



**Islamic Republic of Afghanistan
Ministry of Public Health
Directorate General of Preventive Medicine
Public Nutrition Department**

Strategy for the Prevention and Control of Vitamin and Mineral Deficiencies in Afghanistan

June, 2010

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Abbreviations/ Acronyms

ACF	Action Contre la Faim
ANSA	Afghanistan National Standards Agency
ARI	Acute Respiratory Infections
BASICS	Basic Support for Institutionalizing Child Survival
BHC	Basic Health Center
BPHS	Basic Package of Health Services
CCT	Conditional Cash Transfer
CDC	Centers for Disease Control and Prevention
CHC	Comprehensive Health Center
CMAM	Community Management of Acute Malnutrition
CTC	Community Therapeutic Center
DH	District Hospital
EC	European Commission
EPHS	Essential Package of Hospital Services
FAO	Food and Agriculture Organization (United Nations)
FETP	Field Epidemiology Training Program
FFI	Flour Fortification Initiative
GAIN	Global Alliance for Improved Nutrition
HSS	Health System Strengthening
IAOM	International Association of Operative Millers
IFA	Iron and folic acid
IQ	Intelligence quotient
IYCF	Infant and Young Child Feeding
KIO3	Potassium Iodate
MAIL	Ministry of Agriculture, Irrigation and Life Stock
MCH	Maternal and Child Health
MDG	Millennium Development Goals
MI	Micronutrient Initiative
MoC	Ministry of Commerce
MoF	Ministry of Finance
MoJ	Ministry of Justice
MoM	Ministry of Mines
MoPH	Ministry of Public Health
NGOs	Non-Governmental Organizations
NID	National Immunization Day
NTD	Neural Tube Birth Defects
PBF	Performance Based Financing
PND/MoPH	Public Nutrition Department/ Ministry of Public Health
SC UK	Save the Children UK
SC US	Save the Children US
TAG	Technical Advisory Group
UN	United Nations
UN WFP	United Nation's World Food Program
UNICEF	United Nation's Children's Fund
USAID	United States Agency for International Development
USI	Universal Salt Iodization
VMD	Vitamin and Mineral Deficiencies
WB	The World Bank
WHO	World Health Organization (United Nation)
WIC	Women, Infants and Children's Supplemental Nutrition Program (in US)

Preamble

One in three of the world's people suffer from hidden hunger (vitamin and mineral deficiencies), needed for survival, development, health and a productive life. Although there are no visible warnings, but there are lifelong consequences.

Deficiencies occur in low income countries and with people who do not have access to micronutrient-rich foods. The groups most vulnerable to micronutrient deficiencies are pregnant and lactating women and young children, mainly because they have a relatively greater need for vitamins and minerals and are more susceptible to the harmful consequences of deficiencies.

The health and nutrition situation in Afghanistan is one of the poorest in the world. Infant, child and maternal mortality rates are extremely high. Much of the morbidity and mortality is a result of preventable communicable diseases, malnutrition, complications associated with pregnancy and delivery as well as war-related injuries.

The National Nutrition Survey of 2004 revealed very shocking facts about micronutrient deficiencies in Afghanistan. Of the children under five, 60% were stunted and 34% underweight. Wasting among children under-five was 9%, and in children 1-2 years it was 18.1%), the prevalence of anemia was 38% in children under-five and 50% in children 6-24 months old. Both iron and iodine deficiency affect 72% of under-five children. 48% of non pregnant women of reproductive age are iron deficient, 25% are anemic, and 75% are iodine deficient. These shocking figures solicit us to prepare and implement comprehensive strategies and plans to combat hidden hunger in our country.

When reaching adulthood, the undernourished children cost a nation up to 2-3% losses of GDP due to lower productivity and economic performance, therefore spending on nutrition is investment for a nation. As per Copenhagen Consensus 2008, a gathering of Nobel Prize economists selected interventions to reduce under-nutrition as five of the top ten most effective investments for national development. The Millennium Development Goals (MDGs) also highlight reductions in under-nutrition as the first goal, and nutrition is a factor in reaching several other goals as well (Goal number 2, 3, 4, and 5). Good nutrition improves survival, physical and mental development and educational outcomes of children and highly contributes in decreasing the child and maternal morbidities and mortalities.

The Government of Afghanistan is committed to promote, protect and fulfill the rights of all people to adequate food and nutrition as stated in the International Declarations and Conventions of Human Rights. It is recognized that the social and economic consequences of malnutrition/ micronutrient deficiencies in Afghanistan are enormous and efforts to reduce this national burden are a priority.

The Ministry of Public Health recognizes that an improvement in the nutritional status of the population, especially among women and children will accelerate a reduction in the high prevailing rates of morbidity and mortality, accelerate poverty reduction

and reinforce human and national development. The overall goal of the MoPH therefore, is to reduce malnutrition of all types including micronutrient deficiency diseases in the country through evidence-based integrated and coordinated programming. The solutions for combating hidden hunger are cost-effective, relatively short time and sustainable.

Therefore this is a great pleasure that Ministry of Public Health and the partners succeeded to develop a comprehensive strategy on Micronutrients in Afghanistan to combat hidden hunger; achieve the set goals for improved nutritional and micronutrient status of Afghan population; contribute to reduction of morbidities and mortalities which will result in a better life for our people. We request contribution of all relevant partners in achieving this noble goal.

