Report to USAID
WORKING TOWARD REDUCING MICRONUTRIENT DEFICIENCIES, MATERNAL AND CHILD MORTALITY

A2Z: The USAID Micronutrient and Child Blindness Project
Mid-Project Report
2005–2008

November 2008
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### Acronyms

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<tr>
<td>A2Z</td>
<td>USAID Micronutrient and Child Blindness project</td>
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<td>ANC</td>
<td>Antenatal Care</td>
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<td>CAID</td>
<td>Child Health Days</td>
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<td>CIDA</td>
<td>Canadian International Development Agency</td>
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<td>CHW</td>
<td>Child Health Week</td>
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<td>DHS</td>
<td>Demographic and Health Surveys</td>
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<tr>
<td>EAR</td>
<td>Estimated Average Requirements</td>
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<td>ECSA</td>
<td>East, Central, and Southern Africa</td>
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<td>FY</td>
<td>Fiscal Year</td>
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<td>GAIN</td>
<td>Global Alliance for Improved Nutrition</td>
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<td>GAVA</td>
<td>Global Alliance for Vitamin A</td>
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<td>HIES</td>
<td>Household Income and Expenditure Surveys</td>
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<td>HKI</td>
<td>Helen Keller International</td>
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<td>HMIS</td>
<td>Hazardous Material Information System</td>
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<td>IEC</td>
<td>Information, Education and Communication</td>
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<td>IFA</td>
<td>Iron Folic Acid</td>
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<td>IPT</td>
<td>Intermittent Preventative Treatment</td>
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<td>IMCI</td>
<td>Integrated Management of Childhood Illness</td>
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<td>IPT</td>
<td>Intermittent Preventative Treatment</td>
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<td>ICCIDD</td>
<td>International Council for the Control of iodine Deficiency Disorders</td>
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<td>INACG</td>
<td>International Zinc Nutrition Consultative group</td>
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<td>IVACG</td>
<td>International Vitamin A Consultative Group</td>
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<td>JHU</td>
<td>Johns Hopkins University</td>
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<td>LBW</td>
<td>Low Birth Weight</td>
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<td>Laboratory Proficiency Testing</td>
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<td>MCH</td>
<td>Maternal and Child Health Interventions</td>
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<td>MDG</td>
<td>Millennium Development Goal</td>
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<td>MI</td>
<td>Micronutrient Initiative</td>
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<td>MINI</td>
<td>Morang Innovative Neonatal Intervention Program</td>
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<td>MIP</td>
<td>Malaria in Pregnancy</td>
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<td>Mother Infant Research Activities</td>
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<td>Multiple Micronutrient</td>
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<td>MMR</td>
<td>Measles, Mumps and Rubella</td>
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<td>MN</td>
<td>Micronutrient</td>
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<td>MOH</td>
<td>Ministry of Health</td>
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<td>Management Sciences for Health</td>
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<td>NFHP</td>
<td>Nepal Family Health Project</td>
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<td>NNIPS</td>
<td>Nepal Nutrition Intervention Project - Sarlahi</td>
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<td>NTD</td>
<td>Neglected Tropical Disease</td>
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<td>NVAS</td>
<td>Newborn Vitamin A Supplementation</td>
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<td>PAHO</td>
<td>Pan American Health Organization</td>
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<td>PBT</td>
<td>Planning and Budgeting Tool</td>
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<td>RPM PLUS</td>
<td>Rational Pharmaceutical Management Plus</td>
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<td>SP</td>
<td>Sulfadoxine Pyrimethamine</td>
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<td>Abbreviation</td>
<td>Full Form</td>
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<td>SNL</td>
<td>Saving Newborn Lives</td>
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<td>Technical Assistance</td>
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<td>TAG</td>
<td>Technical Advisory Group</td>
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<td>U5MR</td>
<td>Under 5 Morality rate</td>
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<td>UIRI</td>
<td>Uganda Industry Research Institute</td>
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<td>UL</td>
<td>Upper Intake Levels</td>
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<td>UP</td>
<td>Uttar Pradesh</td>
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<td>USAID</td>
<td>United States Agency for International Development</td>
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<td>VA</td>
<td>Vitamin A</td>
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<td>VAD</td>
<td>Vitamin A Deficiency</td>
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<td>VAS</td>
<td>Vitamin A Supplementation</td>
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<td>WHO</td>
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<td>World Vision</td>
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This report documents the experiences and lessons learned from three years of the A2Z Project’s work at country and global levels. It summarizes the current knowledge about the role of micronutrient interventions in maternal and child health strategies and discusses how to implement them effectively. The evolution of programming needs for micronutrients from 2005 to the present and future directions are described.

I. Background
USAID has provided support for over two decades to Child Survival and Maternal Health programs to achieve progress in saving the lives and improving the health of mothers and their children in many of the poorest countries in the world. While many successes have been documented in reducing maternal and child mortality, a significant unmet need for life saving efforts and interventions still exists. The challenge is the 10.5 million pregnant women and children under 5 who die each year from causes that could be prevented by proven MCH interventions, among them nutrition and specifically micronutrients.

Micronutrients are among the most cost-effective proven ‘high impact interventions’ and are key in assisting USAID to achieve its 2013 goals1 in support of:

• Reducing under-5 mortality by 25 percent in 30 high mortality-burden countries by expanding coverage of vitamin A and zinc in children under 5, and reducing maternal mortality by 25 percent in 30 high mortality burden countries by reducing anemia in pregnancy.

• Reducing child malnutrition by 15 percent in at least 10 of these countries by reducing anemia in the context of improving nutritional intake through supplementation and fortification.

• Addressing the human resources crisis by building capacity of community health workers and volunteers at primary health care and community levels.

The A2Z project, a five-year (2005–2010) Cooperative Agreement, is directed to continue and expand USAID’s more than 20 years of global support and leadership to reduce micronutrient malnutrition. The overall goal of A2Z is to increase the use of key micronutrient and blindness interventions to improve child and maternal health. A2Z attempts to consolidate, build on, and expand USAID’s leadership in micronutrients, child survival, and nutrition overall, by taking proven interventions to scale, introducing innovation, expanding services, and building sustainable programs.

The A2Z project targets high need countries with greatest potential for impact. Of the 30 priority countries that USAID has identified for improvements in maternal and child health, A2Z works directly in the following: Bangladesh, Cambodia, India, Nepal, Philippines, Tanzania, and Uganda, as well as an East Africa regional initiative. The project helps another 12 USAID priority countries by developing and disseminating tools and capacity building, and engaging in analysis, advocacy, and partnerships.

Four high impact interventions form the core of A2Z’s strategy:

- Sustainable high coverage vitamin A supplementation (VAS) through twice-annual Child Health Days (CHD).
- Food fortification to deliver micronutrients through the private sector.
- Maternal anemia reduction through iron deficiency reduction, improved antenatal care, and integration with malaria control and deworming interventions.
- Developing delivery systems to reach children 6–23 months with a package of nutrition interventions aimed at reducing anemia.

These interventions are at different stages of development. In many countries and globally, VAS and food fortification are relatively well established and gaining momentum and sustainability through multiple donors, though many gaps still remain. In maternal anemia, A2Z fills a huge gap and is raising awareness through better analysis and evidence. For child anemia, the work has just started through exploring alternative delivery mechanisms in diverse settings, gathering evidence and packaging appropriate interventions to address locally relevant conditions. Systems strengthening, analysis and advocacy and global partnerships receive the major share of A2Z’s resources.

This next section provides an update on issues and program experience in vitamin A supplementation, food fortification, maternal and child anemia and the global Micronutrient Forum.

II. Technical Interventions

**VITAMIN A SUPPLEMENTATION (VAS)**
From the beginning of the A2Z project in 2005 to the present, VAS programming worldwide has experienced the following:

1. Many more countries are implementing twice-annual distribution of VAS and all have integrated other public health interventions into this distribution.
2. Global partners are well-coordinated and mutually reinforcing global and country efforts.
3. Serious attention is being paid to supply related issues.
4. New and growing evidence exists for the impact of VAS under-5 mortality rate (U5MR) impacts from VAS.
5. Efficacy of newborn vitamin A in reducing infant mortality has been documented in South Asia.

**Challenge**

Twice-annual vitamin A supplementation (VAS) has been widely recognized as a key child survival intervention in developing countries, and is beginning to be fully integrated within routine health services for child health in a sustainable way. Many countries have launched successful twice-annual distribution strategies with external donor support, but concern remains about the ability and commitment of countries to maintain these successful programs. While VAS programs are working adequately in many countries, it is too early to conclude that they no longer need support from global projects such as A2Z.

The immediate threats to VAS programs achieving high and sustainable coverage vary by country and context but include:

- Variable/unstable coverage of twice-annual rounds
- Gaps in supplies: The procurement and distribution of vitamin A often occurs through vertical distribution systems managed by donors or other partner agencies. The episodic nature of the delivery strategy and limited management capacities have made integrating vitamin A supplies into government systems challenging to achieve
- Beliefs by some country opinion leaders that supplementation is the incorrect approach to addressing vitamin and mineral deficiencies in general, and VA in particular
- Shortage of current data on vitamin A deficiency (VAD)
- Absence of effective strategies for high coverage in hard-to-reach populations, e.g. urban poor and remote rural groups
- Inadequate micro-planning and budgeting at district level in decentralized health services
- Little use of health management information systems (HMIS) data
- Absence of appropriate private sector strategies.

Many of these threats result from underlying systemic vulnerabilities challenging health systems in general, not
just VAS. A2Z takes any and all opportunities to address these challenges through strengthening health systems, e.g. pharmaceutical management at district level, health provider training, use of HMIS to track coverage gaps.

