutrient content of the drink would have had to take place with the local partner, not P&G. That local partner went ahead and put the product on the market without further consultation with MOST using the original formula and following the original advertising campaign.

***Observation 1:** In working with the private sector, especially with multinationals reporting to stockholders, corporate responsibility and commitment to doing good are important. Public sector partners, working with committed representatives of the private sector, should continue to be aware that concerns about the bottom line could jeopardize*

*the partnership.* Throughout the four years of dialogue between MOST and P&G, corporate responsibility was certainly part of P&G's motivation for moving forward; however, at three critical times during the dialogue, forces in the industry beyond the control of MOST's closest colleagues within the multinational led to sound "business" decisions that slowed the development of the partnership and ultimately dissolved it.

**Observation 2:** *It is very important to envision the issues likely to arise while working in partnership at the outset and to place the key issues on the table as early as possible in the dialogue.* In the interest of forming the partnership, MOST was too cautious in the early going in discussions with P&G by leaving detailed discussion of some of the potentially difficult issues for some later time. For example, during one of the early meetings with P&G, MOST was assured that the technology developed by P&G was sufficiently robust to allow for changes in the micronutrient mix in the product. By not delving more deeply into the conditions required for such a change, MOST set the stage for the disagreement near the end of the partnership concerning the micronutrient content of the product. As it turned out, the high cost in both money and time of changing the pre-mix owing to the very strict but very necessary internal quality control procedures applied by P&G made it difficult for P&G to respond to MOST's objections to the formula proposed for Nicaragua at the advanced stage of the dialogue when those objections were raised.

**Observation 3:** *Given that the objectives of the private sector and the public sector in a collaborative effort overlap but are not identical, defining a relationship and roles for each partner that can be sustained when difficult issues arise is a challenge.* A viable partnership requires dialogue, mutual understanding and, hopefully, consensus, about key decisions. A number of the critical decisions made by P&G were taken by P&G management without first reviewing the consequences of those decisions on this particular partnership. For example, the decision by P&G to form a joint venture with Coca Cola, a decision that held up the activity in Nicaragua for a year, was made for reasons far removed from the plan to introduce the powdered drink in Nicaragua. The decision was given to MOST as a *fait accompli* and MOST had to either withdraw from the partnership or accept the delay.

## **D. Zinc in Treating Diarrhea**

Context: In May 2004, UNICEF and WHO issued a recommendation that children with diarrhea be given zinc supplements along with oral rehydration therapy to shorten the duration and reduce the severity of that diarrhea episode and to help avert a recurrence for the next three to four months. USAID asked MOST to facilitate the "roll-out" of a program to introduce zinc by preparing guidelines and advocacy materials, working with child survival grantees to add zinc to their programs and work with other counterparts in countries to explore possibilities where those counterparts expressed an interest. As the USAID roll-out plan is now only a year old, progress has been limited to the production of guidelines and materials. Even though USAID Missions and the governments in several countries were eager to introduce zinc, the need for handling that introduction in an orderly and systematic fashion precluded starting programs before MOST ended.

**Observation 1:** *Owing perhaps to the strong level of commitment and interest on the part of counterparts in the international organizations, the development and vetting of materials proved to be surprisingly easy and quick.*

**Observation 2:** *Child survival grantees are frequently locked into a very full programmatic agenda defined by extensive Detailed Implementation Plans (DIPS) and are therefore unable to add program components on the fly*

*without added resources.* In one instance, where MOST was prepared to provide the financial resources, the diversion of the staff from other planned activities scuttled the program.

**Observation 3:** *Countries have a variety of reasons for responding to a recommendation like the one made by WHO and UNICEF regarding zinc with extreme caution.* There is concern that the recurrent costs of adding a program to an already overburdened system would put too much strain on already tight budgets. There is concern that the full implications of a treatment protocol tested in research settings are not fully understood in programmatic situations.

**Observation 4:** *Introducing a micronutrient as part of a treatment for a disease raises the question of whether that micronutrient should be treated as a nutritional supplement or a pharmaceutical.* This gives rise to complex questions of product registration in countries with strict regulations regarding pharmaceuticals and to questions of quality assurance in their production facilities.

## **E. Iodine Deficiency Disorders**

The primary measure for addressing iodine deficiency disorders, the iodization of salt, is a specialized example of the use of food fortification to eliminate a micronutrient deficiency. As salt iodization programs have been in place in most countries for many years, often with its own independent task force, legislation and promotional campaign, they are often discussed outside the context of other food fortification programs. Nonetheless, the observations made earlier in this report regarding food fortification apply to salt iodization programs. The following observations capture some of the features of salt iodization that distinguish it from many other fortification efforts.

**Observation 1:** *Owing to the shelf life and transportability of salt, iodization across regions is essential as is harmonization of standards.* Not all countries are salt producers; some are totally dependent on imports, others are self-sufficient and some rely on imports to complement local production. Countries relying on imports have had to establish procedures to assure that the imported salt is iodized, either at the point of production or, if the salt enters the country without iodine, locally before entering the market. Clearly, if all salt were iodized at the point of production at levels acceptable throughout a region, importing countries would be spared the cost of maintaining iodization facilities.

**Observation 2:** *The sustained success of salt iodization programs is dependent, in part, on continuous, effective sampling and testing of the salt at production facilities and in the market.* The experience in several countries where MOST observed the progress of salt iodization efforts, compliance with laws and standards increased dramatically when monitoring was done regularly. Even though the addition of iodine to salt increases the price of salt charged to the consumer by only a little, families on the margin will purchase non-iodized salt to save money if it is available and producers attempting to maximize profit will provide non-iodized salt, occasionally making false claims regarding the iodine (or lack of it) in the salt. Continuous monitoring helps mitigate these two phenomena.

**Observation 3:** *Mandatory fortification of salt is preferable to voluntary fortification.* An argument encountered frequently against mandatory fortification, whatever the food commodity, is that the consumer should be allowed to choose. Allowing non-fortified salt into the market place creates an environment conducive to sustaining iodine deficiency as some segment of the population will elect the “natural” product even when aware of the health consequences of that behavior.

**Observation 4:** *Although characterized by a relatively simple technology and inexpensive pre-mix (as compared to other food vehicles fortified with other nutrients), the process of achieving universal salt-iodization has been slow and will reach fruition only if investment in advocacy and monitoring continues.* The experience with salt-iodization globally is evidence of the underlying complexity of fortification as a strategy for reducing micronutrient deficiency. Arguments that merely passing legislation, providing technical assistance, and creating demand through promotion will lead rapidly to fortification do not hold up well for salt and will not, in general, be valid for other commodities. Continuous investment in monitoring, enforcement and advocacy are also needed.

## **F. Eye Care**

During its last two years, MOST was given the opportunity by USAID to support a number of organizations with a history of working with the visually impaired in both the treatment of conditions affecting eye health and in helping those already visually impaired to lead better lives. The focus of these programs was the delivery of services in geographical areas where few or no services were readily available. For the most part, these programs were service oriented rather than experimental using the funding made available to accelerate or expand geographically programs that were already in place using techniques known to be effective.

MOST staff, either at headquarters level or in the field, were not intimately involved with the operation of any of these programs. In contrast to MOST country programs to address vitamin A supplementation, anemia or fortification, the eye care portfolio was administered largely through the transfer of funds by issuing fixed price contracts to new partners specializing in eye health. Thus, first hand observation of the programs by MOST staff is limited and the observations as to what works and what does not work are also limited. The exception to the use of this grant mechanism was the administration of four small eye care programs through MOST partner, Helen Keller International.

**Observation 1:** *In many countries, the impetus to provide eye care to children (and adults) in need comes from organizations specializing in eye health rather than from the health sector itself.* This gives programs the appearance of being vertical programs divorced from the usual child survival programs such as immunization or diarrheal disease control. Many of the agencies specializing in eye care put substantial effort into training the peripheral health workers in the identification of conditions leading to poor eye health but, ultimately, referrals are made to facilities with the capacity to perform surgery and other specialized eye care treatments. Within USAID, this separation of eye care from child survival is reinforced by the central control of funds rather than having the funds placed under control of the Missions. In all of MOST's programs with the exception of eye care, MOST support was clearly linked to Mission objectives at country level. Although endorsed by the Missions, the eye care program was viewed as an add-on as opposed to an integral part of the Mission program.

**Observation 2:** *The three glaring deficiencies in eye care programs in developing countries are: lack of functional equipment, lack of staff trained in the most modern and efficient eye care techniques, lack of budget to cover the recurrent costs of items such as glasses to correct refractive error or interocular lenses for cataract surgery.* One consequence of these deficiencies is the inability of the individuals providing eye care to deliver efficient and effective eye care. Small grants of the type administered by MOST can be used to remedy these problems for a particular clinic but do not address the larger problem of integrating

eye care into the larger health program and assuring adequate funding in the long-run from non-donor sources.

**Observation 3:** *Eye care programs in developing countries has not yet reached the stage where targeting is an issue; the need for eye care services far outweighs the supply of those services.* A reasonable hypothesis given the rapid increase in programs to assure adequate intake of vitamin A by children is that the need for eye care services for children is diminishing. In the countries where MOST supported programs, this hypothesis is not true. Certainly, the reduction of vitamin A deficiency has eliminated one of the causes of sight deterioration in developing countries. However, the factors remaining that cause deterioration of vision are still so prevalent and the eye care infrastructure so limited, there is no rationale for expending resources to carefully target funds for eye care.

## **G. Other Global Leadership**

The exercise of global leadership on the part of a project with a limited time horizon presents some unusual challenges. Early in the life of a project, the project has to strive for recognition before it can even consider exerting leadership. As the project draws to a close, the project is viewed by many as lame duck and no longer taken as seriously as it once was.

**Observation 1:** *It is useful for a USAID project to exert leadership on behalf of USAID rather than in its own name.* USAID has longevity, resources and influence in countries and with international organizations and with other country donors. Therefore, advocacy for a particular approach such as Child Health Weeks or arguments regarding the priorities to be given to various programs within a development effort carry far more weight coming from USAID than from an ephemeral project.

**Observation 2:** *Efforts by MOST to set an example for others and “sell” our work were unusually successful when MOST allowed its counterparts to act as spokespersons rather than relying on our own staff.* Cynicism notwithstanding, donors, international organizations and projects representing those groups are recognized as having agendas that may prompt exaggeration, misrepresentation and/or false claims. The credibility of praise for a program goes up when individuals in countries where the program has been successful explain the program to their peers candidly and objectively.

**Observation 3:** *Representation at recognized international meetings and workshops, though costly and disruptive of the every day grind, is important not only for the networking opportunity but also as a means of disseminating written evidence of success to a wider audience.* MOST took full advantage of the International Vitamin A Consultative Group (IVACG) meetings to bring its country staff together and to expose their government counterparts to MOST as well as to micronutrients. In several instances, resistance to micronutrient programs by government counterparts was reduced considerably following their participation at IVACG. The benefit does not stop at direct participation. Publications, including recommendations, are widely disseminated following meetings and are effective means of sharing views and opinions with a wider audience.

**Observation 4:** *Success breeds success.* MOST’s leadership was most dramatic regarding supplementation programs because it could point to a few countries where the Child Health Week approach was successful. In the fortification arena, initiatives such as GAIN and the Flour Fortification Initiative were less responsive to messages emanating from MOST, in part because the evidence base for those messages was not built upon visible success.

## IV – OBSERVATIONS ON THE ROLE OF A CENTRALLY FUNDED PROJECT

### Background

As the control of financial resources within USAID has devolved to its country Missions, the role of the centrally funded project has evolved from one where it had been possible at one time to implement country programs with global bureau funds to one where the centrally funded project acts primarily as a catalyst and technical resource at country level. Written seven years ago, the MOST Cooperative Agreement reflected to some extent the earlier role in that MOST was asked to deliver results in a prescribed number of countries; for example 80% coverage with vitamin A in 5 to 8 countries or a 30% reduction in severe anemia in 5 to 8 countries.

In practice, the ability of a centrally funded project to deliver country level results requires not only sanction to operate from the Missions but funding from those Missions. In part because of the micronutrient earmark and in part because of the familiarity of Mission staff with the impact of the reduction of vitamin A deficiency on child survival, MOST received field support funding for vitamin A supplementation programs from 18 countries and used core funds for a nineteenth. However, MOST received field support funds explicitly for the reduction of anemia in only 7 countries and used a combination of core and regional funds in an eighth. But, in several of those, the amounts were quite small and targeted to only selected components of ongoing programs. Regarding support for iodine programs, MOST received field support funding in only two countries and, in both those, the funds were minimal, almost an afterthought after vitamin A supplementation.

**Observation 1:** *The realization of country level results by a USAID, centrally funded project is dependent on the obligation of field support funds, not on funding from the Central Bureau.* In the MOST Strategy paper written during its first 90 days, the MOST team drew on the experience of its members to identify countries in need of micronutrient support where the potential for achieving the results prescribed by USAID in the Request for Application. Eleven such countries were identified. Of those eleven, MOST was able to make inroads with the Missions in only nine countries. In one of the “failed” countries, the Mission relied on its bilateral grantees for micronutrient support and in the other, despite periodic advocacy, the Mission elected to remain focused on areas other than nutrition. Establishing results for centrally funded projects calling for the delivery of results in any particular number of countries places those projects in a position where their mandated results are outside of their manageable interest.

**Observation 2:** *Missions are folding their micronutrient activities into umbrella bilateral projects rather than taking full advantage of the centrally funded technical assistance projects.* To simplify their own management burden during the seven years MOST was in operation, a number of Missions discontinued support to MOST in favor of newly conceived, broad-based bilateral projects responsible for many health activities, including the more sexy ones like HIV/AIDS. Informal observation of the fate of programs started by MOST under the new bilateral projects suggests that the attention given to micronutrient intervention is far less under the umbrella bilaterals given the impetus to focus on those sexier health programs. The ability of USAID to sustain results in the micronutrient arena is compromised by this trend. If the earmarks for micronutrient programs established by Congress were reduced or eliminated, the USAID nutritional portfolio would be seriously diminished.

**Observation 3:** *Although conceptually appealing, the notion of having centrally funded projects use an allocable accounting mechanism that allocates headquarters support costs to field support, had it been applied rigorously, would have prevented MOST from achieving its country-level results.* The resources provided by Missions for micronutrient programs would have been eaten up largely in support costs rather than program implementation or technical assistance had MOST charged headquarters costs to field support accounts. Had MOST not been charged with achieving results like assuring 80% coverage among children with vitamin A supplements, the pressure to preserve resources for programs would have been less and a greater portion of the field support funds could have been used to cover headquarters costs.

**Observation 4:** *MOST core funds were used: a) to stimulate Missions to initiate country programs, b) to backstop country programs, and c) occasionally to top up the funds available for a country when the success of that country program was in jeopardy because of lack of funds.* MOST understood that, in principle, core funds were to be used to preserve the Washington-based infrastructure (called by some the “hotel” costs of maintaining the project) and for global leadership activities. However, as noted above, MOST saw success in running country programs as an important precursor to global leadership and had objectives defined by the Global Bureau in terms of country-level results. Consequently, MOST used a fair proportion of its core funds to support country programs.

## **V – COUNTRY PROGRAMS**

### **A. Bangladesh**

Funding: \$1,015,000

Time-line: 1999–2005

#### 1. Fortification

Total Population: 144,319,628

Infant Mortality Rate: 62.6

Under 5 Mortality Rate: 90.6

Gross National Income per Capita: \$440

A country of approximately 125 million people beset with chronic flooding, Bangladesh is a poor country with a rapidly growing population. Before MOST started operations, programs were already in place in Bangladesh to alleviate vitamin A deficiency and to counteract child blindness, including supplementation for children. Sub-clinical vitamin A deficiency is now recognized as a problem as are other micronutrient deficiency related conditions including anemia and iodine deficiency.

#### FORTIFICATION

As USAID was already supporting a vitamin A supplementation program in Bangladesh, MOST initiated activities in Bangladesh late in 1999 with a field visit to identify possibilities to pursue food fortification in the country. This assessment honed in on wheat flour as a potential vehicle for food fortification as wheat flour is frequently eaten by the poor, rice being the favored commodity for those who can afford it. MOST implemented a wheat flour fortification trial for the purpose of demonstrating the technological feasibility and efficacy of wheat flour fortification in Bangladesh. The trial had several components: the fortification of wheat flour milled at locally managed chukki mills and delivered through the World Food Program's Vulnerable Group Development (VGD) activity, an efficacy study conducted by the ICDDR, and a demonstration of the technology at a commercial roller mill. The partnership with the World Food Program extended to the establishment of a MOST office in the space occupied by the World Food Program housing a single MOST Field Coordinator.

The World Food Program has continued to secure fortificant from a variety of sources for wheat flour distributed through its VGD and is continuing its program without MOST involvement to this day. The program is often cited by the Micronutrient Initiative as evidence of the feasibility of small-scale fortification, although the economic viability of such an approach without donor support remains in question.

The efficacy study was similar to one done in the Philippines under the OMNI project. Upon advice from USAID/Bangladesh that the scientific community would not easily accept results from another country, MOST repeated the study and attained very similar results. The study demonstrated an impact on the vitamin A status of school age children who consumed fortified chapattis daily but no impact on the iron status of those children, possibly due to the form of iron added to the pre-mix coupled with the relative short duration of the study.

At a meeting convened in 2004 to present the results of the feasibility test and efficacy trial, a high level of interest in pursuing food fortification as a means of alleviating vitamin A and iron deficiency emerged, particularly on the part of the Ministry of Industries. A decision was taken to pursue additional funding through the newly formed Global Alliance for Improved Nutrition (GAIN). MOST devoted its remaining resources to the provision of technical and administrative assistance to the National Fortification Task Force dedicated to preparing a proposal to GAIN for voluntary wheat flour fortification with vitamin A, iron, folic acid, zinc and vitamins B1 B2, B6 and B12 and mandatory fortification of cooking oil with vitamin A.