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Deputy Minister for Policy and Plan
Acting Minister of Public Health**

Background

1.1. Introduction

The Ministry of Public Health (MoPH), donor organizations, United Nations agencies, and NGOs supporting public nutrition efforts in Afghanistan recognize the significance of the burden of vitamin and mineral deficiencies on public health in the country. Despite the lack of adequate security in substantial parts of the country, the MoPH, with international support, has been successfully implementing semi-annual Vitamin A capsule distribution for children through the National Immunization Day (NID) campaigns with sustained coverage of more than 90%. The Basic Package of Health Services (BPHS) has been formalized by the MoPH and calls for health centres nationwide to provide iron and folic acid supplements to pregnant women, high-dosage Vitamin A to post-partum women and children less than 5 years (who are not reached though NIDs) and screening and treatment of anaemia in young children. Efforts are also underway to incorporate zinc supplementation as a component of the diarrhoea treatment protocol. A limited number of projects on Community Management of Acute Malnutrition (CMAM) have been initiated or are being planned in some rural areas. Community Therapeutic Center (CTC) is being implemented in 25 districts of Samangan, Jawzjan, Faryab, Sari Pule, Paktia, Herat, Kandahar and Urozgan provinces.

Table 1: Nutrition Components of the Basic Package of Health Services 2010

Table 2.8. Public Nutrition Services by Type of Facility						
Interventions and Services Provided	Health Facility Level					
	Health Post	Health Sub-Center	BHC	MHT	CHC	Dist. Hospital
a. Assessment of Malnutrition (Population Level)						
Nutritional status	Estimate prevalence of malnutrition (z-score using indices of weight for height [wasting], weight for age [underweight], and height for age [stunting] as well as the underlying causes. Surveys conducted at district or provincial level for purposes of baseline , monitoring , and evaluation or in case of obvious deterioration in nutritional situation.					
b. Prevention of Malnutrition						
Vitamin A supplementation: To all children 6 months to 59 months	Yes during NIDs	No, except yes after NIDs stop	No, except yes after NIDs stop	No, except yes after NIDs stop	No, except yes after NIDs stop	No, except yes after NIDs stop
Promotion of iodized salt	Yes	Yes	Yes	Yes	Yes	Yes
Promotion of balanced micronutrient-rich foods	Yes	Yes	Yes	Yes	Yes	Yes
Support and promote exclusive breastfeeding	Yes	Yes	Yes	Yes	Yes	Yes
Promotion of appropriate complementary feeding for young children with behavior changes	Yes	Yes	Yes	Yes	Yes	Yes
Community food demonstration	Yes	Yes	Yes	Yes	Yes	Yes

Table 2.8. Public Nutrition Services by Type of Facility						
Interventions and Services Provided	Health Facility Level					
	Health Post	Health Sub-Center	BHC	MHT	CHC	Dist. Hospital
Growth monitoring and promotion for less than 2 years ¹ (Where applicable and linked with IMCI)	Yes	Yes	Yes	Yes	Yes	Yes
Iron/folic acid supplementation for pregnant, lactating women	Yes	Yes	Yes	Yes	Yes	Yes
Vitamin A supplementation post-partum	Yes	Yes	Yes	Yes	Yes	Yes
Promotion of maternal nutritional status ²	Yes	Yes	Yes	Yes	Yes	Yes
Control and prevent diarrheal disease and parasitic infections	Yes	Yes	Yes	Yes	Yes	Yes
Underlying causes: based on analysis of causes of malnutrition, support, and advocate for interventions to address underlying causes.	BPHS NGO will demonstrate understanding of underlying causes and outline appropriate interventions to prevent and address malnutrition including, in areas of food security, social and care environment and health (including water and sanitation (see Conceptual Model of Causes of Malnutrition)).					
e. Treatment of Malnutrition						
Micronutrient deficiency diseases diagnosis and treatment	Identify and refer	Yes	Yes	Yes	Yes	Yes
Treatment of severe malnutrition based on MoPH protocols for 24-hour care for Phase I; day care/home-treatment for Phase II ³ and follow-up	No—refer	Pre-referral treatment and refer	Pre-referral treatment and refer	Pre-referral treatment and refer	Pre-referral treatment and refer	Yes
Treatment of severe malnutrition at community-based Community Therapeutic Centers (CTCs) ⁵ : Community mobilization and screening	Yes Refer	(Pre-referral treatment and refer)	Yes	Yes	Yes	Yes
Out patient management (OPM)	No	Yes	Yes	Yes	Yes	Yes
Inpatient care /Stabilization Center (SC)	No	No	No	No	No	Yes
Moderate malnutrition: only where acute malnutrition levels higher than 10% with additional risk factors.	No	Where applicable				
d. Surveillance and Referral						

Table 2.8. Public Nutrition Services by Type of Facility						
Interventions and Services Provided	Health Facility Level					
	Health Post	Health Sub-Center	BHC	MHT	CHC	Dist. Hospital
Clinic-based surveillance: all children under 5 years measured for weight for height (using HMIS forms), monitor trends and children showing developmental delay referred to physiotherapy services	No	Yes	Yes	Yes	Yes	No
Screening: Screening and referral of at risk using mid-upper-arm circumference (MUAC), or weight/height, or clinical signs of micronutrient deficiency diseases (MDDs)	Yes	Yes	Yes	Yes	Yes	Yes to (H2)

1. Growth monitoring and promotion (GM and P): During 2004 or 2005, The MoPH in collaboration with WHO carried out an assessment to identify what needs (resources, training, skills, and adaptation) should be in place for GM and P to be effective in Afghanistan. As indicated in the IYCF strategic plan and the Public Nutrition Policy and Strategy, approaches to growth promotion proven successful elsewhere will be adapted for each level and tested in the Afghan situation before careful scaling up.