Common systemic challenges that directly affect VAS programs include:

- Decentralized health systems, particularly important where strategic and operational capacities at district levels are uncertain
- Inadequate levels of resources to create and maintain high quality of service within health systems, including inadequate operating budgets, salaries, infrastructure, training and supervision
- Misconceptions in some countries about the twice-annual outreach delivery mechanisms being disruptive of routine services
- Resistance to allowing non-health personnel to distribute vitamin A
- Donor fatigue related to funding recurrent costs
- Weak communication/coordination among global partners and the constituencies needed to create and maintain effective, country-owned health systems and MN programs.

Evidence

Strong evidence exists that VAS is being delivered with high coverage at large scale and highly plausible evidence demonstrates positive and cost-effective impact both on functional indicators of VA status and child mortality (see Figures 1–4). Evidence and experiences from previous projects supported by USAID and those of other donors indicated clearly that high coverage could be achieved in the 6–59 month target group through twice-annual distributions/outreach. Further, no country had achieved high coverage with “routine” or passive approaches such as those linked with routine immunization. A recent review of six national VAS programs for the Innocenti Micronutrient Program Meeting (Dary et al. 2008) noted that all were using the twice-annual approach and all were achieving high coverage. But clearly improvements are needed to sustain the substantial achievements of the twice-annual approach.

The impact of VAS programs often together with measles vaccination on clinical indicators of vitamin A deficiency (VAD) such as xerophthalmia has been documented (Figure 1). Mortality reductions are more difficult to attribute to VAS programs but plausible evidence for impact is strong. Many countries are undergoing secular trends showing decreasing infant and under-5 mortality that may or not be associated with achievement in high VAS coverage. Despite these limitations, the analysis of a selection of VAS programs that have achieved high coverage does suggest that programs can achieve the mortality lowering results suggested by efficacy trials. Figure 2 (on the following page) shows a strong association between greatest mortality reductions in countries with highest VAS coverage. The timing of accelerated mortality reductions, i.e. after 1999 coincides with the period when sustained coverage at >70 percent levels was achieved in repeated six-month rounds.

A more detailed study in Tanzania (Masanja et al. 2008) noted a 24 percent reduction in child mortality between 2000 and 2004. Figure 3 (on the following page) shows that of the key child survival programs operating during the period of rapid mortality reduction, VAS had the greatest increase in EFFECTIVE coverage as compared with any other intervention.

Goal

USAID’s U5MR goal is 25 percent reduction by 2013. Globally a goal of 80 percent coverage with VAS is being used. At a funding level of $85 million, A2Z’s goal was to work in 20 to 30 countries to institutionalize high coverage vitamin A supplementation as a lead strategy for reducing child mortality. With four of five years funding allocated to A2Z, we expect approximately 40 percent of this funding level. However, A2Z is scheduled to reach the original goal in terms of country engagement. Vitamin A delivery systems such as Child Health Weeks and food fortification, accompanied by improved routine health delivery and social mobilization, are expected to expand coverage with a core package of low-cost, high impact child survival interventions to vulnerable populations.

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Some countries are supported with limited inputs such as occasional STTA, tools, documentation, and experience transfer while others receive long-term sustained support through in-country teams. This is possible since the implementing partners already assist country programs through other projects and funds.
Strategy
A2Z has addressed both the immediate and longer term challenges described above. In support of USAID’s global leadership in vitamin A supplementation, A2Z identified the following strategies to solve problems at country and global levels:

1. Advocacy to raise awareness of the VAS contributions for MDG4 on child survival

2. Assessments leading to developing recommendations and tools to address weak routine supply systems for accurate forecasting and timely procurement and distribution of vitamin A supplements

3. Developing and demonstrating tools/guidelines to address planning and budgeting needs at district level within the context of decentralized health systems

4. Developing and applying costing methodologies as a way to strengthen the management and sustainability of micronutrient programs
Policies and Advocacy: In 2007, A2Z in collaboration with UNICEF and Micronutrient Initiative (MI) contributed to a policy change in India extending the upper age limit for receiving Vitamin A from 36 months to 60 months in accordance with international standards. This increased the number of children protected by VAS.

A particularly powerful advocacy component is the potential number of lives saved through VAS. In Tanzania this tool was ‘eye-opening’ for many district decision makers.

Political instability in both Jharkhand and Uttar Pradesh (UP) has disrupted capacity building and slowed sustained improvements in coverage. Such a barrier necessitated flexible problem solving and persistence, and most importantly, partnership building with stakeholders, in this case Micronutrient Initiative (MI) and UNICEF. The advocacy package developed by the three international partners to support the suspended VAS program in Jharkhand was extremely effective (See Box 1).

**BOX 1.**

In 2007 Jharkhand State made the decision to end immunization Catch-up Rounds that were used for bi-annual VAS. The rationale was to encourage participation in monthly outreach for routine immunization. MI, UNICEF, and A2Z jointly developed the rationale and operational guidelines to continue intensified outreaches during two of the routine outreaches, six months apart, to deliver VAS and deworming medicines. The twice-annual Child Health Days strategy was thus restored through good partnership but challenges remain in coverage gaps particularly in urban areas, and weakness in planning and monitoring capacity.

System Strengthening: A2Z has contributed to strengthening supplies, managing health information, and improving system capacity through training.

For VAS supplies, A2Z formed a partnership with the USAID-funded global RPM Plus/Strengthening Pharmaceuticals Systems Project operated by MSH to conduct assessments, test interventions, and develop tools in selected countries. The assessments established the basis of inputs that have:

- Increased supply quantity to meet the needs based on population estimates, and
- Improved pharmaceutical management system components at each level as the supply is increased.

Examples of A2Z contributions include completing four key assessments to analyze the micronutrient supply systems and recommend interventions in several large-scale A2Z country programs—India/Jharkhand, India/Uttar Pradesh, Uganda, and Cambodia. In the Philippines, A2Z worked with USAID’s PRISM project to advocate pharmaceutical companies to increase availability of vitamin A and to promote the Health GOV and SHIELD projects to develop procurement plans and supply estimates to ensure that local government units procure sufficient vitamin A.

HMIS: A2Z has improved and standardized recording and reporting processes to strengthen the country’s health information system and data quality. Working with MOH representatives and in-country partners, A2Z promotes HMIS data ownership and utilization of these data to improve coverage.

- Revisions made to recording forms (i.e. tally sheets) and monitoring and supervision tools improved tracking of coverage at all levels in Jharkhand, Uttar Pradesh, Cambodia, Tanzania, and Uganda.
• A2Z has conducted external monitoring in Cambodia, Uganda, Jharkhand, and Uttar Pradesh during vitamin A distribution rounds to identify critical process issues.

• In Cambodia, Tanzania, Uganda, Uttar Pradesh, and Jharkhand, A2Z, in collaboration with MOH representatives and in-country partners, disseminated HMIS round coverage data at the national and district levels to improve micro-planning and to target low-performing districts.

**BOX 2.**
In FY08 A2Z took major steps to enhance supply and logistics systems for micronutrient programming in A2Z country programs. The project’s emphasis has been to focus on interventions which can, in the short-run, address the unreliable availability of vitamin and mineral supplies while working with stakeholders to ameliorate the long-term systemic issues. An assessment, stakeholder meetings, and intervention plan were undertaken in India with technical assistance (TA) provided to Jharkhand as well as follow-up TA to Uttar Pradesh by A2Z’s subcontractor, MSH.

The innovations and package of tools emerging from the supply systems assessments and interventions have been used to develop a draft generic package of tools for the global community. The framework upon which the tool is based encompasses: 1) assessing micronutrient and anemia reduction supply systems, 2) identifying gaps, 3) analyzing options, 4) developing a list of potential interventions, 5) selecting priority interventions, 6) implementing interventions, and 7) evaluating to assess and document impact.

Despite these advances, challenges to improving and using HMIS data remain, especially regarding the following: reporting data up from districts to the national level to calculate national coverage; distinguishing between mass campaign/distribution round vitamin A data and routine vitamin A data in calculating coverage rates; maintaining the involvement and commitment of MOH and in-country partners in using the standardized monitoring tools and formats; and using previous round data for improved planning, budgeting, and targeting.

**Costing:** A2Z’s costing work in Ethiopia on the Child Health Week (CHW) program demonstrated that significant economies of scope could be realized by adding services to a stand-alone vitamin A supplementation program. Building on this work, a district planning and budgeting tool will be finalized for Tanzania that will provide specific, detailed protocols that can help districts better plan their activities and guide them in allocating adequate resources to ensure better maintenance of an effectively functioning vitamin A and deworming program. A2Z will use lessons learned from Tanzania to modify the guidelines for implementing the costing tool and promote its use in other countries, as was done in Uganda (See Box 3).

**BOX 3.**
In Africa, costing work undertaken previously with global partners MI and UNICEF in Ethiopia produced a planning and budgeting tool (PBT) that field staff in Tanzania expected would be helpful in their country’s transition to a decentralized system. The PBT was then tailored to the Tanzania context and working with UNICEF personnel from all 126 districts in the country were trained in its use. At the national level, Ministry of Treasury staff recognized this tool as highly relevant and potentially useful to their mandatory planning and reporting system, PLANREP-2. The PBT tool has been disseminated to Uganda where A2Z staff informed the Ministry of Health staff of its usefulness in Tanzania. The MOH staff recognized its potential and decided to modify and field-test the tool in selected districts.