Cooking oil surfaced as an additional potential vehicle for food fortification upon a review of the industry structure. Unrefined cooking oil in Bangladesh is imported and refined mainly by fifteen private oil refiners. It is universally consumed in sufficient quantity on average to make it a viable candidate for fortification. And, the association of oil refiners expressed a willingness to explore fortification options.

The National Fortification Alliance of Bangladesh successfully submitted a proposal to GAIN in August 2005. Just before MOST closed its doors, the Alliance responded to a first series of questions from GAIN in anticipation of the more detailed review of the proposals by an independent review panel.

## REFERENCES

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## **B. Cambodia**

Funding: \$350,000

Time-line: 2004–2005

1. Vitamin A Supplementation
2. Blindness

Total Population: 13,636,398

Infant Mortality Rate: 71.5

Under 5 Mortality Rate: 93.2

Gross National Income per Capita: \$320

### **BACKGROUND**

Cambodia is emerging from decades of inner turmoil, occupation and civil war. Consequently, the population is poorly educated and lacks productive skills. Seventy-five percent of the population remains engaged in subsistence farming and the rural area suffers from an almost total lack of basic infrastructure. Fear of renewed political instability and a dysfunctional legal system coupled with extensive government corruption discourage foreign investment.

USAID/Cambodia has been supporting vitamin A supplementation through a number of non-governmental organizations delivering child survival and reproductive health services in Cambodia. One of those organizations, Helen Keller International, provides technical assistance and materials to those organizations regarding vitamin A supplementation. Despite reported good coverage in USAID supported areas, individuals providing technical oversight to the micronutrient component of USAID/Cambodia's program felt that additional steps might be taken to improve coverage on a national scale. At the urging of USAID/Washington, USAID/Cambodia provided field support to MOST to explore ways to improve Vitamin A coverage. USAID/Cambodia provided the funding for this exploratory enterprise in MOST's very last year in the amount of \$350,000.

### **VITAMIN A SUPPLEMENTATION**

A preliminary assessment visit by a team from MOST in March 2004 was timed to enable observation of one of the twice-yearly distributions of vitamin A, a distribution conducted throughout the month of March during visits by health center staff to the villages in their catchment areas. These visits are scheduled monthly to facilitate the delivery of child survival services but only two months each year are set aside for the vitamin A distribution. Each visit by the health staff is of several hours duration only. One feature of the health center staff visits to the village is that children not seen during the few hours of the visits do not receive vitamin A. Based on that observation and discussions with colleagues in Cambodia, the assessment team suggested that a community-based approach in which volunteers were empowered to distribute vitamin A to children not seen by the health center staff at the outreach sites would improve coverage.

Ministry of Health officials considered this suggestion to be potentially dangerous citing the possibility of toxic overdose by non-professional volunteers but they agreed to a pilot program to test the effectiveness and safety of the recommendation. Some colleagues expressed the concern that the culture of Cambodia was not attuned to voluntarism and, therefore, a program based on volunteers would fail.

Working with a local non-governmental agency, the Reproductive Health Association of Cambodia (RHAC), MOST designed a pilot project to carry out this test for the November 2004 and March 2005 distributions. RHAC then served as implementing partner for the pilot. At the suggestion of USAID/Cambodia, the location for the pilot project, Sihanoukville, was one included in the USAID focus provinces (or support from another donor). During the design phase of the pilot, MOST built on the successful model of using volunteers in Nepal, a model that called for community mobilization around the notion of vitamin A for children, mobilization that would establish an environment in which volunteers could distribute the vitamin A to all children safely.

The November pilot started with a baseline survey, and included raising community awareness about vitamin A, advocacy among government and community groups, guidance in planning a distribution, training and the forging of linkages between the community and the health staff. The intervention was comprised primarily of training and outreach mobilization. A cascading model of training started with RHAC and Health Department staff with MOST technical support training Health Center Staff who then trained the Village Health Support Groups, Community Support Group leaders, and other influential leaders in the area. The mobilization effort included face-to-face encounters by volunteers, loudspeaker announcements, the registration of all children, and the use of banners and flyers to increase awareness of the time and importance of the distribution.

The most outstanding evidence of the success of the effort was the increase in coverage with vitamin A from 17% at baseline to 82% following the November distribution. Although a part of the test was intended to verify the capacity of volunteers to deliver vitamin A, the mobilization and advocacy worked so well that the proportion of children receiving vitamin A during the outreach session itself went up from 88% to 95%.

The primary recommendation for scaling up the pilot is for other Provinces to adapt the aspects of the training and outreach mobilization interventions not already in place in that worked so well in Sihanoukville. Special attention should be given to the training of local political leaders, and use of mobile loud-speakers to publicize the outreach *before* the day it takes place. The establishment of under 5 registers is important as well as procedures to involve village leaders and midwives in maintaining their currency. Post distribution workshops not only reinforce the message of the importance of vitamin A; they also help give recognition to local leaders for their efforts. The use of surveys (post-activity assessments) also demonstrate the importance attributed to the vitamin A distribution by the authorities as well providing information about the quality and use of the registers as well as the effectiveness of the various mechanisms employed for outreach mobilization.

## REFERENCE

Reproductive Health Association of Cambodia. Final Report: Strengthening Community-Based Vitamin A Program in Cambodia – A Pilot Project. July, 2005

## C. India

Funding: \$3,550,000

Time-line: 1998–2005

1. Vitamin A Supplementation
2. Anemia

Total Population: 1,080,264,388

Infant Mortality Rate: 56.3

Under 5 Mortality Rate: 79.9

Gross National Income per Capita: \$620

### BACKGROUND

Owing to its size, India has more of a great many of the features that describe a country: a large middle class but a large proportion of people living in poverty, a large population adhering to the tenets of Hinduism and large segments of the population who are either Moslem or Christian, a climate that is tropical in the south but temperate in the north, etc. Despite impressive gains in economic investment and output in recent years, major problems persist including the ongoing dispute with Pakistan over Kashmir, massive overpopulation, environmental degradation, extensive poverty, and ethnic and religious strife. Its economy encompasses everything from traditional village farming, modern agriculture, handicrafts, a wide range of modern industries, and a very strong service sector fueled in part by a technology boom.

The importance of eliminating micronutrient malnutrition has long been recognized by India's policy makers and is well-reflected in the country's policy documents: the National Nutrition Policy (1993), which specifies control of micronutrient deficiencies, and the National Nutrition Plan of Action (1995), which had set the ambitious goals of reducing anemia among pregnant women to 25%, eliminating blindness due to vitamin A deficiency, and reducing iodine deficiency disorders to 10% by the year 2000. These goals were far from being met in 1999, when MOST began to work in the country.

### VITAMIN A SUPPLEMENTATION

Initiated during MOST's first year of operations, the MOST India program supported a series of diverse activities while striving to establish vitamin A supplementation programs in the three States. At the outset, MOST supported an effort to develop a nutrition strategy for USAID/India. Although the strategy was never formally adopted, it provided useful input to MOST's later efforts, directed at reducing vitamin A deficiency among children and reducing severe to moderate anemia in pregnant women and adolescent girls in USAID's three focus states - Uttaranchal, Uttar Pradesh and Jharkhand – with a target population of approximately 202 million.

In June 2001, MOST opened an office in Delhi. By November, a biannual vitamin A supplementation round in Uttar Pradesh was imminent when adverse publicity surrounding an incident in the state of Assam where a small number of children died at the time of a vitamin A distribution brought vitamin A supplementation efforts in all states to a halt. Beginning in late 2001, therefore, MOST's efforts were largely directed toward restarting supplementation in the three states.

Efforts to sensitize national-level and state-level decision-makers to the existence, size, and consequences of the problem of micronutrient malnutrition and to the availability and safety of supplementation with vitamin A and iron to address the problem included the conduct of numerous state-level prevalence and Knowledge Attitudes and Practices (KAP) surveys as well as the commissioning of a large national-level study, the “Micronutrient Profile of the Indian Population” from the highly respected and influential Indian Council on Medical Research (ICMR). By late 2002, these efforts, combined with those of others, had succeeded to the extent that vitamin A supplementation was again accepted nationally and by all three states. At that time, the high-level national Committee under the Chairmanship of the Director General of the ICMR set up to look into the entire strategy of administration of vitamin A in the country recommended that vitamin A supplementation be continued for children between 9-36 months of age at six monthly intervals per the existing policy. That same year, the Tenth Five Year Plan (2002-2007) set as goals: achieving universal coverage for each of the five doses of Vitamin A; reducing prevalence of night blindness to below 1% and that of Bitot’s spot to below 0.5% in children between six months to six years of age; and eliminating Vitamin A deficiency as a public health problem.

Thereafter, until MOST’s end, its efforts were focused on providing state-level technical assistance in three essential areas:

- Providing training at the service delivery level.
  - MOST developed training modules to orient ICDS and Health officials and for the induction training of Anganwadi Workers (AWWs). Not only used in the three USAID-supported states, the AWW induction training modules have been shared by the Government of India with all 28 states, and have been adopted by three additional states as of this time.
  - MOST organized training sessions and orientation workshops with the help of local NGOs in all three states. By mid-2005, 400 master trainers and 60,000 AWWs were trained
- Designing and implementing a systematic behavior change communication strategy to generate demand for micronutrient programs and services.
  - MOST conducted formative research, developed state-specific BCC strategies with local partners, and developed an extensive set of IEC materials: “Vitamin A – 11-step plan”; plastic banners, community leaflets, posters, vitamin A folder, strategy book, advocacy folder, badges; flip book, folk media drama script, counseling cards and an audio cassette in which the importance of vitamin A is illustrated through a play.
- Monitoring process and coverage of the biannual vitamin A rounds.
  - Since 2003, MOST has monitored biannual supplementation rounds using direct observation, exit interviews, and coverage evaluation tools, developed by the staff.

MOST worked in close partnership with the various implementing agencies in each state, most significantly the two government line agencies – the Ministry of Health and Family Welfare whose Auxiliary Nurse Midwives (ANMs) administer vitamin A and the Ministry of Social Welfare whose

AWWs provide outreach for immunizations, vitamin A, and other health interventions – UNICEF, CARE, and other NGOs. Specific strategies were developed for each state:

- In Uttar Pradesh, MOST supported CARE and UNICEF in implementing “Bal Swasthya Poshan Mah”, a twice-yearly program in selected districts featuring the distribution of vitamin A supplements to children 9-36 months of age as well as the promotion of improved infant and young child feeding practices.
- In Uttaranchal, MOST supported the state government in implementing a state-wide program to provide Vitamin A supplementation to all children 9-36 months of age coupled with de-worming medication.
- In Jharkhand, MOST supported a wide range of local NGOs to implement the state’s public-private partnership designed to provide vitamin A supplementation to children 9-36 months of age.

All three states reinstitutionalized vitamin A supplementation in 2003, and coverage has been increasing regularly since that time. The history of vitamin A supplementation in each state from the beginning of 2002 through June 2005 is presented in the table below.

Month	Duration	No. of Districts/ Blocks Covered	Coverage (%)	Estimated No. of Children Received Vitamin A
<b>Jharkhand</b>				
June 2003	Routine immunization days (Wednesdays) in June 2003	141 blocks from 18 districts (excluding 4 BDCS districts) of Jharkhand	Coverage Figures Not Available	NA
July 2004-Catchup Round	1 <sup>st</sup> to 31 <sup>st</sup> July 2004	7 Districts (out of 22)	67.6%	0.53 million (Children 9-36 months)
December 2004-Catchup Round	7 <sup>th</sup> December to 2004-7 <sup>th</sup> January 2005	All the 22 Districts	70.4%	2.84 million (Children 9-59 months)
June-July 2005	1 <sup>st</sup> June to 7 <sup>th</sup> July 2005	All the 22 Districts	73.4%	3.04 million (Children 9-59 months)
<b>Uttar Pradesh</b>				
November-December 2003	Routine immunization days i.e. Wednesdays and Saturdays during 21 <sup>st</sup> November to 30 <sup>th</sup> December 2003.	15 UNICEF supported districts	Coverage Figures Not Available	NA
June 2004	1 <sup>st</sup> June to 30 <sup>th</sup> June 2004	15 UNICEF supported + 2 CARE Supported districts	24.5%	0.77 million (Children 9-36 months)
December 2004	December 1-31, 2004	18 UNICEF supported + 2 CARE Supported districts	28.1%	1.08 million (Children 9-36 months)
June-July 2005	1 <sup>st</sup> to 15 <sup>th</sup> June and 11 <sup>th</sup> to 31 <sup>st</sup> July 2005	18 UNICEF supported + 2 CARE Supported districts	51.9%	3.47 million (Children 9-36 months)
<b>Uttaranchal</b>				
May/June 2004	19 <sup>th</sup> May to 30 <sup>th</sup> June 2004	All the 13 Districts	29.3%	0.20 million (Children aged 9-36 months)
December 2004	December 1-31, 2004	All the 13 Districts	55.3%	0.36 million (Children aged 9- to 36 months)
June 2005	1 <sup>st</sup> to 30 <sup>th</sup> June 2005	All the 13 Districts	63.1%	0.42 million (Children 9-36 months)

Source for Coverage data: Coverage evaluation surveys conducted by MOST.

## ANEMIA

In Jharkhand, MOST also developed and initiated a comprehensive anemia program for pregnant and lactating women and adolescent girls through a partnership with a local NGO, Vikas Bharti. The program was a unique example of public private partnership, with the state department providing the supplies and the service delivery, Vikas Bharti taking responsibility for social mobilization, and MOST providing the technical support. Initiated in June 2004, it aimed to make women and adolescent girls aware of the importance of iron supplementation and to improve compliance levels by generating awareness about the side effects. A key component was to have families play a supporting role in the consumption of IFA tablets. An innovation of the project was to test the anemia levels of the involved service providers, ANM, AWW and NGO volunteers. Those found to be anemic were asked to take IFA tablets; by dealing with side effects and compliance issues themselves, these women were able to act as a very effective social support group for the women in their communities. By the end of MOST, compliance levels were found to be in the range of 90 per cent.

## **D. Nepal**

Funding: \$370,000

Time-line: 1998-2005

1. Vitamin A Supplementation
2. Documentation of the Child Survival program

Total Population: 27,676,547

Infant Mortality: 67

Under 5 Mortality: 95.5

Gross National Income per Capita: \$260

### BACKGROUND

Nepal is among the poorest and least developed countries in the world with 40% of its population living below the poverty line. Agriculture provides a livelihood for over 80% of the population and accounts for 40% of GDP. Tourism has been a major part of the economy, especially as a source of foreign currency; however, security concerns in the wake of the Maoist conflict have had severely reduced income from abroad.

### VITAMIN A SUPPLEMENTATION

As a country where some of the seminal research showing the impact of vitamin A on child mortality, Nepal initiated its National Vitamin A Program (NVAP) in 1993. Recognizing the need to have an efficient focused organization to implement the program, the Ministry of Health endorsed a local NGO, the National Technical Assistance Group (NTAG), as the primary coordinator of the program. The program is built around the empowerment of Female Community Health Volunteers (FCHVs) to deliver vitamin A supplements to children twice each year on the exact same two days. Introduced to districts progressively over time (approximately 10 per year), the program has successfully been expanded to cover the entire country, representing some of the most remote and difficult terrain in the world. Despite the current political upheaval in the country, the program continues unabated. Its success has prompted the engagement of the FCHVs in the delivery of other interventions over the years so that today these women are at the center of health care delivery in the remote areas.

MOST became involved in the Nepal program during its second year of operation when MOST proved to be the most convenient mechanism for funding the program. As the program was already experiencing considerable success, MOST elected to enable NTAG to continue its operations as it had been doing since 1993. MOST's only technical role was to provide advice to NTAG in the evolving monitoring and evaluation component of the program. During the year that MOST was the conduit for USAID funding, coverage in the districts surveyed as part of the monitoring component was 85%.

In MOST's final year, residual supplemental funds reserved for use in Nepal were used to enable NTAG to expand its monitoring and evaluation effort for the year. Given that the program built around the FCHVs continues to be broadened to include other interventions, the surveys funded through MOST during its final year had multiple objectives.

- To estimate the *vitamin A* capsule coverage rates
- To explore ways of improving and maintaining coverage
- To assess the performance of program activities like training and promotion
- To estimate *deworming* tablet coverage rates
- To estimate *iron tablet* coverage rates
- To estimate the consumption rate of iodized salt
- To assess *knowledge, attitude, practice (KAP)* on iodized salt and iron tablets

Coverage with vitamin A was determined to be 96% with no apparent drop off in districts with a long tenure in the program giving credence to the assertion that program fatigue has not compromised the program.

## DOCUMENTATION OF THE CHILD SURVIVAL PROGRAM

In 2004, MOST participated in an effort to document fifteen years of child survival programming in Nepal. The effort was orchestrated jointly by BASICS, MACRO (the DHS project) and MOST. MOST had two major inputs to this joint effort, conduct of an analysis to determine the relationship between the vitamin A supplementation program and the drop in childhood mortality in evidence from successive Demographic and Health Surveys and participation in the field visits and writing of the report.

A methodology to determine the relationship between NVAP and mortality changes was developed taking advantage of the phased introduction of the vitamin A program over time. Mortality differentials between districts with a long history of participation in the program were compared to those entering the program more recently. The results were suggestive of the impact vitamin had on mortality; however, when reviewed by academic scientists, the methodology was criticized for not considering several other factors that might explain the observed result and, therefore, the results were not endorsed. This serves to illustrate the inherent difficulty in trying to attribute impact of a program (rather than a controlled study) that operates for many years. In that analysis of the impact of any program spanning years in the absence of a carefully identified control population, the results can and will be challenged as being inconclusive because of the inability to account for alternative competing explanations.

