Strengthening Strategies for the Elimination of Micronutrient Malnutrition in CARK

Results of a Workshop, held on March 24-28 2003 in Almaty, Kazakhstan

UNICEF CARK, 2003
UNICEF CARK gratefully acknowledges the financial and technical support provided by the U.S. Centers for Disease Control and Prevention for organisation of the workshop and preparation of this document.

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<td>ADB</td>
<td>Asian Development Bank</td>
</tr>
<tr>
<td>AIDS</td>
<td>Acquired Immune Deficiency Syndrome</td>
</tr>
<tr>
<td>APC</td>
<td>Anaemia Prevention and Control</td>
</tr>
<tr>
<td>CARK</td>
<td>Central Asian Republics and Kazakhstan</td>
</tr>
<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention (United States)</td>
</tr>
<tr>
<td>CEE</td>
<td>Central and Eastern Europe</td>
</tr>
<tr>
<td>CIS</td>
<td>Commonwealth of Independent States</td>
</tr>
<tr>
<td>CEDAW</td>
<td>Convention on the Elimination of All Forms of Discrimination against Women</td>
</tr>
<tr>
<td>CRC</td>
<td>Convention on the Rights of the Child</td>
</tr>
<tr>
<td>DALY</td>
<td>Disability-Adjusted Life-Years</td>
</tr>
<tr>
<td>DHS</td>
<td>Demographic and Health Survey</td>
</tr>
<tr>
<td>GBAO</td>
<td>Gorno-Badakshan Autonomous Oblast (Tajikistan)</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>IDA</td>
<td>Iron Deficiency Anaemia</td>
</tr>
<tr>
<td>ICCIDD</td>
<td>International Council for Control of Iodine Deficiency Disorders</td>
</tr>
<tr>
<td>IDD</td>
<td>Iodine Deficiency Disorders</td>
</tr>
<tr>
<td>IEC</td>
<td>Information, Education and Communication</td>
</tr>
<tr>
<td>IMCI</td>
<td>Integrated Management of Childhood Illnesses</td>
</tr>
<tr>
<td>IMMPaCt</td>
<td>International Micronutrient Malnutrition Prevention and Control (Program, US CDC)</td>
</tr>
<tr>
<td>IMR</td>
<td>Infant Mortality Rate</td>
</tr>
<tr>
<td>IQ</td>
<td>Intelligence Quotient</td>
</tr>
<tr>
<td>IVACG</td>
<td>International Vitamin A Consultative Group</td>
</tr>
<tr>
<td>JFPR</td>
<td>Japan Fund For Poverty Reduction</td>
</tr>
<tr>
<td>KAN</td>
<td>Kazakhstan Academy of Nutrition</td>
</tr>
<tr>
<td>KAP</td>
<td>Knowledge, Attitudes and Practices</td>
</tr>
<tr>
<td>MDD</td>
<td>Micronutrient Deficiency Disorders</td>
</tr>
<tr>
<td>MoH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MoT</td>
<td>Ministry of Trade</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
<tr>
<td>NHLC</td>
<td>National Healthy Lifestyle Center</td>
</tr>
<tr>
<td>NID</td>
<td>National Immunisation Day</td>
</tr>
<tr>
<td>PHC</td>
<td>Primary Health Care</td>
</tr>
<tr>
<td>RDI</td>
<td>Recommended Daily Intake</td>
</tr>
<tr>
<td>RRS</td>
<td>Regions of Republican Subordination (Tajikistan)</td>
</tr>
<tr>
<td>SES</td>
<td>Sanitary and Epidemiological Services</td>
</tr>
<tr>
<td>SIP</td>
<td>Safe Immunisation Practices</td>
</tr>
<tr>
<td>SUB</td>
<td>Rural district hospital (acronym in Russian)</td>
</tr>
<tr>
<td>ToT</td>
<td>Training of trainers</td>
</tr>
</tbody>
</table>
TSH  Thyroid stimulating hormone
U5MR  Under-5 Mortality Rate
UIE  Urinary Iodine Excretion
UNDP  United Nations Development Programme
UNFPA  United Nations Population Fund
UNICEF  United Nations Children’s Fund
USAID  United States Agency for International Development
USI  Universal Salt Iodisation
VAD  Vitamin A Deficiency
WFF  Wheat Flour Fortification
WHO  World Health Organisation
A Training Workshop on strengthening strategies for the elimination of micronutrient malnutrition in the Central Asian Republics and Kazakhstan was held in Almaty, Kazakhstan 24-28 March 2003. Participants from government, food industry and UNICEF attended from Kazakhstan, Uzbekistan, Kyrgyz Republic and Tajikistan. In addition one UNICEF staff member from Turkmenistan was able to participate.

The aim of the workshop was to strengthen the capacity of participants to support national efforts for the elimination of micronutrient malnutrition with particular focus on iodine, iron, folic acid and vitamin A deficiencies. The Workshop concentrated on fortification, with due reference to other interventions as relevant. The presentations emphasized the need for national ownership and promotion of sustainable approaches, and the sessions encouraged in-depth consideration of choices and assessment of the consequences of strategy choices. Participants were encouraged to think strategically about how the current efforts for elimination of micronutrient malnutrition could be improved and sustained with less reliance on external support. An important tactic discussed was formation of national coalitions.

Information presented in the plenary sessions together with guidance from facilitators in small working group sessions allowed the participants to critically analyse present national activities and plans for elimination of micronutrient malnutrition, developed mainly with UNICEF and ADB support, and to think what needs to be done to strengthen the management and execution of activities under the responsibility of partnering institutions.

There was special focus in the agenda on elaboration of existing plans for communication to improve acceptance of selected interventions throughout the population, and for monitoring to obtain and use data required to assure continuous improvement of the quality of interventions. These elements were felt particularly important to promote permanent progress toward optimum micronutrient nutrition of the population in the Central Asia area.
Each national group reviewed the major constraints to achieving Universal Salt Iodisation, Wheat Flour Fortification with iron and folic acid and Vitamin A supplementation in their country, followed by discussion and agreement on ways to overcome such obstacles. Plans focused on how to augment and sustain national management and support for the agreed-upon interventions.

For future planning, participants considered and discussed the concepts of 1) forming a national coalition (ultimately responsible for seeing that elimination of micronutrient malnutrition is both achieved and sustained), 2) potential allocation of national resources (financial, personnel, capacity development), 3) additional external support that may be required and 4) how national progress would be assured by regular assessment, public reporting and effective decisions.

At the end of the workshop participants felt that they:

- Had increased their understanding of how to manage the different choices and mixes of interventions to eliminate micronutrient malnutrition,
- Had improved their competence in managing choices and strategic applications in communication and monitoring as part of national elimination efforts,
- Understood the need to apply the lessons learned during the workshop to review their present activities and plans for elimination of micronutrient malnutrition with all partners, focusing on how to increase national support and resources and how to ensure sustainability of required activities.

Participants expressed their intention to make progress in working with the broad range of national partners after coming back to their home countries, and to continue the strategic conceptualisation and planning processes initiated during this workshop. UNICEF and ADB reaffirmed their support and assistance to national efforts for elimination of micronutrient malnutrition along policies agreed-upon in each of the countries involved.
Introduction
Strengthening Strategies for the Elimination of Micronutrient Malnutrition in CARK 2
Micronutrient deficiencies worldwide

Adequate intake of micronutrients – nutrients that are essential for development but are required in only minute amounts – is essential for the health and survival of children throughout the world. Worldwide, about 4-5 billion people suffer from iron deficiency\(^1\), 740 million people are affected by iodine deficiency disorders\(^2\), and as many as 254 million preschool children are vitamin A deficient\(^3\). Folic acid helps prevent spina bifida and anencephaly that affect at least 300,000 children a year throughout the world\(^4\). Although micronutrient malnutrition may result in subtler clinical symptoms than other forms of malnutrition – e.g. protein-energy malnutrition – its negative impact on not only the most vulnerable groups, but on entire populations, is enormous:

- **Iodine deficiency** is the most prevalent cause of preventable brain damage in the world, affecting brain development in millions of newborns. At the population level, the consequence of this brain damage from iodine deficiency is a 10–15% lower average intellectual quotient (IQ), which affects the social and economic development of both communities and nations. An estimated 13 per cent of the world’s population in over 130 countries are affected by iodine deficiency disorders (IDD)\(^5\). Severe deficiency can increase the rate of stillbirths, abortions and congenital abnormalities such as cretinism.

- **Iron deficiency** is the most common nutritional deficiency in the world. 4-5 billion people, 66-80 per cent of the world’s population, may be iron deficient. Iron deficiency anaemia (IDA), the most prevalent form of anaemia, increases the risk of premature birth and low birthweight; impairs physical and cognitive development, lowers school performance in children; and contributes to 20 per cent of all maternal deaths\(^6\).

- **Vitamin A deficiency** (VAD) increases mortality from common childhood illnesses by an estimated 23 per cent, increases the severity and complications of infections and is the leading cause of childhood blindness. An estimated 250,000 to 500,000 children become blind as a result of VAD, half of whom die within a year of losing their sight. Vitamin A deficiency may also increase the risk of maternal mortality\(^7\).

- **Folic Acid** helps prevent not only spina bifida and anencephaly, but also contributes to the prevention of iron deficiency anaemia and losses due to parasitic infections and repeated attacks of malaria. An estimated 300,000 children are born each year with spina bifida and anencephaly, which are severe neural tube defects. Approximately 75%, or 225,000, of these affected births could be prevented through increased consumption of synthetic folic acid by all women of reproductive age\(^8\).

These deficiencies strain the capacity of national health care systems but the consequences of micronutrient malnutrition are not limited to the health sector alone. Micronutrient deficiencies not only rob the current generation of children of their right to survival, health, and good nutrition, but also hinder nations from achieving their full development potential. These deficiencies negatively affect children throughout the life-cycle: ill health and impaired physical and cognitive development can reduce school performance in children and reduce their work capacity and productiveness as they grow to be adults. The cost of these preventable micronutrient deficiencies to national economic growth and development is staggering. Deficiencies of vitamin A, iodine, and iron alone cost countries as much as five per cent of gross domestic product annually, according to the World Bank\(^9\).
However, simple, cost-effective strategies for eliminating these preventable micronutrient deficiencies are available. The use of iron and vitamin A supplements among vulnerable groups has been shown to reduce the incidence of IDA and VAD, while decades of experience in fortification of staple foods with micronutrients has also shown that strategy to be effective in preventing micronutrient deficiencies. Iodisation of all food-grade salt for human and animal consumption – universal salt iodisation (USI) – costs only about US$ 0.05 per person per year and is currently the main strategy for eliminating IDD in 93 countries. Fortification of wheat flour with iron, folic acid and other micronutrients is a common intervention to eliminate IDA and to reduce neural tube defects in newborns. The safety and efficacy of these strategies has been demonstrated in programmes around the world.

With the cost of efforts to achieve sustained elimination of these deficiencies estimated at less than 0.3 per cent of gross domestic product (GDP), the cost of not acting to address these problems immediately is far greater. Reducing micronutrient deficiencies leads to lower mortality, morbidity, disabilities and health care costs: all of which contribute to higher productivity and economic stability and growth. For example, by preventing iron-deficiency anaemia (IDA), which reduces work capacity among affected populations, national productivity levels can increase by 20 per cent\(^\text{1}\).

Global commitment to the elimination of micronutrient malnutrition has been growing in the last two decades. At the World Summit for Children in 1990, world leaders agreed to the goals of virtual elimination of IDD and VAD, and the reduction of IDA prevalence in women by one-third by 2000. Although these goals were not met in full, significant progress has been made in many countries.

The global commitment to the sustained elimination of IDD was reaffirmed during the UN General Assembly’s Special Session (UNGASS) on Children in May 2002. The delegations at UNGASS, committed to the renewed goal of sustained IDD elimination through achievement of USI by 2005 and other goals for reduction of iron deficiency anaemia/folic acid/vit A through collaboration with food industry.

Elimination of micronutrient deficiencies is also an essential component of efforts to achieve the Millennium Development Goals of reducing under five mortality (U5MR) by two-thirds and the maternal mortality by three-quarters by the year 2015.
Situation/actions in CARK*

Reflecting the many challenges to ensuring maternal and child health in the area, independent studies and surveys have estimated high rates of infant mortality (IMR) throughout CARK, sometimes several-fold higher than official reports (Fig. 1).

Figure 1: Official and other estimates of IMR in CARK

Based on the results of numerous studies and assessments in CARK, the insight has grown of the significant contribution that micronutrient malnutrition is making to the high IMR in the area. For example, recent assessments of IDD in CIS show that some of the countries with the highest percentage of their populations suffering from IDD and the largest populations suffering from IDD are in CARK (Table 1).

* Presented by Ms. Nune Mangasaryan, UNICEF CARK.
Table 1: Estimates of Iodine deficiency in CIS (based on goiter rates)

<table>
<thead>
<tr>
<th>Country</th>
<th>Population affected by iodine deficiency</th>
<th>Percentage</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenia</td>
<td></td>
<td>&lt;5</td>
<td>-</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td></td>
<td>22.2</td>
<td>892 000</td>
</tr>
<tr>
<td>Belarus</td>
<td></td>
<td>21.8</td>
<td>2 219 000</td>
</tr>
<tr>
<td>Georgia</td>
<td></td>
<td>21.2</td>
<td>1 116 000</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td></td>
<td>6.6</td>
<td>1 072 000</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td></td>
<td>26.6</td>
<td>1 308 000</td>
</tr>
<tr>
<td>Moldova</td>
<td></td>
<td>11.4</td>
<td>490 000</td>
</tr>
<tr>
<td>Russian Federation</td>
<td></td>
<td>10.0</td>
<td>14 549 000</td>
</tr>
<tr>
<td>Tajikistan</td>
<td></td>
<td>57.8</td>
<td>3 517 000</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td></td>
<td>12.0</td>
<td>568 000</td>
</tr>
<tr>
<td>Ukraine</td>
<td></td>
<td>13.9</td>
<td>6 904 000</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td></td>
<td>45.0</td>
<td>11 196 000</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>14.9</td>
<td>40 231 000</td>
</tr>
</tbody>
</table>

Source: Ref.: WHO Global Database on IDD, MDIS, Geneva, 2002

Vitamin A deficiency is also revealed as a large-scale problem in CARK countries. Studies have shown that vitamin A deficiency increases by as much as 23 per cent the risk of dying from common childhood diseases such as measles, diarrhoea, malaria, and other diseases. The magnitude of VAD in countries is considered as a public health problem of high significance if the serum retinol concentrations of less than 0.70 μmol/L are found among more than 20 per cent of children under the age of six. A 2002 survey of children in selected oblasts of Kazakhstan and Tajikistan confirmed that VAD is a problem among those two populations. Preliminary results of similar studies initiated in late 2002 in Kyrgyzstan and Uzbekistan show the similar results. Vitamin A deficiency, as measured by low serum concentrations, was prevalent in 26.9 per cent of surveyed children in Kazakhstan, 27.6 per cent of those in Tajikistan, 32.9 per cent – in Kyrgyzstan, and 53.1 per cent - in Uzbekistan

The high prevalence of iron-deficiency anaemia among both women and children is an acknowledged public health problem of serious concern throughout CARK. Both DHS and MoH data in the five countries show that 36 per cent to 72 per cent of reproductive age women and 36 per cent to 81 per cent of children under the age of three suffer from anaemia

Deficiencies in iron, iodine and vitamin A have been shown to significantly hinder national economic development by reducing worker productivity and draining already limited financial resources. Iron deficiency reduces productivity in heavy labour and blue-collar labour by 17 per cent and 5 per cent respectively. Iron deficiency anaemia alone costs countries approximately 0.9 per cent of the GDP each year. Given these figures it can be estimated in CARK that the economic losses caused by IDA add up to more than US$ 350 million annually. Specifically the economic cost of IDA (in US$) in each country is approximately as follows:
Uzbekistan: 159.3 million
Kazakhstan: 142.2 million
Turkmenistan: 28.8 million
Tajikistan: 17 million
Kyrgyzstan: 11.7 million

However, strategies to eliminate these micronutrient deficiencies such as fortification and supplementation have been shown to be among the most cost-effective health interventions available. For each US$1 spent on vitamin A supplementation, for example, US$ 146.00 equivalent productivity is gained (Fig. 2).

Figure 2: Relative cost-effectiveness of Micro-nutrient Interventions
Productivity gained per US$ expended interventions


The Anaemia Prevention and Control Programme (APC) and USI/IDD prevention programmes/projects aimed at elimination of micro-nutrient deficiencies in CARK take advantage of these extremely cost-effective strategies. Since the mid 1990s, efforts have been made in each of the CARK nations toward achieving USI as the agreed-upon strategy for sustained IDD elimination. Since 1996 comprehensive programmes have been in place to combat IDA in CARK, including supplementation of target groups, awareness building among health workers and the general population, and initiation of efforts to fortify wheat flour with iron and folic acid. Both salt and flour fortification strategies have the support of UNICEF and lately also ADB through its JFPR-funded project. However, the implementation of these interventions has not yet reached a level where it may be reflected in an improvement of national nutrition indicators. Considerable efforts are needed for further refinement of strategies and scaling up the initiated efforts and interventions.

Additional programme development efforts are needed to react to the recently revealed problem of vitamin A deficiency in CARK countries.
Workshop objectives and design

Considerable efforts to eliminate iodine, iron and vitamin A deficiencies in the CARK countries have been ongoing since the mid-1990s. This workshop was organised to strengthen the capacity of participants to support and plan for current and future efforts for the sustained elimination of micronutrient malnutrition with a particular concentration on iodine, iron, folic acid and vitamin A deficiencies. The focus of the workshop was on fortification, with reference to other interventions as relevant.

The main aims of the workshop were to:

- Bring participants to a similar level of understanding about micronutrient programme management, the inter-relation of programme components, the choice and mix of interventions and the need for programme support in terms of legislation and capacity development etc.
- Strengthen participants’ skills to strategically plan for the sustained elimination of micronutrient malnutrition through increased national ownership and oversight

The workshop was organised to achieve these objectives through a mixture of plenary, discussion and small group sessions. Topics included:

- Background on the situation in CARK, on existing national goals and commitments and an overview of micronutrient programme components
- Sharing global and regional experiences in elimination of micronutrient malnutrition, including information on potential supporting resources, such as networks and alliances
- Analysis and strategic planning on
  - Different national programme components such as the intervention, monitoring, and communication
  - Sustaining elimination of micronutrient malnutrition in the future through strengthening national ownership and the creation of effective national alliances

Partnerships, both within countries and with international organisations were one of the main focuses of the workshop and were demonstrated in the collaboration between the various organisations that were represented at the workshop. The continued collaboration between ADB, KAN, Emory University, and UNICEF along with the new partnership with the US Centers for Disease Control and Prevention made the workshop possible.

Facilitators:

The workshop facilitators included representatives from UNICEF CARK, UNICEF Regional Office for Central and Eastern Europe, the Commonwealth of Independent States and The Baltics, the US Centers for Disease Control and Prevention, Emory University and consultants specialising in different aspects of micronutrient malnutrition elimination.

Participants:

Participants in the workshop were from Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan. The delegations included representatives from MCH departments/divisions of the MoH, SES, and the food industry. The entire delegation from Turkmenistan was unable to attend the workshop, as planned. However, an Officer from the UNICEF country office was delegated to the workshop to make presentations and participate in group discussions on behalf of national counterparts. Other participants included representatives from NGOs, KAN, ADB and UNICEF.
1 Global experiences
Strengthening Strategies for the Elimination of Micronutrient Malnutrition in CARK
Overview of key elements for elimination of micronutrient malnutrition

National programmes to eliminate micronutrient malnutrition should aim for the achievement of dual goals, that of ensuring that required amounts of micronutrients are available and consumed by the population and that this is sustained. From the earliest stages of national programmes, sustainability should be built into plans for elimination of micronutrient malnutrition.

The right of all people to good nutrition has been elaborated and agreed upon by heads of state in documents such as the 1948 Universal Declaration of Human Rights that includes “freedom from hunger and malnutrition” as a basic human right, and the 1989 Convention on the Rights of the Child that states: “countries shall …take appropriate measures a) to diminish infant and child mortality… b) to combat disease and malnutrition including…through the provision of adequate nutritious food.”

In addition, the linkages between protection of citizen’s right to good nutrition and national development have been confirmed in formal commitments made by governments. National leaders have established, and committed to achieving, national development goals at various fora, including a series of human rights declarations from 1948, the UN World Food Conference (1974), Convention on the Rights of the Child (1989), Millennium Development Goals (2000), and the UN General Assembly Special Session on Children (2002).

Sound analysis and assessment are necessary to solve the problem of micronutrient malnutrition. The Triple A approach involves three consecutive steps – Assessing the problem; Analysing its causes; and taking Action to solve the problem – and can serve as a framework for the development and implementation of national programmes.

Figure 3: Immediate and underlying causes of Iron deficiency
Through repetition of the three steps, the Triple A process can also aid in modifications and improvements to these programmes.

As part of the process, it is also important to understand the many causes of micronutrient malnutrition that can be organised into basic, underlying and immediate causes. The example of iron deficiency is used to illustrate this conceptual framework (Fig. 3).