**Leadership in Global Coordination:** A2Z participated in two global alliances designed to strengthen VAS programs. During the project’s first year, A2Z assumed the coordinating and chairing functions for the Global Alliance for Vitamin A (GAVA). Traditionally this group had focused on meeting short-term gaps in vitamin A supplement supply; however, to broaden participation and the scope of the group, A2Z suggested a rotating chair. In FY07 A2Z took the leadership role and coordinated six working groups on issues of twice-annual vitamin A supplementation including coverage gaps, data sharing/web site, monitoring coverage, advocacy, planning for the Micronutrient Forum, costing and finance, and optimal intervention mixes. A2Z surveyed potential data users to assess the needs for the data sharing/website working group.

Along with other partners, A2Z has disseminated information and updated guidelines through GAVA. For example, a GAVA Satellite session at the Istanbul Forum titled *Critical Issues in Strengthening Micronutrient Programming* served as the venue for global partners to describe and discuss the progress being made on approaches to and tools being used in monitoring and evaluating VAS programs. To build consensus on using standardized monitoring indicators for VAS, GAVA distributed for comment the national VAS monitoring guide that A2Z developed in collaboration with MI. An accompanying district-level guide was drafted and transferred to MI to incorporate into a revised VAS tool kit for Africa. The GAVA network has also served as a means of gathering information and building consensus on initiatives related to strengthening sustainability.

The project also participated in five of nine working groups established by the Global Alliance for Improving...
Nutrition (GAIN) to develop the Ten-Year Strategy for the Bill and Melinda Gates Foundation. A2Z has played a particularly active role in the working groups for fortification, supplementation, monitoring, and advocacy. In addition to these global groups, A2Z participated in regional working groups for Africa and Latin America.

Lessons Learned
In relation to the available evidence on implementation, the review of micronutrient program experience prepared for the FY08 Innocenti meeting concluded the following:

1. Programs have been able to demonstrate achievement of high VAS coverage, currently using a twice-yearly approach.

2. Programs have been able to demonstrate some consistency in coverage estimates between reported and survey coverage, with survey coverage generally slightly lower.

3. Regional variation in coverage remains, and concern exists that even with high coverage, those not dosed may represent the most vulnerable.

4. Programs achieving high coverage have demonstrated reductions in the percent of children with low serum retinol, although the magnitude of this change is not as high as might be expected.

5. Programs with high coverage also demonstrated improvements in functional indicators, though these were mostly assessed in small studies.

6. Two studies demonstrated a plausible association between VAS and mortality decline.

Gaps and Future Direction
Many gaps still exist as barriers to achieving sustained high coverage of twice annual vitamin A, particularly high mortality countries. Increased awareness is needed among key decision makers, donors, and high burden countries to generate recognition of the importance of and support for twice-annual VAS programs specifically:

- The evidence base for impact on clinical indicators of VAD (i.e. xerophthalmia) is strong and for child mortality is highly plausible
- The implementation of twice-annual delivery mechanisms has been shown to be highly cost effective in achieving high coverage, not just for VAS, but for other key child survival interventions as well

- Tools now exist to support transfer and scale up of this intervention in countries where success has not yet been achieved
- Continued external support is urgently needed to realize the potential this intervention has in contributing to achieving MDGs.

Communication among the three constituencies working on MN programs (implementers, donors/global partners, and academics) should be strengthened. An initial step should be to increase implementer participation in global fora that currently are making decisions affecting programs. Increased collaboration among the global partners is required to develop, share, and utilize common approaches to VAS programming. The first three years of the project, A2Z has helped strengthen collaboration among partners.

The key focus areas to strengthen twice-annual VAS delivery mechanisms for children 6–59 months in the future include:

1. Transferring capacity for planning, management, and supervision to district-level health staff while maintaining a central leadership unit for resource planning and advocacy

2. Ensuring supplies are managed and HMIS data used in district level planning

3. Developing innovative financing mechanisms such as those available through World Bank loans.

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BOX 4. Consensus on Vitamin A Supplementation reached by Innocenti Meeting – September 2008

Agreement: Vitamin A programs can be implemented at scale and are likely to have an impact on <5y mortality in deficient populations when high coverage rates are achieved.

Actions Needed: Focus program efforts on achieving and sustaining high coverage

Implications: 1) Identify & leverage lessons learned from vitamin A & other micronutrient successes; 2) Monitor coverage rates, rather than <5y mortality or retinol levels; 3) For high coverage areas (>80%), focus on program sustainability; 4) Transition to universal coverage including reaching infants at 6 mo; and 5) For low coverage areas (<80%), focus on coverage rate improvement

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NEWBORN VITAMIN A SUPPLEMENTATION (NVAS)

USAID-supported research in India, Indonesia, and most recently Bangladesh established the efficacy of newborn vitamin A supplementation (NVAS) in reducing mortality of infants in the first six months of life in South Asia. In 2008, USAID through A2Z, led a process to transition this research finding to test program implementation.

A2Z facilitated global coordination and initiated discussions in countries with interest in exploring options for introducing newborn vitamin A supplementation. Saving Newborn Lives (SNL)/Save the Children, ACCESS, UNICEF, Canadian International Development Agency (CIDA), Johns Hopkins University (JHU), and the Micronutrient Initiative (MI) have been involved as partners. A2Z coordinated ongoing dialogue that ensured that research findings were translated appropriately to public health applications at global and country levels. A list of reference materials on key research in this area was assembled and made available through the web and include:

- Compilation of key references on efficacy and safety of NVAS
- Frequently Asked Questions (FAQ) on NVAS for stakeholders at global and country level
- Concepts and Guidelines for Developing and Evaluating Implementation Models for NVAS in South Asia

During FY08, WHO initiated a policy review of NVAS. This process has resulted in some public debate and contention about the interpretation of research findings. The Forum is participating in efforts to determine future research needs.

At country level, A2Z in collaboration with its global and country partners has planned, organized, and followed up sensitization meetings and technical updates in Nepal and Bangladesh. These meetings were successful in gathering stakeholder and policy maker support for drafting and approving policies to test potential implementation models for NVAS.

Nepal

In December 2007, Nepal’s Ministry of Health (MOH), with support from A2Z and the Nepal Family Health Project (NFHP), hosted a technical update meeting that provided an opportunity for key newborn care stakeholders in the country to consider thoroughly the scientific evidence on the intervention’s efficacy and safety. Field visits were also made to observe selected newborn care current field studies being undertaken in Nepal.

Stakeholders participating in the technical update meeting included key MOH officials, technical experts from Institute of Medicine, Mother Infant Research Activities (MIRA) Study, Nepal Nutrition Intervention Project-Sarlahi (NNIPS), Morang Innovative Neonatal Intervention (MINI) Program and research institutions, international donors and global partners, including WHO, UNICEF, USAID (Washington and Nepal), MI, Save the Children/US, CARE, PLAN, and John Hopkins University researchers. A2Z also invited government officials and researchers from Bangladesh and Pakistan.

A2Z prepared a draft proposal, “Development of a Model for Newborn Vitamin A Supplementation (NVAS) in Nepal: A proposal for implementation in 4 districts,” that was shared with NFHP, UNICEF, USAID, and the MOH. This was used to request policy approval, which was granted by the MOH in February 2008.

A2Z has leveraged financial and technical support from Canadian International Development Agency (CIDA), USAID/Nepal, UNICEF, and the Micronutrient Initiative (MI). NFHP supports field operations and implementation, and MI will supply the 50,000 IU capsules needed for this intervention. UNICEF, through CIDA, has provided operating costs.

Challenges

Activities in Nepal have been delayed because protocols were still being tested and local implementing partners (NFHP and UNICEF) engaged in extended discussions with the MOH on selecting the focus districts and allocating funds.

Bangladesh

With financial and technical support from A2Z, the JHU/JiVitA team provided in-country logistic and operational support to a series of technical update meetings for key stakeholders and other interested partners in Dhaka in December 2007. These meetings were planned by an informal group of stakeholders including JHU/JiVitA, MI, Saving Newborn Lives/Save the Children (country and regional representatives), ACCESS, and Helen Keller International (HKI). This process raised awareness of NVAS and engaged stakeholders in the policy process. The evidence supporting efficacy was generally accepted. Safety concerns were understood, discussed, and addressed with the participants during the formal briefing and discussion.

In July 2008, JHU/JiVitA in partnership with the Directorate General of Health Services, MI, A2Z, USAID, BRAC, and HKI held a dissemination seminar titled ‘Newborn Vitamin A Supplementation Reduces Infant Mortality in Rural Bangladesh’ in Dhaka. The seminar aimed to disseminate the NVAS efficacy study findings in Bangladesh and their publication in the journal Pediatrics. It was also an opportunity to discuss implications of the NVAS findings for Bangladesh and to provide a rationale for operations research to develop and evaluate potential delivery models.
The seminar also sought MOH endorsement to conduct the NVAS feasibility activities and to secure MOH representation on the NVAS Technical Advisory Group (TAG) to oversee operations research and scale up NVAS nationwide.

The current secretary of the Ministry of Health and Family Welfare and the Directorate General of Health Services participated as did country stakeholders from the National Nutrition Program, and the Institute of Public Health Nutrition.

Final recommendations and a concept paper for pilot testing the NVAS delivery models were developed and submitted in September 2008 to the MOHFW seeking approval for the NVAS pilot testing in six upazillas.

**Challenges**

Regular changes in senior government officials in Bangladesh have delayed the testing of delivery models. JHU/JiVitA has offered multiple technical update seminars and engaged in intense advocacy with scientific and key political decision makers.

**Future Direction**

WHO leadership in the policy review process will determine next steps. USAID support for developing and evaluating potential delivery mechanisms for reaching newborns in the first days of life to delivery interventions such as NVAS, is expected to continue.

**FOOD FORTIFICATION**

Since 2005 when A2Z started, the number of international agencies supporting food fortification in countries has grown enormously and coordination has improved significantly. This has resulted in more country programs and better tools. Greater attention is being given to the quality of food fortification programs and their impact on reducing dietary gaps. The global food crisis has emerged as a factor.