## REFERENCES

National Technical Assistance Group, 2000. *Project Completion Report on National Vitamin A Program: October 1999-November 2000*. Kathmandu, Nepal

National Technical Assistance Group, 2004. *Mini-survey Report October 2004: Vitamin A Program*. Kathmandu, Nepal

BASICS, 2002. *Nepal Child Survival Case Study*. Arlington, Virginia, USA

## **E. The Philippines**

Funding: \$2,600,000

Time Line: 2000-2005

### 1. Food Fortification

Total Population: 87,857,473

Infant Mortality Rate: 23.5

Under 5 Mortality Rate: 34.2

Gross National Income per Capita: 1,170

## BACKGROUND

The Philippines is an archipelago made up of 7,107 islands with a population fast approaching 90 Million. Since gaining its independence following the Japanese occupation in World War II, The Philippines has had a stormy political environment, especially since the end of Fernando Marcos rule. The country faces internal instability as a result of a communist insurgency in the north and Muslim separatists in the south. It continues to have a high population growth rate and an uneven distribution of income contributing to continuing nutritional deprivation throughout the country.

## FORTIFICATION

Based in part on a cost-effectiveness study of supplementation as compared to fortification as the means of delivering micronutrients to its children done under OMNI, the USAID funded micronutrient project that preceded MOST, the Government of the Philippines elected to expand its ongoing fortification program to include the fortification of staple foods. Prior to MOST's becoming involved, the Government had developed a five-year fortification plan and passed legislation on November 7, 2000 to make mandatory the fortification of sugar with vitamin A, wheat flour with vitamin A and iron, cooking oil with vitamin A and the fortification of rice with iron. The goal of the program is to provide 50% of the recommended daily allowance (RDA) of vitamin A, iron and iodine through fortification. The legislation was scheduled to go into effect 4 years later, on November 7, 2004.

USAID/Philippines provided field support to MOST to provide the technical and, in part, the financial wherewithal to the National Food Fortification Task Force to facilitate compliance with the law by the appointed date in 2004. MOST recruited as its Field Coordinator the author of the five-year plan, formerly a UNICEF consultant, and set up operations from the MOST office of its partner Helen Keller International.

MOST set about providing technical assistance to the various industries regarding equipment needed, quality assurance procedures and sources of pre-mix while informing those industries about the law and the motivations behind the law from the public health perspective. At first, communications and advocacy were vested in a team funded through the Asian Development Bank, but when the funding for that team ran out, MOST stepped in to take on the communications function as well. In addition, MOST supported a variety of important studies including such studies as the food consumption component of the periodic nutrition survey, stability tests for various fortified commodities and studies of the structure and behavior of the staple industries.

It took some time for the MOST field staff and the MOST headquarters staff to come to a common understanding of the environment in the Philippines in which mandatory fortification was to be embedded. Among the challenges faced were: a) to determine how to cover the costs fortification within the government mandate to ensure price stability of staple foods, b) to enlist the support of strong industries with agendas that did not include fortification, c) to develop distinct strategies (technical and economic) for each of the industries, and d) to form a broad-based coalition including government and industry representatives to address industry priorities and the mandate to improve public health simultaneously.

At first, MOST headquarters argued that the key to securing compliance with the legislation lay in the establishment of a regulatory monitoring system that would enable the industry associations and the government to assure compliance with the legislation so as to maintain a level playing field for the many food producers operating in the Philippines. More familiar with the capacity of government in the Philippines to enforce legislation of this type (or, to NOT enforce such legislation), the field staff emphasized the need for advocacy to convince industry and their associations to comply with the law independent of the effort at enforcement. Advocacy materials, including a rap video to introduce the alternate seal identifying fortified foods in the market place, were produced and distributed. The materials were directed not only at the general population but also at industry representatives themselves.

In addition, given the importance of involving the Local Government Units (LGUs) in the Philippines, MOST staff visit the LGUs to work with local officials and representatives of the food industry where appropriate to establish monitoring and enforcement procedures. This particular component of the program accelerated when activities to strengthen the LGUs carried out by Helen Keller International were absorbed into MOST. Through this activity, action plans were developed in 11 regions, 28 provinces, 16 cities and 75 municipal government agencies; local advocates, technical staff and health workers were trained, thousands of individuals in the food service industry ranging from production to sales were made aware of the program, and 25 provinces, 15 cities and 67 municipalities initiated monitoring of the program using the tools developed for that purpose.

A year or two prior to the 2004 date when the legislation was scheduled to go into effect, the USAID/Mission and the MOST staff in country and at headquarters expressed concern that there was no apparent movement toward compliance with the legislation. One year before November 7, 2004, a concerted effort to publicize the anticipated implementation of the law prompted some movement by industry, especially the oil refiners and the wheat millers, to prepare for the law. (The government had planned to fortify only that rice sold through the subsidized government network so the same urgency to stimulate industry compliance did not exist for rice.) Nonetheless, there appears to have been a let's wait and see attitude on the part of industry as various food producers observed the behavior of their competitors and of government before actually moving forward with fortification efforts.

The availability of fortified foods increased dramatically following implementation of the law. All 12 flour millers are fortifying with vitamin A and iron (6 with the seal). All 34 large oil refiners have the technology to fortify (11 have received the seal) and, as with the flour millers, the others are expected to follow. Work with the smaller refiners is expected to begin with an assessment once the larger refiners are in compliance. Still, the sugar industry is seeking to defer mandatory sugar fortification illustrating that passage of a law is an early rather than a late step in securing commitment from industry to fortify.

The Government of the Philippines is planning to submit a proposal to the Global Alliance for Improved Nutrition to fund the effort to expand rice fortification beyond the government-controlled rice into the privately milled rice. Given the large number of rice millers, this represents an unusual challenge.

The Philippines fortification story represents a situation likely to be observed in other countries adopting mandatory fortification. The limited capacity of governments to enforce legislation coupled with a very real concern by governments to raise the price of staples to cover the costs of fortification suggest that mandatory fortification, as strictly interpreted, is not readily implemented. Instead, it is necessary to work toward a voluntary acceptance of the legislation by all parties as a precursor to placing fortified foods widely in the market place.

#### VITAMIN A SUPPLEMENTATION

In addition to the primary MOST activity in The Philippines linked to food fortification, Helen Keller International is engaged in a micronutrient and evaluation study design to facilitate a review of the current policy on vitamin A supplementation while helping monitor progress in the food fortification program. A first round of data was collected in 6 locations from July to September 2004 with a second round beginning in May 2005.

## **F. Morocco**

Funding: \$1,230,000

Time Line: 1998–2003

1. Vitamin A Supplementation
2. Food Fortification
3. Anemia
4. Community Development

Total Population: 32,725,847

Infant Mortality Rate: 41.6

Under 5 Mortality Rate: 52.5

Gross National Income per Capita: 1,520

### **BACKGROUND**

Morocco was the first nation to recognize the fledging United States in 1977 and has the oldest non-broken friendship treaty with the U.S., the Moroccan-American Treaty of Friendship, which has been in effect since 1783. After 45 years of being a protectorate of France, Morocco gained its independence in 1956. Owing to substantial progress over the years, Morocco “graduated” from USAID’s health assistance program at the end of fiscal year 2003.

MOST recruited a local Field Coordinator and established its operations within the office of its partner Helen Keller International. MOST funds were used to enable HKI to engage a MOST Field Coordinator, an assistant and an accountant to manage the program.

### **VITAMIN A SUPPLEMENTATION**

A national survey to measure the micronutrient status of the population of Morocco, carried out with USAID support through the OMNI project, revealed surprisingly that 41% of children 6 to 72 months of age were deficient in vitamin A. MOST advocacy played a major role in reestablishing vitamin A supplementation within the calendar of services offered to mothers and children and enabled the Ministry of Health in Morocco to inaugurate a semi-annual event, in the mold of a Child Health Week, to sustain high coverage. MOST support facilitated the training 160 trainers including IEC animators, MCH trainers and doctors at central level and 8,000 health professionals in charge of mother and child health at the periphery. In July 2003, an evaluation of the supplementation program carried out by the Ministry of Health and MOST found that 65% of women received vitamin A postpartum, 65% of children received the first dose (down to only 50% receiving the second dose). The evaluation concluded that additional effort into increasing women’s awareness elevating the perceived value of vitamin A supplements to the same level as that attributed to vaccination.

### **FOOD FORTIFICATION**

As a country within the Eastern Mediterranean Region of the World Health Organization, Morocco was already engaged in considering food fortification as part of a grant given to WHO by the Micronutrient Initiative to promote fortification throughout the region. MOST provided technical and financial support to facilitate some of the “nuts and bolts” work required to make fortification a

reality. Specifically, MOST helped sensitize the partners in fortification from both the public and private sector, contributed to the advocacy effort that led to the serious participation of many government ministries and industry associations in the fortification program and fostered continuing communication among the partners paving the way for program implementation.

MOST also supported much of the technical work required to establish a sound foundation for the fortification initiative including the preparation of a report on iron fortification, a feasibility study of fortifying oil including a stability study, the drafting of the technical dossier for oil fortification and the laying of the regulatory grounds for safe fortification.

Working in collaboration with another USAID project, Commercial Market Strategies, MOST supported the Ministry of Health in developing a media campaign to promote micronutrient fortified foods. The “Seha wa Salama” logo is now recognized as the symbol of fortified foods and is evident on the products of 10 flour mills and the leading oil producer.

The overall success of the program prompted MOST to organize study tours to Morocco for teams from Uganda and from Bangladesh to enable those countries who were just starting out on fortification to benefit from the Moroccan experience.

## ANEMIA

The micronutrient prevalence survey mentioned above indicated that 31.6% of children were anemic while 33% of women of reproductive age were also anemic. The education programs and training described above in regard to vitamin A supplementation included material to promote the ongoing iron supplementation as well. Food fortification, especially the fortification of wheat flour, is also intended to deliver more iron in the diets of women and children to further the effort to reduce anemia in these vulnerable groups.

## COMMUNITY DEVELOPMENT

In addition to providing financial support to MOST directly for health programs, USAID/Morocco provided funds in support of its program to promote democracy to enable MOST partner, Helen Keller International, to engage community development workers in health pursuits. HKI worked with community development workers in 132 local associations using nutrition and micronutrient deficiency as the theme of their work.

## REFERENCE

Sarhani Najat, 2005. *MOST Final Report: Morocco*, Rabat, Morocco

## **G. West Bank/Gaza**

### WEST BANK/GAZA

Funding: \$500,000

Time-line: 2004–2005

#### 1. Fortification

Total Population: 3761904

Infant Mortality Rate: 21

Under 5 Mortality Rate: 25.1

Gross National Income per Capita: 1,120

### BACKGROUND

Despite major initiatives by world powers, the situation in West Bank/Gaza continues to be marked by violence and political discord. Hopes that the Israel-PLO Declaration of Principles on Interim Self-Government Arrangements, signed in Washington in September 1993 would lead to a peaceful transition of power from Israel to a Palestinian authority have been dashed repeatedly over the years. Political uncertainty has damaged the economy of the area as well and high population density, limited land access, and strict internal and external controls have kept economic conditions in Gaza even more degraded than in the West Bank.

### FORTIFICATION

Since 2000, the nutritional status of vulnerable groups in the West Bank/Gaza has declined to the point where there is considerable risk of malnutrition and micronutrient deficiencies. By 2003, USAID's interest in increasing the Palestinian Ministry of Health's attention to and support for activities to address the deteriorating nutritional situation, led MOST to send its Fortification Advisor to the West Bank/Gaza under the Mission's bilateral project, MARAM. Based on the information gathered during this visit and a subsequent one by the MOST CTO, three sets of activities to help alleviate the nutritional crisis and strengthen local capacity to address nutritional needs on an ongoing basis were identified: developing a food fortification program, furthering ongoing micronutrient supplementation efforts, and strengthening the capacity of the Ministry of Health. MOST identified CARE in West Bank/Gaza to be its implementing agent in the field and a CARE staff member was assigned to serve as Field Coordinator.

In March 2004, MOST identified four specific activities that might be supported by USAID. In July, USAID approved a 13-month program to support wheat flour fortification and to evaluate the weekly preventive supplementation program. However, the evaluation of the weekly school supplementation program was dropped from MOST's work plan in October, when it became clear that the start of the program itself would be delayed until February 2005 and continue for only 3 months until the end of school in May. MOST's final work plan, therefore, focused solely on food fortification, and included 6 components aimed at:

- Developing and disseminating new standards for the fortification of wheat flour
- Transferring wheat flour fortification technology to local industry

- Developing a monitoring and enforcement system for wheat flour fortification together with the Food Control Central Laboratories and health inspectors from the Palestinian Ministry of Health
- Developing quality control and assurance systems within the wheat flour industry to achieve expected public health impacts
- Developing social marketing and communication in support of food fortification
- Conducting a biological baseline study on target populations for appropriate program.

Despite some delays caused by political events in the West Bank and Gaza, significant progress was made in initiating wheat flour fortification in the West Bank and Gaza.

- A wheat flour fortification standard was developed and endorsed by the technical committee of the Palestinian Standards Institute. The Ministry of Health authorized its application.
- New simple and practical methods to measure iron and vitamin A in flour without the need for sophisticated equipment were developed with Birzeit University.
- The basic principles and strategies for quality control and assurance in the salt and wheat flour industries were established.
- An enforcement and monitoring workshop was carried out, and a plan of inspection discussed.
- The readiness of flour mills for fortification was assessed; as a result out 7 of eight mills received fortification equipment (feeders). Premix need for 15 days of production was purchased on the local market and distributed.
- The baseline study of nutrient adequacy, a cooperative effort of the Ministry of Health, Al Quds University and Emory University, was completed. Biological samples were taken for determining biochemical indicators at a later date.

## REFERENCE

Dary Omar, 2005. "Wheat Flour Fortification and Enrichment: Serving Mutual Needs" in *Bridges, Israeli-Palestinian Public Health Magazine*, Volume 1, #3

## **H. Democratic Republic of the Congo**

Funding: \$875,000

Time-line: 2002-2005

Vitamin A Supplementation

1. Zinc
2. Anemia

Total Population: 60,764,490

Infant Mortality: 92.9

Under 5 Mortality: 133.7

Gross National Income per Capita: 120

### **BACKGROUND**

After gaining its independence from Belgium in 1960, the D.R. Congo, then called Zaire, was governed by the totalitarian regime of Mobutu Sese Seko. In 1997, an insurrection placed Laurent Kabila in power until his assassination in 2001. There has been continued sporadic fighting throughout the country's life time continuing to this day. Joseph Kabila succeeded his father and now presides over a transition government.

A vast country divided into 11 provinces with over 500 health zones, the lack of infrastructure and financial resources makes work in the country especially challenging.

### **VITAMIN A SUPPLEMENTATION**

Following a visit to USAID/Washington by the Minister of Health of the D.R. Congo, the Office of Health and Nutrition asked MOST to use core funds to allow USAID to respond to the request of the Minister for assistance scaling up a vitamin A supplementation program that had limited geographic coverage in the country. Since 2002, MOST has assisted the government of the DR Congo in developing and implementing its national vitamin A supplementation program in partnership with the National Nutrition Program (PRONANUT) as the coordinating agency. In subsequent years, USAID/D.R. Congo provided field support to enable MOST to continue its work in support of PRONANUT. MOST established an independent office under the auspice of ISTI to house a Field Coordinator to manage the program and accountant to handle administrative matters.

One of the unique qualities of the program in the DR Congo was the active participation and collaboration of a wide variety of organizations, both local and international. These included Church of Christ through their health program SANRU, USAID/MOST, UNICEF and the MOH/PRONANUT. MOST successfully organized and coordinated a network of governmental and nongovernmental organizations throughout the country to establish the national vitamin A supplementation program. High coverage was attained for a single dose by linking the program with National Immunization Days. Recognizing that this type of mass distribution was the key to attaining high coverage in a country with inadequate infrastructure, the model was adopted to reach the children for a second dose each year, independent of the immunization program. MOST played a major role in developing micro-plans for the distribution with the health zones, designing the tools for collecting coverage data, the production of the promotional materials, conducting the training and supervision at all levels and the carrying out of a survey following each distribution.

An indication of the high coverage attained as determined by tally sheets since 2002 is given in the following table. There is a known problem getting accurate estimates of the denominator and, owing to civil disturbances, not all of the country is covered in each distribution. Nonetheless, the table is evidence of the high number of children receiving the vitamin A.

	2002		2003		2004		2005
	February	August	February	August	March	October	May
Target Population (*1,000)	11,114	11,444	10,937	11,863	11,609	11,609	11,459
Children receiving vitamin A (*1,000)	5,482	10,850	8,181	9,508	9,003	9,415	10,017
Coverage	62%	95%	75%	80%	78%	81%	87%

## ZINC

At the request of USAID/D.R. Congo, in February of 2005, MOST supported a national effort to generate a five-year plan of action for the introduction of zinc supplementation as part of the protocol for treating diarrhea. Initial steps in the plan included: formation of a zinc task force, review of existing training materials for the purpose of adapting them to include zinc, importation of the product (registration, securing duty free status, identification of suppliers), and application for technology transfer from NUTRISET to initiate local production. The plan now serves as the basis for seeking funding to implement the program.

## ANEMIA

Acknowledging that the control of anemia in the D.R. Congo will require the close collaboration of a number of ongoing, specialized programs run by the Minister of health, the Ministry asked MOST to assist its efforts to articulate a strategy to combat anemia in a single document to facilitate the efficient coordination of the concerned programs. A MOST consultant convened a meeting of national experts from the relevant services within the Ministry of Health to elaborate a program based on the strategies of those specialized programs. This document was adopted in April 2003. In May 2003, an "Anemia Task Force" created by a Ministerial resolution as the mechanism to strengthen the program, coordinate the activities of the specialized programs, harmonize the tools and protocols used in all of the programs, develop a data bank on anemia while developing the mechanisms for monitoring and evaluation of the integrated plan to combat anemia.

As part of the approach to anemia, MOST was invited to support a program to distribute 1,000 "Moringa Olifeira" plants, spinach-type plants high in iron and other micronutrients, to 500 families in the health sub-zones of Kemi and Kiamfu during the period February to March 2005.