**Action components**

Action components of national programmes include **interventions**, **communication and advocacy**, and **monitoring**. All three components need to work in synergy to achieve success and the links between these three components are as important as the individual components, themselves (Fig. 4).

**Figure 4: Action components of micronutrient programmes**

Interventions are the mechanisms chosen to increase the micronutrient intake of the population. It is important to work with all partners involved to agree on the selection and implementation of the most appropriate type and combination of interventions.

The communication and advocacy component of national micronutrient programmes supports implementation of the intervention through increasing a) understanding among partners, b) political support and c) consumer acceptance of the interventions. As with the interventions themselves, communication strategies should be agreed upon and implemented with the participation of all key partners.

Monitoring provides information on the effectiveness of the interventions, communication activities and of related supporting efforts. The purpose of such data collection is to improve programme management, however its usefulness depends on the design and implementation of the monitoring system, including the feedback/reporting mechanism.

For example, within a national programme to eliminate IDD, the main action components would be the intervention (salt iodisation), communication and advocacy, and monitoring.
Table 2: The main components of a national iodine nutrition program

<table>
<thead>
<tr>
<th>Intervention:</th>
<th>Communication and advocacy</th>
<th>Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt iodisation</td>
<td>High-level advocacy</td>
<td>Legislation/registration</td>
</tr>
<tr>
<td>Production &amp; quality assurance</td>
<td>Strategic mobilisation of partners</td>
<td>Standards &amp; inspection</td>
</tr>
<tr>
<td>Packaging &amp; labelling</td>
<td>Consumer education</td>
<td>Manufacturing practice</td>
</tr>
<tr>
<td>Marketing</td>
<td></td>
<td>Impact assessments</td>
</tr>
<tr>
<td>Retailing</td>
<td></td>
<td>Public reporting</td>
</tr>
<tr>
<td>Pricing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Support for Action Components

Another essential aspect of national programmes are those activities – management, training, technical support, capacity development – that support the three action components. The scope of support may include:

- Creating a supportive policy environment- including legislation and enforcement
- Developing a strong co-ordination and planning base
- Identification of capacity development needs and ways to address these – training, technical support, resources etc.
- Oversight of implementation, communication, monitoring and data exchange among partners
- Facilitating work between partners and creating links with all components

Programmes should consider that each actor in micronutrient programmes – from government officials to the beneficiaries – have different rights and roles to be addressed, examples of which are shown below.

For producers to:

- Deliver only iodised salt
- Insist on equal regulations

For public officials to:

- Apply the law equitably
- Insist on permanent protection through the supply of sufficient, quality-assured iodised salt

For consumers to:

- Buy only iodized salt
- Insist on national oversight to ensure the quality and safety of iodised salt
Elements for Sustainability

Achievement of the goal of eliminating micronutrient malnutrition is not the same as sustaining the achievement. Sustaining the elimination of micronutrient malnutrition needs to be planned from the start by creating acceptance among policy makers, the public and food producers and providing strong national oversight of selected micronutrient interventions.

First, programmes should seek to ensure that all partners understand the consequences of micronutrient malnutrition and the relationship between their specific activities and the nation’s economic and social development. Linkages within and between sectors, and with other national nutrition programmes can help in this regard. Inter-sectoral co-operation and co-ordination can also help ensure broad-based support and acceptance of interventions.

Second, programmes should seek to increase acceptance of the fundamental principle that good nutrition is a human right. With this perspective, supplements will be viewed as an “entitlement” of the most vulnerable groups in the population. Fortification will be continued as a “behavioural norm” in the food industry and be accepted as such in community nutrition.

Third, efforts should be made to create public awareness and oversight of national programmes. These can include communication activities to insert related knowledge throughout traditional and non-traditional educational systems. Micronutrient related topics would be included in the education and training not only of schoolchildren and doctors but also of current and future food scientists, economists, and technicians. With this knowledge, the population could stay vigilant about the elimination of micronutrient deficiencies and would support national leadership in ensuring permanent oversight.
History: major lessons learned from the global progress to eliminate micronutrient deficiencies*

The problem

The global understanding of the nature and extent of micronutrient deficiencies has changed dramatically during the past decades. Here we will focus on the example of IDD, as an illustration of the changes that have taken place with time.

Iodine deficiency has existed for thousands of years and has been recorded throughout history. In the past, attention was directed mostly at the outward signs and consequences of iodine deficiency in individuals such as goitre and cretinism. Even as understanding of the causes of IDD increased in the 20th century, IDD was still considered an issue only facing remote places and populations.

In the 1980s, laboratory research revealed that IDD has a greater impact on brain development and function than is suggested by observation of only the outward signs. The observed external disorders were found to reflect the existence of a much greater population of children whose brains had been damaged by iodine deficiency. Sufficient supplies of iodine, and thus thyroid hormones, are essential in all stages of foetal brain development (Fig. 5). These findings were underlying the new realization that iodine deficiency endangers the healthy development of the brain. Research in the 1990s continued to turn the focus of IDD research to the detrimental effects of iodine deficiency on the brain, especially on the irreversible damage in early foetal development.

Figure 5: Iodine sufficient and deficient brains

The images in the top row are from an iodine-sufficient brain. Those below are from an iodine-deficient brain.

Source: Legrand, 1967

In 1990, 130 of the world’s 198 countries were affected by IDD, according to WHO. Among populations with a goitre prevalence higher than 5 per cent, all children in that population lose an estimated 10-15 IQ points. Iodine deficiency thus shifts downwards the entire distribution of children's IQ, and stunts mental and cognitive development of children at both high and low ends of the IQ spectrum. Estimates that one-half to one-third of the world population is affected by this widespread problem drew the attention of the world community. At the World Summit for Children in 1990, the Heads of State and Government committed their nations to the goal of virtual elimination of IDD by the year 2000.

* Presented by Mr. Frits van der Haar, Emory University, USA.
The available solution

In 1994, UNICEF and WHO, with technical support from ICCIDD, recommended universal salt iodisation, i.e. the iodisation of all food-grade salt, as the primary intervention strategy to eliminate IDD. At the cost of less than US$0.05 per person per year, salt iodisation is “spectacularly simple, universally effective, wildly attractive and incredibly cheap”\(^{15}\). In countries such as the United States and Switzerland, salt iodisation began as early as the 1920s and has led to substantial benefits for the iodine nutrition of the population. In Switzerland, the history of regular population-based monitoring and adjustments in salt iodine levels according to findings, together with the universal use of iodized salt in households has resulted in a population plateau of iodine nutrition adequate for protecting all newborns against the brain damage of iodine deficiency. Consumption of iodised salt by more than 90 per cent of households or adequate iodisation of 90 per cent or more of all food-grade salt are standard indicators of USI achievement.

Once the need and noble practice of USI was communicated widely, along with technology, training and advocacy among all sections of society, salt iodization rates started climbing in country after country. By the end of 2000, the proportion of households in the world using iodised salt had risen to 70%, a tremendous achievement if compared to the beginning of the decade when less than 20% used iodised salt.

Based on the information consolidated in UNICEF about household use of iodised salt, estimates are available of the progress toward USI in the world, expressed as the protection given to newborns against the brain damage of iodine deficiency that otherwise may occur in each nation every year. Figure 6 illustrates these results as regional estimates.

**Figure 6: Newborn brains protected and not protected, 2001 (millions)**

<table>
<thead>
<tr>
<th>Region</th>
<th>Newborns' brains protected</th>
<th>Newborns' brains unprotected</th>
</tr>
</thead>
<tbody>
<tr>
<td>E Europe/CIS/B</td>
<td>1,308</td>
<td>4,467</td>
</tr>
<tr>
<td>S Asia</td>
<td>17,812</td>
<td>20,813</td>
</tr>
<tr>
<td>E/S Africa</td>
<td>6,749</td>
<td>5,628</td>
</tr>
<tr>
<td>M East/N Africa</td>
<td>5,283</td>
<td>4,271</td>
</tr>
<tr>
<td>W/C Africa</td>
<td>9,784</td>
<td>4,091</td>
</tr>
<tr>
<td>E Asia/Pacific</td>
<td>23,371</td>
<td>9,437</td>
</tr>
<tr>
<td>C/S America</td>
<td>10,447</td>
<td>1,748</td>
</tr>
</tbody>
</table>

Source: http://www.sph.emory.edu/iodinenetwork/

While the largest numbers of newborns not yet protected are in South Asia, it should be noted that the largest proportion of newborns not yet protected are born every year in the Eurasian region, which includes CARK.
Although the Year 2000 goal of virtual elimination of IDD was not met, outstanding improvements have been made globally, and the achievement of USI is within reach. Within the 105 countries that regularly collect household iodised salt usage data, 31 countries have achieved household usage rates above 90 per cent; 36 countries have achieved rates between 50 and 89 per cent; and in the remaining 38 countries less than half of all households use iodised salt. Ninety million babies born each year are now protected from IDD. However, 30 million babies born in countries with iodine deficiency are not yet protected by universal salt iodisation. The region containing Eastern Europe, Baltic States, CARK and other CIS countries is among the regions with the lowest levels of salt iodisation in the world, and thus the highest proportion of newborns unprotected from foetal brain damage. In 2000, only an estimated 28 per cent of households in the region consumed adequately iodised salt.

It is important to realize that iodine deficiency is not only a problem in non-industrialised countries. In fact, iodine deficiency may be re-emerging as a public health problem in Australia and other industrialised countries. At current levels of intake, women might not be receiving enough iodine to meet the higher iodine requirements during pregnancy, thus leading to elevated TSH levels that are increasingly being seen in their infants. In Belgium, Germany, Italy, New Zealand, the US, and the UK dramatic drops in iodine consumption have been reported in recent years. This trend suggests the need to apply lessons learned in IDD prevention and elimination efforts to all countries of the world.

Lessons learned

From global experiences, it has been shown that changing the opinions among scientific, development and community gatekeepers to support USI efforts is a key event in accepting the agreed-upon strategy of USI. This change in opinion is needed to work toward sustained elimination. And the change has been facilitated through various means and ways:

- Leaders should acknowledge and accept the nature and magnitude of the IDD problem.
- Potential resistance and misperceptions should be overcome about the dangers of salt, as well as about iodisation and safety of potassium iodate as a fortificant.
- Understanding needs to increase that salt iodisation must be universal and levels of iodine in salt must be adequate in order to most effectively eliminate IDD.
- Gatekeepers need to be convinced that success is attainable by first focusing on priority areas, and through support of the industry – both large companies and small producers.

Achieving and sustaining successful elimination of IDD depends on realisation of the specific roles and responsibilities of each participating actor. Although inter-sectoral co-operation and involvement is important in achieving USI, the different expectations for each actor must be clearly understood. Salt is not produced or distributed by governments, agencies or health experts but by private enterprises with practices and perspectives that are often different from the public sector. On the other hand, the legal framework and normative standards are not enacted by producers but by government authorities. Agencies and academic groups should provide support to the entire process, drawing from their own areas of expertise. Programme developers and implementers should not only keep these differences in mind but also take advantage of them.

The potential for global triumph over the age-old scourge of iodine deficiency is very high. The proven success of USI to eliminate IDD and the achievements listed below should encourage and build confidence in those countries seeking to do the same.
Through efforts to achieve USI:

- The intellectual capacity of one-third of new generations entering the world every year is being increased by more than 10%;
- 130 governments have provided at least some resources for IDD elimination efforts;
- Public and donor investments of US $100 million in IDD elimination during the 1990s have been accompanied by salt industry investments of more than US$1 billion;
- Future tasks are even more likely to lead to successful elimination of IDD because of the cohesive blending of the talents and expertise of all partners.

*The way forward*

At a side event to highlight the outstanding progress already made in IDD elimination through USI held during the UN General Assembly's Special Session on Children in May 2002, the global commitment to the sustained elimination of IDD was reaffirmed. The focus of the meeting attended by salt producers, international organisations, bilateral agencies and heads of state was that USI is, as Dr. Gro Harlem-Brundtland, Director-General of the WHO described it “one of the most effective preventive health interventions that exist.”

The main collaborating international organizations involved in support to the global IDD elimination efforts – WHO, UNICEF, ICCIDD, CDC/Atlanta, Emory University, the Micronutrient Initiative, Salt Producer Associations and Kiwanis International – also used this event to launch a coalition to collaborate and accelerate global progress towards IDD elimination. This Network for Sustained Elimination of IDD:

- Solidifies the alliance of private, public, technical and civic bodies that has brought about the impressive progress towards IDD elimination in recent decades, and
- Pledges full collaboration with national efforts to accelerate the progress in USI and to support national efforts to ensure sustained adequate iodine nutrition.

In Plenary Session, the delegations at UNGASS committed to the renewed goal of sustained IDD elimination through achievement of USI by 2005.

The Iodine Nutrition Network is based on a rights-based approach that acknowledges the rights and responsibilities of the different actors involved.

- The public must understand and insist on adequate iodine nutrition;
- Governments must continue supporting universal salt iodisation and monitor the iodine nutrition situation;
- Scientific and social interests must remain attentive and insist on permanent national oversight;
- Salt producers must assure permanent universal supply of iodised salt.

In summary, the underlying fundamental principle of sustained elimination of IDD is that all households in all countries always use only iodised salt, and government, civil society and the salt industry must continue to ensure this as the behavioural norm.
Nutrition and Rights-based approach in programming*

Understanding the right to good nutrition as a universal human right is an essential element to successful national programmes on micronutrient malnutrition elimination. International agreements such as the CRC, CEDAW and the Universal Declaration of Human Rights have not only confirmed this right, but also outlined the special care that should be given to ensuring this right during motherhood and childhood.

Several principles should be considered in application of a human-rights approach.

First, it should be understood that human rights approach requires:

- **Universality**: each and every person is entitled to equal and inalienable rights.
- **Indivisibility**, meaning that the rights are indivisible and interdependent. The right to good nutrition has equal status to other human rights, such as the right to social protection.
- **Accountability** from various actors: national leaders, communities and families: all these actors have responsibilities and a role to play in ensuring the fulfilment of the human right to good nutrition.

A rights-based approach to combating micronutrient deficiencies should be holistic and applied to all interdependent interventions and strategies in national programmes.

These principles can be applied in all stages of the programme cycle, including:

- Situation assessment and problem analysis
- Deciding on priorities for action, goals and objectives
- Development of strategies and planning
- Implementation and monitoring
- Evaluation and learning
- Integration with other approaches

A key feature of programme development with a rights-based approach is to keep the population at the centre of all efforts, as both social actors and rights-holders. It is important to consider each person as a right holder, not an object of charity. This requires the accountability of governments to both their citizens and the international community and their support to families in their role as primary caregivers. Other components include the following:

- Addressing the causes of problems – basic and immediate
- Seeking inclusive solutions that involve marginalised and hard-to-reach groups
- Holding a holistic vision of rights while making strategic choices and taking specific actions
- Setting goals in terms of fulfilment of human rights
- Focusing on both outcome and process
- Aiming for sustainable results
- Using participatory and empowering approaches

* Presented by Ms. Nune Mangasaryan, UNICEF CARK.
With regard to children, parents normally have the first line of responsibility to provide for a child’s basic needs, to protect the child from harm and to create a family environment that is conducive to the child’s maximum development. Beyond a child’s family, the immediate community is usually the source of basic services. Beyond the community, regional and national bodies have the responsibility to create the broad normative and institutional context for enjoyments of children’s rights, including the right to survival and development which largely depends on child nutrition status.
Legislation and enforcement*

In the past, IDD was virtually eliminated as a public health problem throughout the CARK region. Iodised salt was produced and distributed through a centralised system so that approximately 4 kg of iodised salt (at iodine concentrations of 25 ppm using potassium iodide) was available per capita. Treatment of IDD was available through special medical centres – anti-goitre dispensaries and the single MoH document on goitre (prevention) in 1956 served as the guiding document for all the inter-agency efforts to prevent and eliminate IDD. All these activities were conducted without passing the legislation on IDD elimination or USI.

However, decades of experience around the world have shown that legislation on USI is a key element of sustainable elimination of IDD. Even in areas where IDD was virtually eliminated, the problem has re-emerged. For example, IDD is now a public health problem in the Russian Federation, where USI legislation has yet to be adopted by the Parliament. Appropriate legislation would:

- be adopted by an elected legislative body, such as Parliament;
- cover the main principles and norms of food fortification;
- protect consumers by ensuring safety and efficacy of fortified foods;
- help create a level playing field for the food industry.

Principles and types of effective legislation

Laws on USI or IDD prevention should reflect the will and interests of the people and their development should include the collaboration and input of all stakeholders – government, private sector, civil society, and NGOs, etc. Laws should also:

- Allow flexibility and set a framework for addressing future needs;
- State clearly what is required and what is prohibited;
- Create a mechanism for enforcement;
- Identify penalties for non-compliance;
- Provide for quality assurance.

In addition to this basic law, the need to phase in regulatory requirements over time should also be considered.

Legislation on issues related to micronutrient malnutrition elimination can take the form of executive orders or decrees, ministry orders/decrees, or executive orders issued by the head of state (president). However, the most powerful legal document should be adopted, in order to reflect the significance of IDD elimination.

Executive orders or presidential decrees have the power of law and can fill in the gaps in existing legislative framework. These decrees are usually temporary and applied until a national law is adopted. The aforementioned principles underlying effective legislation apply to executive orders as well.

* Presented by Mr. Gregory Gerasimov, UNICEF consultant
Regulatory acts complement legislative development and can be issued as explanatory or applied acts. Explanatory acts give necessary details that are not provided in the law while applied acts define the mechanisms of law enactment and enforcement. Regulatory acts cannot contradict the law. Examples of regulatory acts include:

- Executive Orders of the government (Cabinet or Council of Ministers);
- Executive Orders of government ministries, agencies, and officials (e.g. Chief Sanitary Inspector);
- Acts of technical regulation (standards, technical conditions, etc.).

**Issues in legislation**

In some countries, the issue of whether it is better to adopt a general food fortification law or a specific law on USI is being debated. Generally, it is better to adopt the former rather than the latter. However, in many circumstances, inclusion of provisions on general food fortification may jeopardise the passage of a law on USI. In these cases, it is better to give priority to salt iodisation legislation. Legislation on USI rather than on IDD prevention is also recommended.

Because IDD affects entire populations, it is important that salt iodisation be universal, meaning all salt intended for human and animal consumption. Prevention of IDD and other micronutrient deficiency disorders is important not only for “endemic areas” or in particular regions, but also for the entire nation. Therefore, it is recommended that legislation be adopted at the national rather than regional level.
Strengthening communication support to national efforts for elimination of micronutrient malnutrition*

Communication and advocacy are essential and ideally, permanent, components of national efforts to eliminate and sustain elimination of micronutrient malnutrition. The term advocacy refers to the development of strategy to change policy and includes the mobilisation of partners, modification of opinions and creation of action. Advocacy differs from communication in that advocacy changes policy while communication is intended to change behaviours.

Advocacy is most often a campaign addressed to national, regional or local high-level decision-makers and professional or public leaders. Short and long-term strategies for advocacy include lobbying, social marketing, education, community mobilisation, and information campaigns.

A strategic approach to advocacy implies that the overall goal - e.g. elimination of IDD - is clearly understood and that objectives and activities are all determined with that overall goal in mind. Objectives of advocacy could include changing or adopting legislation on USI or WFF; mobilising government resources for micronutrient deficiency disorders (MDD) prevention programmes; mobilising public opinion to change policies; or mobilising professional groups (e.g. research institutions and specialists) to value your information. In advocacy, the reputation and respectability of the advocating group and of the argument are equally important.

Elements of advocacy include:

- Establishing objectives;
- Collecting and organising information;
- Coalition development;
- Fund-raising;
- Audience research and targeting;
- Development of message(s);
- Presentation of message(s); and
- Monitoring and evaluation.

An advocate should be understood in the broadest sense of the word, as anyone who supports a certain programme and is willing to make a difference. If possible, a public co-ordination council or coalition should be established to co-ordinate work between different organisations, to gain better access to media and high-level programme and to better improve the development and implementation of programmes. Once the potential partners in this coalition are identified, work can begin to identify an agenda, create a network to work together, and to assess the coalition's resources.

The primary audience or target of advocacy efforts should be high-level policy makers. The secondary audience consists of those people or groups who influence the primary audience. In each country, the key decision-makers will vary. Messages addressed at these audiences should seek to

* Presented by Ms. Fatima Djaftdoeva, UNICEF consultant
influence both the professional and personal interests – the heart and mind – of the audience by presenting accurate data and solid arguments while associating with culturally important values. For example, advocacy efforts can appeal to policymakers’ own professional interests in wanting to promote a positive political reputation that could be improved by supporting MDD elimination programmes.

Research can be conducted to better understand what the primary and secondary audiences know, think and feel about the issues related to micronutrient malnutrition and what they are doing about it. Interviews with parliamentarians on these issues may be difficult and time-consuming but valuable in improving advocacy strategies. In addition, surveys, polls, focus groups and other methods of audience research can be employed.

With the information collected from audience research activities, an effective message or messages can be developed especially with the audience in mind. Messages are short, compelling, and include interesting phrases or sentences that summarise your story in a way that the identified audience will understand and to which it will be able to relate. They should clearly state the concern or issue and include both a policy objective and value dimension to effectively convince and persuade the audience. Messages should be delivered consistently to the target audience, using a variety of communication channels and over an extended period of time. In all advocacy activities, only credible sources should be used. Messages should also be specific without being too specialised, so as to be understandable to the target audiences.