**Challenge**

The food industry adds vitamins and minerals to its products for several purposes: to bring back micronutrients that are lost during production (restoration); to duplicate the nutritional value of natural products that are replaced (equivalence); and to incorporate nutrients that are absent or that are present in lower amounts in the natural ingredients (enrichment). In all such cases, the end result is food fortification.

Three types of food fortification have been identified: **mass** (staples and condiments, mainly promoted by governments as public health policy), **targeted** (complementary foods and products aimed at specific population groups) and **market-driven** (a strategy of the food industry to attract customer attention to a product's improved nutritional value). The increased intake through these and other nutritional interventions, e.g. supplementation, should be sufficient to fulfill the required daily needs or estimated average requirements (EAR) of most individuals for micronutrients. Levels should not be so high as to expose some individuals in the same population to intakes above the tolerable upper intake levels (UL). To be safe and efficacious, food fortification should be planned, regulated, and well supervised.

A justifiable, effective, cost-efficient, and sustainable food fortification program requires integrated efforts of various groups in a real partnership including private, public, research, and social sectors. Figure 5 illustrates different activities required in food fortification programs. Because a logical sequence of these different activities is not often followed and some steps are missed, food fortification projects can be ineffective public health measures.

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**Figure 5. Components of a public health food fortification program**

<table>
<thead>
<tr>
<th>Components of a Fortification Program</th>
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<tbody>
<tr>
<td>An effective program</td>
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<td>Program Evaluation</td>
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<td>Effectiveness Monitoring</td>
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<td>Performance Monitoring</td>
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<td>Governmental Inspection</td>
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<td>Distribution, Marketing, Social Campaigns</td>
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<td>Quality Control and Assurance - Factories</td>
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<td>Implementation and Production of Fortified Foods</td>
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<td>Implementation and Production of Micronutrient Premixes</td>
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<tr>
<td>National Policies: Standards &amp; Regulations</td>
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<tr>
<td>Science (an efficacy trial), and Assessment</td>
</tr>
</tbody>
</table>

Source: Dary, 2008
Reasons for the nutritional/health impact. Successful programs are those that: a) provide sufficient additional intake of a required micronutrient (size of the provision); b) fill the nutritional gap of specific micronutrients (magnitude of need); and c) reach a significant proportion of the target population (extension of intervention - coverage). One fortification vehicle rarely fills all these requirements. However, in most cases adding micronutrients to foods can satisfy part of the nutritional need of a proportion of the population. The magnitude of the benefit depends on dietary habits, the degree of the deficiency, and the market penetration of the fortified product. In many circumstances complementary measures such as vitamin A supplementation should be simultaneously implemented to reach the public health goal. To ensure suitable programmatic combinations and to avoid risks due to excessive intakes, monitoring and evaluation are essential.

The A2Z Approach: Acknowledging the complexity of food fortification programs, A2Z has given equal attention to all components to promote safe, efficacious, and sustainable interventions.

Evidence
A recent review of several fortification program case studies provides evidence that well-planned and managed fortification programs can contribute to reducing micronutrient deficiencies (Dary et al, 2008).

Salt iodization: The evidence from several national salt iodization programs demonstrated that: 1) such programs could achieve high coverage; and 2) salt used at the household level could contain adequate iodine to improve iodine intake (usually 200% EAR to the average person) to prevent goiter and other iodine deficiency disorders.

Sugar fortification with vitamin A: In Guatemala and Nicaragua, program coverage of vitamin A-fortified sugar was high (over 75%). The fortificant level provided, on average, over 150 percent of the EAR. At this coverage and fortification level, the population intake was adequate to address vitamin A deficiency for the population 36 months of age and older. Preventive supplementation though is still used for children 6–24 months to complete the provision and coverage of the sugar fortification program. Guatemala recorded a marked decrease in xerophthalmia, and Nicaragua reported a reduction in the prevalence of low serum retinol in preschool age children. These successes have been maintained in both countries for the last 15 years.

Flour fortification with folic acid: Data from programs in Chile and South Africa showed a decrease in neural tube defects following the introduction of flours fortified with folic acid. Increase in the serum folate levels in Chile and in one province of South Africa demonstrates that folate intake was raised (50–200% EAR) when folic acid was added to flours.

Food and condiment fortification with iron: Findings from programs in Chile, China and Venezuela provide some evidence, though weak, linking iron fortified maize flour, wheat flour, and soy sauce to anemia reduction. Efficacy studies using other foods as vehicles of iron and other micronutrients suggest that the increment in iron intake should be more than 60 percent of the EAR to cause changes in biomarkers of iron status, and more than 90 percent to have demonstrated a clear reduction in anemia rates. Efficacy and effectiveness trials suggest that micronutrient powders used for home fortification or fortified complementary foods are a promising strategy for preventing anemia in older infants and young children because they provide large amounts of bioavailable iron to the target population.

Goal
No globally agreed on targets or goals currently exist. In general food fortification aims to increase the supply of micronutrients through the diet and so provide a public health benefit with minimal risk to health. Well-designed programs contribute to reducing child mortality and malnutrition and human morbidity, improving productivity. USAID is committed to promoting comprehensive food fortification projects that pay adequate attention to all food fortification components. A2Z actions are particularly focused on strengthening public sector capacities, which are usually the weakest components of these programs. Furthermore, A2Z emphasizes introducing comprehensive monitoring and evaluation systems for all nutritional interventions, so that effective and sustainable public health nutrition programs are implemented.

Strategy
Achieving this goal involves collaborating closely with institutions and organizations from public and private sectors, including researchers and consumers, involved in food fortification. A2Z provides technical assistance at global, regional and country levels to design and analyze policies and strategies with counterparts and to develop standards, guidelines, and practical tools for quality control, enforcement, and monitoring. The project shares its experience and lessons learned and builds capacity in other countries through technical workshops and training sessions to accelerate and optimize the application of these interventions as public health and nutrition measures. Finally, A2Z disseminates the produced materials and documented cases to the international community to fill gaps in knowledge, improve programming practices, and strengthen global support for micronutrient programs.

Highlights of A2Z Food Fortification Activities
• Systematized data analysis of the Household Income and Expenditure Surveys (HIES) to identify food fortification vehicles, and to propose fortification formulas
• **Prepared articles and reports** to recognize the importance of the additional intake, bioavailability, and bioefficacy to predict the impact of food fortification programs

• **Published documents** that describe the importance of conducting a comprehensive technical and economical assessment before promoting wide-scale fortification programs (e.g., rice fortification)

• **Developed the Food Fortification Formulator** to disseminate principles and tools that support design, regulation, implementation, and control of food fortification programs

• **Advocated** to extend food fortification in developing countries: oil in Uganda and the Philippines; sugar in Malawi and Ecuador; and flours in Tanzania, the Philippines, and the West Bank

• **Developed tools (manuals) and training** to strengthen food control actions by food industries and governmental authorities

• **Facilitated practical experience** at the national level to implement food inspection and improve laboratory reliability

• **Raised awareness** about the appropriateness of social marketing campaigns of fortified products to avoid exaggeration and misleading messages

• **Promoted global discussion** to build consensus on M&E terms and concepts, emphasize the need to assess micronutrient intake as an important component of the food fortification programs, and encourage use of performance (process) and effectiveness (impact) monitoring and evaluation of food fortification programs

**Results**

A2Z’s global and country activities in food fortification support and inform each other and contribute to results at both levels. Examples of ways A2Z has built the capacity of institutions to design and implement the program components outlined in Figure 5 are summarized below.

**Science and Assessment:**

- **A practical method to identify candidate food vehicles and formulations for mass fortification.** Precise determination of the nutritional gap and potential food fortification vehicles is commonly lacking in many countries considering food fortification. A2Z collaborated with researchers at Emory University to use household income and expenditure survey information to establish a practical process to assess the need and the potential benefit of mass fortification.

  The World Bank, Micronutrient Initiative, and PAHO adopted the method and are applying it in many countries. In partnership with GAIN, the World Food Program, and Makerere University in Uganda, A2Z is validating this method against traditional food consumption surveys. A2Z plans to use the same method for other countries in East, Central, and Southern Africa (ECSA) as part of the technical assistance to the ECSA Secretariat. The method was used in Cambodia to assess the potential impact and coverage of food fortification vehicles for several staples. Figure 6 shows the results for sugar and fish sauce.

**Figure 6. Coverage and potential impact (in terms of estimated average requirement) if sugar and fish sauce are fortified in Cambodia**

- **Coverage and potential impact of fortified sugar**

  ![Coverage and potential impact of fortified sugar](image)

- **Coverage and potential impact of fortified fish sauce**

  ![Coverage and potential impact of fortified fish sauce](image)

**Source:** Dary, 2008

- **Literature review and case studies.** The project advanced the understanding of food fortification through a published literature review of food fortification for managing nutritional anemia and four case studies of the technical feasibility, cost, and experience of rice fortification in China, Costa Rica, the Philippines, and the United States.
The rice fortification report was prepared with the US-based Institute of Food Technologists. The report has been translated into Spanish by Pan American Health Organization (PAHO), and it is now being used in feasibility studies of rice fortification in Nicaragua and Panama.

Standards and Regulations:
- **The Food Fortification Formulator:** This spreadsheet tool, available on the websites of A2Z, ECSA, and the World Food Program for Latin America, is designed to ensure both safety and maximum efficacy of micronutrient levels in mass fortification, and to measure the potential public health impact of fortified foods. The tool currently can be applied to salt, oil, sugar, two types of wheat flour, and three types of maize flour. Training sessions to promote tool use have been offered at ECSA and in some of its member countries. Similar training activities were held in Central and South America sponsored by INCAP and PAHO, respectively.
- **ECSA Food Fortification Guidelines:** A2Z supported several workshops in the ECSA region to establish common formulations for mass fortification based on the usual consumption pattern. Kenya, Malawi, Tanzania, and Uganda have used these regional guidelines to formulate their national standards and regulations.