## REFERENCES

Kazadi, Thierry, 2005. Rapport Triennal des Activites de MOST en R.D. Congo: Annee 2002-2005. Kinshasa, D.R. Congo

Ecole Santé Publique, 2003. Evaluation de la Supplémentation en Vitamine A de Fevrier 2003 Chez les Enfants de 6 a 59 Mois en RDC. Kinshasa, D.R. Congo

## I. Eritrea

Funding: \$582,000

Time-line: 2002-2005

1. Anemia
2. Food fortification

Total Population: 4,669,638

Infant Mortality Rate: 74.9

Under 5 Mortality Rate: 125.6

Gross National Income per Capita: \$180

### BACKGROUND

Following a protracted military struggle with Ethiopia, the population of Eritrea achieved independence in a 1993 referendum. Hostilities broke out again for two and a half years ending in 2000 and Eritrea now hosts a United Nations peacekeeping force. It is a very poor country with an added burden of maintaining a military capability to retain readiness should hostilities once again break out.

Eritrea first surfaced as a country to receive support from MOST as part of a Global Bureau funded initiative to stimulate the introduction of vitamin A supplementary programs in countries throughout Africa with known high infant and child mortality. A preliminary assessment visit to Eritrea in February 2002 found a highly successful, ongoing vitamin A supplementation program through National Immunization Days, a program expected to continue for the next several years. Concerns that anemia was not getting adequate attention coupled with a burgeoning interest in food fortification as a means of delivering iron as well as vitamin A prompted a shift in focus to food fortification.

A second visit several months later to explore the feasibility of fortification in Eritrea identified wheat flour as the likely vehicle but suggested that DMK (a locally milled complementary food), milk and *shiro* (a locally milled food with a chick pea base) be considered as well. A third team of consultants with intimate knowledge of Eritrea and of food technology then developed a more detailed plan for pursuing food fortification.

These three preparatory visits were funded entirely with core funds. Ultimately, with “old” funds de-obligated from the predecessor micronutrient project to MOST, field support was made available enabling MOST to resume activities late in 2004. MOST recruited a Field Coordinator and negotiated an agreement with the “bilateral” project for office space and logistical support. The program has since evolved along two parallel tracks, one addressing the anemia problem and the second addressing the development of a fortification program and the plans for securing a GAIN grant to facilitate acceleration of the program.

### ANEMIA

The anemia program began with formative research based on interviews of health clinic staff and their clients to determine their knowledge attitudes and practices. This research identified a major problem with iron folic acid supplies that was immediately addressed by donors and the Ministry.

With the assessment results in hand, MOST provided the expert services of its nutrition and communication advisors to assist the Ministry in the development of a program strategy and communication plan. Additional technical assistance was provided by MOST's communications advisor in the development of job aids, brochures, leaflets, promotional materials, radio and TV dramas to encourage pregnant women to go to the clinics, take the iron folic acid tablets and use insecticide treated bednets. MOST's field coordinator, working in collaboration with nutrition, reproductive health and health promotion units, was instrumental in pre-testing and publishing the communication materials, developing a training curriculum and integrating anemia-related training with ongoing reproductive health training throughout Eritrea.

Results of the anemia component of the program are:

- Training had been provided to key health management team members in each of the six zobas (regions).
- All health facilities had and were using the revised integrated anemia prevention/treatment protocols.
- In the year following the initial assessment, no health facility had reported a stock out of iron and folic acid tablets.
- Demand creation materials had been developed and were being aired on all major radio and television stations.

## FOOD FORTIFICATION

The first phase of the development of the fortification program using field support funds entailed a study of the economic feasibility of fortification in this very poor country. The study provided evidence that the magnitude of the subsidy required to fortify wheat flour and DMK was relatively small relative to the magnitude of the subsidy already in place to bring whole grain into the country. As milk consumption is restricted to more wealthy urban residents and shiro production is highly decentralized, further consideration of these potential vehicles for fortification was deferred.

A food consumption survey was commissioned and completed to support the preparation of a proposal to GAIN. MOST purchased three volumetric microfeeders and three GAC2100 Agri grain moisture analysis computers to be installed in the flour mills. Plans to provide a milling specialist to install the microfeeders and computers and provide training in quality control and quality assurance for the fortification process were scuttled when USAID assistance to Eritrea was terminated when the microfeeders were in transit.

Results of the fortification component of the program are:

- An active National Fortification Task Force provides leadership to the fortification effort.
- Systems are in place to efficiently mill and fortify wheat flour and DMK with continuing quality control and assurance.

## REFERENCE

Tekle, Estifanos, 2005. MOST Final Project Report [Eritrea]. Asmara, Eritrea

## **J. Ethiopia**

Funding: \$650,000

Time-line: 2001-2005

### 1. Vitamin A Supplementation

Fortification

Total Population: 73,053,286

Infant Mortality Rate: 95

Under 5 Mortality Rate: 163

Gross National Income per Capita: \$110

## BACKGROUND

Ethiopia is a very poor country with a relatively small proportion of the population living in urban areas. Over 70 languages are spoken in the country. It is landlocked and has been engaged in a continuing border dispute with neighboring Eritrea, possibly in hopes of drawing Eritrea with its port cities back into Ethiopia.

MOST was engaged in assisting the Government of Ethiopia in strengthening interventions to reduce micronutrient deficiencies from December 2001 through July 2005. The initial scope of MOST's program included exploration of sugar fortification as one of the strategies to reduce vitamin A deficiency, but vitamin A supplementation (VAS) became the sole focus of the program beginning in mid-2003.

## SUPPLEMENTATION

Between 1998 and 2000, vitamin A supplementation was carried out through two-round annual campaigns, the first round linked to polio national immunization days (NIDs), and the second round conducted as a separate campaign for vitamin A supplementation. In 1998-1999 VAS coverage of more than 70% in children aged 6-59 months was achieved. However, coverage dropped to 30% and less in 2000-2001 because deaths reported to be associated with vitamin A administration undermined support and buy in from major policy makers. Thus, MOST started its operation when key policy makers were raising questions about vitamin A supplements and had decided to put the program on hold.

In the beginning, MOST focused on fostering the recognition that vitamin A supplementation is a legitimate and cost-effective child survival intervention. MOST assisted the Federal Ministry of Health (FMOH) to establish its Nutrition Division and to develop national micronutrient guidelines. It did so by posting its Field Coordinator, hired through CARE/Ethiopia, to the FMOH. MOST proposed to the FMOH the adoption of an outreach strategy to bring vitamin A supplementation to children under five twice a year. In October 2003, the strategy was endorsed by the FMOH, and MOST negotiated its initial implementation in the Southern Nations, Nationalities and Peoples' Region (SNNP Region) of the country. At the same time, MOST encouraged and assisted Dr. Anne Peterson, USAID Assistant Administrator for Global Health, who visited Ethiopia December 11-16, 2003, to promote and support a child survival strategy that included vitamin A supplementation for under fives as one of its pillars.

In early 2004, UNICEF obtained support from CIDA for the implementation of the Enhanced Outreach Strategy (EOS) targeting about 7 million children from 6 to 59 months of age living in 325 drought affected woredas in the country. The cornerstone of the strategy, VAS, was packaged with deworming, measles vaccination, screening for acute malnutrition, and information dissemination as a package of post-emergency rehabilitation interventions. EOS implementation was launched in June 2004, targeting children and women in 54 woredas within the SNNPR, and reaching over 90% coverage in those areas where distribution took place. The second EOS round, which began in mid-January 2005, covered the same 54 woredas of the SNNPR plus 135 additional drought affected woredas in Oromia and Amhara Regions. Further scale-up of the program to non-emergency woredas, aiming at universal VAS coverage, has been pursued since April 2005.

In early 2004, USAID, UNICEF, and other partners agreed that MOST would lead the technical development of the vitamin A supplementation training, communications, and monitoring and evaluation efforts within EOS. During March and April 2004, MOST technical advisors carried out initial assessments and prepared preliminary training, communications, and monitoring and evaluation plans and materials. From that time until the project's end, MOST made considerable progress in all three areas:

- **Training.** MOST produced three job aids, a poster, a “Quick Reference Manual on Vitamin A Supplementation for Frontline Health Workers,” and a publication entitled “Key Information on Vitamin A Supplementation for Supervisors and Coordinators.” MOST also contributed to the revision of the vitamin A supplementation content of the FMOH’s Family Health Card and the Essential Nutrition Actions training materials. Finally, MOST developed a trainer’s manual/guide for use of these materials and successfully trained doctors, nurses, and staff of Regional Health Bureau and a variety of NGOs in their use.
- **Communications.** In the first quarter of 2005, MOST developed a comprehensive long-term communication plan for the FMOH. This plan focused in three areas: advocacy for VA in collaboration with other child survival stakeholders; production of the aforementioned VA training and reference materials; and development of literacy-sensitive community mobilization materials. While much of this plan was not intended for implementation under MOST, by the project’s end, MOST had developed two FMOH logos and sponsored a journalist seminar.
- **Monitoring and Evaluation.** MOST developed a framework for monitoring and evaluating VAS and undertook monitoring activities in support of EOS implementation from the date of its launch, conducting rapid assessments of the implementation of the first and second EOS rounds.

Although there remain important obstacles to the effective implementation of a VAS program in Ethiopia, there is today a notable difference in policy makers’ attitudes towards vitamin A supplementation, as reflected in Ethiopia’s new Child Survival Strategy, which identifies VAS as a key intervention to reduce under-five mortality and help Ethiopia reach the Millennium Development Goals. Through its continuous efforts to present the scientific evidence of VAS’s critical role in child survival and to encourage dialogue on the subject of vitamin A supplementation, MOST played an important role in this change. EOS is currently the predominant strategy for implementing vitamin A supplementation in Ethiopia. But it is now clear that in the longer-term, the

future of VAS largely lies with the National Strategy for Child Survival, to be implemented through the Health Extension Package (HEP). Continuing advocacy will be needed to help ensure the inclusion of vitamin A supplementation in the HEP and the development of appropriate materials for use in the HEP.

## FORTIFICATION

When MOST, working with UNICEF, proposed a technology trial for sugar fortification at one of the government owned sugar mills, the Federal Ministry of Health scuttled the activity. An early issue arose regarding the disposal of the sugar fortified during the trial. Ethiopian law prohibited the sale of the fortified product until it was proven to be safe but that safety could not be demonstrated without undergoing the trial to produce fortified sugar for testing. Ultimately, this issue was resolved; however, the Minister of Health continued to oppose the activity. Although never officially stated, the reason appears to be that he opposed fortifying an otherwise nutritionally useless food commodity.

## **K. Ghana**

Funding: \$1,575,000

Time-line: 1999–2005

1. Vitamin A Supplementation
2. Anemia
3. Nutrition Advantage/Gender Linkages
4. Fortification

Total Population: 21,946,247

Infant Mortality Rate: 51.4

Under 5 Mortality Rate: 87.0

Gross National Income per Capita: \$380

### **BACKGROUND**

In 1957, Ghana became the first sub-Saharan country in colonial Africa to gain its independence. Although Ghana has roughly twice the per capita output of the poorer countries in West Africa, it remains heavily dependent on international financial and technical assistance. In 2004, the Gross Development Product was estimated to be \$2,300 per capita. Although a West-African country with typical developmental challenges, Ghana has an especially dynamic leadership in the health sector, which is moving micronutrient and reproductive health agendas forward.

### **VITAMIN A SUPPLEMENTATION**

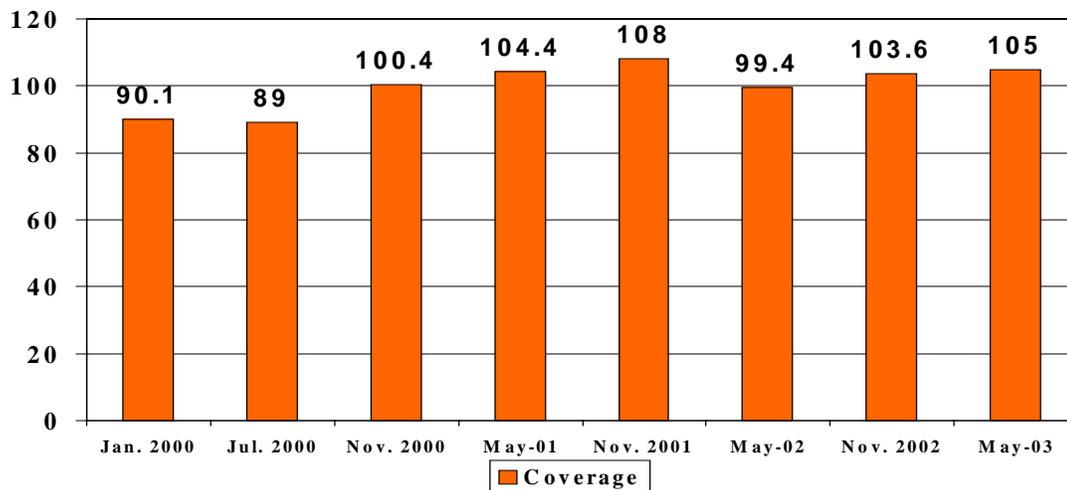
The Vitamin A Supplementation Trials known as VAST, conducted at the Navrongo Health Research Centre, carried out between 1989 and 1991 showed nearly 65 percent of the children in the study area were severely or moderately deficient in vitamin A. It had always been assumed that vitamin A deficiency was not a problem in the south of the country because of the abundance of vitamin A rich foods. But a national survey completed in 1997 revealed that deficiency was widespread when 37.2 percent of children observed registered below 10 ug/dl for serum retinol.

In 1999, the Ghana Health Service (GHS) invited MOST to attend a national meeting to determine how best to expand the Ghana vitamin A program, operating at that time in only the three northern regions of the country. MOST recruited a local Field Coordinator and established a shared office with another USAID project, BASICS. When both the MOST program and BASICS program grew, the shared space became too small and each project established its own office.

First, MOST technical advisors worked with the Ghana Health Service's Nutrition Division to introduce vitamin A supplementation during scheduled National Immunization Days and, in 2000, MOST helped plan and implement the first stand-alone vitamin A distribution. Noting the success of this effort, the regions in this decentralized health sector absorbed vitamin A distribution, combining it with other interventions to go on to have a semi-annual national distribution that has reached coverage rates of 90–100%. Coverage as determined by the tally sheets are displayed in the following graph. The estimates of coverage greater than 100% arise from inaccuracies in determining the denominators for calculating the percentages. The coverage estimates from the post-distribution surveys in July 2000 (91%), May 2001 (90.6%) and May 2002 (89.2%) corroborate the high coverage

figures derived from tally sheets. The sustainability of the program in Ghana is best illustrated by the 98.6% coverage reported in November 2004, after MOST's involvement in the program was terminated.

### Vitamin A Supplementation Coverage 2000 to 2003 (Calculated from Tally Sheets)



#### Elements of the Program

**Communications:** To mobilize and educate the community, a communications program was implemented relying on a variety of channels ranging from mass media to the use of the gong gong beaters (town criers). Communication campaigns were so effective that awareness of vitamin A supplementation improved drastically and caregivers were actually demanding the capsule at subsequent supplementation campaigns.

**Training:** The training of health personnel at all levels of service delivery in all stages of planning, implementation, monitoring and evaluation of the program not only set the stage for successful delivery of the vitamin A, it also enhanced ownership of the program and provided motivation to the health workers.

**Use of Volunteers:** The vast resources required for a national distribution of capsules were forthcoming only because of the commitment of the decentralized departments and community volunteers. The departments saw the vitamin A distribution as a means to introduce other departmental functions and programs resulting in higher coverage, optimal usage and lower shared costs.

**Logistics:** During the 2000 capsule distribution associated with NIDs, capsule shortages were encountered. An analysis of the supply issues resulted in the combination and reassignment of activities. This extra effort became more efficient with each distribution and subsequently capsule shortages were seldom mentioned as a significant problem.

Post-distribution Surveys: Surveys done to estimate coverage in selected regions following each distribution helped build confidence in the coverage statistics generated during the distribution while highlighting other strengths and weaknesses in the program for consideration in later distribution rounds. The “mini-survey” information on caregiver information sources helped modify promotion activities, but only after investigation to ensure that the data were accurate.

#### Factors Contributing to Success

Little or no advocacy was needed to initiate the program because the authorities in Ghana were committed to vitamin A supplementation before MOST became involved. This commitment has its origins in the VAST study, studies that provided the evidence of the existence of the problem and a solution in the Ghanaian context. And, not only does the Ghana Health Service have dynamic leadership, it has well-trained, committed staff at all levels of the administrative hierarchy capable of absorbing and acting on the training provided.

#### ANEMIA CONTROL

From 2002-2005, MOST provided technical assistance to GHS’s Nutrition Division to initiate a comprehensive approach to anemia in Ghana. MOST assistance focused on three activities: the drafting of a national anemia strategy designed to integrate services addressing the primary preventable causes of anemia – iron deficiency, malaria and parasitic worms; the development of a strategic communication plan; and the coordination of the implementation of both the strategy and the communications plan. An Anemia Control Coordinating Committee (ACCC) was formed to facilitate the necessary move towards coordinating existing programs and training, and achieving consistency in communication messages and materials.

Formative research was gathered and formed a base from which to develop the strategy and communication plan. Communication materials and trainings were designed to address all three causes in an integrated fashion. Implementation planning took place at the regional level with regional health management teams using MOST funding to train staff and support local communication and education efforts. A number of media events supported the public information campaign including sensitization meetings with key decision makers, encounters with the media, and a program launch. In addition, Miss Ghana 2004 was recruited to educate the public about anemia and promote anemia prevention among pregnant women.

A program evaluation in June 2005 found that there were clear successes in enhancing awareness of anemia and its multiple causes among health staff at all levels, in women attending antenatal care earlier in their pregnancies, and in strengthening the iron folic acid supplementation component of antenatal care. National and regional health staff readily endorsed the central concept of the strategy, i.e. coordinating services to address the three main causes of anemia, and over 3,000 health staff received training designed to reinforce the integration of appropriate service provision.