2. Maternal nutrition: Improving the nutritional status of women remains a priority, but a strategy for addressing the poor nutritional status of women is still being developed.

3. Treatment of severe malnutrition: The MoPH currently has guidelines and a strategy to support hospital-based (24-hour/day care) treatment, which are implemented in hospitals

4. Supplementary feeding points (SFPs): Emergency SFPs will only be implemented in those identified districts which have a prevalence of acute malnutrition > 10% and/or high risk (see MoPH Guidelines for Supplementary Feeding).

5. Community Therapeutic Centers (CTC) with its components will be implemented where vertical input is provided by UNICEF in agreement with the Public Nutrition Department.

Public-private sector collaboration to address micronutrient deficiencies at scale began in 2002 when the first private iodized salt production plant was established in Kabul, with partial funding and technical assistance from UNICEF and, since 2007, by the Micronutrient Initiative (MI). At present, about 25 such facilities produce iodized salt, and coverage of users of iodized salt has increased from 28 to 50% (National Nutrition Survey 2004, NRVA (National Risk and Vulnerability Assessment) 2007). With funding and technical support from the development partners, and overarching support of the MoPH, 8 private roller mills with 10 production lines have started fortification of industrially milled wheat flour. According to the recent data, the 8 mills produced 72,336 MT of fortified flour in 2009.

Recognizing the importance of timely and appropriate *treatment* of nutritional deficiencies, this document emphasizes multi-sectoral approaches to population-based **prevention** of vitamin and mineral deficiencies. Prevention of such deficiencies is especially important because their potential effects are not always reversible with treatment. For example, impaired cognition in young children resulting from iron deficiency is not fully reversible by treatment of anaemia with iron supplements. Similarly, the occurrence of neural tube birth defects (NTD) due to

inadequate folic acid intake in the first few weeks of pregnancy cannot be reversed with the provision of folic acid in later stages of pregnancy.

Improving the micronutrient status of the Afghan population will be an important factor toward the socio-economic development of the country. Evidence-based, effective and low cost interventions such as vitamin and mineral supplementation and food fortification are recommended by the world's renowned economists as the top development program policy choices by governments (Box 1).

Box 1.

Prevention and Control of Vitamin and Mineral Deficiencies

Highly Cost Effective Public Health Policy

At the Copenhagen Consensus in May 2008, a group of prominent economists who assessed the costs and benefits of a variety of public investments concluded that micronutrient supplements (Vitamin A and Zinc) were top-ranked solutions and micronutrient fortification (iron and salt iodization) was the third ranked solution to the challenge of malnutrition and hunger with tremendously high benefits compared to costs*.

For example, the annual world-wide costs of vitamin A and zinc supplementation programs is estimated at US\$60 million annually, while the annual economic returns is estimated at just over US\$1 billion based on lives saved, diseases averted and cognitive benefits gained. Fortification of flour with iron costs about 10 cents per person per year, and the benefit to cost ratio is nearly 9:1. Iodized salt can be produced for about US\$0.05 per person with a benefit to cost ratio of the order of 30:1**.

* Copenhagen Consensus 2008 – Results. Copenhagen Consensus Centre, 2008.

<http://www.copenhagenconsensus.com/Home.aspx>

** Horton S, Alderman H and Rivera JA. Copenhagen Consensus 2008 Challenge Paper: Hunger and Malnutrition. Copenhagen Consensus Center, 2008.

The planning, success and sustainability of development oriented vitamin and mineral deficiency prevention programs require adequate know-how and capacity building among the public, civic, and private sectors. Furthermore, the ability of the government and public health sectors as well as the private food industry and markets in Afghanistan to enable the population to sustainably access and consume micronutrient rich foods and/or supplements will, in part, be affected by the political and security conditions across the country.

This document is proposed to be consistent with other relevant policies and strategies such as: Afghanistan National Development Strategy, National Health Policy and Strategy, the Basic Package of Health Services (BPHS), Essential Package of Hospital Services (EPHS), National Nutrition Policy and Strategy, National Infant and Young Child Feeding Policy and Strategy, National Child and Adolescent Health Policy and Strategy, Reproductive Health Policy and Strategy and other relevant documents.

1.2. Definition of important micronutrients

1.2.1. Iron

Iron is a mineral involved in energy metabolism as an oxygen carrier in hemoglobin and as a structural component of cytochromes in electron transport. Iron is a component of various enzymes required for diverse metabolic functions. A well known consequence of iron deficiency is anemia.

1.2.2. Folic acid

The B-vitamin, folate, is necessary for the synthesis of DNA. Adequate and timely consumption of folic acid (synthetic form of folate) reduces the incidence of babies born with neural tube defects (NTD) which result in life-long paralysis and other complications among affected children who survive.

1.2.3. Vitamin A

Vitamin A helps to form and maintain healthy teeth, skeletal and soft tissue, mucous membranes and skin. It also promotes good vision, especially in low light. Vitamin A deficiency is the primary cause of preventable childhood blindness in many developing countries.

1.2.4. Zinc

Zinc is a mineral required for the metabolic activity of enzymes, and is considered essential for cell division and the synthesis of DNA and protein, as well as tissue growth and wound healing. Among other complications, zinc deficiency can result in retarded growth of children.