Production of Micronutrient Premixes:
- **ECSA Regional Certification Procedure:** Program quality depends largely on the quality of the micronutrient premix. Most countries do not regulate and control this product. To address the problem, A2Z is supporting ECSA to establish a regional system to certify the micronutrient premix. A similar effort will soon be initiated in the West Bank.

Production of Fortified Foods:
- **Collaboration to Implement and Improve National Food Fortification Programs:** A2Z is collaborating with other institutions to introduce adequate fortification practices in food industries. Examples include the wheat flour fortification project sponsored by GAIN in Uganda, and salt iodization in Cambodia under UNICEF leadership and in Guinea under HKI leadership. A2Z is working directly with the Palestinian Authority to fortify wheat flour and to support market-driven fortification in the West Bank.
- **Advocacy for Sugar Fortification in Malawi:** A2Z collaborated with the Malawian offices of UNICEF and USAID to promote sugar fortification with vitamin A. As a result, Malawi has started preparatory steps to introduce this intervention.
- **Advocacy for Wheat and Maize Flour Fortifications in Tanzania:** A2Z and ECSA are working together with a National Food Fortification Working Group in Tanzania to introduce fortified wheat and maize flour manufactured by large industries in the country.
- **Improved Oil and Wheat Flour Fortification Programs in the Philippines:** A2Z has continued the work of its predecessors with the government of the Philippines in implementing its mandatory programs, especially oil and wheat flour fortification.

Quality Control and Assurance (QC/QA):
- **Training to Food Industry Employees:** A2Z provided technical instructions to the oil industry of Uganda and the wheat flour industry of the West Bank to strengthen their quality control and assurance activities. The oil and wheat flour industries of the Philippines also received some training.
- **Manuals for Food Control of Fortification Programs:** A2Z worked with ECSA to produce several food control manuals that cover different stages of the fortification process: salt (small and large operations), oil, sugar, wheat flour, and maize flour (small and large operations). INCAP and UNICEF/Guatemala translated most of these manuals into Spanish for Central America.

Governmental Inspection:
- **Manuals to Inspect and Audit Fortified Foods:** A2Z worked with ECSA to prepare several manuals for food inspection at the factory, importation sites, and retail stores and a manual for the most common analytical assays used in mass fortification. Training workshops on the use of these manuals were held at ECSA, and in Kenya, Malawi, and Tanzania. Many manuals, translated into Spanish by INCAP and UNICEF/Guatemala, have been adapted and validated for Central America.
- **Food Control Rounds in Uganda:** A2Z provided technical assistance to develop and apply food control manuals for oil, salt, maize, and wheat flours in Uganda. Two rounds of data collection were completed and most provinces were surveyed. This experience will serve as a model for other countries in the ECSA region for introducing this system of food control.
- **Laboratory Proficiency Testing (LPT) Exercise in the ECSA Region:** A2Z and ECSA completed two rounds of proficiency testing exercises with a network of laboratories that support food fortification programs in Kenya, Malawi, Tanzania, Uganda, and Zambia. The Uganda Industry Research Institute (UIRI) laboratory based in the Ministry of Industry and Economy coordinated the activity. The exercise examined the iodine content in salt; vitamin
A in oil, sugar, and flours; and iron in flours. The tests confirmed the analytical reliability of some laboratories. Other labs are working now to improve their performance based on the results of the exercise. Figure 7 above shows some results of the second round of the LPT exercise.

**Distribution, Marketing and Social Campaigns:**
- **Branding:** The A2Z office in the Philippines continued working with the national authorities to use and disseminate the Sangkap Pinoy seal to identify approved fortified products, that cover both branded staples and market-driven fortified products. Uganda also uses a seal to identify the fortified oil and is expected to do the same for other fortified products, because the country is starting a voluntary mass-fortification program. Results of this food control system determined that in 2008 more than 90 percent of vegetable oil in retail stores throughout the country contained vitamin A.

**Performance and Effectiveness Monitoring:**
- **Proposal for Performance Monitoring in Uganda:** A2Z is discussing with CDC’s IMPPaCT project an activity to design, plan, and introduce a system to monitor and evaluate food fortification programs in Uganda to determine quality and coverage of the interventions and changes in impact indicators.
- **Dietary and Biochemical Assessment of Micronutrients in the West Bank:** A2Z conducted a food/micronutrient survey and collected serum samples in communities of Hebron and Gaza in 2005 as part of its support to the West Bank. The results provide a situational assessment of nutrition at that time and can be used to review and readjust the fortification formulation of wheat flour, introduce complementary programs, and design a permanent surveillance system currently being discussed. Figure 8 shows the preliminary results this study.

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**Figure 7. Performance of country laboratories in the second round of the ECSA LPT-exercise**

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**Figure 8. Micronutrient inadequacy of Palestinian children living in Hebron and Gaza**

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**Program Evaluation:**
- **Cost Analysis of Oil and Sugar Fortification in Uganda:** A2Z began creating evaluation tools and procedures to develop cost estimates for oil and sugar fortification programs in Uganda.
- **Monitoring and Evaluation Workshops:** In July 2006 A2Z organized an inter-institutional meeting to discuss general M&E concepts and a framework as applied to food fortification programs. A subsequent meeting to analyze the importance of measuring food intake for diagnostic assessment and M&E food fortification programs was held in August 2007.

**Gaps and Future Direction**
Critical analysis of current programs indicates gaps in food fortification. The following list identifies some pending issues—grouped by micronutrient and component—that A2Z and other partners need to address to help overcome some of these limitations.
Iodine: Additional information is needed on the iodine status of pregnant women whose requirements may be greater than the iodine supplied by programs aimed at the general population. Finding other strategies to cover, in a more permanent and efficient way, populations that do not have access to industrially-produced iodized salt is also important. Indicators of the success of salt iodization programs should be reviewed because target levels must be tailored to country-specific needs.

Vitamin A: Providing vitamin A through several interventions (mass-, targeted- and market-driven fortification, as well as periodical supplementation) should be carefully assessed to reach the most optimal combination of approaches and to avoid unnecessary excesses.

Folic Acid: The concern regarding adverse effects associated with high intakes of folic acid is extending to the scientific and public health environments worldwide, and hence interventions that provide this substance should be based on the prior assessment of the original folate status and the estimation of the nutritional gap that should be corrected. Serum folate seems to be the appropriate biomarker for this objective.

Iron: The low bioavailability of minerals, including iron, in most diets in developing countries requires a serious review of policies rooted in food based approaches, because the projected results are seemingly higher than the real potential benefits. Novel iron interventions may be needed to overcome these constraints.

Other micronutrients: Micronutrients are complex entities; many negative consequences of micronutrient deficiencies are due to inadequacies as mentioned above. In the absence of biomarkers of status, correcting deficient intakes of micronutrients would help to improve the human diet in the developing world.

Micronutrients in a world at risk of insufficient foods: World population growth, coupled with global warming and the reduction in availability of food for human consumption, are creating conditions that further reduce potential for dietary diversity. Surveillance of the micronutrient status of populations should be maintained together with the attention to supply of sufficient foods (sources of energy and protein). Monitoring and evaluation of the human diet, and studying the evolution of a population’s nutritional status will be increasingly important.

Micronutrients in a double-burdened world: Overweight and obesity are both rapidly increasing even in poor countries. This is occurring at a time when many products being fortified are foods whose consumption is not recommended (‘junk’ foods). This situation merits special attention to health claims and social-marketing messages associated with the mass- and market-driven fortification programs. Establishing and enforcing regulations and standards are priority actions for food fortification programs.

Coverage of groups without access to fortified foods: Poor individuals, rural populations, and small children are often the least likely to benefit from the micronutrients supplied through mass-fortification. Designing complementary strategies and interventions is a challenging future task and one that needs to consider at-risk or inaccessible populations not currently reached by existing programs.

Reviewing standards and regulations of mass-fortification: Experience in several countries suggests that current food fortification standards and regulations deserve to be reviewed, because they do not reflect the realities of the technological processes. Current stipulations are creating conflicts between the government authorities and the food industry.

Strengthening food control systems: Success of food fortification programs depends on the quality of the products marketed and the compliance with the technical specifications. Both the food industry and the public sector need to improve their food control procedures to ensure the expected results of food fortification programs are reached. Assessing food quality at the consumer level should be part of monitoring and evaluation efforts.

Establishing reliable and permanent monitoring and evaluation systems: The human environment is changing rapidly; old deficiencies may disappear while new risks may emerge. Countries need to continually assess the evolution of human nutrition and health. Comprehensive, integrated, and regular surveillance systems should be promoted and adopted in all countries and regions to take appropriate and timely decisions.

Publishing periodic reports: Program performance and the impact of food fortification should be well documented and disseminated. This will provide recognition and help assure permanence of food fortification programs.
Box 5. Consensus on Food Fortification reached by Innocenti Meeting – September 2008

**Agreement:** Fortification is an important and cost-effective intervention to enhance MN intake and is complementary to supplementation and other interventions. Fortification has shown to be successful in at-risk populations for iodine in salt, vitamin A in sugar, and folic acid in cereals flours in context-specific settings. In most settings, fortification programs will provide a proportion of the needs for a proportion of the population at low incremental costs as it uses an existing delivery system.

**Actions Needed:** Identification of food vehicles, starting with centrally produced products, that reach an adequate proportion of the target populations and are consumed in adequate quantities.