#### NUTRITION ADVANTAGE/GENDER LINKAGES

MOST supported the development and implementation of a food-based strategy in Ghana by contributing to a multi-country study on gender-agriculture linkages. The study was sponsored by the International Center for Research on Women and funded by the USAID/West Africa Bureau

for Sustainable Development. This effort documented successful projects using gender-sensitive approaches and then replicated successful food-based interventions in four target districts. Nutrition/agriculture outreach teams worked with community-based organizations to promote community gardens, community nutrition education and mobilization, increased production of vitamin-rich crops by district farmers and increased consumption of vitamin-rich foods by local communities. Messages on production, consumption and utilization of micronutrient-rich foods were developed and disseminated.

## FOOD FORTIFICATION

At the request of the Nutrition Division of the Ghana Health Service, MOST was invited to attend a meeting that brought the private and government sectors together to consider the possibilities of introducing food fortification in Ghana. As this meeting coincided with the global introduction of GAIN, the participants not only forged ahead with a national fortification initiative; they formed a National Fortification Alliance to assemble a GAIN proposal. MOST provided technical and financial assistance to that National Fortification Alliance, supporting a number of advocacy meetings and events and the development of standards and regulations for fortified foods. The GAIN proposal has accepted and negotiations between GAIN and the Alliance to establish the detailed implementation plan are underway.

## REFERENCE

Harvey, Phillip, Nyaku, Albertha, MacDonakd, Vicki, 2005. *MOST Final Report*. Ghana, Arlington, Virginia

## **L. Guinea**

Funding: \$750,000

Time-line: 2004–2005

1. Vitamin A supplementation
2. Anemia
3. Fortification

Total Population: 9,452,670

Infant Mortality Rate: 90

Under 5 Mortality Rate: 159

Gross National Income per Capita: \$460

### **BACKGROUND**

Having gained independence from France in 1958, Guinea took steps toward instituting democracy by holding elections in 1993 and, again, in 1998 and 2003. Although endowed with good mineral, hydroelectric and agricultural resources, fighting along its borders, refugee movements and poorly developed fiscal and legal systems have held back foreign investment and economic growth.

MOST partner, Helen Keller International, had been working in Guinea when its cooperative agreement with USAID known as the Life Cycle Agreement was consolidated into MOST in 2003. Already in progress, HKI continued its work through both NGOs and the Ministry of Public Health to develop community-based programs in three districts encompassing vitamin A supplementation for children under five, postpartum vitamin A supplementation and anemia control.

### **VITAMIN A SUPPLEMENTATION**

MOST, in collaboration with UNICEF and CIDA, supported biannual VAC distributions for all children aged 6–59 months with reported high coverage approaching 100% and worked with the Ministry of Public Health to increase the capacity of service delivery personnel to integrate Vitamin A supplementation for sick children into routine health care. Numerous training workshops for Ministry and NGO health care and community outreach personnel on the design, implementation and evaluation of micronutrient programs were conducted. This included integration of micronutrient supplementation services into the community-based activities of NGOs and integrating micronutrient service delivery indicators into the national health monitoring system and health worker supervision tools. A communication campaign was implemented to increase the demand for vitamin A supplementation and consumption of vitamin A rich foods among postpartum women and children. MOST also assisted the government in conducting, validating and disseminating the findings of a national survey on vitamin A, iron folate and chloroquine coverage and the Knowledge Attitudes and Practices of health agents.

An independent post-distribution evaluation confirmed that coverage rates for children under five was over 85%. In addition, post-partum coverage of women in areas being targeted under the community-based pregnancy surveillance program in three selected districts ranged from 84–88%.

## ANEMIA

A pilot, integrated anemia control program was launched in two regions of Upper Guinea. This community-based pregnancy surveillance program included anemia control activities to increase demand for iron and folic acid, training of Ministry and NGO personnel, implementation of a communication campaign to increase the demand for iron & folic acid and the consumption of iron-rich foods among pregnant women, and an evaluation of the iron/folic acid supply system. Overall, MOST trained 308 health workers and volunteers in general nutrition, micronutrients, and hemocue operations.

## FOOD FORTIFICATION

In Guinea, MOST supported food fortification efforts through advocacy with the Ministry of Commerce and Industry and the National Quality Control Laboratory and the flour mills, encouraging public-private partnerships in support of food fortification. MOST funded the first national food fortification workshop, successful wheat flour fortification trials (with MI and Great Mills of Guinea), and meetings to draft regulations for mandatory fortification of flour products. MOST staff also worked with other partners to find solutions to increased production costs of Baraka (infant weaning flour), produced by a local women's group.

## **M. Madagascar**

Funding: \$486,000

Time-line: 2001–2003

### 1. Vitamin A Supplementation

Total Population: 18,040,341

Infant Mortality Rate: 76.8

Under 5 Mortality Rate: 121.4

Gross National Income per Capita: \$300

## BACKGROUND

An island country with unique plant and animal species, Madagascar has lost much of its natural habitat through deforestation and soil erosion as the population has expanded. A political crisis in 2002 growing out of a disputed election set back the economy and hindered development efforts.

Under OMNI, the USAID micronutrient project that preceded MOST, plans were put in place to carry out a vitamin A prevalence survey using the technology developed by PATH to measure the retinol binding protein (RBP) in a dried blood spot taken from a finger prick. USAID/Madagascar asked MOST to work with the Nutrition Division in the MOH to implement this survey to create baseline data on the vitamin A status of children under 5 years of age. SEECALINE, a project funded by the World Bank, requested that anemia in school aged children be measured as well to create a baseline for a school-based program to provide iron supplements to students. Following a delay caused by the diversion of personnel to carry out a national immunization campaign, the survey was implemented in May 2000; however, as the RBP technology was not fully validated, MOST urged the use of the proven method to measure the prevalence of vitamin A deficiency in populations, the analysis of venous blood with high pressure liquid chromatography (HPLC). MOST trained the local staff to do the chemical analyses in country with verification performed by a laboratory in Switzerland.

Forty-two percent of all children 6 to 59 months of age were found to be deficient in vitamin A while 29 percent of women were deficient. Among the school children 38% suffered mild anemia, 12% suffered moderate anemia and 1% were severely anemic. The results from this survey contributed to an acceleration of the effort to distribute vitamin A supplements to all children.

## SUPPLEMENTATION

In order to provide technical assistance to the Nutrition Division of the Ministry of Health in support of its national vitamin A supplementation program, MOST recruited a local Field Coordinator and established an office for him in space rented by another USAID Cooperating Agency. MOST collaborated with the Ministry on all phases of a program to conduct twice yearly vitamin A supplementation rounds.

### MOST:

- helped convene meetings and workshops for the partners at central level and in the field to plan the distributions and assign responsibility to the various partners

- developed and revised the instructions and directives given to the staff at all levels
- developed messages, materials and radio spots comprising the promotional campaign
- organized the “launch” preceding each distribution round
- organized and participated with the Ministry staff in field supervision during the distribution
- tallied the coverage figures attained during each round
- conducted coverage surveys after each round to verify the tally sheets and inform program managers of areas for improvement
- organized the workshops in which the results of each distribution round were reviewed and mechanisms for improving the program considered.

The coverage improved progressively over time as shown below.

Baseline in 2000: 18% (Estimated during the prevalence survey described above)

March 2001: 55%

September 2001: 72%

March 2002: 73%

October 2002: No data, distribution combined with a polio campaign

April 2003: 83%

October 2003: 91%

The Demographic and Health Survey of 2003-2004 provides independent validation of the high coverage in reporting that 76% of all children 6 to 59 months of age received a vitamin A supplement in the six months preceding the survey.

Additional assistance included providing technical expertise to develop the appropriate micronutrient content to be incorporated into all levels of the pre-service training for the county’s health professionals.

The micronutrient activities supported by MOST support were incorporated into the new USAID bilateral project SantéNet.

#### References:

MOST, The USAID Micronutrient Program. 2004. *Enquête sur la Carence en Vitamine A chez les Femmes et les Enfants et Enquête sur l’Anémie chez les Ecoliers de 6 à 14 Ans*. Rédigé par Razafiarisoa Berthine. Arlington, Virginia USA

Herilaza Rasamimanana. 2004. Rapport Technique: Projet MOST Madagascar. Unpublished MOST document.

## **N. Mozambique**

Funding: \$499,990

Time-line: 2004-2005

1. Vitamin A Supplementation
2. Nutrition

Total Population: 19,406,703

Infant Mortality: 131

Under 5 Mortality: 203

Gross National Income per Capita: \$250

### **BACKGROUND**

After gaining independence from Portugal in 1975, Mozambique experienced civil war, interference from neighboring states, and economic collapse. Many of the Portuguese nationals left the country during this period leaving behind a weak infrastructure and economic mismanagement. An estimated 1 million Mozambicans perished during the civil war, 1.7 million took refuge in neighboring states, and several million more were internally displaced.

In the last decade, however, Mozambique has experienced a notable economic recovery. The resettlement of war refugees and successful economic reform have led to a high growth rate with government projecting continue economic expansion of between 7%-10% a year for the next 5 years, although rapid expansion in the future hinges on several major foreign investment projects, continued economic reform, and the revival of the agriculture, transportation, and tourism sectors.

Already working in country, Helen Keller International, one of MOST's partners, took the lead role in implementing this program. Also receiving funds from other sources, HKI was able to optimize the use of MOST's funding by combining the resources available to assure adequate funding for planned activities.

### **VITAMIN A SUPPLEMENTATION**

Recognized as a public health problem in the late 1990s, vitamin A deficiency was counteracted by distribution high dose supplements during the National Immunization Days for polio in 1999. A subsequent distribution took place during annual Mother and Child Health Care Campaigns in 2000 and 2001. After these three successful campaigns generated coverage between 80-100%, the Ministry of Health decided to continue vitamin A capsule distribution during routine Well Baby Consultations in conjunction with growth monitoring and vaccination. As noted in Table 2, the overview of coverage rates in many countries supported by MOST, Mozambique reports coverage based on health statistics for every 6 month period. The coverage rates attained through the routine distribution are:

1<sup>st</sup> semester, 2002: 21%

2<sup>nd</sup> semester, 2002: 30%

1<sup>st</sup> semester, 2003: 16%

2<sup>nd</sup> semester, 2003: 27%

1<sup>st</sup> semester, 2004: 27%

2<sup>nd</sup> semester, 2004: 30%.

At the same time post-partum vitamin A supplementation started as a pilot in Maputo city, provided at the maternity (at birth or through the health care system postnatal care). Gradual expansion to the rest of the country started in late 2003/early 2004.

The overall goal of this support to the MOH Nutrition Program was “To reduce morbidity and mortality caused by Vitamin A and other micronutrient deficiencies in vulnerable groups (women of child bearing age, children from 0-5 years old) within the context of the National Strategic Plan for Nutrition.”

In ensuring that vitamin A is important in reducing malnutrition with an impact on morbidity and mortality of children and women; this project focused activities on provision of an enabling nutrition environment through policy review, increased and improved supplementation strategy, advocacy at all levels of MOH staff and stake holders, increased awareness and provision of a relevant nutrition package to health staff for effective implementation of the project.

Specific activities were undertaken in the following areas:

Supervision and training: All health facilities in the entire country received a supervision visit and receive on-the-job-training in vitamin A supplementation (MOST funded this activity in 3 provinces Sofala, Zambézia and Nampula while funding was secured from other sources in the 7 other projects). Based on reports generated during the visits the major problems found were: (1) no registration of the supplementation on either the tally sheet or on the child health card and (2) some of the health staff had problems with determining dosage, frequency and the target group (3) supply problems at health centers and at provincial level (4) a lack of forms to record the information, which often lead to non reporting.

Annual provincial review meetings: Review meetings considering achievements and plans for the broader nutrition program also served as a forum for short technical updates and analysis of PROFILES at provincial level.

A vitamin A post-partum supplementation pilot: Started in May 2002 in Maputo city, this pilot project was evaluated with MOST support leading to a review of the training guidelines and training of the staff of the main maternity wards in all provinces.

Guidelines and job-aids: During a workshop held in June/July 2003, *micronutrient supplementation policies* were reviewed leading to the drafting of guidelines and job aids for health workers. The job aids and other promotional material were pre-tested by the MOH health education unit and finalized in September 2004.

Radio promotion: ANSA, a local consultancy firm in nutrition, was contracted to develop 2 sets of short radio programs of 6 months on vitamin A, to increase awareness of the importance of vitamin A supplementation to the larger public. The first program was translated into all the local languages. Broadcasting in Portuguese and local languages of the first series began in June 2005.

## COMMUNITY-LEVEL NUTRITION INTERVENTIONS

In December 2003, a national seminar was conducted on community nutrition with an emphasis on vitamin A and iron. Based on the shared experiences of the MoH and various NGOs and recommendations of the seminar, ANSA was contracted to develop a community nutrition manual/training package that is now finalized.

## IMPROVE NUTRITION EDUCATION AND SERVICE DELIVERY BY THE NATIONAL HEALTH SYSTEM (MINPAK)

The MoH, in collaboration with HKI, reviewed the health workers training manual on nutrition and ANSA was hired to revise those materials. Based on a trial training of trainers, the manual has been revised, finalized and introduced in all the Provinces.

## INSTITUTIONAL IMPROVEMENT OF THE NUTRITION DIVISION OF MOH

The Nutrition Strategic Plan was finalized under the guidance of Dr. Helder Martins, a former Minister of Health and it has now been approved. The advocacy tool PROFILES was updated at the beginning of 2004 and adopted for each Province. These Provincial PROFILES were used to open the Provincial annual review meetings and also used to advocate for nutrition at higher levels within the MoH.

## **O. Rwanda**

Funding: \$100,000

Time-line: 2003

### 1. Vitamin A Supplementation

Total Population: 8,440,820

Infant Mortality Rate: 91

Under 5 Mortality Rate: 178

Gross National Income per Capita: \$220

## BACKGROUND

Rwanda is among the poorest countries in the world, with a GNP of \$210 in 1997 (reduced from \$270 in 1983). The country suffered immensely during the 1994 war and genocide. Not only was the country's infrastructure completely destroyed, but also its human resources were significantly reduced. The country is still in a post-war rebuilding phase: aid agencies are only as of recently transferring from emergency projects into long term development projects; the government, with help from its partners, is investing in the education of a new generation of managers; and new government policies are being drafted or existing ones revised.

## VITAMIN A SUPPLEMENTATION

Vitamin A deficiency disorder is an important public health problem among Rwandan children under 5 and pregnant and lactating women. Until 2000, vitamin A supplementation of children aged 6-59 months was carried out during National Immunization Days, and high coverage was achieved. NIDS effectively ended in Rwanda in 1999, however. During the following two years, the Ministry of Health, with the support of UNICEF, undertook a number of efforts to try to keep a vitamin A program alive, including the development and dissemination of program directives and monitoring tools, and some vitamin A supplementation activities were carried out through the routine health system and in the context of community-level pilot projects supported by various international NGOs and religious groups. In essence, though, in the absence of a national post-NIDS vitamin A strategy, Rwanda did not have a functional national vitamin A program from 2000-2003. In response to this situation, USAID/Kigali requested MOST to carry out a vitamin A assessment. Conducted in April – May 2003, this assessment was designed to produce results for the development of a national vitamin A strategy.

Rwanda's own post-NIDS experience as well as that of other countries around the world has shown that the success and sustainability of vitamin A programs depends on an appreciation — among both the population and key decision-makers — of the importance of the problem and on the simplicity of the intervention(s) to resolve the problem. The assessment found that, in the case of vitamin A deficiency disorder, neither condition was met. For a variety of reasons, including the conclusions of the 1996 National Nutrition Survey Rwanda's decision-makers were not convinced that vitamin A deficiency is a priority public health problem. At the same time, the obviously pressing problem of HIV/AIDS led these decision-makers to focus their attention elsewhere. What few resources were devoted to address the problem of vitamin A deficiency were dispersed among multiple programs, operating independently of and with little coordination among each other. And, compounding the problem was the fact that existing supplementation directives — for this, ordinarily the simplest and

most straightforward of the vitamin A interventions — led to the development of service delivery and support systems that were complex and difficult to manage. The resulting system failure, reflected in the recent expiration of three million vitamin capsules, created a loss of confidence among program managers, decision-makers, and donor agencies.

The assessment team believed that this situation could best be rectified by the adoption of a strategy that emphasizes doing a few effective things well:

- *Adopt preventive vitamin A supplementation of children aged 6-59 months and postpartum women as the principal interventions.*
- *Reduce the recommended frequency of supplementation from every four months to every six months.* While Rwanda's current recommended frequency of supplementation falls within the WHO guidelines of every four to six months, it was, unnecessarily, at the upper limit of the range.
- *Distribute capsules nationwide during two specific periods each year through community-based programs — PNBC and PAS.* The task of determining eligibility for and delivering capsules on an individual basis is an arduous one even for the most robust health system.

Based on this assessment, the Government of Rwanda elaborated a National Strategy on Vitamin A Supplementation in June 2003, and the first country-wide distribution was scheduled for November 2003.

The national strategy identified community health workers and health animators as the key implementers of the vitamin A distribution, and the USAID Mission requested MOST to provide a trainer to: develop training modules and technical guidelines for health workers and health animators; train a national team of trainers and develop a national training plan; and set up a monitoring system in support of the upcoming vitamin A distributions. In September 2003, MOST sent the Field Coordinator of its project in Madagascar to carry out this scope of work. The training plan was developed, a national team of 90 trainers was trained, and a monitoring system for vitamin A supplementation at all levels was integrated in the existing monitoring mechanism for health animator activities. Subsequently, Rwandan trainers conducted nationwide training of 11,000 health animators throughout all 12 provinces of the country, and the Ministry of Health successfully implemented twice-yearly vitamin A distributions beginning in November 2003. USAID/Kigali reported that the November 2004 distribution achieved over 93% coverage of children 6-59 and that coverage of over 90 percent was achieved in the May 2004 distribution.