As with all components of MDD elimination programmes, continuous monitoring and evaluation to assess progress and improve strategies are essential for achieving and sustaining success.

Programme managers should adhere to the principle of economy of resources and take advantage of partnerships and opportunities to share available resources. For example, funding of interventions to eliminate micronutrient malnutrition can come from the government, private sector and charitable organisations within a country, in addition to international organisations and agencies. Resources contributed by these different partners need not only be in the form of monetary funding but can also come in the form of discounted printing or design of IEC materials, use of facilities or hours of volunteer work. In one country a concert held on International Children’s Day was used to raise awareness and funds for IDD elimination.

In summary, advocacy and communication should be considered parts of a strategic process that brings together stakeholders and delivers targeted messages to an audience of decision makers in order to bring about policy change.
Strengthening monitoring and evaluation support to national efforts for elimination of micronutrient malnutrition*

Regular monitoring of interventions provides feedback on the function and impact of interventions, allowing programme managers to know the progress made towards the stated goal and to modify interventions where needed during course of implementation. Monitoring of micronutrient interventions helps to:

1. ensure the safety and appropriateness of supplementation and fortification,
2. ensure coverage of the most vulnerable groups,
3. ensure that interventions are achieving their intended goals,
4. ensure adequate attention is paid to logistics of intervention (e.g. delivering iron supplements),
5. make stakeholders (health workers, community organisations, target groups, food producers, government) aware of the importance of micronutrients and what needs to be done,
6. reduce recurring costs (by increasing efficiency and sustainability).

For example, monitoring of a food fortification programme can identify geographic areas or population groups not covered, identify problem points in production, distribution, price, or acceptance, etc.; and ensure that the micronutrient content of fortified food meets the desired range. A complete monitoring system not only collects information about the impact of interventions but the process, as well. Thus, in the case of IDD elimination, information on iodine status measured through Urinary Iodine (UI) alone will not provide sufficient information to recommend improvements that may be needed at the iodised salt production level.

Key questions to ask when monitoring interventions to eliminate micronutrient malnutrition are:

- Is the intervention functioning adequately?
- Is fortified food available in sufficient amounts?
- Is quality assurance in place and functioning?
- Is the health communication program in place and functioning?
- Is the intervention available (adequate supply at the retail level), affordable (low price) and acceptable (taste, quality, no adverse side effects)?
- What is the impact of the intervention on the micronutrient status in the population or, how has the micronutrient status improved in the (target) population?
  - For example, in case of IDD elimination interventions, what is the iodine status among the target population?

The first step of developing a monitoring system is to determine what information needs to be collected and why. Monitoring serves different purposes the most common being programme

* Presented by Mr. Arnold Timmer, UNICEF Regional Office for CEE/CIS and the Baltic states, Geneva.
management and research. For example, as part of programme management, monitoring can assess the magnitude of the problem, effectiveness of each activity (to determine what works) and the impact of these activities in relation to the goal. Monitoring the cost of micronutrient deficiency can also be useful in advocacy efforts, while evaluation of interventions, or individual aspects of interventions, can be used in improving external relations with the media or donors. Information collected through a monitoring system can also be used to answer a specific research question. Rather than collecting information for the sake of monitoring, each piece of information should be collected for a specific purpose. Given the limited resources (staff, financial) available it is essential to only collect information that is minimally required for effectively managing the programme. In the case of salt iodization, monitoring at production level should be fed back directly so that corrective measures can be taken to ensure adequately iodized salt leaving the factory. Then iodine concentration in salt at market or households will provide information on the adequacy level of this level of iodization.

The information collected should also lead to action at the root of the problem. In our example, it often happens that inadequate levels of iodine in salt at household level leads to interventions to improve storage of salt at market and household level. In fact often the problem actually lies at production level in the type of fortificant used (when the less stable iodide is used instead of iodate) and/or in the level of fortification (amount of iodine added at production level should be based on iodine content in salt at household level).

Once the purpose of monitoring has been decided, specific indicators need to be identified in order to develop an appropriate monitoring system. Information can be collected at various levels. For example, data about the two main interventions to eliminate micronutrient disorders – fortification and supplementation – should be collected at three levels: production/import, distribution/sales, and consumer/beneficiary. The consumer level is often overlooked in the monitoring and evaluation of micronutrient supplementation programmes, to their detriment. For example, non-compliance to iron supplementation schedules is a major constraint to the success of many IDA prevention programmes. Monitoring of these programmes should take into account the fact that interventions do not end at the distribution level.

Taking the example of food fortification, possible indicators include storage conditions and price at the retail and distribution levels and UIE at the consumer level. The iodine content in salt should be monitored at all levels while the effectiveness and quality of training and communication activities should be monitored at the retail and consumer levels. Consumer perception and awareness of iodised salt could also be assessed through monitoring.

Once indicators have been identified, questions of who, how, and how often need to be answered. A variety of factors determine what is appropriate for each country situation and will need to be considered by programme managers. Clarification of these issues will help partners – in this case, the producers or companies fortifying food – and government, better understand their responsibilities. When considering monitoring methods, the simple method of observation should not be underestimated. Experience in Turkmenistan has shown observation through routine site visits to be a powerful tool for monitoring that can be used to immediately identify and correct problems in iodised salt production.
The next step in developing a monitoring system is to determine what information from the indicators collected will be reported, how and by whom. In the case of iodised salt, both producers and government should record and report on the proportion of iodised salt samples/batches complying with national standards (within set range or above minimum level mg/Kg), the quality assurance and control procedures, labelling, packaging and storage procedures and conditions (see Table 3). In addition, producers should report more specifically on the amount of non-iodised and iodised food grade salt produced/imported/ exported and distributed in the country (both crude and per capita).

**Table 3: Possible indicators for monitoring of food fortification**

<table>
<thead>
<tr>
<th>Possible indicators</th>
<th>Frequency</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal (collected by company)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iodine content in salt</td>
<td>Every hour</td>
<td>Test kit/ titration</td>
</tr>
<tr>
<td>Procedures</td>
<td>Monthly</td>
<td>Observation</td>
</tr>
<tr>
<td>Packaging/ storage conditions</td>
<td>Daily/monthly</td>
<td>Observation</td>
</tr>
<tr>
<td>Quality/ effectiveness of training/ communication</td>
<td>Annual</td>
<td>Questionnaire</td>
</tr>
<tr>
<td><strong>External (collected by government)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iodine content in salt</td>
<td>Monthly</td>
<td>Test kit/ titration</td>
</tr>
<tr>
<td>Procedures</td>
<td>Annual</td>
<td>Document review</td>
</tr>
<tr>
<td>Packaging/ storage conditions</td>
<td>Annual</td>
<td>Observation</td>
</tr>
<tr>
<td>Inspection of compliance with laws/ regulations</td>
<td>Monthly</td>
<td>Document review</td>
</tr>
<tr>
<td>Quality/ effectiveness of training/ communication</td>
<td>Annual</td>
<td>Survey</td>
</tr>
</tbody>
</table>

Applying these steps to the specific situation of wheat flour fortification (Fig. 7), one might ask the question: Is the fortified flour available in sufficient quantity to reduce micronutrient deficiencies? The necessary indicator to determine the answer to this question may be the amount of fortified flour produced and distributed in the country. Next would be to determine, how the information should be collected. The method and partner responsible for collecting necessary information can vary depending on the question asked. In the case illustrated, reports from producers and sales data reported by distributors or the Ministry of Commerce are sufficient. Finally, the frequency of necessary data collection should be determined. With flour fortification, information may need to be collected on an ongoing basis (every batch). By working through this process for all interventions, appropriate and specific monitoring systems to each of them can be developed.
Is the intervention functioning adequately?

- **Question**: Is fortified flour available in sufficient quantity?
- **Indicator**: Amount of fortified flour produced and distributed
- **Method**: Reports from industry, sales data
- **Who collects**: Flour companies and distributors; Ministry of Commerce
- **Frequency**: Ongoing
Forming national coalitions for the sustainable elimination of micronutrient malnutrition*

Achieving national elimination of micronutrient malnutrition, and sustaining the success of elimination once it is achieved, benefits from close collaboration of different partners, each with their own roles and responsibilities. For example, collaborative efforts in food fortification imply the food industry's role and responsibility to continuously improve the production and supplies of fortified food for consumers. Commitment of the highest levels of government can enable better collaboration between these various partners. It is the responsibility of Government to provide the framework and authority for making decisions that lead to success. This includes the empowerment of partners to oversee appropriate implementation of the national strategies and to take decisions toward re-orientation should the agreed-upon strategies be seen to fail.

In many countries, programmes that initially succeeded in eliminating micronutrient deficiencies were unable to sustain success and, instead led to failure. Such was the case in Guatemala, Bolivia and in countries that arose from the former Soviet Union. The reasons for this lack of sustainability were not technical, but related to a decline in national vigilance, as manifested in low political concern, combined with diminished efforts by the salt industry, and a failure of consumers to insist on continued efforts.

The lesson learned from these failures is that sustained success depends on continued progress. In turn, continued progress depends on permanent supply of only iodised salt, which is the result of periodic political re-commitment, supported by constant attention of leaders and assurance of national oversight. Formation of a national coalition of stakeholders can help provide this national oversight.

A national coalition can serve a number of different roles in order to help reach the dual goals of achieving and sustaining successful elimination of micronutrient malnutrition. A national coalition can help ensure the quality and sufficiency of iodised salt for all people at a fair price. A coalition can manage domestic investments, which, despite foreign assistance, constitutes the majority of all investments in IDD and other programmes. Such a body can also provide oversight that is often insufficient when provided by government alone, as well as help in providing the following:

- Periodic renewal of high-level political commitment
- Open, transparent and constant communication
- Finance for training and other support activity budgets, combined with constant management attention
- Permanent incorporation of information into existing educational systems
- Regular reminders about the value of iodine for animals (in the case of IDD)
- Professional measurement of micronutrient nutrition, and
- Regular monitoring, with periodic public reporting

A national coalition can also be effective in overcoming ignorance among political leaders,

* Presented by Mr. Frits van der Haar, Emory University, USA.
Strengthening Strategies for the Elimination of Micronutrient Malnutrition in CARK

Consumers and the private sector that is often the greatest obstacle to success. Examples of ignorance about IDD include: political leaders’ lack of awareness on the effects of iodine deficiency on the national economy; consumers’ lack of knowledge about the damage of iodine deficiency on their children’s mental development; and salt producers’ lack of awareness of their responsibility to assure iodine nutrition of the nation. Comprehensive communication is required to periodically reach key politicians, permanently reach current and future consumers, and penetrate the food production industry. This is best assured through a national coalition.

Members of national coalitions may include, but are not limited to:
- Formal government bodies
- Judicial/legislative groups
- Professional groups
- Civic/civil society organisations
- Scientific groups
- Food industries
- Communicators

High level of government representation is needed to lend authority in oversight, decision-making and direction of the national coalition. The government remains the party responsible for reaching the national goal. Support from international agencies can be helpful.

In practical terms, national coalitions in CARK may be effective in pushing for achievement of the goal of IDD elimination by 2005 and for achieving it through USI; encouraging adoption and enforcement of norms and procedures to sustain the success; and calling for continuous public and other forms of education to assure permanent knowledge and acceptance of the agreed-upon strategy. In addition, national coalitions can provide oversight to assure those objectives and widely share the results and benefits of the national efforts. They can also serve as focal points in communicating and collaborating with international partners such as the Network for Sustained Elimination of Iodine Deficiency.

Issues that national coalitions must address include: 1) permanent quality and sufficiency of the product; 2) permanence of the essential national programme components; 3) assured progress in iodine nutrition; and 4) political, economic and human resource development. National coalitions can work to develop and implement national standards for fortification that can be respected by producers and suppliers and help ensure fair and transparent application of the laws and standards. They will help organise the ongoing and encompassing communication activities, and in the case of IDD elimination, help assure elimination by pushing for continuous collection of UIE information from the most sensitive population groups, pregnant women. The inter-sectoral nature of national coalitions can also be used to encourage continuous development of political, economic and human resources in relation to micronutrient malnutrition elimination efforts.

Suggested next steps for CARK countries include first, the identification of high-level leaders as potential members of the coalition. Second, efforts should be made to remind them of the national commitment to eliminating micronutrient malnutrition, advocating the concept that blending of all the available national talent is most likely to lead to success. Third, a national-level advocacy
event can be held to officially launch the national coalition. In some countries, steering committees, working groups or other similar groups on micronutrient deficiency related issues have already been formed. They might be taken to form an initial nucleus around which to form a national coalition.

The central and essential issue of any IDD elimination strategy or programme is to protect foetal brains against the negative affects of iodine deficiency. It is essential that iodine deficiency is understood to be the underlying cause of IDD and that USI be understood as the single successful solution for sustainable elimination. Unlike other health interventions, USI is achieved through private sector production and distribution, and the different needs of private sector partners needs to be considered. Also, unlike pills or injections, USI is not a ‘quick-fix.’ Permanent political commitment is needed to reach the goal of eliminating IDD and to sustain this achievement. Although the role of salt producers is vital in achieving USI, the government remains the party ultimately accountable for successful achievement of the national goal.
Vitamin A deficiency: programming and linkages*

The underlying cause of Vitamin A deficiency (VAD) is that the intake of vitamin A in the diets of affected populations is inadequate. Where vitamin A intake is low, such as in much of Asia, VAD is correspondingly high. Strategies for eliminating VAD should be understood as strategies to restore the vitamin A intake of deficient populations to appropriate and healthy levels.

Vitamin A deficiency is a term describing the state of inadequate vitamin A status. Vitamin A deficiency disorders (VADD) are all the effects of VAD on health, survival and vision. Xerophthalmia is the clinical evidence of VAD and represents only the tip of the iceberg of VAD among a population, similarly as cretinism from iodine deficiency.

Vitamin A is an essential micronutrient for the normal function, development and growth of children. It plays a key role in vision, including night-vision and colour perception, integrity of epithelial tissues, immune response, haemoglobin formation, skeletal growth and fertility. Normal gene function and gene regulation, as well as epithelial growth and differentiation, and immune response rely on adequate vitamin A status.

As a result of the reduced immune response and other affects of VAD, an estimated 1.2–3 million children die from insufficient vitamin A consumption. In addition, VAD leads to xerophthalmia in an estimated 4.4 million children and 6.2 million women each year in the world. However, many more are estimated to be affected by VAD without showing clinical symptoms of eye damage: 140 million pre-school age children and 7 million pregnant women have VAD.

Interventions

A number of interventions are available to eliminate VAD among populations. Since increased dietary intake is the most natural method of increasing vitamin A stores, interventions to promote consumption of vitamin A-rich foods are ideal. However, in practice, only focusing on promotional efforts to change food consumption habits is considered inadequate in normalising VAD. Distribution of high-dose supplements, on the other hand, allows for targeting of the most vulnerable group(s) and provides rapid, temporary amelioration of VAD among the populations reached. Fortification of commonly eaten food(s) is an intervention that can significantly reduce VAD in an entire population. Successful fortification requires a shift in responsibility from the health sector to the food industry. In addition, other public health interventions, such as de-worming, can support these efforts to improve vitamin A status.

In designing the overall strategy it is essential to consider the likelihood of sustained adoption and implementation of an overall strategy based on mixes of the approaches mentioned above. This requires political will among decision-makers, technical and financial feasibility, acceptance by intended beneficiaries, and adequate infrastructure requirements (including the delivery system, participation of the intended beneficiaries and ease of monitoring).

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* Presented by Mr. Frits van der Haar, Emory University, USA.
Dietary diversification

Dietary diversification alone is not enough to normalise vitamin A status among affected populations for a number of reasons. First, the bio-efficacy of vitamin A from plant sources is lower than previously assumed. Second, children's vitamin A intake from breastmilk may be insufficient due to the high prevalence of VAD among mothers. In many developing countries, frequent morbidity among children also reduces their food intake.

Although limited in addressing the entire problem, the usefulness of dietary diversification interventions should not be underestimated. For example, protection and promotion of breastfeeding is a key to reducing VAD among young children. Breastfeeding should be universal and exclusive until 4-6 months and continue up to 24 months, when possible. Promoting consumption of eggs, liver, dairy products, and other foods in which vitamin A is naturally available is also an important intervention. In areas where culture or taboo restrict consumption of certain vitamin A-rich foods by small children or pregnant and lactating women, efforts should also be made to overcome these restrictions.

Supplementation

Since 1998, the deaths of one million children in the world have been prevented by supplementation programmes to ensure their adequate vitamin A status. Large-scale supplementation programmes are ongoing in more than 90 countries, reaching more than 200 million children each year. In 43 of these countries, more than 70 per cent of the affected population is covered, while programmes in 50 countries have reached half or more of their affected populations. In many countries, the distribution of vitamin A capsules is integrated into routine immunisation programmes, or National Immunisation Day campaigns. Guidance on this strategy of integrating vitamin A supplementation with existing immunisation programmes has been published by WHO.

Supplementation interventions are based in the health care delivery system and can more easily be targeted to address the most vulnerable population group(s). Although these interventions have a rapid, positive effect on vitamin A status of a population, they do not address the underlying causes of VAD. For example, supplementation programmes have increased the vitamin A status among targeted populations in Chuuk Island and prevented many deaths from common childhood diseases. However, without additional interventions adopted over time, supplementation alone was shown to be insufficient to normalise vitamin A levels sustainably (Fig 8).
High-dose supplementation takes advantage of the fact that vitamin A is stored in the liver and that the effect of supplementation can last for many months. In 2002, the internationally recommended schedule for supplementation was adapted to reflect the most recent medical evidence on safe, effective doses of vitamin A to eliminate VAD (Table 4). They are currently under review by WHO and expected to be approved in the future.

### Table 4: IVACG recommended schedule for high-dose capsule supplementation

<table>
<thead>
<tr>
<th>Population group</th>
<th>Amount of vitamin A</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants 0-5 months</td>
<td>3 doses of 50,000 IU</td>
<td>One-month intervals</td>
</tr>
<tr>
<td>Infants 6-11 months</td>
<td>1 dose of 100,000 IU</td>
<td>Any opportunity</td>
</tr>
<tr>
<td>Children 1-5 years</td>
<td>1 dose of 200,000 IU</td>
<td>Every 4-6 months</td>
</tr>
<tr>
<td>Women, post-partum</td>
<td>2 doses of 200,000 IU</td>
<td>Within 6 weeks of delivery</td>
</tr>
<tr>
<td>Women of childbearing age</td>
<td>10,000 IU daily or 25,000 IU weekly</td>
<td>During first 6 months after delivery</td>
</tr>
</tbody>
</table>

Treatment and prevention of VAD through regular high-dose supplementation can significantly reduce hospital and clinic visits, reducing the strain on the health care system. Costing just a few cents per capsule, high-dose vitamin A supplementation has also been shown to be one of the most cost-effective health interventions available.
Taking advantage of the strong will of donor organisations to assist and support VAD elimination efforts, the cost of supplementation programmes can be minimal (Fig. 9).

**Figure 9: Benefits and costs of forty-seven health interventions**

![Graph showing costs and benefits of health interventions](image)

Source: World Bank, 1993

**Fortification**

Fortification of a staple food with vitamin A is a viable, long-term sustainable strategy to improve a population's vitamin A status. Building on simple, fortification technology and requiring modest ongoing investments, the costs of fortification are also relatively low. Conditions that increase the likelihood of successful fortification interventions include a centralised food-processing system that reaches a large proportion of the population, consumer acceptance of the fortified food product and the investment of private, rather than public resources.

Incentives for private investment and partnering with the food industry in fortification lead to benefits such as increased motivation of employees, increased innovation in food production, and a more stable society and healthy economy as a result of consumers' improved health status. In return, legislation should be adopted in order to address the private sector's needs for equity among all food producers and transparency in inspections and monitoring of fortified food safety and quality. In addition, the private sector's food sales networks can be used as an effective channel for increasing awareness and knowledge of VAD and its prevention.

Global experiences have established the safety, sustainability and effectiveness of fortifying foods with vitamin A to improve the vitamin A status of populations. Levels of fortification vary with the needs and conditions in each country. In some countries, fortification of certain foods has been made mandatory. Wheat and maize flour must be fortified with vitamin A in Venezuela, and in the United States, wheat flour intended for export as food aid must be fortified with 80-100 per cent of RDI. The cost of fortifying foods with vitamin A has shown to be minimal. For example, prices for fortified oil are only one to two per cent higher than prices of non-fortified oil in many countries (Table 5).
Table 5: Selected food vehicles for vitamin A fortification

<table>
<thead>
<tr>
<th>Food product</th>
<th>Level of fortification</th>
<th>Costs (approx. US$ per metric ton)</th>
<th>Benefits</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetable (cooking) oil</td>
<td>18 mg retinol/kg</td>
<td>US$ 2</td>
<td>Familiar, simple and cheap technology</td>
<td>Star Margarine (Philippines); Vanaspati Ghee (India, Pakistan).</td>
</tr>
<tr>
<td>Margarine and spreads</td>
<td>7.5-25 mg retinol/kg</td>
<td>US$ 0.80-2.45</td>
<td>Familiar (mimics butter), simple and cheap Established effectiveness</td>
<td>Star Margarine (Philippines); Vanaspati Ghee (India, Pakistan).</td>
</tr>
<tr>
<td>Cereal flours</td>
<td>2.5-5.0 mg retinol/kg*</td>
<td>US$ 1.50-3</td>
<td>Mandatory wheat and maize fortification since 1993 (Venezuela); Pandesal bread (Philippines)</td>
<td></td>
</tr>
<tr>
<td>Sugar</td>
<td>US$ 6-10</td>
<td>Extensive experience with demonstrated effectiveness</td>
<td>Rapid world-wide expansion</td>
<td></td>
</tr>
</tbody>
</table>

*Assuming ±15% losses before consumption, a safe level of fortification is ±30% of RDI at median consumption level of the population.