**Implications:** 1) Strengthen food control, documentation, and monitoring and evaluation; 2) Form a technical group to review iron and zinc programs; 3) Disseminate and apply the updated WHO fortification guidelines.

**MATERNAL ANEMIA**

Since A2Z started in 2005, evidence has increased regarding maternal and perinatal mortality and low birth weight impact of maternal anemia. Several large scale programs have been launched and partnerships are growing at country and global levels with maternal health institutions.

**Challenge**

According to the Global Burden of Disease analysis (2006) and Lancet Nutrition series (2008), 115,000 of the 500,000 maternal deaths and a large number of perinatal deaths are attributable to maternal anemia each year (Figure 9). Using a different methodology, WHO found that 12.8 percent of maternal deaths in Asia are caused by anemia (WHO, 2006) (Figure 10). These facts are not well known and anemia programs have received less priority. According to Lancet (2005), maternal anemia increases the odds of neonatal/perinatal death and low birth weight (LBW) by two to four times over non-anemic mothers. A study in India found a strong association between hemoglobin levels in pregnant women and birth weight (Figure 11).

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Anemia limits oxygen supply to all vital organs, restricts fetal growth and can accelerate deaths from hemorrhage and infections that occur in pregnancy and during childbirth. Preventing anemia also reduces the need for blood transfusions that carry risks of HIV and other blood borne disease transmission and raises risks for women who may need surgical intervention. Anemia prevalence is high (Figure 12) and has not improved in many Asian and African countries. Reducing maternal anemia in pregnancy in high mortality settings can prevent a significant proportion of maternal deaths during childbirth. But coverage with proven anemia interventions remains low and strategies to reduce maternal mortality have focused on emergency obstetric care and deliveries by skilled birth attendants to the exclusion of preventive care in pregnancy.

**Figure 12. Anemia prevalence among pregnant women**

Source: Macro/DHS

### Evidence

To reduce anemia, proven interventions include iron supplements plus intermittent preventive treatment (IPT) for malaria and deworming medicine in areas where these infections are prevalent. Efficacy and effectiveness trials have shown these interventions to be effective and affordable.

Global guidelines for preventing anemia during pregnancy recommend 60 mg of iron and 400ug of folic acid given as a combined tablet (WHO, 1998 and 2001); two doses of sulfadoxine pyrimethamine (SP) for IPT in malaria endemic countries (WHO, 2004) and deworming using Albendazole for hookworm (WHO and Lancet, 2004).

The global Malaria in Pregnancy (MIP) and Neglected Tropical Diseases (NTD) initiatives are accelerating coverage with IPT and deworming in pregnancy, respectively. However, iron supplementation has received less attention. Figure 13 shows that anemia interventions have low coverage in settings such as India and Uganda. Supply systems for iron folic acid supplements are weak and result in frequent stock outs. Health providers do not counsel women adequately to complete at least 90 doses per pregnancy. As a result, only a few countries can claim successful prenatal anemia control programs.

**Figure 13. Coverage of Anemia Interventions in Pregnancy**

Source: A2Z Baseline Surveys

India, Nicaragua, Peru, and Thailand have shown that programs can successfully reduce anemia when supplies of iron, malaria, and deworming medicines accompanied by education effectively reach women and adolescents in high anemia prevalence areas. During pregnancy, the iron intake of very few women is sufficient to meet their increased requirements and findings indicate that maternal iron supplementation should remain a high priority.

### Goal

Millenium Development Goal 5 (MDG 5) is to reduce maternal mortality (from 1990 statistics) by 75 percent by the year 2015. USAID’s MCH programmatic strategy aims to achieve 25 percent reduction in maternal mortality rate (MMR) in 30 high burden countries by 2013 (MCH Report to Congress, 2008). USAID aims to increase the number of countries showing reductions in prenatal anemia prevalence and increased coverage with antenatal care (ANC) that includes a package of iron, deworming and malaria drugs. A2Z aims to document impacts in at least three sites, launch programs at scale in another three to five countries, and help develop a global network to support maternal anemia reduction.

### Strategy

A2Z’s main strategy is to strengthen anemia interventions within ANC since infrastructure and access to the population of pregnant women already exists. In addition, private sector and NGO channels are being explored to expand and reinforce anemia control measures. At the global level, the project advocates to mainstream anemia interventions among...
institutions working to reduce MMR. A large knowledge gap exists among key maternal health partners regarding recent analysis that shows a substantial role for anemia in maternal mortality. In the absence of another entity who could advocate for maternal anemia reductions, A2Z is synthesizing and disseminating the evidence and raising awareness among global partners about need for strengthening ANC. The advocacy goal then is to motivate an alliance of concerned health experts to adopt the cause to reduce anemia in pregnancy.

At the country level, A2Z focuses on countries with the following characteristics: high burden of maternal mortality and maternal anemia, interest within government and other country stakeholders, and an enabling policy environment. The intervention involves addressing policy and supply gaps for IFA, IPT, and deworming; building partnerships with maternal health institutions to reach larger geographic areas; strengthening capacity of health managers and providers through training and tools; improving routine monitoring of ANC and anemia intervention coverage; and expanding community awareness regarding the importance of maternal anemia and adherence to protocols. Since most governments already have policy statements and program activities noted within their health plans, A2Z focuses on helping governments assign greater priority to anemia, identifying specific implementation barriers, and addressing them.

The process of rolling out maternal anemia strengthening activities involves:

- Rapid assessments to help identify and systematically address current gaps specifically to raise coverage with IFA, deworming and IPT
- A coordinated multi-stakeholder platform/framework that aims to improve antenatal services
- Diagnostics that address supply systems and supply gaps
- Reviewing existing HMIS, supervision and information, education, and communication (IEC) tools
- Developing tools for managers, supervisors and providers followed by training and on-site support/follow up
- Behavior change communication (BCC) and community awareness raising, that includes involving NGOs and the private sector
- Monitoring and evaluating existing ANC and coverage data, and when possible anemia prevalence measurements. Some countries have conducted rapid mini surveys of processes to determine suitability of the above actions.

GLOBAL RESULTS
A2Z’s global contributions include:

- Completing planning steps to form an informal network of country, regional and global public health professionals and institutions with a common interest in maternal anemia reduction (2008).
- Conducting advocacy with health sector leaders and partner agencies from 14 countries at the East Central and Southern Africa (ECSA) Health Community’s Directors Joint Consultative Committee Meeting in Arusha, Tanzania of the maternal mortality attributable to anemia and recent findings from studies in Zanzibar (2008).
- Reviewing and disseminating national iron and iron folic acid (IFA) supplementation programs in Nicaragua and Thailand and a large-scale weekly multiple-micronutrient (MMN) effectiveness study in Peru (Innocenti Meeting 2008).
- Presenting and discussing maternal mortality/anemia associations and micronutrient data needs at the Maternal and Perinatal Health Epidemiology Reference Group (MPHERG) planning meeting, WHO Geneva (2008). This led to a joint A2Z/WHO funded meeting planned for FY 2009.
- Giving multiple presentations on the maternal mortality/anemia evidence and programmatic approaches for USAID, GAIN, Gates Foundation, WHO, other donors and PVO/NGOs at global, regional, and country levels (2005–2008).

COUNTRY RESULTS
The A2Z project works in the following USAID MCH priority countries on maternal anemia issues: Cambodia, India, Philippines, Tanzania, and Uganda. Important gains in operational processes and coverage indicate improved ANC and likelihood of public health impact (Figures 14 and 15 on the following page). How did the project achieve these impacts?

- Policies and guidelines: In Cambodia, India and the Philippines the project advanced strengthened policy guidelines. For example, Cambodia developed, published and disseminated the first ever National Guidelines for Prevention and Control of Anemia in Pregnant and Post Partum Women, and a National Anemia Policy.
Gaps and Future Direction

The contribution of iron deficiency anemia to maternal mortality was estimated at about 20 percent (Stoltzfus et al, 2004) but this analysis has not been widely accessible or understood and accepted by the global maternal health community. Further dialogue and discussion actions are needed with maternal health and nutrition experts about the magnitude of the risk due to anemia for maternal and perinatal health actions to inform policy and program planning, and strengthen advocacy to accelerate MDG5. Research gaps emerging from this discussion should be given priority.

Regarding interventions, experts agree that a package of interventions is likely to be more effective than single interventions due to the multiple causality of anemia. However, few convincing evaluations exist from large scale programs in different settings e.g. Asia and Africa. Among the intervention options, the role of fortified staple foods in fulfilling the total gap in pregnant women’s diets has been questioned, and specialized products targeted to pregnant women have not been fully tested. Iron/folic acid supplementation remains the intervention of choice. Discussion is needed to develop clear messages about multiple micronutrient supplementation, dosage and level of iron in tablets, and use of folic acid in malarious areas. Methods for addressing supply problems and behavior change approaches to improve adherence are high priorities for operational research. Systematic documentation of varied experiences can inform future programs. While anemia is relatively easily measured as an outcome for program evaluation, routine screening for anemia where it may be needed, is neither affordable nor feasible on a large scale in many countries. Current WHO guidelines recommend universal supplementation since the cost of screening outweighs its benefits.

Serious leadership gaps exist in country programs that support anemia reduction as the maternal health community has not prioritized preventive antenatal care interventions other than tetanus toxoid and IPT. At the global level, no organized group or alliance supports information exchange, much less guarantees supplies to assure program progress as is the case with vitamin A. Leadership development among senior maternal health officials in countries, and forming of an advocacy/coordination platform as an offshoot of maternal health groups would be valuable steps in the future.
Since A2Z began in 2005, several large-scale nutrition programs that aim to reduce anemia have been launched. Discussion and debate have intensified about delivery platforms to reach children 6–23 months at scale, alternative products to use, risks associated with iron supplementation in malarious areas, and screening approaches.