## REFERENCES

Rasamimanana, Herilaza, 2003. *Rapport de Mission En Rwanda: Formation en Supplementation en Vitamine A (09 Septembre – 10 Octobre 2003)*, Arlington, Virginia

Shaikh, Jean and Mahy, Lina, 2003. *Assessment of the Vitamin A Situation in Rwanda*, Arlington, Virginia

## **P. Senegal**

Funding: \$234,348 (core funds only)

Time-line: 2005

### 1. Vitamin A Supplementation

Total Population: 11,706,498

Infant Mortality Rate: 55,5

Under 5 Mortality Rate: 102.7

Gross National Income per Capita: \$670

## BACKGROUND

Senegal gained its independence from France in 1960. In 1994, an economic reform program helped turn the economy around and has led to a 5% annual growth in gross domestic product.

## VITAMIN A SUPPLEMENTATION

AS MOST was drawing to a close, an opportunity arose to provide funding to enable the Government of Senegal to conduct a national vitamin A supplement distribution. Through MOST partner, HKI, funds were transferred to the districts in the country lacking support from other donors. MOST funds were used for district level planning, training, communication and promotion and monitoring of the program. Preliminary estimates of the coverage rate as determined using tally sheets maintained during the distribution was 86%.

## **Q. Sierra Leone**

Funding: \$300,000

Time-line: 2004–2005

### 1. Vitamin A Supplementation

Total Population: 5,867,426

Infant Mortality Rate: 143

Under 5 Mortality Rate: 217

Gross National Income per Capita: \$200

## BACKGROUND

Sierra Leone recently emerged from a decade of civil war resulting in large displacements of its population and some of the highest maternal and child mortality rates in the world. While Sierra Leone has substantial mineral, agricultural, and fishery resources, the lack of economic and social infrastructure and continuing social disorder is hampering economic development. About two-thirds of the working-age population engages in subsistence agriculture.

## VITAMIN A SUPPLEMENTATION

The USAID Mission responsible for the Guinea program also manages the USAID program in Sierra Leone. As MOST partner, Helen Keller International, worked well with the Mission in Guinea, it expanded its program into Sierra Leone when its cooperative agreement with USAID known as the Life Cycle Agreement was consolidated into MOST in 2003.

Beginning in FY04, MOST began providing funding to support the vitamin A supplementation program. By 2004, the Ministry of Health and Sanitation (MOHS) had initiated the first round of a national vitamin A distribution integrated with oral polio vaccinations. Post-distribution surveys confirmed that the MOHS achieved 65% coverage in the first round and 95% in the second. These are excellent results in a country with an unstable recent past.

MOST's program included hosting micronutrient strategy meetings to discuss integration of vitamin A supplementation for sick children into routine care, increasing vitamin A coverage, creating an efficient micronutrient supplement supply system and ensuring supplementation for postpartum women; finalizing and disseminating national guidelines on infant and young child feeding practices; and supporting post-Vitamin A distribution rapid coverage surveys. MOST also developed training curricula and implemented training for MOHS and PVO staff on vitamin A and other key nutrition issues; trained health agents on integration of VAS into the onchocerciasis (CDTI) program; and developed and pre-tested BCC messages on anemia, vitamin A and child feeding. In collaboration with UNICEF, MOST assisted the MOHS to conduct a survey to measure vitamin A, iron, folate, deworming, and chloroquine coverage and to determine the KAP of health agents on nutrition education and counseling.

Coverage in children with vitamin A supplements is confirmed to be 90% and all peripheral health unit staff have completed training in vitamin A supplementation. National guidelines of infant and young feeding practices are now finalized and disseminated.

## R. South Africa

Funding: \$800,000

Time-line: 1999–2005

1. Vitamin A Supplementation
2. Fortification
3. Zinc

Total Population: 44,344,136

Infant Mortality Rate: 61.8

Under 5 Mortality Rate: 102.7

Gross National Income per Capita: 3,630

### BACKGROUND

Still in the throes of adjusting to the end of apartheid in the 1990s, South Africa continues to have high unemployment and, among the disadvantaged population groups, serious health problems. It is suffers from one of the highest prevalence rates for HIV in the world today. As a middle-income, emerging market with a wealth of natural resources and a well developed financial, legal, communications, energy, and transport infrastructure, South Africa has the potential to move forward rapidly on both the economic and health fronts.

### VITAMIN A SUPPLEMENTATION

MOST's primary objective in South Africa was to increase the coverage of vitamin A supplementation by supporting South Africa's program of delivery through the routine immunization and child health services system. Asked by USAID/South Africa to work in the geographical area of concentration for its bilateral project, Equity, MOST's initial efforts focused on improving vitamin A supplementation service delivery and coverage in the Eastern Cape province. Although areas of South Africa are very developed, the Eastern Cape, specifically the former Transkei region, has pockets of extreme poverty and significant nutritional needs. MOST support for the Eastern Cape was provided under a sub agreement with the University of the Western Cape, which directly assisted the Eastern Cape Department of Health (DOH). Support was provided in the areas of:

- training – to assure that each clinic had at least one staff member trained and prepared to administer vitamin A
- communications – to encourage mothers to bring children from 6-24 months of age to the clinics on a regular basis to receive supplements
- logistics management – to ensure that clinics had the needed capsule supplies
- monitoring and evaluation - to ensure that DOH personnel were properly recording service information and analyzing it to improve services.

District Health Information System (DHIS) data showed progressively higher levels of vitamin A coverage in the Eastern Cape over the program period (2002–2003). Coverage of children aged 6–11 months increased from 15% to 68%; coverage of children aged 12-23 months also increased, from 8% to 35%, a notable achievement for a routine delivery system.

In 2004, USAID requested MOST to expand its technical assistance efforts to the national level. In response, MOST sponsored a national vitamin A supplementation workshop for senior health program directors from all nine provinces in the country. Participants learned to use DHIS data to assess coverage and target poorly performing areas, became familiar with several approaches used in the Eastern Cape to increase demand and coverage, and discussed various approaches to integrating vitamin A into IMCI, EPI, and Integrated Nutrition Programs. Thereafter, MOST worked with the South Africa National Vitamin A Coordinator and provincial nutrition managers to identify technical assistance needs in the areas of training, development of appropriate communications, and monitoring systems. MOST hosted a communications workshop, using a social marketing approach, and provided training in 7 of 9 provinces. In addition, MOST was provided with AIDS account funds and requested to address the nutritional and vitamin A needs of children in households affected by HIV/AIDS. MOST executed a sub agreement with a U.S. Private Voluntary Organization working in KwaZulu Natal, a province with extremely high rates of HIV, to train Community Health Workers to improve outreach to all children between 2–5 years of age not being reached by routine health coverage. Community health workers were trained to understand the importance of vitamin A supplementation and to recognize during home visits those children for whom special outreach efforts are needed.

## FORTIFICATION

Although not a major focus of MOST efforts, MOST contributed funds to the initial food consumption survey in 1999 in preparation for national fortification efforts focused on wheat flour and maize meal. After South Africa was awarded a GAIN grant to support fortification, South Africa's Department of Health requested technical assistance from MOST to strengthen compliance monitoring and to resolve technical issues in terms of regulations and appropriateness of the iron compound being used in the fortification mix.

## ZINC

In early 2005, MOST, in partnership with the KwaZulu Natal Department of Health and a US PVO working in the province, embarked on a program to pilot zinc supplementation as an adjunct treatment for diarrhea. Representatives of the National Government expressed great interest in the intervention and supported efforts to register the NUTRISET tablet to enable the pilot project to go forward. While it was discovered that the registration process to use zinc as a medicinal treatment for diarrhea, rather than as a nutrition supplement, would take several months and extend beyond the life of MOST, MOST was successful in working with the DOH to modify IMCI protocols and training curricula for diarrheal diseases to include zinc.

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## **S. Tanzania**

Funding: \$950,000

Time-line: 2004–2005

1. Vitamin A Supplementation
2. Zinc

Total Population: 36,766,356

Infant Mortality: 98.5

Under 5 Mortality: 149.0

Gross National Income per Capita: 330

### **BACKGROUND**

In 1964, shortly after gaining independence, Tanganyika and Zanzibar merged to form the nation of Tanzania. A relatively peaceful country, Tanzania was governed by a single party that applied a socialist model until 1995 when democratic elections were for the first time since the 1970s.

Tanzania remains a very poor country with an economy that depends heavily on agriculture. In recent years, the World Bank, the International Monetary Fund and bilateral donors have provided funds to rehabilitate Tanzania's out-of-date economic infrastructure and to alleviate poverty leading to an increase in industrial production and a substantial increase in output of minerals, led by gold. Following banking reforms that stimulated private sector growth and investment, Tanzania enjoyed growth of nearly 6% in 2004.

### **SUPPLEMENTATION**

USAID/Tanzania informed MOST of its intention to allocate field support funding to MOST in the second half of the project's next to last year of operation. In anticipation of receiving a substantial, time-bound field support obligation, MOST/HQ conducted a preliminary visit to plan its program for 2005 in mid-June 2004.

The country already had a history of successful vitamin A distribution coupled with National Immunization Days and continues to support "routine distribution" coupled with two campaign style distributions each year. At the request of the Mission, MOST engaged its partner, Helen Keller International, to serve as its implementing agent for the Tanzania activity to strengthen the supplementation program and work towards its sustainability.

This visit was followed by the conduct of two assessments.

- The first was a qualitative assessment of the vitamin A program in Tanzania. This assessment looked at national policies, protocols for supplementation, supply and distribution mechanisms, personnel and partners involved in the program, training and supervision, community mobilization and monitoring and evaluation procedures.
- The second was a national population-based coverage survey for children aged 6-59 months and postpartum women in all the 21 regions of the Tanzanian mainland. Working in close collaboration with the Tanzania Food and Nutrition Center and an advisory committee of local and international organizations, the survey was designed to validate the data collected

through tally sheets and to develop a profile of those children not receiving the vitamin A. Coverage was estimated to be as high as 85% among children 6 to 59 months and 29% among postpartum women.

Based on the findings of the assessment, the local partners involved in the program agreed to assess the cost and cost-effectiveness of the national twice-yearly supplementation program for the children, increase the awareness of the population especially mothers about vitamin A, improve the supply and distribution system of supplements and strengthen the program monitoring and evaluation.

The cost study of the national twice-yearly supplementation program for children revealed that the average cost per child dosed *twice per year* is Tsh 253 or \$0.22 if program-specific costs are considered and Tsh 806 or \$0.71, if personnel and capital costs are also included. Assuming a 23 percent reduction in mortality rate of children between 6 and 59 months due to the twice-yearly vitamin A supplementation program, cost per death averted in Tanzania is estimated at \$106 when personnel and capital costs are also included. The findings were shared with national level policy makers from the government, USAID, UNICEF and a number of other health and nutrition-related organizations.

In collaboration with another USAID project, T-MARC, HKI organized a four-day “Behavior Change and Communication (BCC)” workshop for 37 people to build capacity and efficacy to develop BCC materials and messages among partners and various nutrition stakeholders from the government, UNICEF and non-governmental organizations. As a result of this workshop a small working group was established to develop and finalize radio spots for the national Vitamin A/measles and de-worming campaign which to be held in August 2005.

To strengthen the supply and distribution system, approximately 20,000 health workers at district, facility and community levels are being trained on management of vitamin A logistics.

## ZINC

A MOST technical advisor participated in a joint planning visit to Tanzania with two colleagues from HaRP, USAID’s research program in child health, to assess the potential for and plan activities related to introducing a zinc supplementation program as adjunct therapy for diarrhea treatment. The Government in Tanzania is supportive of the notion of including zinc supplementation as part of the treatment of diarrhea. Representatives of the government are giving careful consideration to safety issues and long-term costs.

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## **T. Uganda**

Funding: \$2,108,000

Time-line: 1999–2005

1. Vitamin A Supplementation
2. Dietary Diversification
3. Anemia
4. Fortification

Total Population: 27,269,482

Infant Mortality Rate: 68

Under 5 Mortality Rate: 136

Gross national income per Capita: \$270

### **BACKGROUND**

The Uganda Demographic and Health Survey of 2000-2001 was the very first that estimated the prevalence of vitamin A deficiency nationally, using dried blood spots analyzed by Craft Technologies in North Carolina. The survey showed that more than 28% of children and 50% of women suffer from vitamin A deficiency. The survey also showed that anemia affects 64% of children and 38% of women of childbearing age.

Uganda has adopted a multi-pronged strategy to address micronutrient malnutrition through vitamin A capsule supplementation, dietary diversification, case management and nutritional rehabilitation, food fortification, and information, education, and communication (IEC). Since 1999, MOST has been actively involved in supporting all elements of this strategy.

At the request of USAID/Uganda, MOST used core funds to conduct a broad-based assessment of the nutrition situation in the country. Four possible interventions emerged:

- Strengthening the delivery of vitamin A capsules to children.
- Exploring food-based options to deliver vitamin A including dietary diversification.
- Developing and testing a community-based strategy for controlling anemia in women.
- Pursuing the fortification of sugar (later changed to oil and maize meal).

At the suggestion of USAID/Uganda, MOST opened its office at the Child Health and Development Center at Makerere University in Kampala.

### **VITAMIN A SUPPLEMENTATION**

With MOST technical and financial assistance, the Government of Uganda introduced twice-yearly distribution of vitamin A in three stages:

1. Updated the country's existing vitamin A protocol to bring it into line with World Health Organization (WHO) recommendations and to distribute IEC materials introducing the changes
2. Developed a strategy for implementing the new protocol

3. Supported the actual implementation of the strategy, starting with a pilot project in one district in August 2001 (Kabale) and, ultimately expanding to three distributions in all 56 districts of the country.

It was anticipated that MOST financial support for national distributions would be reduced gradually to build sustainability.

The pilot in Kabale District, launched by the State Minister for Primary Health Care, achieved coverage estimated from tally sheets to be 86% at a cost of U.S. \$36,000. The price tag was considered rather high when extrapolated to a national program prompting adoption of a strategy to engage many stakeholders. The Ministry of Health reached consensus with major stakeholders that vitamin A supplements would be distributed biannually in May and November. MOST helped the Ministry of Health plan the first national distribution under the new strategy in May 2002, supported mass media promotion of the event, and provided support to districts with no other donor. To “launch” the first distribution under the new strategy, USAID took advantage of the visit of U.S. Treasury Secretary Paul O’Neil by involving him in the distribution in one district.

An issue that has consistently emerged in Uganda has been the inability to accurately measure coverage. A monitoring exercise conducted during the May 2002 distribution identified a problem with record keeping that has persisted: the number of districts submitting reports on coverage after each distribution declined over time, from 22 of 56 in November 2002, to only seven after the May 2003 round. This prompted MOST and the Nutrition Division of the Ministry of Health to approach the HMIS Department to discuss incorporating vitamin A coverage into its information system. This mid 2003 initiative to revise the health management information system (and other nutrition data) was stopped when the vitamin A supplementation component of MOST’s Uganda program ended later that year when MOST was asked to begin planning for the closeout of its Uganda program and the incorporation of its vitamin A supplementation (and anemia activities) in USAID/Uganda’s new bilateral project (UPHOLD) by the summer of 2003.

Given the early termination of MOST’s involvement in vitamin A supplementation activities, MOST’s goal of 80% coverage was not reached. However, MOST’s efforts did give rise to a new strategy in April 2004 calling for twice-annual Child Days, featuring an integrated package of child health interventions, including vitamin A to all children aged 6 months to 5 years, de-worming, immunization, growth monitoring, insecticide treatment of mosquito nets, and health education, is delivered. Coverage in the May and November 2004 rounds was estimated at 51% and 68% respectively.

#### DIETARY DIVERSIFICATION: THE ORANGE-FLESHED SWEET POTATO

To improve vitamin A intake derived from the diet, MOST undertook a modest \$50,000 effort to promote the production and consumption of a sweet potato variety - the orange-fleshed sweet potato - that has a higher level of  $\beta$  carotene than local varieties. Expanding the activities of women’s groups established under a previous USAID-supported project, MOST supported collaboration among a number of in-country organizations and the International Centre for Research on Potatoes (CIP) and Vitamin A for Africa (VITAA) to implement a pilot project in Luwero district. Activities included training farmers to cultivate 3 varieties of the orange-fleshed sweet potato, distribution of vines, monitoring and supervision of planted fields, and

demonstrations of post-harvest processing technologies. The effort was supported with IEC materials: posters and a brochure.

The pilot showed that, in comparison to local varieties, the orange-fleshed sweet potato had distinct benefits, both in terms of its production and its consumption. Farmers appreciated the orange-fleshed sweet potato varieties for being faster growing and having higher yields than local varieties. Children (although, interestingly, not adults) preferred the orange-fleshed sweet potato, particularly the sweetest and most  $\beta$  carotene-rich variety.

The project was closed in 2002, and project management was transferred to the Luwero women's groups. In October 2003, representatives of Luwero and VITAA were given the Consultative Group for International Agricultural Research (CGIAR) Partnership Award by the vice president of Kenya. The new crop has proved to be extremely popular and has been widely adopted in the district and, with the involvement of other stakeholders, in new districts. To date, more than 40 of Uganda's districts have introduced production of the orange-fleshed sweet potato.

## ANEMIA PREVENTION AND CONTROL

Under the assumption that their results would provide a foundation for an effective anemia control strategy, MOST conducted a series of studies to identify and fully understand the barriers to implementation of anemia-reduction activities during antenatal care services. One study identified barriers at the systems, health-provider, and client level. Others (trials of improved practices (TIPs)) ascertained which of the barriers identified were amenable to change. Two additional studies were conducted to follow up on the TIPs, one focusing on logistics (the ordering, distribution, and dispensing of pharmaceutical supplies), and the other which identified options for community-based distribution of supplements.

Using the information from these studies, MOST supported the development of an anemia control communications package consisting of two tools, a community tool and a district tool. MOST's anemia prevention activities concluded with the publication of the two tools and did not move into implementation.

## FOOD FORTIFICATION

The initial MOST view that sugar fortification was the means to deliver vitamin A encountered obstacles arising out of the structure of the sugar industry with its delicate balance of imports and domestically produced sugar. Ultimately, the Government of Uganda decided to develop a national food fortification program beginning with the fortification of other commonly eaten foods, oil and maize flour. MOST has supported all elements of this initiative:

1. A multidisciplinary and inter-institutional food fortification task force is in place
2. Standards for the fortification of maize meal, cooking oil and fat, sugar, nutritional labeling, and nutritional claims have been developed and gazetted
3. The technical feasibility of fortification of oil, maize meal, sugar, and wheat flour has been demonstrated
4. The economic feasibility of oil and wheat flour fortification has been established.