Fortification requires the market to ensure adequate supply and access of the population to the fortified foods and monitoring of the use of the fortified food to ensure that consumption effectively improves vitamin A status.

**Vitamin A and HIV/AIDS transmission**

Considering the role of vitamin A on healthy immune response, research on the potential protective role of adequate vitamin A status on mother-to-child transmission of HIV/AIDS has been actively studied in recent years. One study published in 1994 observed what seemed to be a link between the vitamin A status of mothers and HIV/AIDS incidence in their children. Research conducted since then has been unable to demonstrate any connection between VAD and HIV/AIDS prevalence. Neither have any study shown that vitamin A supplementation plays a protective role against HIV/AIDS transmission. In 1999, 728 pregnant HIV-positive women were given either daily vitamin A and beta-carotene supplements during pregnancy and vitamin A supplements post-partum or placebo in a trial intervention in South Africa. The study found no significant differences between the two study groups at birth or 3 months and concluded that there was no correlation between vitamin A status and transmission of HIV/AIDS from mother to child. A more recent study in Tanzania also found no effect of VAD in HIV/AIDS prevalence or on child survival at 24 months.

The general impact of adequate vitamin A status in immune function and in reducing the severity and complications of secondary infections makes reducing VAD a relevant intervention for HIV/AIDS affected mothers and children. However, although studies are ongoing, there is as yet no evidence of a protective role of vitamin A in the transmission of HIV/AIDS between mother and child.

In conclusion, VAD is a serious and widespread nutritional problem affecting millions of people around the world. The survival and health of mothers and children are negatively affected by VAD but effective means for the elimination of VAD are available. The sustained elimination of VAD requires both a multi-pronged strategy and continued national oversight.
CARK Experiences, Challenges and Future Vision
Strengthening Strategies for the Elimination of Micronutrient Malnutrition in CARK
Country situations

Kazakhstan*

Micronutrient deficiencies affect a significant proportion of women and children in Kazakhstan. An estimated 36 per cent of women suffer from IDA to some degree, with 8 per cent suffering from moderate anaemia, and one per cent from severe anaemia. Rates are even higher among women aged 35-39 living in western and southern regions of the country. Of these anaemia-affected women, 60 per cent are pregnant.

Women of childbearing age make up the highest proportion of the IDD-affected population, with over 60 per cent of all IDD cases reported among women between 15-49 years of age. Of these, approximately 4-12 per cent suffer from severe forms of IDD. While rates are much lower in central regions (25%), more than half of all women in all other regions are affected. Even in West Kazakhstan, which was once IDD-free, IDD affects an estimated 61 per cent of women of childbearing age.

No UIE data is available to assess the iodine intake of children. However, research has shown that goitre prevalence is high in several regions. In Kentau city (South Kazakhstan region), 26 per cent of children are affected by goitre. In Markakol and Western Kazakhstan region, estimated goitre prevalence among children makes up 12-35 per cent. Children whose mothers had goitres suffered from goitre at double the rate (14%) of their peers. In addition, studies in Almaty and South Kazakhstan the 1990s have shown that 6-7 per cent of all children have hypothyreosis, rates that are 150-300 times higher than that in European countries (where IDD prevalence is low).

A significant proportion of children also suffers from IDA. An estimated 36 per cent of children under the age of five suffer from some degree of anaemia – 17 per cent from moderate anaemia, and 1 per cent from severe forms of anaemia. Children in rural areas are more likely to suffer from moderate-to-severe anaemia (22% and 12%, respectively) than their peers living in urban areas. In addition, the rate of moderate-to-severe anaemia among Kazakh children is approximately double the rate among children of Russian and other ethnicities.

Recent research has also confirmed VAD to be a problem that negatively affects the health of women and children in the country. Dietary intake surveys had indicated that VAD was likely to be a problem throughout 1980s and 1990s. Recent surveys of serum retinol concentrations showed that approximately 38.2 percent of children in Kyzyl-Orda and 15.6 percent of children in Semey suffer from some form of VAD.

Table 6: Vitamin A deficiency among children in Kazakhstan (%), 2002

<table>
<thead>
<tr>
<th>Region</th>
<th>Moderate VAD, 10&lt;20 µg/dL</th>
<th>Severe VAD, &lt;10 µg/dL</th>
<th>Total VAD, &lt;20 µg/dL</th>
<th>Low level, 20&lt;30 µg/dL</th>
<th>Normal level, =&gt;30 µg/dL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kyzyl-Orda</td>
<td>33,3</td>
<td>4,8</td>
<td>38,2</td>
<td>38,7</td>
<td>23,1</td>
</tr>
<tr>
<td>Semey</td>
<td>12,8</td>
<td>2,8</td>
<td>15,6</td>
<td>22,2</td>
<td>62,2</td>
</tr>
<tr>
<td>Total</td>
<td>23,3</td>
<td>3,8</td>
<td>27,1</td>
<td>30,6</td>
<td>42,3</td>
</tr>
</tbody>
</table>

* Presented by Mr. Igor Tsoy, Kazakh Academy of Nutrition, Kazakhstan.
Although the problem of VAD has not yet been addressed at the national level, some strategies to reduce VAD are being implemented at the local level. For example, beta-carotene and vitamin A fortified bread and pastas are being introduced in Almaty. In Shimkent, vitamin A capsules were distributed as part of the routine tuberculosis immunisation campaign with the reported result of 40 per cent increase in inoculation efficacy.

Major causes of iron deficiency anaemia in Kazakhstan include not only lack of bio-available iron in diets, but also:

- insufficient consumption of proteins and ascorbic acid;
- low consumption of vitamin B₁₂, folate and other nutrients that are needed for hemopoiesis;
- helminth infections (especially in south and south-western regions);
- high level of contaminants in foods (heavy metal salts, radionuclids, pesticides) that inhibit hemopoiesis;
- high prevalence of abortions, intra-uterine device use, and inadequate birth spacing;
- high rate of artificial and mixed feeding of young children.

Factors contributing to IDD include low consumption of iodised salt, with less than 31 per cent of all urban households and less than 29 per cent of rural households consuming adequately iodised salt. Forty per cent of salt is either not iodised or contains inadequate levels of iodine to protect against IDD.

In general, low public awareness of micronutrient deficiencies, methods available for their prevention and deterioration of the PHC system, especially in rural areas, also contribute to high levels of micronutrient deficiencies.

Strategies for elimination of micronutrient malnutrition in Kazakhstan include:

- Improvement of the legislative base, especially in regards to food fortification;
- Social mobilisation targeted at policy makers, mass media and the general public;
- Improvement of inter-sectoral co-ordination, especially between local authorities, public organisations and the private sector within the country and with international organisations and foreign agencies (such as UNICEF, UNDP, WHO, CDC, USAID, etc);
- Improved implementation of reproductive health and breastfeeding promotion programmes;
- Conduct wider scientific research into the prevalence, causes and prevention of micronutrient deficiencies at all levels.

In order to implement these strategies, the necessary legal framework, monitoring system, and public awareness need to be developed. For example, national laws on IDD prevention, food safety and quality; national programme on elimination of micronutrient deficiencies; and relevant by-laws and resolutions need to be approved and adopted. Regular social, medical and biological monitoring should also be conducted to assess the progress of programme implementation. A wide-scale communication campaign supported by mass-media, and introduction of micronutrient deficiency prevention issues into school curricula need to be implemented in order to increase awareness and knowledge of these problems. In addition, prevention, early detection and care of MDD at the
primary health care level should be improved. A survey conducted in 2001 by the NHLC among PHC health workers found that 32 per cent of them were unaware of the importance of iodised salt in IDD prevention.

Specific support should also be given to food fortification efforts. Financial mechanisms such as favourable taxation, reduction of customs tariffs and a transparent, equitable legal framework can encourage production of fortified foods by the private sector. Other forms of support include improvement and strengthening of control on production, sales, and both export and import of fortified food products.

A number of legislative documents have already been approved and adopted in regards to the elimination of micronutrient malnutrition. These include several national programmes on health, healthy lifestyle and nutrition passed in 1998 and 1999. Legislative amendments to make flour fortification mandatory by 2005 are under development and review. Significant advocacy and support from KAN have assisted the development and adoption of these documents.

Two major salt producers (AralTuz and Pavlodar Salt) have received equipment and fortificant for salt iodisation since 1996, with UNICEF support. Laboratory equipment for quality control at production sites and at KAN has also been supplied with UNICEF support. These salt producers will continue to produce iodised salt with additional support from ADB/JFPR in recent years.

Table 7: Timeline of selected micronutrient-related research and interventions in Kazakhstan

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>The first research on IDA prevalence among women conducted at the national level by the Kazakh Academy of Nutrition.</td>
</tr>
<tr>
<td>1995</td>
<td>The first DHS in Kazakhstan was conducted and data on IDA prevalence among women of reproductive age and children under five were collected. Evaluation of nutrition status and IDA prevalence among non-pregnant women and their children initiated at the national level (UNICEF).</td>
</tr>
<tr>
<td>1996</td>
<td>UNDP national study on the nutritional status of the population (15-80 years old) conducted.</td>
</tr>
<tr>
<td>1999</td>
<td>Second DHS study in Kazakhstan.</td>
</tr>
<tr>
<td>1998</td>
<td>Evaluation of effectiveness of daily and weekly supplementation of pregnant women and young children by ferrous sulphate and folic acid conducted in Kyzyl-Orda (UNICEF).</td>
</tr>
<tr>
<td>2002</td>
<td>Implementation of nation-wide fortification activities supported by UNICEF and ADB/JFPR. Study on vitamin A deficiency prevalence among young children in selected regions of Kazakhstan, Tajikistan, Kyrgyzstan and Uzbekistan conducted with support from KAN and UNICEF.</td>
</tr>
</tbody>
</table>
In 2003, activities have been initiated to start flour fortification (with both iron and other micronutrients) at 15 flour producers, with plans for further expansion when legislation for mandatory flour fortification is enacted. Under the Health of the Nation programme for 2003-2005, communication and social mobilisation activities on IDD prevention, salt quality and UIE monitoring, as well as surveys on IDD-affected populations have been proposed.

Challenges faced during implementation of these MDD prevention efforts include limited financial resources from state and local budgets and limited awareness of policy makers and general population about the importance of these efforts for national development. Better planning to allocate needed financial resources and organisation of comprehensive communication programmes to increase awareness and knowledge are needed. These communication programmes should give primary focus to the significant impact of micronutrient deficiencies on mental and physical development of children, as well as on maternal and child mortality; to the various causes of IDA; and the availability of effective methods for MDD prevention.

**Kyrgyzstan**

*Iodine Deficiency Disorders*

Iodine deficiency is widely known to be a problem in the mountainous and land-locked country of Kyrgyzstan. In the last decade, however, the IDD morbidity rate has increased 8-10 fold, especially among children and adolescents. Endemic goitre prevalence ranges from 30-87 per cent in the country, depending on age and gender. However, due to unreliable diagnostics and a low referral rate IDD prevalence may be lower or even higher than suggested by these statistics.

*Figure 10: IDD morbidity (registered goitre cases) in Kyrgyzstan, 1995-2002*

![Graph showing IDD morbidity in Kyrgyzstan](image)

Source: MoH

*Presented by Ms. Lyudmila Davydova, Sanitary Epidemiological Surveillance, Kyrgyzstan.*
Factors contributing to this rapid increase in IDD prevalence include negative changes in nutrition patterns and the lack of access to affordable and adequately iodised salt. Consumption of iodine-rich sea products has decreased significantly in recent years. In addition, due to the lack of a local salt industry, the country depends on imported salt, up to half of which does not meet national standards for iodine content. Domestic salt producers process salt that has been imported from countries such as Kazakhstan, Turkey, Uzbekistan and China. Iodised salt prices are also reported to be double or triple that of non-iodised salt, discouraging consumption by a large proportion of the population.

Inadequate control of the turnover of technical salt (which is not iodised) and difficulty in controlling the small-scale import of salt by individuals, combined with the low level of public awareness on IDD and the need to use iodised salt also contribute to the high incidence of IDD in the country.

The country has developed a legal framework for fortification of salt with iodine. A national program for reduction of IDD in 2003-2007 has also been approved and calls for building infrastructure for local salt production; social mobilisation; quality assurance and quality control monitoring; increasing laboratory capacity for monitoring; and developing an enabling legislative framework for USI. A number of additional laws on consumers’ rights and population health also relate to USI for IDD prevention. In 2002, a presidential decree on production, storage and sale of salt was also passed. The national program and activities on USI have been implemented with the co-ordination of various ministries and agencies.

In addition to the development and approval of the national program, other IDD prevention efforts include establishment of a national Association of Salt Producers; support to 13 salt production and packing enterprises; and approval of the inter-state GOST on establishing iodine-content standards to 40 ppm in iodised salt. Information and educational activities are also being conducted to improve awareness on IDD prevention, as well as to promote positive dietary changes. In 2000, tests of salt samples by the SES found that as much as 54.3 per cent of salt in the country does not contain adequate amounts of iodine. As a result, over 50,000 kg of inadequately or non-iodised salt was removed from the market. In recent years, a greater proportion of salt samples has met national iodine concentration standards.

**Figure 11: Inadequately iodised salt (% of total samples) in Kyrgyzstan, 1997-2002**

Source: SES
Challenges to current efforts to prevent and eliminate IDD in the country include unresolved problems related to the turnover of technical salt, unregulated local salt deposits, pending legislative amendments, and difficulties in keeping the price of iodised salt down. Enforcement of existing laws is reportedly difficult, as the state laws tend to be more supportive of producers than inspectors and there is limited funding available for enforcement of the laws.

By increasing consumer demand for and supply of iodised salt; formation of wide political and public support through social mobilisation and involvement of the media; and co-ordination with governmental, non-governmental and international organisations, it is hoped that these problems will be solved in the future. Work by the newly established Association of Salt Producers is also expected to help correct the currently distorted pricing structure of iodised salt to accurately reflect the low added costs of iodisation, and make iodised salt more affordable to consumers.

Iron Deficiency Anaemia

According to MoH statistics, the number of cases of IDA reported among adolescents and adults has increased in the most recent years. The number of cases increased by approximately one-third from 87,568 in 2000 to 115,331 cases in 2001. In 2002 57 per cent of pregnant women and 77.5 per cent of children under the age of three were found to suffer from anaemia. Anaemia prevalence was higher among children and adolescents in northern regions, where rates were 87 per cent, than in southern regions, where average rates were 52 per cent.

Several factors contribute to the high levels of IDA in the country, including:

- Insufficient dietary iron intake (due to poor nutritional habits)
- Poor iron-absorption (due to dietary habits which include tee consumption during and after meal and other factors)
- Increased loss of iron (due to frequent child-births and abortions, high prevalence of parasitic infections)
- Increased erythrocyte-destruction (due to high prevalence of infectious diseases).

A government decree on IDA prevention was passed in 1996, paving the way for a pilot project to mass-produce fortified wheat flour in Kyrgyzstan in 1996-1997. Through the project, 30,000 tons of fortified flour was produced. However, due to low demand and difficulties in distribution of the fortified product, fortified flour was eventually mixed with non-fortified flour and sold instead. Since then, public awareness on IDA prevention through WFF has increased and activities such as roundtables on the topic have helped to create more positive attitudes toward WFF.

As a participant in the ADB/JFPR project for food fortification to combat micronutrient malnutrition, 10 enterprises have been equipped with flour fortification equipment. A national plan of action on WFF is also currently under development. Additional efforts to reduce IDA have included iron supplementation of women and children in Kara-Suu Rayon and Naryn Oblast, with UNICEF support. Efforts to increase the awareness and knowledge of the general population and medical community on IDA issues are also ongoing. Medical school curricula are being reformed to include a new field of public health, which will combine issues related to hygiene, sanitation, and medicine under one curriculum.
Strategies for successful, sustained elimination of IDA include the following:

- support to producers in WFF efforts;
- development and adoption of a national law on universal flour fortification;
- adoption of legislation for use of multi-micronutrient KAP Complex as premix for fortification;
- revision of the current legal framework to draft a national program on IDA elimination;
- continued IEC activities on IDA prevention and other activities for wide public and political support; and
- continued co-ordination between governmental, non-governmental and international organisations.

**Tajikistan**

*Iron Deficiency Anaemia*

Iron deficiency is prevalent throughout the republic and is especially high among pregnant women. Although IDA prevalence among pregnant women has decreased in some areas – Dushanbe and Khatlon Oblast – prevalence has increased nationwide since 1999. In GBAO IDA increase in pregnant women has been dramatic – from 26.1 per cent in 1999 to 42.0 per cent in 2002.

**Table 8: IDA morbidity among general population in Tajikistan, 1999-2002**

<table>
<thead>
<tr>
<th>Region</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dushanbe</td>
<td>702.0</td>
<td>587.5</td>
<td>1068.0</td>
<td>1188.6</td>
</tr>
<tr>
<td>Khatlon</td>
<td>1474.3</td>
<td>1929.6</td>
<td>1714.4</td>
<td>1645.7</td>
</tr>
<tr>
<td>Sogd</td>
<td>986.1</td>
<td>1179.9</td>
<td>1157.9</td>
<td>1802.5</td>
</tr>
<tr>
<td>GBAO</td>
<td>1306.8</td>
<td>763.2</td>
<td>709.4</td>
<td>652.9</td>
</tr>
<tr>
<td>RRS</td>
<td>1094.4</td>
<td>948.0</td>
<td>1680.9</td>
<td>1731.0</td>
</tr>
<tr>
<td>National</td>
<td>1165.0</td>
<td>1325.0</td>
<td>1445.0</td>
<td>1636.0</td>
</tr>
</tbody>
</table>

*Presented by Ms. Rano Abdurakhmanova, Ministry of Health, Tajikistan.*
Table 9: IDA prevalence among pregnant women in Tajikistan, 1999-2002

<table>
<thead>
<tr>
<th>Region</th>
<th>IDA prevalence among pregnant women (% of total treated in dispensaries)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1999</td>
</tr>
<tr>
<td>Dushanbe</td>
<td>75.9</td>
</tr>
<tr>
<td>Khatlon</td>
<td>57.4</td>
</tr>
<tr>
<td>Sogd</td>
<td>57.2</td>
</tr>
<tr>
<td>GBAO</td>
<td>26.1</td>
</tr>
<tr>
<td>RRS</td>
<td>54.5</td>
</tr>
<tr>
<td>National</td>
<td>56.9</td>
</tr>
</tbody>
</table>

Source: MoH

In response to the high proportion of the population affected by IDA, a pilot project on IDA prevention has been initiated in Khatlon Oblast. A working group has been established at the MoH, regional health department, and at the district level (containing members from cities and districts in Kurgan-Tube zone). Nearly 600 medical facilities (ranging from medical houses to SUBs and district hospitals) and more than 6,000 medical workers are involved in the pilot project.

As a result of the success and lessons learned in the pilot project, a National Programme on elimination of IDA elimination was developed. The programme includes increasing population awareness; building capacity for wheat flour fortification (through the provision of equipment and fortificant premix); weekly supplementation of ferrous sulphate and folic acid to target groups; and a survey to assess IDA prevalence. Target groups include young children (ages 6-24 months), pregnant women, and women of childbearing age. The national programme is also linked to other programmes on breastfeeding promotion and reproductive health.

Wheat flour fortification efforts have been conducted with the support of ADB/JFPR and UNICEF. To date, seven pilot mills had been selected and 22 tones of fortificant premix had been procured. The amount of fortified wheat flour to be produced is estimated at more than 146,000 tons.
Vitamin A Deficiency

A study was conducted in Khatlon Oblast in 2002 to assess the prevalence of VAD among children 6-59 months of age. Results from the study conducted jointly by the MoH, KAN and UNICEF confirm that VAD is a problem of public health concern in the republic. Efforts for high-dose supplementation have been initiated with the procurement of vitamin A capsules.