**Challenge**

More than a third of child deaths are attributable to undernutrition worldwide and 3.5 million deaths in children under 5 can be prevented with improved nutrition. Iron deficiency and poor feeding practices are common at the age when undernutrition and anemia prevalences accelerate.

Factors other than nutrient deficiencies causing anemia in children include malaria and helminthic infections. Often children are born with poor iron reserves and become anemic by six months of age. Figure 17 shows the high prevalence of anemia in pregnant women and children 6–23 months of age in A2Z presence countries. A package of interventions to improve iron intake, reduce worm prevalence and suppress malaria transmission can reduce anemia prevalence in children. Very few developing countries implement anemia prevention programs at any scale.

**Figure 16. Reduced developmental scores at ages 11–14 years, among infants with low iron**

![Figure 16](image)


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**Figure 17. Very high child anemia prevalence in A2Z presence countries**

![Figure 17](image)

Source: Macro/DHS
Evidence

Associations between poor development and micronutrient deficiencies in children are well established but the deficiencies usually occur in disadvantaged circumstances and ascertaining causal relationships is difficult. This lack of undisputable evidence has in part delayed action to address iron deficiency adequately. However, public health experts who have examined the evidence believe that anemia and iron deficiency can seriously compromize brain development and affect behavioral patterns in young children even in industrialized countries. Considering the high prevalence of anemia in young children even when compared with pregnant women, urgent action is warranted. Fortified infant foods and iron drops have supplemented diets and show reductions in anemia (Figure 18). The A2Z project is also collecting evidence from Cambodia and two sites in India on a package of interventions.

Based on a global review of efficacy and effectiveness trials, Sachdev and Gogia (2008) estimated the projected reductions in anemia prevalence with iron supplementation to be 38 percent to 62 percent in non-malarial regions. Deworming in areas of high worm prevalence has also shown reductions in anemia. Because children aged 6–23 months require both macro and micronutrients, a package of interventions including anthelmintics, micronutrients and improved complementary feeding has been recommended. A recent review of effective nutrition interventions for 6–23 month old children concluded that educational approaches can have modest effects in improving nutritional status, but a greater impact was seen when food or food supplements were also provided. The use of nutrient-rich and animal source food in particular has beneficial effects on growth and developmental outcomes. Besides increasing dietary diversity through animal foods, effective interventions to improve the nutrient quality of the local diet include (i) point of use enrichment, (ii) the use of appropriately fortified blended food, and (iii) supplementation.

A major challenge is to find a suitable program implementation platform or delivery channel to provide the package of interventions to all children aged 6–23 months in a country or state/province/district. This may include one or a combination of the following: immunization contacts starting at 6 months, twice annual Child Health Days where vitamin A and deworming are already being provided, monthly well-child visits to health centers using conditional cash transfers as an incentive, and commercial or subsidized marketing.
Goal
Goals for reducing undernutrition in children under three years of age are not well defined. No universally agreed upon goal exists for anemia reduction in young children. USAID seeks to increase the proportion of children with adequate hemoglobin, and increase the coverage of children with a package of iron supplements and deworming. A2Z aims to reduce the prevalence of anemia in its feasibility study sites by at least 25 percent. MDG1 for poverty reduction aims to reduce by half (from 1990 to 2015), the proportion of people suffering from hunger; and one indicator is underweight children. When child anemia programs are implemented in high undernutrition settings, improved feeding practices and reduction in underweight are both expected outcomes.

Strategy
In the context of three large scale, public health strategies (Cambodia, Jharkhand/India and UP/India), A2Z has launched feasibility studies to determine the most operationally viable approaches to reach children 6–23 months of age with iron/MN supplements, deworming, and nutrition education on infant and young child feeding.

The project conducted formative research, synthesized existing studies and established baselines in all study sites prior to launch. Governments in all three locations were closely engaged in developing and implementing these studies. A2Z will develop a viable basis for expanding child anemia to state and national levels by systematically documenting the impact of these interventions on anemia and feeding practices and identifying how to deliver the package within existing health and social services. Multiple stakeholders are involved as co-funders, in technical advisory roles, and/or in evaluating/documenting the studies. Formative research findings, discussions with Technical Advisory Groups, and subsequent field monitoring informed the intervention strategies.

Based on A2Z experience to date, the following steps illustrate how large scale programs can be designed and implemented for reducing child anemia.

Program Implementation Steps:

Start-Up:
• Determine
  • Epidemiology of childhood anemia
  • Nature and magnitude of dietary deficits
  • Current knowledge and practices related to anemia in children and interventions at provider and HH levels
  • Access to programs/services, markets
  • Products and formulations: composition, acceptability, etc.

Launching:
• Test delivery channels for feasibility
• Conduct advocacy and policy analysis
• Engage partners and stakeholders
• Develop tools and build capacity
• Assess and strengthen supply management

Systems Strengthening:
• Ensure adequate supplies
• Update counseling and provider skills
• Promote HMIS, M&E, and use of data
• Track and improve quality and coverage

Community Mobilization/Demand:
• Develop multi-stakeholder BCC strategy
• Design and produce IEC materials
• Implement multi-channel dissemination strategy

Evaluation and Re-design:
Evaluate and make appropriate changes to
• Coverage
• Quality
• Behavior
• Impact
• Effectiveness
• Cost-effectiveness

Results
At the global level, A2Z has dialogued with community-based organizations such as World Vision International (WV) to determine how intervention strategies for child anemia and nutrition can be mainstreamed within broad, multisectoral development programs. Considering the need to prevent iron deficiency from birth and the role of prenatal interventions, coupled with WV’s ability to provide follow up from pregnancy through infancy, a “-9 month to +24 month” program strategy was developed. WV headquarters has now adopted this strategy as the backbone for integrating other child survival interventions.

Preliminary results from the formative research and baseline studies in Jharkhand and UP are now available and conclusions to date are shown below.

Conclusion # 1. Childhood anemia affects over two-thirds of young children and shows no signs of declining without intervention programs.

Conclusion # 2. Iron deficiency in the diets of young children is a major factor in the causality of anemia, but high worm prevalence even at 6–23 months is an important cause (Figures 19, 20, and 21 on the following page).
Conclusion #3. Infant and young child feeding practices are extremely poor and must be addressed alongside improved iron/micronutrient intakes. See Figure 22.

Conclusion #4. Current coverage with anemia and child nutrition interventions for the 6–23 month age group is very poor (Figure 23).

Conclusion #5. Formative research is important in designing child anemia programs. The local epidemiology of anemia, food consumption practices, available program options and accessibility will determine choices of interventions, messages, and delivery channels.

Conclusion #6. Preliminary results show progress is being made in covering and enrolling children 6–23 months and in distributing iron supplements.

Conclusion #7. Dietary surveys are feasible and provide critical insights into the nature and magnitude of dietary deficits that are required for designing effective programs.
Gaps and Future Directions
The field of child anemia reduction is new programmatically and yet the prevalence of the deficiency and its potential for causing damage are large. Anemia deficiency occurs at a vulnerable phase of development and DHS surveys have, for the first time, provided a clear picture of the enormous magnitude of childhood anemia making this problem hard to ignore.

Guidelines on this topic are limited, however the implicit global strategy is to provide a package of infection control, multiple micronutrients, and infant feeding interventions for children aged 6–23 months. In Latin America, children consume an excess of macronutrients so micronutrient powders and other supplements may be sufficient. But in Asia and Africa energy gaps are huge and need to be addressed simultaneously. There are multiple approaches and products for filling dietary gaps and all options should be considered.

- The greatest challenge is finding an appropriate program delivery channel that reaches a high proportion of children. Most common available options are not ideally suited to the requirements of child anemia intervention packages.
- Managers make insufficient investments in formative research when designing a program. Choosing a vehicle to provide supplemental iron to children this age should be based on a careful assessment of products consumed by children or present in the home that can be fortified, or products whose consumption can be increased. The range and levels of nutrients that should be formulated in each setting are likely to differ. Dietary surveys to quantify nutritional intakes of young children are important but rarely conducted.
- In high infection areas, particularly malaria and worms, the intervention package should contain malaria control and deworming drugs. However major constraints exist related to supplies and coordination with malaria and parasite control programs. Research is needed to determine safe delivery channels for children in malarious areas. Screening every child to supplement only iron deficient children in not presently a viable option, and new simpler screening methods would be helpful.
- Strengthening child nutrition capacity among institutions is urgently needed as is building a cadre of future leaders in countries. Childhood anemia is not well integrated into child survival strategies since mortality from anemia has not been well established. The best documented impact from childhood anemia is on cognition and behavioral development. Building an alliance of development partners to respond to this issue has been a challenge.

Box 7. Outcomes from the Innocenti Meeting – September 2008

Agreement: Evidence from effectiveness studies shows that MN powders can reduce MN deficiencies for target populations when appropriately formulated. To realize the full potential of MN powders, they must be tailored to the specific needs of targeted populations.

Actions Needed: Improve micronutrient powder monitoring and evaluation

Implications: 1) Involve program implementers in Micronutrient Powders Task Force; 2) Secure funding for independent monitoring and evaluation to assess implementation, effectiveness, and cost-effectiveness of large scale programs to generate evidence to refine programs and maximizing their impact.

1 Note: “MN deficiencies” include iron deficiency and anemia; comments about powders also applies to iron supplementation programs.