The National Food Fortification Program was officially launched in July 2004, and the country's largest vegetable oil producer (supplying 80% of the domestic market) has been fortifying all the vegetable oil it produces since that time. Although large-scale fortification of maize meal is not feasible given the enormous number (some 17,000) of maize millers, Uganda's two largest maize millers are fortifying their product. Lack of national consensus within the national public health community on the desirability of fortifying sugar as well as concern on the part of the Ugandan sugar industry about the potential effect of fortification on the price of their product led to a long delay in the serious consideration of sugar fortification. These impediments appear to have been overcome, however. Although, initially, wheat flour was not included in the trial fortification program, its consumption being relatively low, wheat flour is now considered a good food vehicle due to the large increase in its consumption (in the form of baked goods) in recent years as well as the relatively centralized nature of its production (there are 8 significant wheat flour millers).

Consolidation and further expansion of the national food fortification program is expected to occur with funding from the Global Alliance to Improve Nutrition (GAIN), a proposal for which Uganda will submit August 1, 2005.

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## **U. Zambia**

Funding: \$1,836,000

Time-line: 1998–2004

1. Vitamin A Supplementation
2. Fortification

Total Population: 11,261,795

Infant Mortality Rate: 88.3

Under 5 Mortality Rate: 164.8

Gross National Income per Capita: \$450

### **BACKGROUND**

After Zambia gained independence from the United Kingdom in 1964, it struggled through a prolonged, difficult economic downturn due to falling copper prices and drought. Periodic drought continues to affect the health and well-being of the people and the onset of the HIV/AIDS pandemic has caused a serious depletion in the ranks of young skilled professionals. MOST's work in Zambia coincided with a landmark effort to decentralize government powers that altered the structure of the health sector by creating a Central Board of Health that contracted with the districts for the delivery of health services.

Zambia was one of the first countries to engage MOST as the Mission requested MOST support to continue a number of successful initiatives had been undertaken under OMNI, the USAID project that preceded MOST. The sugar industry had already begun to fortify all sugar for home consumption with vitamin A in response to legislation making fortification mandatory. And, in response to a prevalence survey revealing severe vitamin A deficiency, both USAID and the Government recognized the need to renew efforts to distribute vitamin A supplements to children. To oversee operations, MOST recruited a Field Coordinator whose organizational affiliation was to CARE/Zambia.

### **VITAMIN A SUPPLEMENTATION**

Despite recognition of the importance of vitamin A supplementation for children following the prevalence survey in Zambia, the authorities in Zambia were not organized to implement a successful program. During an early technical assistance visit by a MOST headquarters staff person, those same authorities scuttled plans for a vitamin A distribution in February of 1999 as no one had ordered the vitamin A capsules.

By August 1999, with MOST assistance, preparations for a Vitamin A day, to be held in districts not participating in a sub-national immunization day, were sufficiently advanced to go forward, attaining a coverage rate of 65% in the non-NIDS districts. The National Food and Nutrition Center was the major government counterpart for this initiative although the approval to proceed had to come from the Central Board of Health. MOST support included technical assistance in promoting the distribution, assuring that the capsules were available, and monitoring the activity; however, the key to success may well have been the payment to each district to enable them to carry out the training needed, to promote the distribution and make sure all distribution points had the capsules. Had it not been for UNICEF's willingness to support some of the districts (as well as the USAID bilateral

program, ZIHP), funding would have been insufficient for a national program. Although only anecdotal rather than quantitative, MOST staff heard that the districts appreciated the vitamin A distribution because the mobility afforded to the district leadership by the payment to the districts gave that leadership the opportunity to accomplish other goals while in the field that required face to face contact.

In order to sustain the interest of the other donors as well as to convince the government that the effort to mount a national vitamin A distribution was cost-effective, the National Food and Nutrition Council and MOST put forward a plan to expand the mass distribution to a Child Health Week by adding other child survival interventions. The districts were free to add interventions at their own discretions. The most common was to administer catch-up immunizations when the mothers brought the children for vitamin A.

The Demographic and Health Survey of 2001-2002 confirmed high coverage reporting that 67% of the children 6 to 59 months of age had received a capsule in the six months preceding the survey. In 2003, MOST working in collaboration with the Centers for Disease Control attempted to measure the impact of both the supplementation program and the fortification programs on the prevalence of vitamin A deficiency (see below). That study found a coverage rate of 64% in January 2003 and a rate of 87% in June 2003.

At a meeting convened in February 2003 to review the experience with Child health Weeks in Zambia, the head of the Central Board of Health, Dr. Mukonka, summed up the change in attitude over time in his statement,

- Health personnel from the province and districts need to view the Child Health Weeks, not as a program imposed on them by central level, but adopt it as their own and integrate it into their routine activities.

The continued success of the Child Health Week has prompted the government to adopt the approach as an integral part of the national health policy, thus institutionalizing the program. The Child Health Week now has government support and multilateral funding; however, the issue of sustaining that funding is one that has to be faced over and over again as local resources are inadequate and donor support is needed.

## FORTIFICATION

The single sugar company operating in Zambia when MOST first came to the country, Zambia Sugar Company, supported and agreed to comply with legislation passed that made it mandatory for sugar sold for home consumption to be fortified with vitamin A. Suspected segregation of the vitamin A from the sugar was confirmed in an early technical assistance visit supported by MOST. Seven years later, the problem has still not been totally resolved as major modifications of the production process in use as regards to the blending of the pre-mix with the sugar are needed.

In 2000, Zambia Sugar Company indicated that they were prepared to stop fortifying unless the government stepped up its efforts to enforce the law. Imported sugar was entering the country unchecked. MOST provided training to laboratory personnel in the process for testing sugar, trained the network of national health inspectors and produced the manuals to guide the inspection process.

At the request of the Government of Zambia, MOST extended its training of the inspectors to include the testing of salt for iodine. Ultimately, the government did step up their inspections. Zambia sugar continue to fortify its sugar today, even after the sale of the company by Tate & Lyle, a multi-national player in the sugar industry to Illovo Sugar, a South African based firm. In addition, two new sugar manufacturers have begun production in Zambia and are also fortifying their product.

MOST also provided financial and technical assistance to the National Fortification Task Force to develop and submit a proposal to the Global Alliance for Improved Nutrition (GAIN) to fortify maize meal.

### The Impact Study

At the request of USAID/Zambia, MOST collaborated on a series of surveys designed to demonstrate the biological impact of the vitamin A program (fortification and supplementation) on the children of Zambia. The overall mean plasma retinol concentration of children 6–59 months improved to 0.72  $\mu\text{mol/L}$  (standard deviation (SD) 0.25) from the 0.64  $\mu\text{mol/L}$  found in the national survey done in 1997. In the 1997 survey, the prevalence of VAD in children, defined as retinol concentrations  $< 0.7 \mu\text{mol/L}$  was 65.7%, indicating a severe public health problem. In 2003, the overall percentage of VAD among children was 54.1% (95% CI: 46.5, 61.6), a slight improvement compared to 1997 survey but still a severe public health problem in Zambia. The survey also found a very high level of infection in the population, a finding that may explain the less than dramatic improvement in the vitamin A status of the children.

MOST's role in Zambia ended in September 2004 as USAID/Zambia elected to integrate its micronutrient program into its new bilateral program.

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## V. El Salvador

Funding: \$200,000

Time-line: 2002-2004

### 1. Anemia

Total Population: 6,704,932

Infant Mortality: 25.1

Under 5 Mortality: 31.2

Gross National Income per Capita: 2,350

## BACKGROUND

In 1992, the protracted civil war between the government in power and leftist insurgence came to an end. However, rebuilding was severely hampered by hurricane Mitch in 1998, earthquakes early in 2001 and a severe drought in the summer of 2001. When MOST began to work in El Salvador, the country was close to meeting its national goal to eliminate vitamin A deficiency and Iodine Deficiency Disorders, but anemia levels remained high.

## ANEMIA

MOST focused primarily on strengthening the implementation of a reformulated anemia, iron and folate deficiency control strategy to bring about a significant reduction in anemia prevalence in young children and women and in folate deficiency in women, particularly before pregnancy. Components of the strategy included fortification of wheat and corn flour with iron and B-vitamins and increased demand for fortified foods by the majority of the population, as well as through universal iron/folate supplementation for women of reproductive age and iron supplementation for young children.

MOST assisted the government to update its iron/folate supplementation policies and to act to improve demand and compliance with that policy through a national behavior change and communications strategy. Recognizing supply of supplements as a major barrier to achieving compliance, MOST also strengthened the existing micronutrient supplementation management logistics system, a system that upon examination was found to be obsolete. A partially computerized revised system was established countrywide after training of Ministry of Health central, district and local personnel. The system is intended to address existing supplement supply constraints to secure continue availability of supplements at delivery posts. The system established in El Salvador has become a prototype for neighboring countries.

## REFERENCE

Lins, Sergio, Nunez, Yolanda Irma and Mora, Jose, 2004. *Prototipo de Sistema de Gestión Logística de Suplementos de Micronutrientes*, Arlington, Virginia

## **W. Haiti**

Funding: \$683,000

Time-line: 2004-2005

1. Vitamin A Supplementation
2. Fortification (including salt iodization)

Total Population: 8,121,622

Infant Mortality: 73.5

Under 5 Mortality: 108.9

Gross National Income per Capita: 390

### **BACKGROUND**

In 1804, Haiti was the first black republic to declare itself independent. Its history is marked with considerable political strife and violence. Located on the western portion of Hispaniola, Haiti experiences recurring natural disasters including flooding and hurricanes, all made more severe by the deforestation of the island that has led to the disappearance of topsoil as well as trees for fuel. It remains the poorest country in the western hemisphere.

### **SUPPLEMENTATION**

MOST provided technical and financial support to programs to reduce micronutrient deficiency in Haiti beginning in 2003, initially leading an assessment team to review the status of Haiti's micronutrient programs. As a result of that assessment, extending the coverage of the vitamin A capsule distribution program throughout Haiti was given the highest priority while revitalization of the salt iodization program and wheat flour fortification were also identified as activities worthy of pursuit.

In spite of operating in a country in an almost constant state of anarchy and upheaval beginning in January 2004, MOST provided technical assistance to the Ministry of Public Health and Population to develop its capacity to implement Child Health Weeks in Haiti. A number of options were reviewed, including working principally with U.S. and local non-governmental organizations providing health services in various departments in Haiti. An initial Child Health Week was implemented in June 2004 in the department of Grand Anse, assisted by Catholic Relief Services, the Haitian Health Foundation and a number of local NGOs.

Based on lessons learned during this campaign and with the urging of the Minister of Health, MOST provided financial and logistics support to eight of the ten departments to implement a national Child Health Week in November–December 2004. MOST provided technical training of trainers, developed radio spots, posters, leaflets and other communication materials, and supported planning, training and operational costs including supervision of the Child Health Week. In spite of the fresh wave of violence in the country, eighty percent of communities participated. Vitamin A supplementation coverage in children 6–11 months, reached 76%; coverage for children 12–59 months was 33%; and de-worming for children 24–59 months, reached 41% of the target population.

In collaboration with the Micronutrient Initiative, UNICEF and the USAID Health Systems 2004 program, MOST provided technical and financial support to the Ministry of Public Health and Population's second nationwide Child Health Week in June 2005.

#### FORTIFICATION INCLUDING SALT IODIZATION

One issue hampering efforts to iodize salt in Haiti that had been identified by a number of consultants over the years continues to challenge those committed to salt iodization; the salt produced using traditional methods is not refined enough to be iodized. Moreover, the producers are small and unorganized; therefore, further refinement of the salt requires a restructuring of the industry. To further complicate matters, a local company that had been given salt iodization equipment by UNICEF to fortify the salt that was suitable for fortification had gone out of business ending the local production of iodized salt. Therefore, the government was considering operating the machines rather than relying on the private sector.

MOST funded a assessment to identify strategies that might be applied to contribute to increased production and use of iodized salt. Several studies in the past recognized the technological and marketing difficulties associated with a salt industry like that in Haiti where salt producers use antiquated methods to produce salt that is unsuitable for iodization. A commercial initiative to iodize some salt several years ago failed when the industry went out of business. The MOST-funded assessment reiterated recommendations to work with the larger producers to refine salt that is suitable for iodization, create a variety of incentives (tax breaks, etc) to make it financially attractive to iodize salt, continue with advocacy and promotion to build up the demand for iodized salt in this country where the people are used to buying salt in large, unclean crystals.

Also, MOST held discussions with the only wheat flour miller in Haiti regarding the need to continue fortifying the flour milled in country.

## **X. Honduras**

Funding: \$100,000

Time-line: 2003–2005

1. Anemia
2. Fortification
3. Micronutrient supplements management logistics system

Total Population: 7,167,902

Infant Mortality Rate: 29

Under 5 Mortality Rate: 41

Gross National Income per Capita: \$1,030

### **BACKGROUND**

Honduras is one of the poorest countries in the Western Hemisphere with an unequal distribution of income and high unemployment. Growth remains dependent on the economy of the US, its largest trading partner, and on commodity prices. On the surface, Honduras has an enabling environment that is open to health programs, but a high turnover of health staff adversely affects service delivery. The economic problems of Honduras are exacerbated by its high crime rate.

One of the smaller MOST country programs, the work was accomplished with the assistance of a local consultant and with technical assistance provided by MOST Headquarters.

### **ANEMIA**

In 2003, USAID/Honduras requested assistance from MOST for the development of an action plan to strengthen the anemia control program. MOST helped the Secretariat of Health (SOH) develop a strengthened Anemia Control National Action Plan and a Detailed Implementation Plan. In 2004 and 2005, MOST provided technical assistance to the Ministry of Health by reviewing and updating the technical guidelines and supplementation manual for the anemia program, and limited financial support for the implementation of training workshops, technical meetings and the production of communication materials for tying the program into the childhood integrated approach (AIN).

### **FORTIFICATION**

MOST also provided technical assistance to the SOH in its effort to update its micronutrient policy, including the legislation governing food fortification.

### **LOGISTICS**

In 2005, MOST provided technical assistance for evaluating the existing micronutrient supplement management logistics system, which led to an adaptation of the prototype system developed in El Salvador to the particular Honduran situation. Mostly manual rather than electronic, the system helped improve the distribution of supplements down to the village where existing computer systems could not reach. The system was put in operation after the SOH staff at central, district and local levels was trained.

## REFERENCE

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## Y. Nicaragua

Funding: \$1,070,000

Time-line: 1998–2005

1. Fortification
2. Iron/folate supplementation
3. Nutrition program monitoring and evaluation system
4. Zinc

Total Population: 5,465,100

Infant Mortality Rate: 30

Under 5 Mortality Rate: 37

Gross National Income per Capita: \$790

### BACKGROUND

Still recovering from a brief civil war in the late 70s that placed the Sandinistas in power until being voted out in free elections in 1990 as well as the devastation caused by hurricane Mitch in 1998, Nicaragua is slowly rebuilding its economy.

In Nicaragua, MOST was asked by the USAID Mission to continue the work initiated by OMNI in support of implementation, monitoring and evaluation of the Nicaraguan National Micronutrient Plan. MOST established an independent office under the auspices of the Nicaraguan doctor that managed the USAID program under OMNI. As demonstrated by the results of the surveillance system (SIVIN) described below, Nicaragua stands as an example of a country that has virtually eliminated micronutrient deficiency; however, it should be noted that MOST's involvement came at the tail end of fifteen years or more of intervention in Nicaragua to address micronutrient malnutrition.

### FOOD FORTIFICATION

MOST brokered the final negotiations between of the government and the sugar industry, and assisted the Ministry of Health (MOH) in launching the program to fortify sugar with vitamin A during 1999–2000 harvest. Nicaragua was the last Central American country to join the regional sugar fortification initiative, perhaps owing to the need to resolve issues surrounding the ownership of the sugar industry. MOST also supported a national communications campaign in support of fortification and gave technical assistance in industry quality control and government regulatory monitoring.

In 2000, to develop a baseline for the subsequent evaluation of the fortification program, the MOH asked MOST to assist in all phases of the Second National Micronutrient Survey. MOST was involved in the planning, training, field implementation, database design, data entry and analysis, report, and dissemination of the results. The survey revealed a dramatic decline in sub-clinical vitamin A deficiency (VAD) from 31% in 1993 to 8% in 2000, most likely a result of several years of consistently high coverage rates of vitamin A supplementation in children, and a significant decline in anemia rates in women from 34% to 24% but not in children. VAD in women was found not to be a problem of public health significance. Urinary excretion of iodine in school-aged children was found within normal limits for 90% of them.

## ANEMIA

MOST assisted the MOH in development and field testing of an innovative model and demonstration project for iron supplementation to young children and women of childbearing age through systematic involvement of trained community health volunteers in supplement delivery, counseling and follow-up, as well as in supporting training and scaling up of the model countrywide with active NGO/PVO participation. As the results of the field test were positive, MOST assisted in scaling up the model by exporting it throughout the network of non-governmental organizations as well as government authorities.

## NUTRITION PROGRAM MONITORING AND EVALUATION SYSTEM

Jointly with the US Centers for Disease Control and Prevention (CDC), in collaboration with MI, UNICEF and INCAP/PAHO, MOST assisted the MOH in development, field-testing and implementation of a national integrated system for nutrition program monitoring and evaluation (SIVIN), with emphasis on micronutrients. The system integrates several sources of information aimed at program M&E for decision-making, including a countrywide household survey. SIVIN has documented increasing coverage of both vitamin A supplementation to children 6-59 months, iron/folate supplementation to pregnant women and iron supplementation to children under five years, as well as high population coverage of fortified sugar, wheat flour and salt. Likewise, SIVIN has confirmed that vitamin A and iodine deficiencies are now virtually under control and anemia has dropped dramatically in women and, more recently, in children as well. In 2005, MOST supported the implementation of the third and the final year of the pilot phase of SIVIN. Major emphasis was placed on guaranteeing the continuity of collection of nutrition data through the household survey and its integration with other existing information. The partners collaborated on a sustainability plan for SIVIN focusing on MOH capacity for collecting, processing and analyzing SIVIN data and its application for policy making.