1.2.5. Iodine

Iodine is a mineral important in the synthesis of thyroid hormone. Iodine deficiency is of particular concern during pregnancy and early childhood, and is the primary cause of preventable cognitive impairment.

1.2.6. Vitamin C

Vitamin C is a water-soluble vitamin that has a number of biological functions. Vitamin C plays a critical role in several metabolic functions. Vitamin C helps the body to use the calcium and other nutrients to build bone and blood vessels, helps the body to absorb non-haem iron, acts as an antioxidant in the blood and other body fluids, helps to destroy free radicals, is effective in healing wounds and preventing infections and protecting against the effects of stress and detoxifying chemicals.

1.3. Burden of Vitamin and Mineral Deficiencies in Afghanistan: A Matter of National Development

Afghanistan is trying to recover from 30 years of war that has damaged the capacity of almost every sector of society. The socio-economic development of the country cannot be achieved without improving the health of the population. As the Afghan Government and policy makers, with the support of the international community and

donors, work to rebuild and strengthen the public health infrastructure and programs in the country, it is critical to consider reducing the very high burden of vitamin and mineral deficiencies as a high priority. In the absence of according it adequate priority, such “hidden hunger” will continue to sap the cognitive and physical abilities of the Afghan population of all ages, slowing down or possibly inhibiting the nation’s socio-economic development.

1.3.1. Iodine Deficiency

Goitre, a physical symptom of iodine deficiency, affects Afghan children, women and men. In a 1999 survey in Kouz Kunar District, Nangarhar Province, goitre was reported in 13% of preschool children and over 50% of 10 – 14 year olds¹. A 2002 survey by Action Contre la Faim (ACF) found 50% goitre prevalence among school age children and adult women in the Panjshir Valley area (personal communication, ACF-Kabul, 2002). Based on the 2004 National Nutrition Survey, the median urinary iodine excretion (UIE) level among 7-11 year old Afghan children was 49µg/L, well below the WHO minimum level of 100µg/L. Nearly 72% of the school-age children had UIE <100µg/L. Iodine nutrition status of Afghan women of childbearing age was also quite poor; the median UIE being only 42µg/L, with almost 75% of them having iodine levels <100µg/L². This situation seriously jeopardizes the intellectual capacity of the next generation of Afghan children who would be born with diminished intelligence due to their mothers’ poor iodine status.

As would be expected, the iodine status of people with more access to iodized salt was better; a lower proportion of school age children (55%) and women of childbearing age (57%) in Kabul were found to have UIE <100 µg/L. This coincided with a 75% household coverage of iodized salt in the capital city, compared to 20% in the rest of the country.

1.3.2. Iron Deficiency

The 2004 National Nutrition Survey² found that 38% of Afghan preschool children suffered from anaemia; 6-24 month olds had the highest prevalence of 50%; >70% of children 6-59 months old were iron deficient. Approximately one-fourth of non-pregnant women of childbearing age also suffered from anaemia, while 48% were reported as iron deficient. By contrast, anaemia was found among 7% of Afghan men; this is only slightly higher than the expected prevalence of 5% in the reference population. However, 18% of adult men were found to be iron deficient.

1.3.3. Vitamin A Deficiency

Afghanistan has the third highest under five mortality rate in the world, with >300,000 children dying each year³ (see Table 2). It is well recognized that high under-five mortality is associated with a high prevalence of Vitamin A deficiency among children. In a sample of preschool children in Kabul, it was established that close to 30% of less than 5 years olds in that city may be vitamin A deficient (personal communication, Mr. Laird Ruth, CDC, Atlanta). Given the much higher levels of poverty in rural areas of the country, the prevalence of vitamin A deficiency among children is likely to be higher outside the capital. The 2004 National Nutrition Survey also established that 10% of pregnant women in Afghanistan suffered from night-

¹ Goiter Survey: Kouz Kunar District, Nangarhar. Ibn Sina Public Health Programme for Afghanistan, April 1999.

² CDC. Summary report of the National Nutrition Survey: Afghanistan, 2004. Atlanta, Georgia, May 2005.

³ UNICEF, (2006). Afghanistan Statistics. Accessed at: http://www.unicef.org/infobycountry/afghanistan_statistics.html

blindness, and only 24% of mothers reported having received a high-dose vitamin A capsule within four months of their last deliveries.

Table 2: Mortality statistics for infants and young children in Afghanistan

	1990	2000	2006	Goal for 2013
Infant Mortality Rate*	168	165	129	115
U5 Mortality Rate*	260	257	191	167
U5 deaths/ year		327,000		

*per 1000 live births

1.3.4. Other Vitamin and Mineral Deficiencies

Although there are no quantified data related to the extent of other vitamin and mineral deficiencies in Afghanistan, available evidence indicates a high risk of multiple micronutrient deficiencies. For example, outbreaks of scurvy (a very rare condition) have been documented in some areas of the country⁴. The 2004 National Nutrition Survey established that about 54% of children 6-59 months old were stunted, indicating a high likelihood of widespread zinc deficiency among children. Reports of birth outcomes from Rabia Balkhi Hospital in Kabul indicate an incidence of about 60 per 10,000 babies born with spina bifida and anencephaly⁵. This is nearly eight times higher than in the U.S. or Canada and indicates substantial folate deficiency among the mothers in early pregnancy. Furthermore, the high prevalence of infectious diseases (e.g. 46% of Afghan children 6-59 months old were reported with diarrhoea⁶) and likely parasitic (e.g. *H. pylori*) infestation further exacerbates vitamin and mineral deficiencies by diminishing the absorption and retention of nutrients in affected groups.