Table 10: Vitamin A deficiency among children in Tajikistan, 2002 study findings

<table>
<thead>
<tr>
<th>Serum retinol concentrations (µg/dL)</th>
<th>Number</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10</td>
<td>21</td>
<td>4.2</td>
</tr>
<tr>
<td>10&lt;20</td>
<td>113</td>
<td>22.6</td>
</tr>
<tr>
<td>Total &lt;20</td>
<td>134</td>
<td>26.8</td>
</tr>
<tr>
<td>20&lt;30</td>
<td>125</td>
<td>25.0</td>
</tr>
<tr>
<td>Total&lt;30</td>
<td>259</td>
<td>51.8</td>
</tr>
<tr>
<td>30 and more</td>
<td>241</td>
<td>48.2</td>
</tr>
<tr>
<td>Total</td>
<td>500</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Iodine Deficiency

The National Programme on IDD elimination includes steps towards achieving and sustaining USI, including monitoring of salt production and urinary iodine concentrations among the population, and a social mobilisation and public-awareness campaign. A national law on iodised salt was adopted by the Parliament in December 2002, helping to ease implementation of the national programme. Iodised salt is produced at three main salt factories in Tajikistan, both for domestic consumption and for export. The combined capacity of these three factories – Yavan, Voce and Asht – is 253,000 tones of iodised salt per year.

Social mobilisation activities have been conducted to increase awareness on the need for and ways to prevent IDD/IDA and to increase consumer demand for fortified food products. Schoolchildren have been both the target and participant in these interventions. Children received messages on IDA and IDA prevention in schools and also helped test the iodine concentrations of household salt by using rapid-test kits distributed at schools. Other activities include a ‘Children Against Goitre’ campaign to improve awareness of IDD prevention through consumption of iodised salt and mobilisation of local NGOs.

After a four-fold increase in the incidence of endocrine problems from 1991-1997, the IDD morbidity rate has stabilised in the last two years. However, IDD still affects a significant proportion of the population and the problem is severe in some areas. In 2001 an estimated 6,000 per 100,000 citizens were affected by IDD.
Figure 12: IDD morbidity in Tajikistan (per 100,000 population), 1997-2002

Source: MoH 2002

Resource constraints pose a serious challenge to the national efforts to eliminate micronutrient malnutrition. Limited central and local budgets; shortage of wheat stocks and frequent electricity cut-offs have led more than 90 per cent of mills to shut down. All this and inadequate laboratory capacity to assess and control the quality of fortified flour are factors limiting the progress towards USI and mass production of fortified wheat flour. Problems in pricing have made access to fortified products difficult for the large proportion of the population that lives in poverty. The rural characteristic of the population also limits access to fortified products and information on their importance that is broadcast through mass media.

Draft legislation has yet to be completed, and a working group will soon be established for this purpose. Supplementation needs to be better co-ordinated, and standards of salt iodisation need to be monitored and enforced. Reforms to customs should also be implemented in order to prevent import of non-iodised or inadequately iodised salt. School curricula should include appropriate information on micronutrients.

Plans have been made to develop a national nutrition policy and to incorporate elimination of micronutrient malnutrition as part of a national poverty alleviation plan. Activities still need to be conducted to assess the dynamics of IDD prevalence, increase access to high-quality food products, strengthen monitoring, improve information exchange across CARK countries, and increase cooperation with international organisations.
Throughout the 1990s research showed high rates of both IDA and IDD prevalence among women and children in the country. In 1993, 80 per cent of pregnant women and 43 per cent of girls ages 15-16 were reported to be anaemic. The proportion of women who encountered labour complications as a result of anaemia even increased from 40 per cent to 50 per cent during the decade. In 1994, research showed that 64 per cent of children in Dashoguz velayat and 20 per cent of those in Ashgabad, suffered from IDD.

The DHS conducted in 2000 showed somewhat decrease in the proportion of women and children suffering from anaemia. However, these rates remain high. Approximately 36 per cent of children under the age of five suffer from anaemia, 16 per cent - from moderate, and one per cent - from severe anaemia. Trends among women of reproductive age are similar: 38 per cent suffer from mild anaemia; 8 per cent from moderate anaemia; and one per cent from severe anaemia.

The DHS also revealed improvements in iodine consumption rate by the population. About three-quarters of the nation’s households were estimated to use adequately iodised salt (iodine concentrations>15 mg/kg) and median urinary iodine excretion (UIE) was 60-70 µg/L.

Efforts to eliminate micronutrient malnutrition in the country are ongoing and have received strong support and commitment from the government. In 1994, the government committed to achieving USI by 1998, and in 1996 presidential orders on WFF and USI were signed. In 1998, MoH Decree initiated a pilot programme on APC in Dashoguz velayat, which was expanded to Balkan velayat in 2000.

Production of iodised salt for elimination of IDD began in 1996. Currently, all salt for human consumption that is produced for sale in the country is fortified with potassium iodate. Preliminary reports show that more than 90 per cent of households have access to iodised salt, one of the indicators that a nation has achieved USI. In December 2002 the MoH approved an increase in iodine concentration standards in salt to 40±15 ppm. Since 2002, MoH and SES have implemented a monthly reporting system to monitor salt iodine concentrations at the retail and household levels. A draft national plan on biological monitoring has been prepared and calls for strengthening of IDD monitoring and for a survey to assess UIE among population.

Production of fortified wheat flour began at one mill in Ashgabad in November 1996. Since then production has increased to seven mills throughout the country. In 2002, 100,000 tons of fortified wheat flour was produced, an estimated 40 per cent of all first-grade flour produced in the country. Plans for further expansion of flour fortification efforts to include five new mills would allow production of fortified flour to double in the next year. Authorisation has also been given for the fortification of other grades of flour, in addition to the first-grade flour that is most commonly consumed and is currently fortified in the country. The government is also planning to submit a proposal to GAIN for further support to WFF efforts in the country.

Efforts to prevent IDA have also included provision of iron supplements to all hospitals in pilot areas – Dashoguz and Balkan velayats; building capacity of health workers on APC; conducting regular monitoring visits to the field; and promotion of anaemia prevention messages among the population.

* Presented by Mr. Anatoly Abramov, UNICEF Turkmenistan.
Challenges faced in food fortification efforts include limited technical knowledge and experience on food fortification, limited financial resources, and inefficiencies in the process of procuring equipment and reagents to improve monitoring and quality control capacity. Opportunities to exchange technical knowledge and experiences with countries that have successfully implemented WFF programs are also needed.

Although much progress has been made towards achievement of USI and in initiating WFF, the existing plans of action for the elimination of micronutrient malnutrition require further refinement. At all levels, improvements in overall monitoring and evaluation capacity are needed. Activities such as nutrition education and dietary diversification need to be reviewed in order to improve population coverage, especially of hard-to-reach groups that suffer most from IDA/IDD.

**Anaemia prevention and control**

WFF efforts are underway in the country but may be improved by inclusion of folic acid and other micronutrients in the fortification process. Acknowledging the temporary nature of international funding, efforts also need to be made to find other resources to fund fortification activities in the country.

Experience and recent research has highlighted areas for improvement and change in order to more effectively implement iron supplementation interventions in the country. The capacity of health workers needs to be improved through revision of training materials and introduction of updated IDA prevention and treatment protocols in medical education institutions (e.g. to better clarify differences between IDA prevention and treatment protocols). Recent research has shown that although the current programme targets women of childbearing age (15–49 years of age), women above the age of 30 are less likely to have children. In light of this finding, target groups for preventative supplementation may need to be revised in order to improve cost-effectiveness. Additional efforts to improve family participation and to strengthen monitoring and supervision of supplement supply and distribution are also needed.

In order to improve monitoring and evaluation further research on household and national food consumption and on the role of helminthes in the epidemiology of anaemia will be conducted.

**IDD/USI**

A study to be conducted in Ashgabad to assess IDD among school children and pregnant women is expected to indicate achievement of USI in Turkmenistan. An external verification of USI achievement/IDD elimination is also planned for 2003. However, efforts to sustain this achievement need to be made. These include application of the newly adopted national standard iodine concentration of 40 ppm in the production of iodised salt; extension of inspections to salt imports; and restoration of the capacity of the Maternal and Child Health Research Institute laboratory.

**Vitamin A**

Based on the findings of VAD studies in other CARK countries (Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan), similar dietary practices and high mortality rate among children under five in Turkmenistan, it may be presumed that the Republic also has a VAD problem. The country plans are to assess the VAD prevalence among children under five, and based on findings, develop relevant policies and strategies.
Uzbekistan*

Elimination of micro-nutrient malnutrition problem is the foundation of strategies aimed at ensuring soglom avlod, a healthy generation. Micronutrient malnutrition significantly reduces the chances of survival in children and negatively affects the health and wellbeing of both children and women. For example, an estimated 65 per cent of maternal deaths are due, in part, to poor nutritional status among mothers. Thus, the prevention of micronutrient deficiencies is a vital element of any effort to improve maternal and child health.

The results of the DHS conducted in 1996 showed that rates of stunting (low height-for-age) and wasting (low weight-for-height) among children in Uzbekistan are the highest in CARK, reflecting both chronic and acute malnutrition. In addition to this poor overall nutritional status, deficiencies in specific micronutrients—iron, iodine and vitamin A— are also prevalent. The DHS survey conducted in 1996 also showed high rates of hypotrophy (18.8%) among the nation’s children.

Figure 13: Stunting, wasting and hypotrophy prevalence in CARK

Source: DHS

Iron Deficiency

Anaemia prevalence is high both among women and children in the country: in the Republic of Karakalpakstan, 72 per cent of women and 81 per cent of children had anaemia; and in Fergana Oblast, anaemia was prevalent in 78 per cent of women and 79 per cent of children. Despite this high prevalence, public awareness of the importance of adequate iron intake is low. A survey conducted in Navoi Oblast in 2000 showed that only 34 per cent of the population knew the importance of iron in preventing anaemia. Forty-five per cent of the population identified iron as important in building physical strength or for other effects.

* Presented by Ms. Dilbar Makhmudova, Institute of Pediatrics, Uzbekistan.
Iodine Deficiency

An estimated 50-60 per cent of the population suffers from IDD. However, according to one survey conducted in Navoi oblast, 85 per cent of the population was unaware of the role of iodine in the health of pregnant women and children. Universal salt iodisation is the main strategy to prevent and eliminate IDD in Uzbekistan. However, by the end of 2002 less than half – approximately 47 per cent – of the salt on the market was iodised.

Vitamin A Deficiency

According to data collected in 1994, an estimated one-quarter of children in the country have vitamin A deficiency. Surveys conducted in 2002 have revealed VAD to be a public health problem affecting other CARK countries. Results of a survey conducted in Fergana Oblast in 2002 are expected to confirm VAD to be a public health problem in Uzbekistan, as well. Research from Karakalpakstan has also shown that VAD contributes to high anaemia levels in that region. Of the 53 per cent of the population affected by severe or acute forms of anaemia, 25 per cent was attributable to retinol deficiency. An estimated 35 per cent of anaemia cases were a result of both retinol and iron deficiency anaemia²².

Prevention

Methods of IDA prevention used in Uzbekistan are WFF, targeted iron-supplementation and public awareness promotion in selected areas. Wheat flour in five pilot oblasts is being fortified with iron and other micronutrients, with the support of ADB/JFPR and UNICEF. Iron supplements are distributed to women of childbearing age and children under the age of two in: the Republic of Karakalpakstan and Khorezm, Namangan and Andijan oblasts. Activities to improve public awareness of the importance of iron and IDA prevention are conducted in the Republic of Karakalpakstan and Khorezm and Fergana oblasts. The first round of a sentinel study collected baseline data in order to improve understanding of the IDA situation in the country.

Universal salt iodisation, communication and advocacy to support its achievement, are the main methods for IDD prevention. These include monitoring the quality and iodine content of salt at the production, retail and household levels. The communication component of the national programme has been co-ordinated at the national level, and includes development of a plan and materials for IEC, a roundtable for policymakers and a campaign to address IDD issues in schools throughout the nation. In addition to these activities, iodine test kits have been distributed at schools to increase awareness among children, transmit IDD information from children to parents, and to assist in nationwide monitoring of iodised salt usage at household level.

Large-scale activities to address VAD were initiated in 2002 and include distribution of high-dose vitamin A supplements to target groups and development of a national plan of action that calls for integration of supplementation into routine immunisation services beginning in 2004. The 2002 supplementation campaign was implemented as part of the national Healthy Week. Children aged 6-12 months received capsules containing 100,000 IU retinol while those 13-59 months received 1 dose of 200,000 IU retinol. The second dose of 200,000 IU will be administered to children ages 13-59 months in 2003.
Orientation meetings, training sessions and workshops were conducted to prepare for the supplementation campaigns and informative materials and video spots were developed to increase public awareness. These and other efforts are needed to overcome doubts by some officials about the safety of vitamin A supplementation and its integration with routine immunisations.

**Monitoring**

Monitoring of activities to eliminate IDA, IDD and VAD include sentinel studies on flour fortification, constant monitoring of salt iodine concentrations and a study on serum retinol levels. The first round of the sentinel study for flour fortification assessed the iodine, haemoglobin, ferritin, and folic acid status of the population. A second round of the sentinel study is planned for December 2003. Monitoring the iodine concentration in salt is conducted regularly at the production, retail and household levels. In addition to monitoring the supplementation campaign conducted in 2002, a study on VAD in Fergana Oblast will also be used for further monitoring of interventions.

**Constraints**

A key constraint in successful implementation of interventions to eliminate micronutrient malnutrition is the inadequate legislative framework for fortification of foods. Ensuring effectiveness of strategies is difficult without the authority and enforcement of appropriate legislation and national-level standards. Adoption of draft laws that may ameliorate this situation is also difficult.

Lack of co-operation and the decentralised nature of the salt production industry in Uzbekistan constrain national efforts to achieve USI. The domestic salt production industry is characterised by a large number of small producers that are scattered across the country, making communication and co-ordination between them difficult. The low profit margin of iodised salt production discourages many producers from iodising salt, as does the lack of state control over illegal salt production that undermines USI efforts.

A future challenge will be to identify ways to continue and expand WFF efforts that have already been initiated in Uzbekistan. By mid 2003 an estimated one-third of all flour produced in the country is expected to be fortified with micronutrients. However, new partners and resources to fund the expansion of WFF activities from the 5 pilot mills to all of the nation’s flourmills need to be identified.

**Opportunities**

Improved government support will play a key role in the future implementation of strategies to eliminate micronutrient malnutrition. High-level support will lend authority and will expedite development and implementation of national plans of action and national-level co-ordination of efforts. Strengthening consumer demand for fortified products – through communication stressing the importance of micronutrients – and supply of these products by the private sector will be also an area of future inter-sectoral collaboration. An opportunity for co-operation with international organisations will be in the development and submission of a proposal to GAIN for support to the national micronutrient programmes.

Current and future activities to eliminate micronutrient malnutrition should keep in mind the overarching strategic goal of all these efforts: the promotion of a healthy generation. Investments
towards this goal will not only improve children’s health, but will also have positive impacts outside the health sector. Improved economic growth and progress towards national development goals are all expected outcomes of interventions to improve the nutritional status of children and women in the country.

*Figure 14: From elimination of micronutrient deficiency to socio-economic progress*
Legislation in CARK

In CARK, some form of legislation on IDD/USI is in place or has been developed. Legislative documents in the five countries include:

- Executive Order of the President of Turkmenistan N 2626 “On salt iodisation and flour fortification with iron”, 28 May 1996
- Draft law of Kazakhstan Republic “On prevention of IDD”
- Draft law of Uzbekistan Republic “On iodisation of table salt”

Acts of technical regulation in CARK countries include a CIS interstate GOST (standard) 13830-97 On Table Salt adopted by Turkmenistan, Kazakhstan and Tajikistan. The document allows each country to determine its own national standards and regulations on USI. The ministries of health are generally responsible for dealing with issues of setting up of normative values for salt iodisation. Since the problem of IDD is shared throughout the CARK countries, harmonisation of salt iodisation standards (e.g. salt iodine concentrations of 40 ppm using potassium iodate as the fortificant) in the future may help smooth area-wide achievement of USI.

Model legislation

Based on lessons learned through international experiences in USI/IDD legislation, a model of an effective legislative document has been developed. A manual on developing legislation related to micronutrient malnutrition has been devised by the Micronutrient Initiative and copies of the manual have been distributed to national partners in the ADB/JFPR project on 'Improving Nutrition for Poor Mothers and Children in Asian Countries in Transition'. Provisions of model legislation on salt iodisation include the following:

- Purpose and scope
- Definitions (uniform definitions and terminology are useful in implementation and interpretation of laws)
- Applicability and exemptions
- General provisions
- Prohibitions
- Licensing
- Quality assurance
- Packaging, labelling, advertising
- Inspections
- Authorised bodies
- Powers and duties of authorised bodies
Review of the adopted and draft laws in CARK shows that many of these elements have been incorporated. Areas to be strengthened include clarifying the responsibilities of authorising bodies (e.g. MoH, SES, etc.) and in reducing areas of potential confusion (e.g. what is and what is not allowed in Uzbekistan’s legislation and in endemic zones in the Kazakhstan legislation).
Experiences from CARK countries in micronutrient communication planning and implementation

Kazakhstan*

With the support of KAN, a nation-wide communication and social mobilisation campaign on IDA and IDA prevention and elimination was launched in 2003. The main target groups of the information, education and communication activities are policymakers, private sector, the general population and mass media. In this way, it is hoped to initiate government support in terms of adoption and enforcement of relevant legislation, encourage production of fortified foods and create consumer demand for fortified foods.

The communication campaign has been implemented with the support from the Technical Advisory Implementation Group (TAIG) which consists of members from: KAN; MoH; NHLC; Confederation of NGOs; Ministry of Culture, Information and Social Consent; salt and flour producers; and the media. Activities have included development and distribution of IEC materials as well as TV spots on IDA/IDD prevention. The campaign was officially launched at a press conference in Almaty in February 2003 with the participation of UNICEF Goodwill Ambassador, Anatoly Karpov. A talk show with Mr. Karpov was also organised to increase visibility of the communication messages. Information, education and communication materials on IDD prevention were also pre-tested on policymakers and distributed to politicians at the presentation of the Millennium Goals to the Parliament.

Throughout the campaign, unity and visibility have been maintained by using selected slogans and messages, such as: “A pinch of salt – the simplest way for a healthy and happy family now and in the future” for IDD prevention and “Anaemia prevention is easier than anaemia treatment” for IDA prevention. The same pregnant woman and young child are also used in all the video-spots and posters. A universal logo developed with KAN and UNICEF support is also used on packages to identify fortified food products.

Figure 15: Examples of education materials with special logo of fortified products developed for Central Asia

* Presented by Ms. Lailya Kulmursaeva, Kazakh Academy of Nutrition, and Ms. Olga Zorina, Children’s Park newspaper, Kazakhstan.
Future activities outlined in the communication plan include:

- A roundtable for policymakers, MoH, KAN, NHLC, National Committee on Women and Family, salt and flour producers, Union of Grain Processors and Bakeries, mass media, ADB and UNICEF;
- Presentation on the relevance of IDD and IDA to national development based on cost-efficiency analysis to be conducted for MDD prevention interventions in Kazakhstan;
- Nation-wide training workshops for various groups with training by NGO partners (e.g. NHLC staff to train PHC workers, etc.);
- Production and distribution of IEC materials on IDA/IDD prevention – especially targeting teachers and schoolteachers, with support from NGOs and other partners.

In the South Kazakhstan city of Shymkent, children and adolescents are not only the target audience, they are also participants in the communication campaign. Teen activists and reporters have focused on IDD issues in their newspaper and organised activities to promote awareness of IDD among their peers. Children have also used graffiti as a medium for communicating IDD prevention messages: fences near children’s and outpatients clinics have been painted with prevention messages. It is hoped that other NGOs will also implement such creative strategies for working with children to eliminate micronutrient malnutrition.

Involving mass media in the communication campaign has been the most significant challenge encountered thus far. Due to the competitive nature of the privately owned media industry, regular, free radio or television airtime is difficult to obtain. More funding or other strategies for obtaining airtime is needed. It is hoped that an agreement with the radio industry on airing radio public service announcements will be reached soon.

Monitoring and evaluation of the communication campaign will be conducted in three ways. KAN will support the biological monitoring of the incidence of micronutrient deficiency disorders, while monitoring of media activities will be supported by the Kazakhstan Press Club. The Confederation of NGOs, along with a private company, will monitor the social response and impact of the communication campaign.

It is hoped that this large-scale, integrated campaign will act as a catalyst in changing consumer awareness and knowledge; in increasing private sector motivation to produce fortified foods; and creating both high supply and demand for these fortified foods.

**Kyrgyzstan**

Many partners from civil and religious organisations, as well as the health, education and social sector are involved in the national communication campaign on IDD prevention. Social workers and health workers, including family doctor’s associations, will help disseminate information, while schools will include activities on IDD prevention and distribute samples of iodised salt to schoolchildren. Video and print IEC materials, including calendars and growth-chart bookmarks, have also been produced to help convey prevention messages and increase public awareness.

*Presented by Ms. Galina Ignatovskaya, Republican Health Promotion Center, Ministry of Health, Kyrgyzstan.*
In one pilot project supported by the Swiss Red Cross Society, the participation of community members in identifying local health problems and developing solutions to these problems was shown to successfully increase usage of iodised salt. Health committees formed in selected villages of Naryn Oblast identified IDA and IDD as problems in their communities and worked with retailers to ensure supply of iodised salt in their villages. A survey showed that since the intervention, use of iodised salt has increased to 98 per cent of households in these communities.