III. Global Micronutrient Forum

Challenge
When the A2Z project started, various micronutrient groups—International Vitamin A Consultative Group (IVACG), International Nutritional Anemia Consultative Group (INACG), International Zinc Nutrition Consultative Group (IZINC) and International Council for the Control of Iodine Deficiency Disorders (ICCIDD)—operated independently from one another. The 2002 meetings of the vitamin A, iron, and zinc groups at the IVACG meeting in Morocco led to increased communication among them. The 2004 IVACG meeting in Peru used a scientific planning committee that combined experts from these communities to review abstracts and organize the meeting around a multiple micronutrient theme. This process, even at the time, was recognized as a purposeful step toward developing a combined body. As the forum’s Secretariat, A2Z began with the challenge to continue transitioning the existing consultative groups into a unified Forum.

Goal
The Forum’s goal is to stimulate policy-relevant science and move the global community toward consensus around evidence-based policies and programs that reduce micronutrient deficiencies of public health importance around the globe. In contrast to IVACG and INACG meetings, the Forum seeks to heighten focus on issues related to micronutrient programs in addition to the science and to encourage greater private sector engagement.
Strategy
To achieve this goal, A2Z helped create the new “Micronutrient Forum,” building on the recognized scientific and global policy leadership of IVACG and INACG that had been developed with USAID support over the past 25 years. Reflecting a membership with broader interests, the first Steering Committee meeting was held in April 2006. The committee agreed on the Forum’s goals and determined that first Forum would focus on science and the second Forum on programs, and that the secretariat would provide technical assistance to strengthen the presentation of evidence on MN programs.

Results
First Micronutrient Forum, Turkey, 2007
In partnership with the Turkish Ministry of Health, the Forum hosted its inaugural meeting in April 2007, in Istanbul. More than 750 people attended this highly acclaimed international event. For the first time, all micronutrients of public health significance were discussed in one forum. The discussions achieved a balance between programmatic and scientific issues that were welcomed by an overwhelming majority of the participants. A2Z leveraged funding from the Bill and Melinda Gates Foundation to support the meeting.

The meeting fostered the exchange of new ideas, described innovations, presented the most current research findings and survey data, and promoted action programs that translated research findings into practical applications. The meeting further enhanced global partnerships and capitalized on alliances to strengthen the design and implementation of strategies to reduce vitamin and mineral deficiencies. For the first time, commercial sponsors were offered exhibit booths to showcase their research and development products, which increased their profile in the meeting over previous years. To engage the private sector further, a Chairman’s Breakfast launched a dialogue with private sector partners on how they could become more engaged in the meeting’s more scientific aspects.

The meeting report was published as a supplement to the Sight and Life Magazine and was disseminated globally to 9,000 people, including all Istanbul meeting participants as well as the Magazine’s regular mailing list. The Forum’s long-term partner, Sight and Life, produced and disseminated the report, representing a major financial contribution.

The Forum strengthened A2Z’s efforts to enhance coordination among global partners in several ways.

• “Twinning” meetings brought together successful country leaders in micronutrient programs with those from countries at an earlier stage of program design and implementation. These meetings served to transfer experience and tools for accelerating coverage. The following countries were linked: Nigeria/Tanzania (vitamin A supplementation); Uganda/Bangladesh (zinc for diarrhea); Tanzania/Uganda and Kenya (fortification); and Cambodia/Thailand (anemia reduction). Follow-up activities in FY08 have been planned to maximize the benefits from such technical support.

• Shared presentation of both satellite sessions and posters at the Forum required strong coordination and communication, which was facilitated by A2Z. Examples of this coordination include a pre-Forum seminar titled Critical Issues in Strengthening Micronutrient Programming, satellite sessions titled Mobilizing Communities to Reduce Anemia and Food Fortification in the Developing World: Learning From the Past to Support Critical Decisions for the Future, and two posters presented jointly by representatives from the global partners most engaged in vitamin A supplementation programs.

• Greater involvement of the private sector in planning and sponsoring the Forum reflected growing collaboration efforts to reduce malnutrition.

Preparation for Second Micronutrient Forum, China, 2009
The Forum’s second international meeting will be hosted in Beijing, China, in May 2009. The meeting is titled “Micronutrients, Health, and Development: Evidence–based Programs” and will review the evidence base for programs, focusing primarily on what is known and what is not known about the design, implementation, and impact of large-scale micronutrient programs. In FY08, A2Z initiated meeting preparations with a visit to Beijing to establish the local organizing committee (LOC), convene a Steering Committee meeting to set the theme of the Forum, and to issue a call for abstracts.

As part of the preparations, the Secretariat convened an international meeting in September 2008 at the UNICEF Innocenti Research Center in Florence, Italy, to examine the evidence on implementation and impact of large-scale micronutrient programs in high-mortality countries. A second meeting objective was to develop guidance on delivering micronutrient programs effectively to accelerate Millennium Development Goals (MDGs) achievement. The conference culminated a 4-month consultation bringing together internationally recognized scientific and program experts and governmental and non-governmental country implementers from around the world to review and synthesize the available evidence. Primary funding for the meeting was provided by the Bill and Melinda Gates Foundation, with substantial contributions from USAID, UNICEF, the World Bank, and the Micronutrient Initiative.
Approximately 40 participants in the meeting represented three major constituencies:

- **Country-level implementers**: from all regions provided a ‘voice’ for priority MN programming needs.
- **Global partners**, including donors, the UN system, governments, government-funded projects, and NGOs, engaged in supporting micronutrient programs provided a global perspective on pragmatic implementation and evaluation issues.
- **Program-oriented academics** prepared background papers that formed a basis for meeting discussion. They brought a range of perspectives on the interpretation of available evidence as well as recommendations and priorities for strengthening design and collection of future program evidence.

The primary outcomes of the meeting were as follows:

**Bridge-building among the three constituencies initiated**: Country implementers, donors/global partners, and academics articulated a shared vision/goal of using micronutrient programs to achieve MDGs. A process was initiated to involve country implementers more meaningfully in various ongoing global discussions and working groups.

**Micronutrient Program Assessment Tool developed**: Participants provided feedback on the Assessment Tool developed for the meeting. The tool will be further refined to systematize three aspects of planning/evaluating programs: a) evidence; b) contextual knowledge; and, c) decision making procedures. Global partners expressed interest in implementing these assessments.

**Evidence for programs reviewed**: Systematic reviews of the evidence of impact and implementation of large-scale direct MN programs (supplementation, fortification, MN powders) and poverty reduction programs (conditional cash transfers, micro-credit) on micronutrient status were prepared for the meeting. With a framework based on the Assessment Tool, the reviews described the strength of and identified gaps in evidence. In considering transferring and scaling up direct programs, the meeting acknowledged the importance of contextual factors such as local knowledge and experience that requires country-level implementer participation.

**Recommendations for the Beijing Forum made**: The meeting participants recommended priority issues, sessions, and MN programs for the Beijing Forum to the Program Committee as part of the Forum planning process. An overarching theme that emerged was the priority to build bridges among the three constituencies. One suggestion was to form teams with representatives from each constituency to guide program presentation preparation.

**Future Directions**

More than two decades of USAID support for IVACG and INACG established the foundation upon which the Micronutrient Forum enjoys a global leadership role in the international nutrition community for policy and program development and implementation. In 2008 MN programs are keenly interested in helping countries achieve the MDGs.

The Lancet Series on Maternal and Child Undernutrition, the 2008 Copenhagen Consensus, the development of a Ten-Year Strategy for Nutrition, and other multi-lateral and bilateral initiatives are creating multiple constituencies in the international nutrition community. The Forum provides recognized convening power to bring these many partners together to build consensus around future directions for both research and programs that will be necessary for success.

In the shorter term, the Forum Secretariat will support USAID in efforts to engage the private sector further and broaden the Forum’s funding base both for the Beijing Forum and future Fora. The Forum will also seek to achieve a more balanced focus on research and programs. The focus of the Beijing Forum on programs is part of this balancing effort. In preparation for Beijing, the Secretariat will coordinate teams of country implementers, academics, and donors/global partners to strengthen the presentations of selected MN programs. The Secretariat will facilitate/coordinate the further development and implementation of the Micronutrient Program Assessment Tool that was developed for the Innocenti meeting. Lastly, based on the outcomes of currently planned global consultations, the Secretariat will organize consultations on such topics as newborn vitamin A dosing, maternal micronutrient supplementation, and potentially preventive zinc supplementation. The secretariat will also begin initial planning for the third Micronutrient Forum to be held in West Africa in 2011.

**IV. Conclusions**

While important progress has been made in reducing maternal and child mortality globally in the past decade, significant unmet need still exists for proven interventions that save the lives of women and children.

- 9.7 million children die annually
- 500,000 women die annually

This is particularly true in high mortality countries in Africa and Asia. Micronutrients are key to assisting USAID achieve its 2013 goals related to reducing under-5 and maternal mortality and improving child nutrition.

With USAID support, A2Z has assisted this effort. At the end of the third project year, A2Z has documented progress made in each main technical area, with significant country
program and global technical work. The project is poised to deliver significant public health impact in the present environment.

Global attention to addressing current gaps in programs for maternal and child mortality reduction has increased and we have an opportunity to leverage this interest. In regions where high burden populations are located economic optimism and expectation of political stability has grown. This provides an environment conducive to realizing accelerated progress. Micronutrients among all public health interventions provide a simple and low cost solution and added confidence to address difficult problems.

Alliances among international agencies in micronutrient programming have improved and mutual respect exists for complementary resources and skills. The benefits of joint programming have been made clear with new success stories such as VAS and salt iodization. Also see the Innocenti MN Meeting Consensus Report of September 2008.

Projects such as A2Z and its predecessors have helped build a stronger knowledge base and understanding of how programs can deliver results. Better and more convincing evidence exists that micronutrients are crucial for development (Copenhagen Consensus 2007/08).