## ZINC

NICASALUD, the umbrella organization for PVOs and NGOs in Nicaragua has tested the clinic-based guidelines for adding zinc supplements to the treatment for diarrhea. MOST translated the clinic-based guidelines into Spanish and has supported the field testing of those guidelines.

## REFERENCES

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SIVIN Team, 2006. *Systemo Integrado de Vigilancia de Intervenciones Nutricionales (SIVIN): Informe de Progreso*, Managua, Nicaragua

Mora, Jose 2004. *MOST Final Report: Nicaragua 1998-2003*, Arlington, Virginia

Ministry of Health, Nicaragua, 2000. *Second National Micronutrient Survey, Nicaragua 2000: Summary Report*, Managua, Nicaragua

## Z. Ukraine

Funding: \$35,000

### 1. Fortification

Total Population: 46,996,765

Infant Mortality Rate: 20.3

Under 5 Mortality Rate: 24.2

Gross National Income per Capita: \$1,260

## BACKGROUND

USAID/Ukraine supported the effort by the University of South Alabama to develop a surveillance system for neural tube defects. Once functioning, the system provided evidence that the incidence of neural tube defects in Ukraine is substantially higher than the reported incidence in neighboring countries. A deficiency of folic acid early during a pregnancy is one of the major causes of neural tube defects. An effective means of reducing that deficiency in countries where wheat products are consumed in quantity is the fortification of wheat flour.

Recognizing that efforts to initiate wheat flour fortification in Ukraine had been unsuccessful, USAID/Ukraine asked MOST to review the situation and make recommendations for moving forward. After the initial visit by the MOST Fortification Advisor to help understand the wheat flour industry and the obstacles to fortification, UNICEF and USAID suggested that a follow-up visit consider not only wheat flour fortification but also salt iodization as it was believed that the two programs were facing many of the same hurdles.

## WHEAT FLOUR FORTIFICATION

A pilot trial to fortify wheat flour in one location in Ukraine was authorized in 2003; however, the trial has not been started because of questions raised regarding the amount of folic acid to be added to the flour. (The issue of fortification levels is likely to plague fortification efforts in developing countries in years to come as program designers wrestle with the problem of adding enough of a given micronutrient to have a major impact while not adding so much as to do harm among that part of the population with adequate dietary intake.) The trial is merely to test and refine the technology and would not serve as a test of the impact of fortification of neural tube defects. Formal requests have been submitted to the Ministry of Health to elevate the Recommended Nutrient Intake of folate for Ukraine to enable the addition of a greater amount of folic acid. A distinct request has been submitted to increment in the level of folic acid fortification for the fortification trial. As the professional community in Ukraine offers conflicting advice to the Ministry regarding these requests, the Ministry has not responded to either request. This situation is regrettable as many women who might be protected against folic acid deficiency even at the lowest levels of folic acid under consideration have been are not yet receiving the benefit of this potentially dramatic intervention.

MOST urged the authorities in Ukraine to move forward with the pilot trial as it is an essential step toward introducing fortification throughout the entire industry. The trial would provide information needed before going to scale at any level of fortificant regarding safety, efficacy and variability in the production process. Separately, the discussion regarding levels of folic acid to be added should

continue but be based on the nutritional and genetic profile of the Ukrainian population. Even if not resolved, fortification should be initiated as soon as possible at the lower levels of folic acid to offer at least some protection to women of child bearing age.

## SALT IODIZATION

The review of the salt iodization program concluded that production capacity is not currently a limiting factor for supplying sufficient iodized salt in the Ukrainian market. The capacity exists within country to produce all the iodized salt needed for the population of Ukraine in addition to contributing to needs of other countries in the region. Educational efforts through a variety of methods have increased public awareness of the problem and there is clearly national capacity for increasing household use through implementation of a demand-creation strategy. The lead institutions involved in the program have established standards for iodized salt, and an adequate inspection and food safety system exists for monitoring at different levels.

Nevertheless, the elimination of iodine deficiency is likely to depend on making iodization of salt for human consumption mandatory. The main obstacle to this step appears to be lack of consensus among the key institutions advising the Ministry of Health, with continued concerns raised about safety, consumer preference, and the need to differentiate endemic from non-endemic areas. To overcome this obstacle, the IDD Task Force should be revitalized and asked to review all the scientific data pertaining to residual concerns among scientists and others to gain consensus on the need for mandating salt iodization. The efforts to raise awareness and create demand for iodized salt should continue and, if possible, intensify and the data on the magnitude of the problem and on progress toward its solution should be consolidated to help emphasize the importance of moving forward with mandatory fortification.

## REFERENCE

Dary, Omar, 2005. *Situation of the Wheat Flour Fortification Trial in the Oblast of Volyn, Ukraine*, Arlington, Virginia

## **VI. REGIONAL PROGRAMS**

### **A. Salt Iodization in Europe and Eurasia**

Funding: \$200,000

Time-line: 2002-2005

#### **BACKGROUND**

The USAID Bureau for Europe & Eurasia provides funds to UNICEF to support the evolution of salt iodization programs in the region. The dissolution of the Soviet Union led to a restructuring of the salt industry in the region creating free market forces where none existed before. In order to assess the progress in a number of countries, the Bureau for Europe & Eurasia asked MOST to work with UNICEF to improve selected programs in the region. The primary tool applied was the Iodized Salt Program Assessment Tool (ISPAT). Used as a guide to field visits designed to document the status of country programs and help guide local management toward strategies and tactics that would improve program implementation, the ISPAT helped systematize and structure the reviews. Following the guidance set forth in the ISPAT manual, the assessments looked at production and importation, key aspects of program implementation (advocacy, legislation and regulation, monitoring, laboratory capacity, communications) and the measurement of coverage and impact.

The countries considered for this activity were selected in conjunction with UNICEF. It is well known that the two largest producers and exporters in the region, Russia and the Ukraine, are not making adequate progress toward universal salt iodization. The discussions with UNICEF regarding the countries to include in this activity disclosed substantial prior knowledge regarding the issues facing those two countries; therefore, they were not targeted for assessments. Ultimately, however, a brief assessment was made in Ukraine when it was coupled with a technical assistance visit to consider the related issue of wheat flour fortification.

#### **ACTIVITIES**

Working with colleagues from UNICEF, MOST assessed the salt-iodization programs in Moldova, Bulgaria, Kosovo and Ukraine. In addition, two regional meetings were organized, one in Georgia involving the countries of Georgia, Armenia and Azerbaijan and one in Tajikistan.

##### **Moldova**

The first assessment in Moldova, completed by MOST in July 2002, looked at salt iodization in a country where all salt is imported. The salt must be iodized either at the point of production and brought into the country iodized or iodized in country following importation. The most recent survey to estimate coverage found that the proportion of households using adequately iodized salt is low (33%) but only 22% used salt with no iodine. This suggests that a much larger proportion of households are using salt that may have been subjected to iodization but that either the iodization was inadequate or there are significant losses.

A few of the recommendations growing out of the assessment are:

1. Distribution
  - a. Seek a permanent Value Added tax exemption to help minimize the difference in cost between imported iodized and non-iodized salt
  - b. Package the imported salt at the point of production (before importation) into smaller sacks to minimize degradation during repackaging
2. Implementation
  - a. Continue advocacy so as not to lose the momentum gained in implementation in recent years
  - b. Complete the revision of the food law now under consideration and submit the directive concerning salt iodization
  - c. Increase the number of samples taken for better monitoring and defer taking urinary iodine measurements until evidence exists from that monitoring system that consumption is higher.

## Bulgaria

The second assessment completed in Bulgaria in October 2002 concluded that the program was quite successful and iodine deficiency disease had been reduced to levels so it is no longer a public health problem. Recommendations were made to sustain the advocacy component of the program, especially with government ministries other than health who had a role to play in the program. The commitment of the Health Ministry was clearly strong.

## Kosovo

The objective of the assessment in Kosovo was to review the micronutrient situation and program activities, including salt iodization, vitamin A programs and the use of pre-natal iron supplementation. The assessment was prompted by recognition of the value of taking stock following the conflict of 1999. All salt is imported into Kosovo and is iodized so that iodine deficiency disorders are not, at present, a public health problem. The major recommendations of the assessment addressed the need to strengthen the monitoring system for all micronutrient programs and integrate the data collection and analysis of the data.

## Regional Meeting in Georgia

In order to increase the exposure to program reviews guided by the ISPAT framework, three countries were invited to attend a workshop held in Georgia.

## Armenia

Armenia has good compliance with standards among producers, reasonable controls for imported salt, an active task force, and recent household coverage data. It is in the process of passing a law mandating iodization and is establishing a monitoring system that includes production/import level, market level, and periodic household level assessment. Some small issues remain including sampling at the border, modifying the monitoring system slightly, and strengthening enforcement for the relatively few instances of non-compliance. Iodine deficiency disorders are no longer a health problem in the country.

## Azerbaijan

Given that problems arise in managing multiple small producers, it is pleasantly surprising that so much progress has been made toward reducing iodine deficiency disorders. In spite of a large proportion of salt samples tested being below standard (30-50 ppm), the consumption of iodized salt is such that there is adequate iodine at the household level and urinary iodine results are better than expected. The workshop concluded that the situation in Azerbaijan is not necessarily stable and there may still be difficulties with full compliance among the small producers and still some counterfeiting. While there is good support within the Ministry of Health for the program, support within other Ministries is less secure. Accordingly, there may need to be greater attention given to strengthening the task force and ensuring regular meetings to solidify support at all levels, and in all sectors.

## Georgia

The program in Georgia has made considerable progress in establishing the B. regulatory environment and increasing consumer demand and, therefore coverage. The process of establishing legislation mandating salt iodization is nearing completion. There is also a clear plan in place for moving forward, including collection of monitoring data and strengthening the cooperation among importers and the government. The Georgian program enjoys solid political support currently, and thus it is likely that completion of the legislation will be successful. If the legislation passes, the monitoring system proposed should be adequate to provide sound data to measure progress over the next few years.

## REFERENCES

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- Houston, Robin, 2002. *The Iodine Deficiency Elimination Program in Moldova: Trip Report, July 15-26, 2002*, Arlington, Virginia
- Houston, Robin, 2004. *A Review of Micronutrient Intervention Programs in Kosovo (Trip Report, Feb 18-29, 2004)*, Arlington, Virginia
- Houston, Robin, Schoffelen, Ernest and Makhumula, Phillip, 2004. *An International Workshop on Monitoring IDD/USI Programs Held in Gudauri, Georgia, December 6-9, 2004*, Arlington, Virginia
- Houston, Robin, Dary, Omar, Bogg, Malia and Zeilinger, Michael, 2005. *Salt Iodization and Iodine Deficiency in Ukraine: A brief review of current situation, key institutions involved and recommendations*, Arlington, Virginia

## **B. Fortification in Eastern and Southern Africa**

Funding: \$600,000

Time-line: 2004–2005

The East, Central and Southern Africa (ECSA) region has made strides towards control of iodine deficiency disorders through iodization of salt. However, similar advances have been more limited in the prevention of other micronutrient deficiencies including vitamin A deficiency, folic acid, zinc, vitamin B12, and iron deficiency and anemia. In particular, while National Immunization Days held throughout the region have improved vitamin A supplementation coverage, food fortification is currently not widely practiced. As a result, ECSA Ministers of Health in their 36th Regional Conference in Entebbe, Uganda in November 2002, passed a resolution which aimed at enhancing collaboration between public and private sectors to strengthening food fortification initiatives in the individual countries and the region as a whole. The Health Secretariat of ECSA (ECSA-HC) was charged with developing a strategic plan to satisfy the mandate of the Ministers.

The first objective of the plan was to strengthen the knowledge and skills needed by the public sector to effectively play its role in food fortification. In 2004 two regional meetings, with participants from 13 countries, identified areas where regional initiatives could support and enhance national programs. That workshop resolved to establish three technical groups to prepare action plans and proposals in the areas of

- Regulation and Food Control of Food Fortification Programs;
- Regional Laboratory Network of Food Fortification Analysis; and
- Technical and Trade Support for Program Implementation.

Overall coordination and follow-up was assigned to ECSA-HC who was charged with heading a special regional group to address issues related to resource mobilization and advocacy.

MOST's involvement with the regional initiative began with the second meeting, in July 2004, which advanced the development of specific action plans for the four groups, aimed respectively at establishing:

- Consensus on regional harmonized fortification guidelines.
- Laboratory network for food fortification analysis.
- Regional training and development programs
- Coordinating and advocacy capacity at ECSA.

MOST's role, which it played in close collaboration with the other partners in the regional initiative - MI, UNICEF, and GAIN - was to support ECSA-HC in finalizing and implementing the action plans of the Regulation and Control, Laboratory Network, and Coordination and Advocacy working groups, while MI was responsible for providing such support to ECSA-HC in relation to the Technical and Trade Support working group. As of the end of MOST, these groups have been active for more than 16 months and have recommended action plans including strategies and activities to be planned and developed together with the private sector, both at the regional and national levels. Specific activities included:

In March 2005, the Regulation and Control technical working group held a workshop in Malawi. Regulatory, trade and food control officials considered regional standards for food fortification vehicles, premix and analytical methodologies. The working group held a second workshop in Tanzania in July 2005 to discuss member states' achievements and progress in food fortification regulation, voluntary fortification and how to regulate claims, logos and seals.

In May 2005, a training course was sponsored by the Medical Research Council of South Africa to impart critical skills and perspectives as well as lay the foundation for a regional laboratory network of food fortification analysis. This training of trainers workshop included selected laboratory personnel from Kenya, Malawi, Tanzania, and Zambia. As a follow-up to this workshop, the trained participants conducted similar workshops in their respective countries in July-September 2005.

In the spring of 2005, program and communications experts considered the most effective avenues for regional communications to support national advocacy for food fortification. Advocacy materials were developed for use by ECSA, and a food fortification web page was created on the ECSA website.

A third regional meeting was held in July, 2005, in Entebbe, Uganda. This meeting aimed at establishing effective partnerships with formal food industries - oil, sugar, and wheat and maize flour - in the ECSA countries, offering them specific harmonized standards, governmental commitment for enforcement and training, and basic strategies to reduce costs.

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Commonwealth Regional Health Community Secretariat for East, Central and Southern Africa, 2005. *Workshop Report: Third Regional Meeting on Food Fortification, Creating Good Partnerships to Accelerate Progress*

## **C. Support to Nutrition Programming in West Africa**

Funding: \$

Time-line: 2004-2005

### BACKGROUND

In the various regions of Africa, particularly in West Africa, regional organizations have been playing a major role in setting health and nutrition priorities for their regions. In West Africa, the West African Health Organization (WAHO), a specialized agency of the Economic Community of West African States (ECOWAS) has as its mission “the attainment of the highest possible standard and protection of health of the peoples in the sub-region through the harmonization of the policies of the Member States, pooling of resources, and cooperation with one another and with others for a collective and strategic combat against the health problems of the sub-region.” Based in the region, MOST partner Helen Keller International provides support to WAHO and to its ECOWAS Nutrition Forum to enable this fledgling organization to develop the capacity to carry out this mission.

### SUPPORT TO NUTRITION POLICY DEVELOPMENT IN THE REGION

The regional staff of HKI participated in the development of the ECOWAS Nutrition Forum Strategic Plan, a plan that established as high priority activities in the region the distribution of vitamin A supplements to children mothers of newborns and the application of food fortification technologies to alleviate micronutrient deficiencies. In order to facilitate continuing communication among the countries of the region as they work to implement the strategic plan, HKI helps maintain the WAHO nutrition web site, provides assistance for the planning, determination of technical content and dissemination of results of a number of meetings and forums, routinely screens and distributes relevant technical updates and information to the nutrition focal points in the region and helps maintain valuable links with other donor organizations including UNICEF and the Micronutrient Initiative.

Although far less advanced in its development, a Central Africa and Madagascar Nutrition Focal Points group has formed and HKI provides similar assistance to this group as it does to the West African Group. The second meeting of this group, held in July 2005, featured an exchange of information about nutrition and HIV/AIDS and considered how to manage the effects of the pandemic on nutrition. HKI plays the added role of sharing the WAHO Nutrition Focal points experience in this newly organized group.

A particularly intriguing initiative is under development by the New Partnership for Africa's Development (NEPAD). NEPAD has elected to consider nutrition under its agriculture program, the Comprehensive African Agricultural Development Program (CAADP) rather than health. Although the primary focus of this program is food security, the advocacy of a number of donor organizations has prompted consideration of a vitamin and Mineral Deficiency initiative that may well stimulate actions such as the implementation of food fortification throughout the region and harmonization of standards applied to assure maintenance of the level playing field.

In MOST's final year HKI, through MOST, participated in the West Africa Universal Salt Iodization Consultation, a meeting organized by UNICEF for the purpose of advancing the goal of universal salt iodization. That consultation led to a decision to focus on two major salt producing countries in the region, Ghana and Senegal, who then received technical advice on the measures needed to assure that all salt produced in these countries and exported by them is iodized.

As WAHO has begun to consider anemia, it invited HKI to participate in an Anemia Technical Working group. A consensus statement has been written and circulated in all ECOWAS countries, paving the way for action in the years to come.

#### COUNTRY SPIN-OFFS

As a result of the advocacy and technical inputs delivered through the regional organizational structure, several country level activities emerged and received technical support. In Cote D'Ivoire, the rejuvenation of vitamin A supplementation following the civil disturbances called for special attention including the revision of the training modules for the integration of supplementation into IMCI and the organization of a campaign for children in the emergency affected areas.

In Tanzania, an assessment of the vitamin A program was completed (see Tanzania) leading to the field support funding from the Mission for activities to be carried out in MOST's final year. In Senegal, an initial assessment to determine appropriate vehicles for food fortification has been completed.