Another innovative communication activity developed for the campaign is the use of a contest to encourage coverage of IDD issues in radio and television programmes. The competitive nature of the privatised media industry has required television public-service announcements to be shortened to a brief 15 seconds. However, by offering a monetary reward for the best radio or television programme on IDD, it is hoped that television and radio producers will voluntarily increase coverage of IDD issues. Positive results have already been reported.

**Tajikistan**

Through partnerships with local NGOs and with the support of ADB, communication activities are expected to broaden to cover all areas of the country. Task forces consisting of local authorities, teachers, and health workers have already been formed in each rayon, and teachers have been trained on IDD prevention.

Although shortages in electricity supply and low access to TV by most of the population limit the usefulness of television as a medium for conveying prevention messages, printed media have been widely used. In addition, the communication strategy has taken advantage of special events such as Child Protection Day and the national Nowruz holiday to increase awareness of IDD and IDA. The theme of the recent Child Protection Day held in Sogd, and other selected areas, was 'Children Against Goitre and Anaemia.' T-shirts and street-paintings by children were used to display prevention messages. Most recently, Women’s committees, doctors and local authorities helped to include micronutrients in the production of *sumalak*, a traditional food consumed during Nowruz.

**Uzbekistan**

Efforts to increase public awareness of micronutrient deficiencies and methods for their prevention have included development of IEC materials and involvement of the mass media. Video scrolls have been produced and development of printed IEC materials is planned for the future. Journalists have been invited to all workshops and events on micronutrient deficiency issues. For example, journalists were in attendance at meetings of government and experts on micronutrient deficiency disorders.

Special attention is paid to children’s participation in these efforts, a theme that was emphasised in the 2002 UN General Assembly’s Special Session on Children and the parallel session held in Bishkek. The Child Parliament has expressed its willingness to support MDD elimination efforts. School activities are also expected to help increase children’s awareness and involvement in prevention efforts.

In the future, better co-ordination of efforts at the national level is expected to improve implementation of the campaign.

* Presented by Ms. Salomat Kasimova, Endocrinology Center, Tajikistan.

** Presented by Ms. Nargiza Egamberdieva, UNICEF Uzbekistan.
Experiences from CARK countries in monitoring and evaluation of micronutrient interventions

**Turkmenistan***

*Anaemia Prevention and Control*

Monitoring of APC activities include field visits, laboratory testing, and quality control of fortified flour at production sites. Field visits consist of conducting questionnaire-based surveys among community members, targeting parents and women of childbearing age, and medical personnel. Although these visits are conducted regularly on a quarterly basis, they are reported to be used more for supervisory purposes than for monitoring. Fear of punishments from MoH and a heavy paperwork burden need to be reduced and the objective of monitoring to improve practices better understood.

Laboratory testing is conducted to measure iron concentrations in blood samples from the population. The cyanide method is used in this process. In flour fortification, both semi-quantitative atomic spectrometry and titration methods are used to monitor the quality of fortified flour at the production level.

A DHS conducted in 2000 and two external assessments in 2002 have also helped monitor APC efforts in the country. The mid-term-review of Government – UNICEF strategies recommended nation-wide expansion of APC efforts. At preparatory stage for a proposal for support from GAIN, a national assessment of the flour fortification situation will be made, with support from UNICEF.

*IDD prevention/USI*

Since 1999, field visits to salt production sites have been conducted jointly by the MoH, Ministry of Energy, and UNICEF. Quality of iodised salt is also monitored at production sites using the titration-method.

National monitoring of iodine concentrations in salt at all levels has been conducted since May 2002. The SES has both the legal authority to monitor all facilities and the sufficient human resources in order to take charge of these responsibilities. The MoH is also involved in national monitoring efforts, which include a system of monthly reporting on salt quality at the production, retail and consumption levels. Data collected at the rayon and oblast level are entered into a specialised computer program.

So far, rapid-test kits have been used in more than 400 schools, warehouses, shops, and production sites to measure iodine concentrations. Titration kits will also be used in 2003. The knowledge of retail staff on aspects of iodised salt—such as shelf life—is also assessed. However, it is recommended that these assessments should entail instructional, rather than punitive nature of monitoring.

The 2000 DHS provided valuable information on the status of USI efforts in the country. In 2002, two external assessments were conducted. The recommendation that verification of USI achievement be conducted in 2003-2004 came out of the MTR review process in 2002. An increase in median UIE from 60 µg/L (as measured in a 1998 survey) to higher than 100 is expected.

*Presented by Mr. Anatoly Abramov, UNICEF Turkmenistan.*
Vitamin A

The MoH has agreed that a study to assess VAD prevalence in the country is needed. However, this activity depends on the availability of funds. In general, the monitoring and evaluation capacity and activities in the country need to be strengthened at all levels. Plans of action also require further refinement.

Uzbekistan*

Data from monitoring is useful in sensitising and increasing awareness of decision makers and is an essential element in effective programme implementation. Monitoring also serves the following functions:

- Ensures that the salt produced or imported into the country is iodised;
- Improves targeting of actions to eliminate micronutrient deficiency among the population;
- Determines the efficiency of the programme and allows for timely correction or adjustments to interventions; and
- Motivates the responsible persons to take appropriate measures and decisions.

Monitoring of iodine deficiency disorders

In Uzbekistan, monitoring of salt iodine content is conducted at four levels: production, distribution/retail and consumption level. Activities at the production level include development of appropriate instructions on monitoring of salt, training of laboratory assistants at salt production sites and provision of necessary laboratory equipment.

At the distribution and retail level, the storage, transportation and sale of salt is monitored. Activities included development of methodical recommendations for SES workers on iodised salt monitoring, training of laboratory and oblast/rayon SES staff.

At the consumption level, monitoring is conducted to assess work done in co-operation with local mahallas. The communication materials and specifically those targeted at mahalla leaders, as well as the at mahalla activist groups (created to promote awareness and help conduct educational activities in school related to IDD/USI) are monitored. In addition, bio-monitoring through UIE assessment is also conducted among selected groups of schoolchildren. These assessments are conducted at the Institute of Endocrinology using a titration method.

Evaluation of activities conducted to eliminate IDD are made through analysis of the clinical, biological and programme indicators, such as:

- Size of thyroid gland (percentage of children with enlarged thyroid gland by palpation)
- UIE of pre-school age children
- Population coverage (percentage of families or households consuming iodised salt)
- Evaluation
- Reports on availability of iodised salt
- Laboratory reports on quality of iodised salt

* Presented by Ms. Dilorom Akhmedova, Ministry of Health, Uzbekistan.
**Vitamin A deficiency**

Over 5 million capsules containing 100,000 ME of vitamin A were distributed to target groups throughout the country in the 2003 vitamin A supplementation campaign. These target groups included children aged 1-6 and post-partum mothers (within 8 weeks of childbirth) in all the regions. In Karakalpakstan and Khorezm oblasts, supplements were also distributed to children aged 6-12. The decision to conduct the supplementation campaign was based on the findings of a survey in one oblast and the high rates of infectious disease morbidity and infant mortality in the country.

Monitoring of distribution of Vitamin A capsules showed that 79 per cent of children under the age of six were covered by the supplementation campaign. Coverage was higher in Khorezm, (86.4%), than in Karakalpakstan (72.6%). Transient headaches were reported in a small number of children.
Experience of salt and flour producers in working towards elimination of micronutrient deficiencies

*Flour fortification in Kazakhstan*

The Union of Grain Processors and Bakeries (the Union) works with UNICEF and ADB in an efforts to mass-produce fortified wheat flour in Kazakhstan. The Union has been involved in various aspects of this process, including selection and introduction of WFF concepts and knowledge to participating flour mills; conducting necessary quality control and training activities; creation of an education centre and laboratory to control quality of premix; and participation in IEC and marketing activities to promote fortified products.

With the consultative assistance of the Union, three of the 15 companies have been selected to participate in the WFF project in the autumn of 2002. After an initial peak immediately following the launch of WFF, monthly monitoring reports show that production has declined due to a number of factors, one of which being low consumer demand for the product. A delay in the launch of the communication campaign on IDA prevention and inadequate public relations on the part of producers both contributed to this smaller-than expected market for fortified wheat.

Other constraints include absence of national regulatory documents on WFF that reduces incentive and motivation of producers to produce fortified flour, as well as an absence of regulatory documents on standards for fortification. Government support is required now and even more in the future after the conclusion of the current project. Co-ordination of goals between the state, consumers, and the private sector also needs to be improved.

*Figure 16: Dynamics of fortified flour production at Tsesna-Astyk Corporation, Kazakhstan*

Strategies to overcome these constraints include adoption of draft legislation to make fortification of flour mandatory for all flour producers starting from January 2005; social mobilisation and advocacy; and continued support for the national communication campaign. Communication strategies should be targeted at a number of different target groups, such as central and local governments, flour producers, teachers, students, doctors and health workers, and mass media.

*Presented by Mr. Yevgeny Gun, Union of Grain Producers and Bakeries, Kazakhstan.*
Flour fortification in Kyrgyzstan*

Independent Bread Inspection Agency (a joint-stock company) has long supported efforts for elimination and prevention of micro-nutrient malnutrition. In the former Soviet Union, this agency was one of the pioneers in micronutrient deficiency research, especially on the topic of iron deficiency. It was also involved in the information and education campaign to support the 1996-1997 project on WFF in Kyrgyzstan.

Under the current WFF programme implemented with ADB/JFPR and UNICEF support, considerable efforts have been made to improve co-ordination with the public and private sectors, as well as to improve public attitudes towards fortified products. Although WFF is not mandatory, producers are encouraged to produce fortified flour through favourable taxation and credit policies. Payment of taxes on inputs can be delayed until fortified flour is produced and interest-free credit is also offered to participating flourmills. In addition to a logo on all packages of fortified flour, brochures, calendars and other IEC materials have been used to increase awareness of and demand for fortified flour. The Independent Bread Inspection Agency/Organisation has developed methodological manuals for WFF, trained staff of flourmills, and organised seminars for stakeholders.

In future, large-scale fortification of bread, pasta and other products should be considered. Reportedly one firm has already initiated efforts to fortify pasta products. The effect of fortificants on yeast in baked goods should be adequately studied and shared with producers.

Other methods to improve WFF efforts include a greater emphasis on production and technical issues of WFF for the private sector. To date, workshops have been conducted at the central or regional level. On-site workshops and training sessions may be more useful in addressing more specific production issues related to fortification. Also, some difficulties have been encountered in using the multi-micronutrient premix with existing equipment, because of the starch in the premix have been reported. It is recommended that the starch in the premix be replaced.

Salt iodisation in Uzbekistan**

Private sector production of iodised salt could benefit from the improved government support, through creation of a transparent legal framework and for helping create consumer demand for iodised salt.

Local salt deposits and salt reserves in lakes throughout the country offer relatively easy access to free or low-cost non-iodised salt and lower demand for iodised salt produced by the private sector. Consumer rights’ organisations and the State Standard Agency are partners in helping ensure that only high-quality iodised salt is sold at markets. However, improved commitment of local governments to IDD elimination through USI is needed.

* Presented by Mr. Alexander Shefner, Independent Bread Inspection, Kyrgyzstan.

** Presented by Mr. Amankul Baykulov, ADB/JFPR Project, Uzbekistan.
Interventions to prevent and eliminate micronutrient malnutrition can be organised into four major strategic categories: supplementation, fortification, dietary diversification and other public health interventions. The importance, effectiveness, and timeliness of these strategic directions varies depending on both country situation and stage of programme implementation (Fig 17). Each has advantages and disadvantages that must be weighed when designing comprehensive programmes. Only the best combination which takes into consideration those advantages/disadvantages and potential impact of each strategy may result in sustainable achievements towards improved nutritional status of population. Hence, it is important that the country designs the short-term and long-term strategic plans in the most comprehensive way with consideration of relevant elements of all strategic directions.

*Presented by Ms. Nune Mangasaryan, UNICEF CARK.*

Figure 17: Intervention strategies for eliminating micronutrient malnutrition

Source: WHO

Supplementation is a medical approach to address micronutrient malnutrition that involves the administration of capsules, tablets, syrups, etc. containing micronutrients.

This intervention results in a rapid improvement of nutritional status, is relatively low in cost and can be easily targeted to high-risk groups within a population. The strategy is needed to quickly reach high coverage of the target population before other strategies take off. It is also the method that is most appropriate when deficiency is severe or life-threatening. However, poor compliance and limited long-term efficacy are constraints in using supplementation alone to eliminate micronutrient deficiencies. In addition, supplementation often creates dependency on external sources for supplements, funding, or other resources. In the long term, the supplementation has to be more focused to vulnerable groups that still need additional dosage after other interventions are implemented with high coverage.

Fortification is the addition of nutrients to a commonly eaten food and is an effective long-term approach to improve nutritional status of population. The initial cost is modest and recurring expenses are less than those of supplementation. However, fortification requires the co-operative
efforts of governments, food industries and consumers. The selection of appropriate food vehicles for fortification is crucial for a successful strategy. In addition, the chemical form of the fortificant is of equal importance to ensure adequate intestinal absorption. Therefore the fortification of staple food takes a certain time to reach high coverage. One of the options for combining the two aforementioned strategies may be an urgent initiation of supplementation activities while fortification is being scaled up gradually. Once a high coverage of population with fortified food has been reached, the supplementation may be scaled back to small group of target population. For example, in the case of iron-deficiency anemia prevention programme in CAR, the supplementation target group may be narrowed from women of reproductive age to pregnant women.

As the most natural method of improving nutrition status, dietary improvement or, dietary diversification strategies are the most desirable and sustainable method of preventing micronutrient malnutrition. These strategies include those that ensure access of households, especially those at risk, to micronutrient-rich foods. Educational efforts aimed to change feeding practices with respect to these foods are crucial for the successful strategies. Examples include actions aimed at promoting home gardens and small animal husbandry through home or community technologies and poverty alleviation programmes to increase household access to nutritious foods.

Measuring the dimension of a public health problem is the first step of an integrated strategy. In addition to the initial assessment of the problem, continued monitoring of nutrition-related diseases, nutrition risk factors, and evaluation of the impact of nutrition programmes are also necessary components. Local health centres should be responsible for data collection and their work in this regard should be supported with the provision of equipment to measure weight, height and haemoglobin.

The minimum package of nutrition interventions for young children recommended by WHO and UNICEF consists of the following components:

- Promote and protect exclusive breastfeeding until 6 months.
- Initiate complementary feeding at the appropriate time, starting at 6 months, in addition to breastfeeding until 24 months.
- Provide appropriate nutrition management during and after illness.
- Ensure adequate vitamin A intake.
- Provide iron supplement where iron deficiency prevalence is high.
- Promote the use of iodised salt instead of non-iodised salt by all families.

**Anaemia prevention and control**

Anaemia is a serious problem with high prevalence in all CAR countries. Experiences gained in APC programmes in the 1990s and the achievements and accomplishments made in the past provide a good basis for further expansion and scaling up of efforts, with significant progress in iron status expected within the next 3-4 years. The multi-pronged approach of country programmes should be continued, for both effectiveness and sustainability. Programmes need to be sustainable and ongoing, with more attention to fortification and stronger monitoring and evaluation components.

More specifically, aspects to be strengthened for more successful anaemia prevention and control include the following:
National ownership: Country-specific plans of action for APC, incorporating also recommendations of recent CARK MCH Forum (VI) and the work conducted during this workshop by each country. Improved education and advocacy directed at both health professionals and government policymakers can help increase national ownership. For those in the health sector, a greater understanding of the extent and consequences of APC on the current health and future development of the country is needed.

Nutrition education and dietary diversification: Efforts need to be made to incorporate nutrition education and promotion of dietary diversification into other national programmes, such as IMCI and Safe Motherhood. Linkages should be made with complementary health measures such as promotion of exclusive breast-feeding, immunisation and vitamin A supplementation.

Monitoring and evaluation: Monitoring systems should evaluate both the process and outcome of interventions and should include a permanent component to monitor enforcement of the relevant legislation. Further research on household and national food consumption will also be undertaken (with joint support from ADB/UNICEF). Research may be needed to assess the problem of parasitic infections in some regions of CARK countries.

Supplementation: Greater attention needs to be paid to the supply and distribution of supplements that appears to be weak at peripheral levels. Preventive supplementation can be expected to be necessary for the next three to five years, or until IDA prevalence falls below 30 per cent. At that point, supplementation may be more specifically targeted at young children at risk, adolescent girls and pregnant women.

Wheat flour fortification: Within APC programmes, fortification presents a valuable opportunity to significantly reduce micronutrient deficiencies and should be aggressively pursued over the next few years. Like all other interventions, food fortification alone is not enough to eliminate IDA. However, WFF will help elevate the average intake of iron, folic acid (and other micronutrients) of the majority of the population while allowing for more efficient use of resources to address groups that might continue to be iron-deficient. New strategies and further scaling-up of activities are urgently needed in order to sustain the momentum produced by current WFF efforts (see Table 11). In addition to general support to communication and monitoring components of national programmes, specific support is needed in the following areas:

- **Capacity building** should be ongoing at all levels of concerned sectors with the involvement of educational institutions. Technical assistance and support should be provided, including exchange of experiences from countries that have implemented successful WFF programmes and training of mill staff on fortification process. Curricula of medical education institutions should increasingly reflect the high priority of and latest knowledge on WFF.

- **National standards**: Countries should establish national standards for aspects of WFF programmes such as fortification levels and quality assurance/quality control. Where possible, global experiences (such as those in Latin America) should be considered.

- **Legislative and regulatory enforcement**: As important as development of appropriate legislation and regulations is the continued and transparent enforcement of these by government.
**Mass production**: Fortified flour should be produced by all large mills in order to ensure supply to cover at least 90% of the women and children in CARK countries. Technical assistance, procurement of supplies and installation of equipment should be provided to flour producers in order to sustain activities at the pilot mills and to extend experience to other large mills.

**Monitoring system**: In addition to general programme monitoring, additional monitoring should be conducted at the production level. Specific information about the milling process should be collected and monitored.

**Table 11: Current fortification status and plans for the future**

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of large mills</th>
<th>Number of mills supported by ADB</th>
<th>Proposed for 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kazakhstan</td>
<td>35</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>15</td>
<td>5</td>
<td>7 (3 equipped previously by UNICEF)</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>17</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>18</td>
<td>0</td>
<td>15 (3 equipped previously by UNICEF)</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>30</td>
<td>14</td>
<td>16</td>
</tr>
</tbody>
</table>

**USI for IDD elimination**

Methods to increase iodine intake of populations include supplementation and fortification of foods (most commonly, salt). Advantages of the supplementation method are that the once-yearly oral supplements are widely accepted and do not require active participation of the population. The need for extensive logistical planning and a reliable monitoring system and the exposure of the population to potential risks or adverse effects are disadvantages to distribution of iodised oil supplements.

Salt is the internationally and nationally agreed food vehicle of choice for iodisation. Although other food vehicles (bread, milk, and water) have been iodised, salt has been chosen for the following reasons:

- Salt is consumed by everyone;
- Salt production is generally centralised;
- Salt iodisation is easy to implement;
- Salt iodisation is cost-effective (The cost of iodisation is US$0.02-0.09/person/day, or US$0.04-0.05/kg of iodised salt);
- The colour, taste and odour of salt are not affected by iodisation;
- Salt quality can be easily monitored at production, retail and household levels, thanks to field test methods that are currently available.

Thus, USI is the strategy recommended by WHO, UNICEF and ICCIDD to eliminate iodine deficiency.
In developing salt iodisation programmes, the choice of fortificant and level of iodisation are the issues that must be considered. Iodide has been used as the fortificant in iodised salt production for the last 80 years. It is still used in many European countries today. However, iodate, which was introduced as a fortificant 50 years ago, is more soluble and stable than iodide. In humid and warm climates, iodate is the preferred form of fortificant. It is recommended that iodised salt should provide 150 µg iodine/day. Verification includes that UIE is ultimately within the range of 100-300 µg/l. The recommended level of iodine in salt is 20–40mg of iodine per kg of salt, assuming the following:

- 20% loss between the point of production and the household;
- 20% loss during cooking; and
- average salt intake of 10 g/person/day.

All above mentioned recommendations were taken into consideration by CARK governments to decide on salt iodisation with potassium iodate at levels of 40 ppm iodine. The commitment by CARK countries at UNGASS to reach USI by 2005 is another indication of recognising the importance and significance of the issue.

To achieve sustainable USI within the next two years, the high commitment of governments and the salt industry; private-public partnerships; appropriate legislation and enforcement mechanisms; and reliable surveillance system to monitor quality control and quality assurance are the major components to prioritise for success.

To achieve USI in CARK, the following urgent tasks have been identified:

1) support salt producers,
2) adopt laws on USI, and
3) develop and implement reliable surveillance systems. Support to the private sector in achieving USI includes increasing capacities for salt iodisation, marketing, testing, product promotion and ensuring their participation in the policy- and decision-making process. Adequate surveillance systems would include monitoring at three levels:

- Production: to monitor product quality and safety. This is the ongoing responsibility of producers.
- Market: to monitor product quality and safety, and the constant adequacy of supplies to meet consumer purchases against a fair price. This is a regular responsibility of decentralized government.
- Household: to monitor permanent acceptance by consumers, with specific attention to maintaining adequate iodine nutrition among pregnant women. This is a responsibility of the national government undertaken at regular intervals.