1.4. A Global Perspective: Why the Urgency to Eliminate Vitamin and Mineral Deficiencies?

Approximately two billion people around the world suffer from vitamin and mineral deficiencies. The World Health Report identified iodine, iron, vitamin A and zinc deficiencies among the world's most serious public health risk factors (Ref 1). The 1990 World Summit for Children in New York challenged member states to reduce the burden of vitamin and mineral deficiencies, and that goal was reiterated at the 1993 International Conference on Nutrition in Rome. Such vitamin and mineral deficiencies contribute to a vicious cycle of poor health and diminished productivity which traps families in poverty and reduces the economies of many countries around the world. Enabling populations to regularly consume these essential nutrients will help protect people from a range of disabilities and diseases, help children grow and learn and improve workplace productivity of adults. Indeed, reducing micronutrient malnutrition has been cited as an important component of strategies to address at least five of the Millennium Development Goals (MDGs) - poverty alleviation,

⁴ Woodruff BA, Reynold M, Tchibindat Fand Ahimana C. Nutrition and Health Survey, Badghis Province, Afghanistan, February – March 2002. UNICEF-Afghanistan.

⁵ Personal communication, Dr. David Gahn, U.S. Indian Health Service, May 2009.

⁶ CDC. Summary report of the National Nutrition Survey: Afghanistan, 2004. Atlanta, Georgia, May 2005.

universal primary education, gender equality, reduced child mortality, and improved maternal health (Table 3).

Table 3: Millennium Development Goals (MDGs) and the role of micronutrients in achieving them

Millennium Goal	Development	Role of Micronutrients
GOAL 1		
ERADICATE POVERTY AND HUNGER	EXTREME	<ul style="list-style-type: none"> • Iron intake can reduce anaemia – leading to greater productivity and earning potential • Salt iodization reduces iodine deficiency disorders – increasing learning ability and intellectual potential, and leading ultimately to better-educated citizens earning higher wages • Zinc supplementation reduces stunting among children
GOAL 2		
ACHIEVE PRIMARY EDUCATION	UNIVERSAL	<ul style="list-style-type: none"> • Salt iodization reduces iodine deficiency – improving cognitive development and learning potential • Iron in young children improves cognitive development to help them succeed academically later in life • zinc reduces the frequency and severity of diarrhoea, decreasing the number of school days lost • Vitamin A prevents childhood blindness • Folic acid prevents disability due to neural tube defects
GOAL 3		
PROMOTE EQUALITY AND EMPOWER WOMEN	GENDER	<ul style="list-style-type: none"> • Iron improves women's economic productivity • Addressing under-nutrition empowers women more than men: improved micronutrient intake by women can help to correct inequalities in their access to adequate and nutritious food
GOAL 4		
REDUCE CHILD MORTALITY		<ul style="list-style-type: none"> • Vitamin A significantly improves child survival rates • Zinc reduces the frequency and severity of diarrhoea, a major cause of child mortality • Salt iodization reduces iodine deficiency, lowering rates of miscarriage, stillbirth and neonatal death
GOAL 5		
IMPROVE HEALTH	MATERNAL	<ul style="list-style-type: none"> • Iron improves maternal survival rates • Salt iodization prevents iodine deficiency disorders and its consequences such as spontaneous abortion, stillbirth, and impaired mental function

Adapted from Micronutrient Initiative: Investing in the future: A United Call to Action on Vitamin and Mineral Deficiencies. Global Report 2009

Iodine deficiency is the primary cause of preventable mental retardation in the world. Populations with adequate iodine intake have on an average a 13 point higher IQ than iodine deficient populations (Ref 2). The addition of very small quantities of iodine to food grade salt is the globally accepted low-cost and extremely effective approach. Although significant progress has been made in reducing the global burden of iodine deficiency through salt iodization, about 30% of the world's population still does not have access to iodized salt (Ref 3).

Iron deficiency is the most prevalent nutrient deficiency in the world, affecting an estimated 2 billion people worldwide, more than half of whom are in South Asia (Ref 4). It reduces the learning capacity of young children, leading to their having diminished learning capacity as adults (Ref 5). As the cognitive damage in iron deficient children may not be fully reversible with treatment, it is critical to emphasize prevention of iron deficiency among children. Iron deficiency anaemia in pregnancy is an important risk factor for maternal mortality; globally, 115,000 maternal deaths per year have been attributed to this risk factor and ensuring adequate iron intake during pregnancy could lower maternal mortality by as much as 20% (Ref 6). Iron deficiency in early pregnancy also significantly increases the risk of low weight and pre-term birth. Although it is more severe in poor and rural communities, iron deficiency also occurs in wealthier and urban populations. Inadequate birth spacing further increases the risk of iron deficiency among pregnant women.

Vitamin A deficiency is a widespread public health problem in developing nations and affects more than 130 million preschool children. It is the leading preventable cause of childhood blindness (Ref 7) and a major underlying cause of child mortality (Ref 8). As it helps boost the immune system, adequate Vitamin A protects against common childhood infections. It is also estimated that 20 million pregnant and lactating women around the world have less than adequate Vitamin A status, predisposing them to higher risks of night blindness, anaemia, morbidity and mortality (Ref 9).