In order to sustain USI for IDD elimination, several more conditions must be met. These include the continued commitment by the government and salt industry; partnership arrangements within countries with advocacy and support of international organizations; and adoption and effective enforcement of relevant legislation. In addition, consumer education and awareness of the dangers of IDD and the need to consume only iodised salt will ensure the continued acceptance of the agreed-upon strategy of universal salt iodization. Periodic (every 3-4 years) assessments of iodine status (UIE) among the population should also be conducted in order to verify sustained progress in eliminating IDD.
Fortification: current status and challenges for future*

At the Almaty Forum in 2001, representatives from Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan agreed to a set of regional and national actions to achieve USI and implement wheat flour fortification for the elimination of iodine and iron deficiencies in CARK. The governments committed to fortify all salt for human consumption with potassium iodate and to the maximum extent achievable fortify wheat flour with micronutrients using the KAP Complex multimineral premix formula developed by KAN. All five countries also agreed to the following national-level actions to achieve those two goals:

- Pass and effectively implement mandatory salt iodization laws and facilitate the consideration of flour fortification laws in a timely fashion.
- Integrate fortification programs into national strategies and policies to reduce poverty, raise the quality of human resources and support survival, growth, psychosocial and cognitive development of all children, especially those of early ages.
- Promote an expanded public sector-private sector dialogue on fortification of salt and cereal flour and organise advocacy events to increase program and donor support.
- Develop and implement a communication strategy and campaign to raise public awareness parents on the importance of fortified salt, wheat flour and wheat flour products, to improve the parental skills in this respect and promote increased consumer demand for these products. These activities will be led by non-governmental organisations in collaboration with the private sector, national experts, the media, local authorities and communities.

Four of the five CARK countries participate in the ADB/JFPR project, ‘Improving Nutrition for Poor Mothers and Children in Asian Countries in Transition’, along with Mongolia and Azerbaijan. Turkmenistan is pursuing food fortification strategies with the support of UNICEF.

Universal Salt Iodisation

Government support and commitment to achieving USI, expressed through adoption of national legislation on USI, is a key element of salt iodisation programmes. Such legislation was passed in Kyrgyzstan in 2000 and in Tajikistan in 2002. Draft law is still under discussion in Kazakhstan and Uzbekistan.

Through ADB/JFPR support, potassium iodate, iodisation equipment and both packaging equipment and supplies (i.e. salt bags and film rolls) have been procured for the 4 participating CARK countries. Mini salt-iodine labs, test kits and WYD Iodine Checkers – photometers for measuring iodine content in salt – have also been provided.

Wheat Flour Fortification

By removing the micronutrient-rich bran and germ from wheat flour, the milling process significantly reduces the micronutrient content of processed wheat flour. For the more processed and highly refined first- and premium-grade flours the micronutrient content is even lower.

* Presented by Mr. Rustam Muzafarov, ADB/JFPR.
Fortification restores the flour micronutrient content. Fortifying flour at the mill, rather than at bakeries or other processors, is easier to monitor and regulate than at other sites. Fortification of flour, rather than bread or other products also ensures greater population coverage.

ADB/JFPR provided financial and technical support for procurement of feeders and iron-based premix KAP-1 to all participating countries in order to ensure that one-third of consumed wheat flour would be fortified.

The issues of quality assurance and control were thoroughly considered during Project implementation, and special training workshops were conducted for flour millers.

Figure 18: Wheat flour processing

In 2002 all four countries adopted the technical standards for use of the KAP Premix developed by KAN. Equipment, pre-mix, and fortification equipment (namely, feeders) have been installed. However, only Kazakhstan and Kyrgyzstan have started production. From October, 2002 to February 2003, nearly 90,000 metric tons of fortified flour was produced in Kazakhstan, and 330 tons in Kyrgyzstan.

Since the ADB/JFPR project is targeted at poor populations in CARK it is essential that fortified foods be affordable. All population groups – regardless of socio-economic status – should be able to have access to the fortified foods. Efforts to ensure this access should include social mobilisation, roles for local authorities, and elimination of relevant taxes and tariffs.

Social mobilisation includes health education directed at children, women and families, as well as community involvement in quality control of fortified foods at local markets.

The role of local authorities in facilitating the work of consumer associations, women's federations and local NGOs; introducing favourable local tax policies on fortified foods; monitoring
of fortified food quality; and prioritised supply of fortified food products to hospitals, kindergartens, etc. should not be under-estimated. For example, one akim in Tajikistan has created a blacklist of companies that produce poor-quality goods in order to ensure that consumers have sufficient knowledge to choose only high-quality foods. Local authorities can also play a role in appropriate pricing policies for fortified foods.

In addition, elimination of taxes on import of fortification equipment and fortificants, as well as domestic transportation tariffs and value-added taxes on fortified foods should be considered as methods of increasing affordability of fortified foods.
Strategic Planning for the Future: strengthening national ownership and sustainability
Strengthening Strategies for the Elimination of Micronutrient Malnutrition in CARK
Selected points from discussions in working groups

Introduction

This working group sessions planned to bring the final focus of the workshop back to the main themes of “National ownership and oversight” and “Planning for sustained elimination”, which had been emphasised throughout the week. Again the aim was to stimulate participants to think and plan strategically, this time about the longer term future, 3-5 years and beyond, and with particular emphasis on the weakest parts of the on-going programmes such as monitoring/evaluation and communications.

Participants were asked to consider the concepts of national coalitions (ultimately responsible for overseeing that national elimination of micronutrient malnutrition is both achieved and sustained), the realistic potential for national resource allocation (financial, personnel, capacity development), what additional external support may be required, and how national progress would be assessed and reported.

Guidelines and matrices (see annexes) were provided to assist participants in working through some of the exercises. It was the strategic thinking process rather than the outcome which was most important. To complete this exercises in full would have required more time and a greater diversity of national partners than were present during this workshop. Therefore, detailed outcomes and tables developed during most of these sessions have not been included in the report but were taken by participants to continue and complete following their return to their home countries.

A. Analysis of Specific Components of National Plans for Elimination of Micronutrient Malnutrition

During the group work on the topic, each country delegation with support of facilitators have identified and discussed most challenging components and issues within the national plans and proposed possible best actions to respond to the problem.

Kazakhstan

Task:
How to sustain efforts to prevent iron deficiency anaemia, through increased national ownership?

Situation:

a. Extensive research has been conducted on the problem of iron deficiency anaemia and it is well-recognised as a national problem,

b. Routine supplementation of target groups with iron and folic acid continues in pilot areas of the country,

c. Progress is being made in the development of national capacity for flour fortification with premix containing iron, folic acid, and other micro-nutrients.
**Identified constraints:**

a. Political will in support of the selected prevention strategies is not strong enough to sustain activities without external support,

b. There is currently no national legislation for flour fortification,

c. Currently prevention activities mostly are supported by international donors.

**Future Recommendations:**

a. Establish an executive body to co-ordinate all activities for prevention of iron deficiency anaemia,

b. Explore mechanisms for reimbursement of costs by different partners, consumers and government,

c. Advocate for legislation and regulatory acts,

d. Increase public awareness and consumer demand through communication activities.

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**Kyrgyzstan**

**Task:**

How to address existing legal issues related to Universal Salt Iodisation in the country, including enforcement of legislation (adopted by the parliament in January 2000)? Which key activities that may strengthen the national programme for elimination of IDD (adopted by the government in December 2002), and result in sustained elimination?

**Situation:**

a. Kyrgyzstan does not have any domestic food grade salt producers therefore all its food grade salt is imported from neighbouring countries (80% from Kazakhstan).

b. The import of non-iodised edible salt is legally prohibited, however there is a significant amount of salt imported as non-iodised “technical” salt, that later appears on the food market. This non-iodised salt is distributed by illegal salt packaging companies.

**Identified Constraint:**

a. Currently the Sanitary-Epidemiological Service under the MoH is facing constraints in enforcement of the law to prevent this trade of non-iodised salt due to restricted rights to control the quality of the product at production and market.

**Future Recommendations:**

a. According to the President’s decree on State control of the salt market, a special enterprise, “Kyrgyzsalt”, should be organised to regulate the salt market. However, the status and affiliation of this enterprise has not been defined. It could be either a new State organisation, or possibly a private company. This organisation would help place local salt production, packaging and import under government control, thus helping to prevent the illegal import and trade of non-iodised salt.
b. Four major companies have recently organised national association of salt distributors (packagers), and five other companies are willing to join this association. The aims of this association will include:

- protection of the local market from illegal import and trade of non-iodised salt,
- promotion of iodised salt,
- strengthening quality assurance of iodised salt at the point of distribution/packaging (some companies are iodising imported non-iodised salt), including organisation of a joint titration laboratory,
- joint ownership and use of an iodised salt logo,
- joint procurement of potassium iodate to reduce its cost.

c. The Ministry of Health introduced an amendment to the Administrative Codex to the Cabinet of Ministers (which has the right of legislative initiative) which has to be reinforced. The amendment has a special clause on violation of production, import and trade of iodised salt. Violators would be punished with a $100-200 fine.

d. Iodised salt shall be promoted through a communication campaign that has already been launched in Kyrgyzstan. This campaign will include:

- broadcasting of Public Service Announcements on major national and regional TV channels and on the radio,
- involvement of medical professionals, community leaders and NGOs in the promotion of the benefits of using iodised salt compared to non-iodised salt,
- distribution of various printed materials on iodine deficiency and its elimination through the availability and use of iodised salt instead of non-iodised salt,
- including the information on IDD and on iodised salt use in the school curricula.

**Tajikistan**

**Task:**

How to achieve national goals set for flour fortification and prevention of iron deficiency anaemia?

**Situation:**

a. 20 large mills exist of which 18 are privatised,

b. 70% of the population live in rural areas and obtain flour from 1500 small mills and domestic mills,

c. ADB supports the purchase of feeders and fortificant for the 7 large (pilot) mills,

d. The country requires 1 million MT of flour, it produced 520,000 MT in 2002, therefore the deficit was 430,000 MT. Locally grown wheat is soft wheat - not very suitable for bread flour. Large amounts of wheat and un-fortified flour are imported as donated food. This discourages local production of wheat.
**Identified Constraints:**

a. The mills lack consistent electrical power and raw material,

b. Quality control is poor, there is no supervisory body and there is lack of lab equipment for its proper organisation,

c. Legal aspects of flour fortification need to be enforced,

d. High grade flour (the type that is usually fortified) is not affordable for the majority of the population.

**Future Recommendations:**

a. Amend current food safety legislation to include fortified flour,

b. Establish bank loans for investments in flour fortification,

c. Negotiate with food donors for compulsory fortification of donated wheat flour,

d. Provide Sanitary Epidemiological Services with lab equipment (spectrophotometer) and training to strengthen quality control of wheat flour fortification,

e. Provide tax relief on imports of the fortificant,

f. Protect the local wheat market against imported wheat by providing tax relief on locally produced wheat,

g. Make importation of wheat grain (for fortification in country) more attractive than importation of wheat flour, by decreasing custom duties for importation of wheat grain and increasing custom duties for importation of wheat flour.

**Uzbekistan**

**Task:**

Which are the next steps to reach USI in the country?

**Situation:**

A draft law has been prepared under the responsibility of the Director, Sanitary Epidemiology Services (SES) in the Ministry of Health. This draft is currently being circulated through the government structures for their initial comment and sign-off, which is required prior to introducing this draft law to the Cabinet of Ministers.

**Identified Constraint:**

A critical obstacle is that policy makers responsible for passing the law are not fully aware of iodine deficiency significance, how it impairs foetal brain development and how this subsequently effects national development and the economy. They do not realise that legislative action is needed in order to meet the commitment of sustained elimination of IDD through USI which was made at the UN General Assembly Special Session.
In particular, the following major objections to signing-off on the draft law were found:

a. The Ministry of Justice appeared to feel that consumers should have the right of choice in the market between iodised and non-iodised salt. The group agreed that this “right of choice” was violated in other instances where the public health benefit overrode the perceived need to preserve consumer rights, for example, water purification with chlorine. In the case of national elimination of IDD through USI, the group agreed that the right to good nutrition of the unborn child overrides the perceived right of consumer choice.

b. The Ministry of Finance and the State Prosecutor’s Office had technical questions regarding national financing to develop salt iodization capacity and the required enforcement systems by SES, and also regarding the determination of appropriate enforcement penalties in cases where the law may be violated by producers or traders.

**Future Recommendations:**

To accelerate and improve the work on awareness raising of lawmakers about IDD and, therefore, their will to enact a law for Universal Salt Iodisation, possible solutions are as follows:

a. Constitute a National Salt Producers Association (likely 12-20 members) who could form a more effective constituency to advocate to political levels,

b. Form an alliance of collaborating partners (Ministry of Health, Medical Scientific Institutions, Salt Producers Association, UNICEF, etc) that can put collective pressure on the highest level authorities to enact a law.

**B. Strengthening Communication Support for National Efforts Toward Elimination of Micronutrient Malnutrition**

Points considered during this working group session:

1. What are the biggest challenges in obtaining resources?

2. What are the biggest challenges in elimination of micronutrient deficiencies in general?

3. How can advocacy help to address these problems?

**Main conclusions**

The countries are at different stages of planning and implementation of communication plans. At the same time, it is obvious that preparation of detailed strategic plan on communication and advocacy activities is essential to ensure the effectiveness and high coverage of interventions.

In particular, the operational plan that has already been prepared in Kazakhstan with support of CDC facilitated the overall vision for communication and advocacy support to their national programmes for elimination of micronutrient malnutrition. The preparation of an operational plan was accompanied by parallel training and skills development of different partners involved in the process: media, producers, public health specialists, educators, NGOs, etc, which is important pre-requisite for a successful communication strategy. The plan also provided the clear picture of all partners with concrete delineation of each party’s responsibility which also facilitates overall co-ordination of the process.
It is also important that the communication plan has well-thought through monitoring component as well as evaluation to measure impact and outcomes.

Within the communication plans, identification of target groups and development of the most appropriate and relevant strategies for them has to be of special attention.

It was clearly stated that countries lack relevant institutions and organisations, as well as specialists that are able to lead the work in communication. Hence continuous capacity building of all partners has to be considered as an important task in all countries. At the same time, establishment of salt producers association, involvement of schools and universities, as well as media organisations will help to institutionalise the communication activities.

The groups focused their discussion also on identification of target groups and strategies for advocacy and communication to support the national IDD elimination programme. These groups included:

- High and mid-level policy decision makers in the government to promote law adoption and enforcement
- Government institutions that are responsible for inspection, including SES and customs
- Salt producers/traders
- Mass media
- General population
- Schoolchildren
- Religious leaders.

It was concluded by all working groups that advocating to high-level officials from outside the health sector is currently a weakness limiting overall comprehension and understanding of the problem at all levels. Special advocacy activities have to be planned to target Parliaments, Ministries of Justice, Trade, Agriculture, Industry, etc. Several advocacy tools were brought to the attention of country delegations, which will hopefully make future negotiations more successful. In addition to this, special attention shall be given in the future to raising the awareness of local authorities at the regional and sub-regional level.

C. **Strengthening Monitoring and Evaluation Support for National Efforts Toward Elimination of Micro-nutrient Malnutrition**

The aim of this working group session on monitoring and evaluation was to stimulate participants to think strategically about the purpose and sustainability of a monitoring system, i.e. how the data would be used in order to define what information would be required, how often, by whom, and to whom should it be reported.

Participants were asked to consider this process in the context of available national resources (financial, personnel, training etc), required external support and sustainability of national achievements (what information would be most effective in assuring sustained elimination of a micronutrient deficiency?).
Development of an effective monitoring system requires more time and attention than it was possible to allocate during this workshop. It would also require participation by more diverse group of involved partners than were present.

Participants were given the instructions and accompanying matrices (see in Annexes) to assist in thinking through the process of developing an effective monitoring system.

**Main conclusions**

The country groups all felt that the monitoring and evaluation components of programmes for the elimination of micronutrient malnutrition are still weak. It was also stated that the division of responsibilities between different actors within the overall system of monitoring has not yet been established, which often creates confusion and inhibits proper accomplishment of tasks. As a common feature for all countries it may be concluded that absence of comprehensive and detailed Monitoring/evaluation plans with clear delineation of functions, responsibilities, as well as instructions and guidelines for implementation is the major factor impeding proper interventions within this component of programmes.

The following major recommendations to improve monitoring/evaluation systems have been proposed during group work and plenary discussions:

- A subsequent workshop devoted to monitoring and evaluation of the elimination of micronutrient malnutrition was recommended to further develop the capacity of governments, food producers and other sectors in this field.
- Strong commitment from all partners at country level would also be needed to create and implement an effective monitoring system following the above workshop.
- At all levels of monitoring: production, distribution, retail, consumption, it is necessary to establish roles and responsibilities of all key players, but at the same time to ensure that timely and appropriate information sharing is also on-going between different sectors in order to ensure timely correction of any problems identified.
- It will be important for each nation to develop its own set of timelines and indicators to monitor both the intervention and the impact of an effective intervention on the nutritional status of the population.

**D. Strengthening Strategic Planning for the Future**

The aim of this working group was to encourage groups to consider the longer term future of efforts to eliminate micronutrient malnutrition nationally. The matrix in annex XX was provided as a template to work from with a facilitator. This exercise was designed to bring participants back to the main themes of the workshop, i.e. sustaining elimination of micronutrient malnutrition in the future through strengthening national ownership and the creation of effective national alliances.

**Main conclusions**

Each group reported that the exercise had been helpful and that they would like to continue the process with additional partners back in their own country. There was expression of interest to work towards the formation of national coalitions in all countries, however it was thought that obtaining full funding from national sources for micronutrient malnutrition elimination activities would take a longer time to achieve.
Future opportunities for support – GAIN*

Beyond domestic partnerships and alliances, countries can also benefit from international partnerships and alliances. For example, the Global Alliance for Improved Nutrition (GAIN) is an alliance of public and private sector organisations whose stated mission is to seek “to save lives and improve health through the elimination of vitamin and mineral deficiencies.” One of the strategies of GAIN is to work with developing countries in strategic approaches to reduce micronutrient malnutrition.

Founded by a group of private donors, bilateral agencies and the Micronutrient Initiative, GAIN is led by an executive director and an executive board that consists of ten voting members. Unlike many other boards, each member of the GAIN executive board represents a constituency group rather than their organisation. The constituency groups are:

- Bi-lateral donors (1 representative)
- Foundations and private donors (1 representative)
- UN and other multilateral agencies (1 representative)
- Industry and industry associations (1 representative)
- Developing country experts (4 representatives)
- International NGOs (1 representative)
- Scientific agencies (1 representative)

As a source of both technical assistance and funding, GAIN is accepting proposals from countries that have clearly defined strategies for eliminating micronutrient malnutrition among their populations and have shown evidence of national commitment to sustained elimination evidenced by formation of national coalitions and investment. Since such coalitions have already been developed and the momentum for nationwide programmes to eliminate micronutrient malnutrition created in all five countries, programme managers should take advantage of the opportunity to collaborate with and receive support from GAIN.

The GAIN framework document and official request for proposals is available on their organisation website and on the workshop CD.

* Presented by Mr. Frits van der Haar, Emory University, USA.
Planning activities for 2003 and beyond*

Strategic planning

Continued government support, ownership and investment are needed for future strategic planning of efforts to eliminate micronutrient malnutrition in CARK sustainably. This requires high-level government leadership to play a role in co-ordinating between the different agencies involved: MoH, SES, food producers and ministries of education, agriculture and industry, and NGOs. Although the MoH is an important partner in these efforts, sustained elimination of micronutrient malnutrition is only possible with the continued participation by other national entities. Only solutions developed and implemented through partnership in the country between government agencies, associations of producers, NGOs, consumer organisations, media, scientific groups, and international organisations will lead to sustainable successes.

The strategies discussed during the workshop can be applied to enrich and further develop plans that have been made in each country.

The population outreach and acceptance, combinations of approaches and their timing and the resources required for implementation of various strategies – food fortification, supplementation, and public health actions – need to be considered. The workshop and national programmes have focused on two of the above strategies: food fortification and supplementation.

Food Fortification:

Universal salt iodisation is the most urgent task to be undertaken in order to eliminate iodine deficiency in CARK, and contribute to success globally. The importance of achieving USI to eliminate IDD was re-iterated at the 2002 UN General Assembly’s Special Session on Children. Within efforts to reach and sustain USI, functioning legal and enforcement mechanisms are as essential as continued collection and accumulation of national evidence that the strategy works and leads to benefits in health, education and economy of the nation.

Although efforts have started only recently, WFF experience in CARK has already provided a good basis for further expansion and scaling up in the future. Efforts need to be made to draw greater attention and support to the initiative from government, partners and donors so that the momentum created by the current ADB/UNICEF/JFPR – supported initiative is not lost. Country teams should also examine the feasibility of fortifying staple foods with vitamin A in the future.

Supplementation

Estimates suggest that IDA prevalence is still higher than 30 per cent in reproductive age women in CARK countries. Iron supplementation strategies should be continued until fortification is taken to scale and includes a review of the target group and intervention strengthening (as proposed in the 2002 desk review of CARK APC programmes). Improved management, organisation and supply distribution, capacity building, and improved IEC activities are needed, with a strong monitoring component at all levels.