Zinc deficiency is usually found in populations that are iron deficient and is associated with approximately 4% of deaths among children under age 5 in lower-income countries (Ref 10). Adequate zinc nutrition strengthens the immune system and resistance to infections. Inadequate zinc intake in young children increases the rates of diarrhoea and acute lower respiratory infections (ARI) (Ref 11), reduces linear growth and physical development (Ref 12). Adequate zinc intake is also necessary for women of childbearing age to ensure normal pregnancy outcomes.

Folate is necessary for the production of new cells, and protects the healthy development of the central nervous system. Inadequate folic acid (synthetic form of folate) intake in the first few weeks of pregnancy leads to infants being born with neural tube defects (NTD) such as spina bifida and anencephaly, the leading forms of birth defects (Ref 13). Folate deficiency is also a cause of anaemia, and there is growing epidemiological evidence that improved folate status reduces homocysteine levels and the risk of stroke mortality among adults.

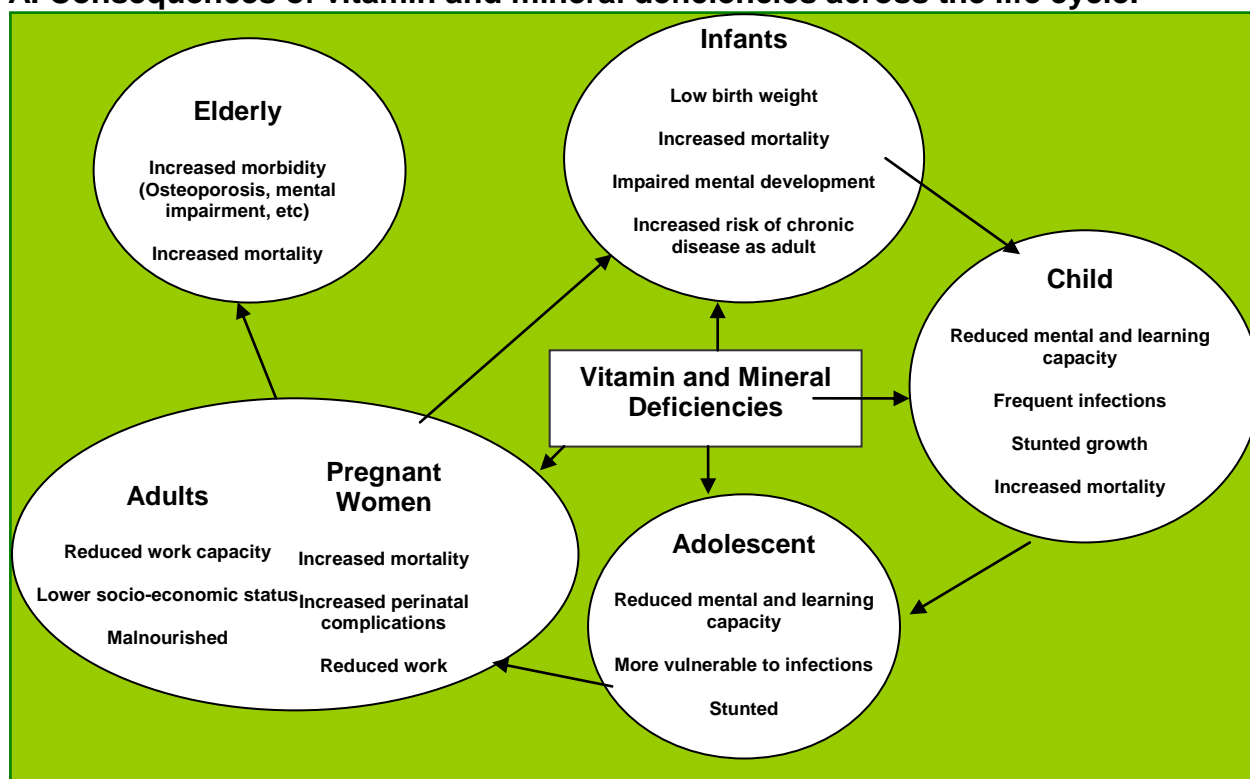
The importance of vitamin B12 depletion and deficiency is being increasingly recognized as affecting many population groups that consume low amounts of animal source foods which are its only natural dietary source. Vitamin B12 deficiency has been linked to the birth of babies with NTDs, delayed child development, abnormal cognitive function and depression, anaemia, and elevated plasma homocysteine concentrations in adults (Ref 14).

Life Cycle and Inter-Generational Consequences of and Solutions for VMD (Vitamin and Mineral Deficiencies)

Although improving the vitamin and mineral status of women and children up to two years is the primary focus of this document, it is essential to note that micronutrient deficiencies affect all age groups and populations (Figure 1). Furthermore, micronutrient deficiencies during pregnancy directly affect the cognitive and physical growth of children born to deficient women, which in-turn affects the physical and cognitive health and development of the next generation.