* Presented by Ms. Nune Mangasaryan, UNICEF CARK.
In addition, the preventive supplementation and treatment guidelines for vitamin A and iron should be reviewed in each country.

In both fortification and supplementation programmes there is a great need for partnerships between government agencies, private sector associations, producers, NGOs, consumer organisations, media, scientific groups and international organisations.

**Communication**

National communication plans need to be reviewed, enriched and operationalised so that efforts are not limited to campaigns but include sustainable activities. They should include building government ownership and commitment through advocacy of politicians, media, etc. When approaching government and decision makers it is also recommended that the cost-effectiveness of interventions be highlighted along with the economic burden of micronutrient malnutrition. Cost-benefit analysis and other tools for decision makers should be developed.

Efforts also need to be made to increase communication skills and knowledge of implementing agencies and to increase the involvement, awareness and knowledge as well as improve partnership with the mass media.

However, communication efforts should not remain limited only to advocacy and mass information supplies. Special efforts should focus on co-operation insertion the education sector. Incorporating these interventions into formal school curricula (e.g. within healthy lifestyle or life-skills subjects), integration of activities with other national programmes (e.g. Safe Motherhood), and other strategies can contribute to sustainability of these efforts.

At the primary level, school-based testing of iodised salt (for both education and monitoring) has been shown to be highly effective. At higher levels, the education of professionals: undergraduate, post-graduate, continuous education for food producers, technologists, teachers, journalists, customs officials, etc. should include information on the prevention of micronutrient malnutrition. In addition, extra-curricular activities should also be considered, as a way to influence children’s environments and to increase community participation. For example, peer-to-peer education and child-to-parent education activities have had positive effects at the pilot level in Kazakhstan.

A KAP assessment should be conducted to collect baseline data for use in later assessment of interventions:

- Any IEC activities have to be based on results of these assessments which would allow development of most appropriate education materials reflecting the gaps in knowledge, attitudes, and practices of target group. The developed IEC materials and activities have to not only aim at the positive changes in knowledge and attitudes, but also to ensure that they will lead to desired behavioural changes.

- Post-intervention KAP surveys will allow evaluation of the IEC campaigns and reflect impact of the activities and at the same time serve as a monitoring tool for further adjustments to education activities.

Product marketing and promotion skills, which are still weak in Central Asian, have to be strengthened to again ensure sustainability of activities.
To ensure higher cost-effectiveness of communications strategies and interventions the information materials developed within IEC activities have to be largely incorporated into communications activities within other projects. In general, more and better integration with other public health programmes will significantly increase coverage of planned interventions.

**Monitoring and Evaluation**

Food fortification requires the adoption and implementation of adequate legislation together with agreed enforcement procedures which may be enacted based on the results of monitoring activities. In addition, multi-directional strategies usually implemented to eliminate micronutrient malnutrition require well-prepared project/programme monitoring plans with relevant mechanisms for their continuous implementation.

The SES plays a crucial role in inspection. Other parties responsible for monitoring and evaluation include producers and suppliers, customs agencies, and the ministries of trade, industry, education and health.

Monitoring activities for fortified food have to be well established at at least some of the following, depending on programme feedback:

- production,
- processing,
- retail,
- consumption (households and schools),
- import/export (customs) levels.

Appropriate rules and regulations need to be developed in order to assure the quality of fortified products, while knowledge and skills of staff and institutions need to be improved. These activities should be outlined in comprehensive and detailed monitoring plans in each country.

**Immediate actions required**

As a follow up to the workshop, similar strategic planning work shall be conducted in each country and national strategies and action plans reviewed and adjusted. The strategies and actions already identified in the workshop should be incorporated into the national action plans to facilitate improved programme implementation in future. Immediate follow-up actions to improve monitoring systems based on the concrete plans developed by country groups at the workshop will significantly facilitate further progress with programme implementation.
Strengthening Strategies for the Elimination of Micronutrient Malnutrition in CARK
References


Strengthening Strategies for the Elimination of Micronutrient Malnutrition in CARK

11 a. UNICEF/Kazakh Academy of Nutrition. Vitamin A Deficiency Assessment in Kazakhstan; 2002
b. UNICEF/Kazakh Academy of Nutrition/Research Institute of Obstetrics and Pediatrics (Kyrgyzstan). Study on Vitamin A Deficiency in Kyrgyzstan; 2002
c. UNICEF/Kazakh Academy of Nutrition/Center of Nutrition under MoH. Study on Vitamin A Deficiency in Tajikistan; 2002.

12 a. Academy of Preventive Medicine (Almaty, Kazakhstan)/Macro International Inc. (Calverton, Maryland, USA). Demographic Health Survey in Kazakhstan; 2000
b. Research Institute of Obstetrics and Pediatrics (Kyrgyzstan)/Macro International Inc. (Calverton, Maryland, USA). Demographic Health Survey in Kyrgyzstan; 1997
c. UNICEF. Multiple Indicator Cluster Survey in Tajikistan; 2000
d. Macro International Inc. (Calverton, Maryland, USA). Demographic Health Survey in Turkmenistan; 2000
e. UNICEF. Multiple Indicator Cluster Survey in Uzbekistan; 2000.


Strengthening Strategies for the Elimination of Micronutrient Malnutrition in CARK 90
Guidelines for Group work on Monitoring and Evaluation for Elimination of Micronutrient Malnutrition

1. Describe the minimum monitoring system that is required (duration 1 hour)

Participants are required to describe the minimum monitoring system that would be required:

- Choose one intervention: fortification or supplementation
- Choose one micronutrient: iron or iodine
- List all the information you require and for each:
  - Where will the information be collected?
  - Who should collect it?
  - What should be reported and to whom?
  - How often does the information need to be collected?
  - How will the information be used and who is the user?

Example:

Iodized salt quality:

- at factory level
- by the factory itself and external control by SES
- total amount of edible salt produced for domestic market, total amount of edible iodized salt produced, % of samples (in)adequately iodized
- continuous, every hour
- information will be used to guarantee that iodized salt is produced of good and required quality, providing adequate iodine to the consumer

2. Describe the existing monitoring system

Participants are required to describe the existing monitoring system:

- For the same intervention and micronutrient:
- List all the information that is collected and for each:
  - Where is the information collected?
  - Who collects it?
  - What is reported and to whom?
  - How often is the information collected?
  - How is the information be used and who is the user?

3. Identify gaps, weaknesses and suggestions for improvement
Matrix for Group Work on Monitoring & Evaluation – Minimum monitoring system

<table>
<thead>
<tr>
<th>Intervention selected:</th>
<th>Micronutrient selected:</th>
</tr>
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<tbody>
<tr>
<td>Information collected:</td>
<td>Where is it collected?</td>
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<tr>
<td></td>
<td>Who collects it?</td>
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<td>What is reported and to whom?</td>
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<td>How often is it collected?</td>
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<td>How is it used and by whom?</td>
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Matrix for Group Work on Monitoring & Evaluation – Existing monitoring system

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<thead>
<tr>
<th>Intervention:</th>
<th>Micronutrient:</th>
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<tr>
<td>Information collected:</td>
<td>Where is it collected?</td>
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Matrix for Group work Monitoring & Evaluation – Identify gaps, weaknesses, and suggestions for improvement

<table>
<thead>
<tr>
<th>Gaps</th>
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<tbody>
<tr>
<td>Weaknesses</td>
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<tr>
<td>Suggestions for improvement</td>
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</table>
## “Strategic Thinking for the Future” matrix

<table>
<thead>
<tr>
<th>The Key Strategic Considerations</th>
<th>Iodine Deficiency</th>
<th>Iron Deficiency</th>
<th>Food Fortification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Universal Salt Iodization</td>
<td>Iron/Folate Supplementation</td>
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<tr>
<td><strong>National Ownership</strong></td>
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</tr>
<tr>
<td>a. What national entities are the lead responsible organizations?</td>
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<tr>
<td>b. What other entity(ies) might support the national effort?</td>
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<tr>
<td>c. From where to obtain adequate financial resources?</td>
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<tr>
<td><strong>Sustainability</strong></td>
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</tr>
<tr>
<td>a. Define essential training requirements of the lead organizations</td>
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<tr>
<td>b. How do the Partners assure steady political support?</td>
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<tr>
<td>c. What is the key indicator of success for public reporting?</td>
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</table>
**Strengthening Micronutrient Strategies in CARK**  
*Almaty, Republic of Kazakhstan, 24-28 March 2003*

**AGENDA**

<table>
<thead>
<tr>
<th>Day 1: Monday, 24 March 2003</th>
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</table>
| 09.30 – 10.10 | **Opening and introduction**  
  Philippe Heffinck, Area Representative, UNICEF CARK  
  Toregeldy Sharmanov, President, Kazakhstan Academy of Nutrition  
  Nune Mangasaryan, Project Officer, UNICEF CARK |
| 10.10 – 10.40 | **Overview of aims and format of the workshop**  
  Jacky Knowles, Centers for Disease Control (CDC), USA |
| 10.40 – 11.00 | Break |
| 11.00 – 12.00 | **Major lessons learned from the global effort to eliminate micronutrient deficiencies**  
  Frits van der Haar, Emory University, USA |
| 12.00 – 12.30 | **Presentation on national strategies and actions to address micronutrient deficiencies**  
  Dilbar Makhmudova, Institute of Paediatrics, Uzbekistan |
| 12.30 – 13.00 | **Presentation on national strategies and actions to address micronutrient deficiencies**  
  Anatoly Abramov, UNICEF Turkmenistan |
| 13.00 – 14.00 | Lunch |
| 14.00 – 14.30 | Q&A session and discussions |
| 14.30 – 15.30 | **Overview of key elements for elimination of micronutrient malnutrition**  
  Jacky Knowles |
| 15.30 – 16.00 | Break |
| 16.00 – 16.30 | **Presentation on national strategies and actions to address micronutrient deficiencies**  
  Rano Abdurakhmanova, Deputy Minister of Health, MoH, Tajikistan |
| 16.30 – 17.00 | **Legislation and enforcement**  
  Gregory Gerasimov, UNICEF Consultant |
<p>| 17.00 – 18.00 | Q&amp;A session and discussions |</p>
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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</table>
| 09.00 – 09.30| **Presentation on national strategies and actions to address micronutrient deficiencies**  
Lyudmila Davydova, State Department of Sanitation and Epidemiological Surveillance, Kyrgyzstan |
| 09.30 – 10.00| **Presentation on national strategies and actions to address micronutrient deficiencies**  
Igor Tsoy, Kazakhstan Academy of Nutrition |
| 10.00 – 10.30| Q&A session and discussions                                               |
| 10.30 – 11.00| Break                                                                    |
| 11.00 – 12.00| **Interventions**  
**Programming for the elimination of vitamin A deficiency – and relations to HIV/AIDS**  
Frits van der Haar  
Q&A session and discussions |
| 12.00 – 13.00| **Choices in, and vision for CARK countries**  
Nune Mangasaryan, UNICEF CARK  
**Fortification: current status and challenges for future**  
Rustam Muzafarov, ADB/JFPR 9005 Project |
| 13.00 – 14.00| Lunch                                                                    |
| 14.00 – 15.00| **Experience of salt/flour producers in working toward elimination of micronutrient malnutrition**  
Evgeny Gun, Union of Grain Processors and Bakeries, Kazakhstan  
Amankul Baykulov, ADB/JFPR 9005 Project, Uzbekistan  
Alexander Shefner, Independent Bread Inspection, Kyrgyzstan  
Followed by discussions |
| 15.00 – 15.30| **Analysis of components of national plans (covering period until 2005)**  
Country groups with facilitators  
Introduction: Gregory Gerasimov |
| 15.30 – 16.00| Break                                                                    |
| 16.00 – 16.30| **Analysis of components of national plans (covering period to 2005)** (continued)  
Country groups with facilitators |
| 16.30 – 17.30| **Discussion of national strategies and actions that were presented by country groups**  
Facilitator: Frits van der Haar |
**Day 3:** Wednesday, 26 March 2003

<table>
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<tr>
<th>Time</th>
<th>Session</th>
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<tr>
<td>09.00 – 10.30</td>
<td><strong>Strengthening communication support to national efforts for elimination of micronutrient malnutrition</strong>&lt;br&gt;Orientation for group work session on communication for elimination of micronutrient malnutrition&lt;br&gt;<em>Fatima Djatdoeva, UNICEF Consultant</em>&lt;br&gt;Q&amp;A session and discussions</td>
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<tr>
<td>10.30 – 11.00</td>
<td><strong>Presentation of communication planning and implementation process in Kazakhstan</strong>&lt;br&gt;<em>Lailya Kulmursaeva, Kazakhstan Academy of Nutrition, Kazakhstan</em></td>
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<tr>
<td>11.00 – 11.30</td>
<td>Break</td>
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<tr>
<td>12.00 – 13.00</td>
<td><strong>Group work to strengthen communication support for national efforts for elimination of micronutrient malnutrition</strong>&lt;br&gt;<em>Country groups with facilitators</em></td>
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<tr>
<td>13.00 – 14.00</td>
<td>Lunch</td>
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<tr>
<td>14.00 – 16.00</td>
<td><strong>Group work to strengthen communication support for national efforts for elimination of micronutrient malnutrition (continued)</strong>&lt;br&gt;<em>Country groups with facilitators</em></td>
</tr>
<tr>
<td>16.00 – 16.30</td>
<td>Break</td>
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<tr>
<td>16.30 – 17.30</td>
<td><strong>Plenary discussion to share thoughts on group work to strengthen communication support for elimination of micronutrient malnutrition</strong>&lt;br&gt;<em>Fatima Djatdoeva</em></td>
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**Day 4: Thursday, 27 March 2003**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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| 09.00 – 10.00 | **Presentation of monitoring and evaluation planning and implementation process**  
  Anatoly Abramov, UNICEF, Turkmenistan  
  Dilorom Akhmedova, MoH, Uzbekistan |
| 10.00 – 11.00 | **Strengthening monitoring and evaluation support to national efforts for elimination of micronutrient malnutrition**  
  Introduction to group work session  
  Arnold Timmer, UNICEF RO |
| 11.00 – 11.30 | Break |
| 11.30 – 13.00 | **Group work to strengthen monitoring and evaluation support for national efforts for elimination of micronutrient malnutrition**  
  Country groups with facilitators |
| 13.00 – 14.00 | Lunch |
| 14.00 – 15:30 | **Group work to strengthen monitoring and evaluation support for national efforts for elimination of micronutrient malnutrition**  
  Country groups with facilitators |
| 15.30 – 16.00 | Break |
| 16.00 – 17.00 | **Plenary discussion on group work to strengthen monitoring and evaluation support to elimination of micronutrient malnutrition**  
  Gregory Gerasimov |
| 17.00 – 17.30 | **Vitamin A deficiency and linkages to HIV/AIDS transmission**  
  Frits van der Haar |
<table>
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<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>09.00 - 11.00</td>
<td>National Oversight Coalitions – Partnerships</td>
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<td>Future opportunities – GAIN</td>
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<td><em>Frits van der Haar</em></td>
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<tr>
<td>11.00 - 11.30</td>
<td>Break</td>
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<tr>
<td>11.30 - 13.00</td>
<td>Planning and management of activities for 2003 and beyond</td>
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<td><em>Group work</em></td>
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<td><em>Introduction: Nune Mangasaryan</em></td>
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<td>13.00 – 14.00</td>
<td>Lunch</td>
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<tr>
<td>14.00 – 15.30</td>
<td>Plenary discussion: planning and management of activities for 2003 and beyond</td>
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<td></td>
<td><em>Presentation of group work</em></td>
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<td></td>
<td><em>Discussion of further strategies</em></td>
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<td></td>
<td><em>Facilitator: Nune Mangasaryan</em></td>
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<td><em>Jacky Knowles</em></td>
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**Strengthening Micronutrient Strategies in CARK**  
*Almaty, Republic of Kazakhstan, 24-28 March 2003*

**LIST OF PARTICIPANTS**

### KAZAKHSTAN

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<tr>
<th></th>
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<tr>
<td>1.</td>
<td>Mr. Evgeny Gun</td>
<td>Chief, Union of Grain Processors and Bakeries</td>
</tr>
<tr>
<td>2.</td>
<td>Ms. Nailya Karsybekova</td>
<td>Country Coordinator, ADB JFPR 9005 Project</td>
</tr>
<tr>
<td>3.</td>
<td>Ms. Lailya Kulmursaeva</td>
<td>Country Communication Coordinator, KAN</td>
</tr>
<tr>
<td>4.</td>
<td>Mr. Victor Merker</td>
<td>Chairman, Committee of SES</td>
</tr>
<tr>
<td>5.</td>
<td>Ms. Akkumis Salkhanova</td>
<td>Regional Communication Coordinator, KAN</td>
</tr>
<tr>
<td>6.</td>
<td>Mr. Toregeldy Sharmanov</td>
<td>President, KAN</td>
</tr>
<tr>
<td>7.</td>
<td>Mr. Igor Tsoi</td>
<td>Vice president, KAN</td>
</tr>
<tr>
<td>8.</td>
<td>Ms. Olga Zorina</td>
<td>Editor, Provincial Newspaper “Children’s park”</td>
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### KYRGYZSTAN

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<tr>
<th></th>
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<tr>
<td>1.</td>
<td>Mr. Artur Buyuklyanov</td>
<td>Country Coordinator, ADB JFPR 9005 Project</td>
</tr>
<tr>
<td>2.</td>
<td>Ms. Lyudmila Davydova</td>
<td>Head of State Sanitary and Hygienic Department, State Department of SES</td>
</tr>
<tr>
<td>3.</td>
<td>Ms. Galina Ignatovskaya</td>
<td>Communication Officer, The Republican Health Promotion Center, Ministry of Health</td>
</tr>
<tr>
<td>4.</td>
<td>Ms. Kaltar Sarjanova</td>
<td>Head of Nutrition Department, Kyrgyz Scientific Research Institute on Obstetrics &amp; Pediatrics, Chief specialist in children’s nutrition, Ministry of Health</td>
</tr>
<tr>
<td>5.</td>
<td>Mr. Alexander Shefner</td>
<td>Director, Independent Bread Inspection</td>
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</tbody>
</table>
### TAJIKISTAN

1. Ms. Rano Abdurakhmanova  
   Deputy Minister of Health, Ministry of Health
2. Ms. Rano Alieva  
   Head of Gynecological/Obstetrician Department, Ministry of Health
3. Mr. Azim Azizov  
   Chairperson of the Childhood Diseases Department, Medical University
4. Ms. Salomat Kasimova  
   Director, Endocrinology Center
5. Mr. Abdusalom Vokhidov  
   Country Coordinator, ADB JFPR 9005 Project

### UZBEKISTAN

1. Ms. Dilorom Akhmedova  
   Chief pediatrician, Ministry of Health
2. Mr. Bohodir Azimov  
   Head of Science and Technology Department, Academy of Science
3. Mr. Shakhobidin Bakhridinov  
   Chief of the Nutrition Department, Tashkent Medical Institute – II
4. Mr. Amankul Baykulov  
   Country Coordinator, ADB JFPR 9005 Project
5. Ms. Dilbar Makhmudova  
   Director, Institute of Pediatrics
6. Ms. Roza Matkarimova  
   Chief of the Sanitary Hygiene Laboratory, Republican Center of the State SES
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<td>2. Ms. Aida Darmenova</td>
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<td>1. Ms. Torgyn Mukaeva</td>
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<td>2. Ms. Aigul Nurgabilova</td>
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<tr>
<td>1. Ms. Indira Moldagaziev</td>
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<td>2. Ms. Galina Solodunova</td>
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<td>3. Ms. Nataliya Tkachenko</td>
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<td>1. Ms. Nargiza Egamberdieva</td>
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<td>2. Mr. Shukhrat Rakhimdjanov</td>
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<td>3. Ms. Herma Veenbrink</td>
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<td>4. Ms. Gulnara Yanbukhtina</td>
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## UNICEF, TURKmenistan Country Office

1. Mr. Anatoly Abramov  
   Assistant Project Officer

## UNICEF Regional Office for Central & Eastern Europe, Commonwealth of Independent States & The Baltics

1. Ms. Natasa Dobrijevic  
   Project Assistant

## Facilitators

1. Mr. Gregory Gerasimov  
   UNICEF consultant

2. Ms. Fatima Djatdoeva  
   UNICEF consultant

3. Mr. Frits van der Haar  
   UNICEF consultant, Rollins School of Public Health, Emory University, USA

4. Ms. Jacky Knowles  
   International Micronutrient/Malnutrition Prevention and Control Program, Division of Nutrition and Physical Activity, US CDC

5. Ms. Nune Mangasaryan  
   Project Officer, Child Survival and Development, UNICEF CARK

6. Mr. Rustam Muzafarov  
   Project Coordinator, ADB JFPR 9005 Project

7. Mr. Arnold Timmer  
   Project Officer, Nutrition, UNICEF Regional Office for CEE/CIS and the Baltics

## Secretariat

1. Ms. Anastassia Bugaeva  
   Secretary-Translator, UNICEF

2. Ms. Jennifer Lee  
   Rapporteur, UNICEF
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Results of a Workshop,
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