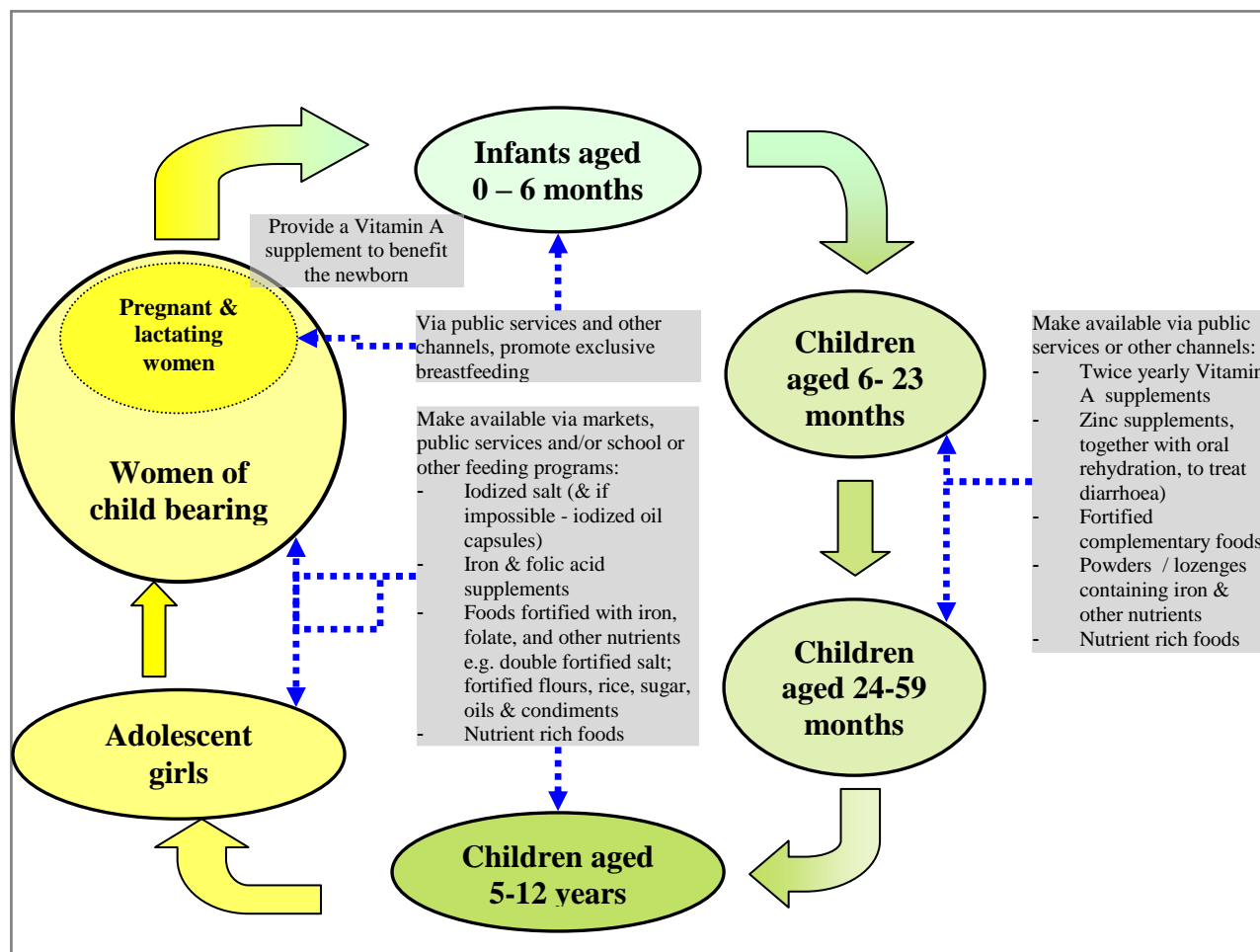
Figure 1:

A. Consequences of vitamin and mineral deficiencies across the life cycle.



Adapted from the United Nations Administrative Committee on Coordination Sub-Committee on Nutrition (ACC/SCN, Fourth Report on the World Nutrition Situation, 2000, Geneva: ACC/SCN in collaboration with IFPRI)

B. Potentially cost effective micronutrient interventions provided during the life cycle



1.5. No One Group Can do it Alone: Need for Multi-Sectoral Partnerships

The most immediate cause of poor vitamin and mineral status is a population's lack of regular access to and consumption of a varied and balanced diet comprised of meats, eggs, dairy products, legumes, fruits, vegetables, oil and cereals. Although the consequences of vitamin and mineral deficiencies may require medical intervention, the prevention of such deficiencies requires the engagement of many sectors, including:

- National government authorities (e.g. MoPH, MAIL (Ministry of Agriculture, Irrigation and Livestock), MOF (Ministry of Finance), MOJ (Ministry of Justice), legislature, etc.)
- Health care providers
- Industrial food producers, importers and retailers
- Food industry regulating agencies
- Agriculture
- Pharmaceutical and nutrient premix industry
- Community and religious leaders
- Public health, UN and non-governmental agencies
- Mass media

It is fair to assume that the public sector does not and will not provide micronutrient-rich foods or supplements to all population groups in Afghanistan. However, the Afghan Government, with the assistance of its international partners, could support and implement policies to enable the vast majority of the population to access a variety of foods, including fortified products and supplements, through a combination of public sector programs and services, and private sector production and marketing.

1.5.1. Emphasize High Coverage of Preventive Vitamin and Mineral Supplement Regimens: Strengthen and Complement BPHS

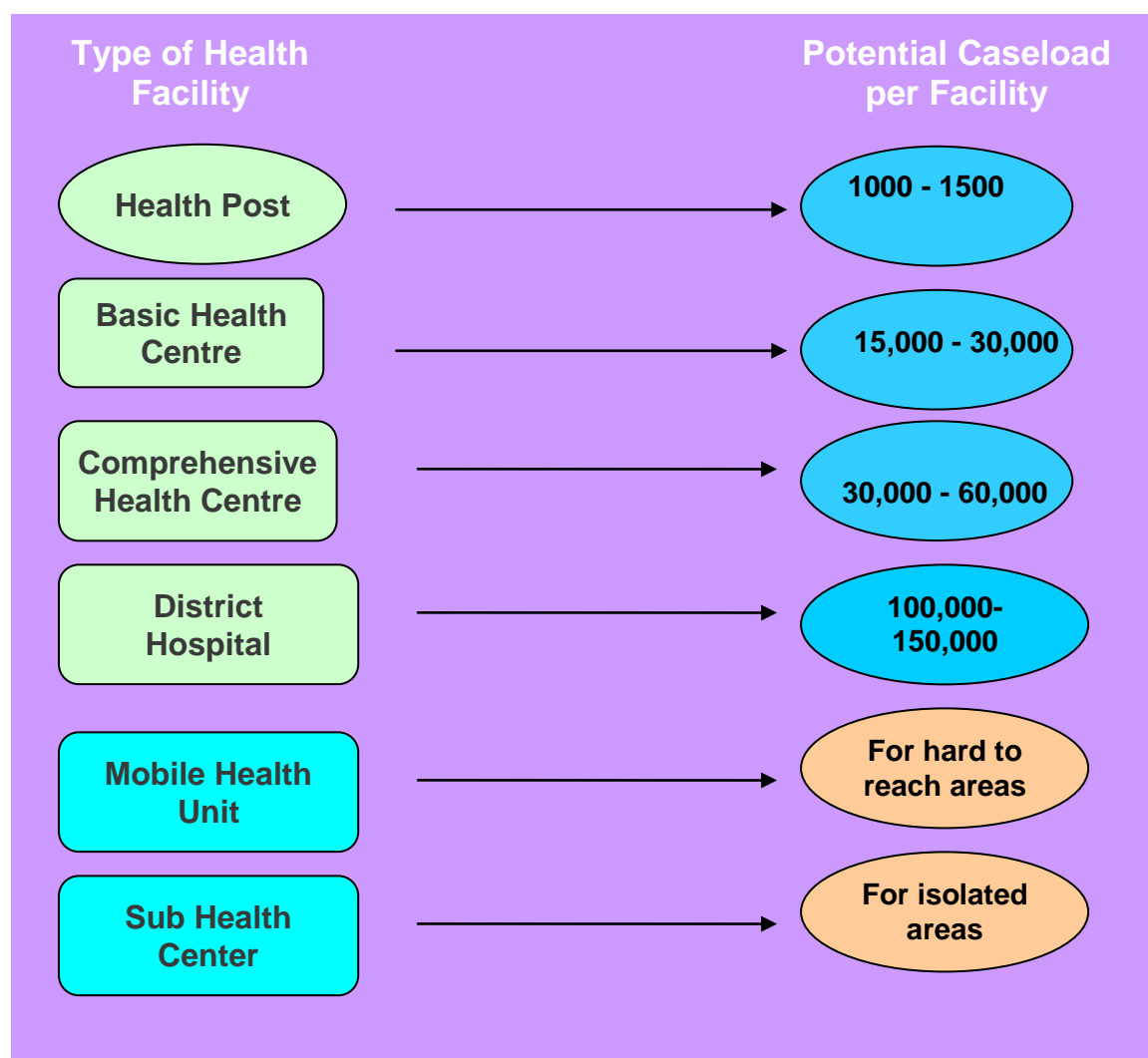
Although food based approaches for the prevention of vitamin and mineral deficiencies would be preferred, this is not a sufficient option for some population groups who do not have regular access to the needed foods, or who require higher doses of micronutrients than ordinary diets can provide (e.g. folic acid during pregnancy; iron during infancy). Thus, preventive vitamin and mineral supplements help protect at-risk groups from deficiencies, while therapeutic supplementation boosts the intakes of deficient individuals.

International guidelines require that all pregnant women receive iron and folic acid supplements starting in the first trimester of pregnancy, and that all children 6-24 months receive iron supplements where fortified complementary foods are not widely and regularly consumed, and that supplementation continue through the second year of life when the prevalence of anaemia in children is more than 40% (the prevalence of anaemia among 6-24 month olds in Afghanistan is about 50%⁷).

The BPHS is the nationally mandated package of preventive health services delivered through a nationwide network of six types of health facilities: 1) Health Post, 2) Basic Health Centre, 3) Comprehensive Health Centre, 4) District Hospital, 5) Sub Centre and 6) Mobile Health Unit (Figure 2).

⁷ CDC. Summary report of the National Nutrition Survey: Afghanistan, 2004. Atlanta, Georgia, May 2005.

Figure 2. Types of public sector health facilities and the approximate number of subjects each type is intended to serve.



The BPHS guidance requires preventive supplementation of pregnant women with iron and folic acid, and screening and treatment of anaemia in preschool children. It also calls for giving high dose Vitamin A supplements to preschool children not reached through the NID distributions as well as to postpartum women.

For distribution of micronutrient supplements (and “in-home fortificants”) through public health facilities to have widespread nutritional impact, three factors are essential:

- A majority of the target women and children must visit public health facilities for preventive health care frequently and regularly (to receive the products).
- Public health facilities must have appropriate, sufficient and regular supplies of the products (including adequate storage facilities).
- Subjects should be appropriately counselled at the facilities about the use of the supplements and/or “in-home fortificants”.

Studies in some developing countries indicate that other than Vitamin A capsule distribution through NID or other mass campaigns, the population coverage and impact of routine public health sector supplement distribution programs have been generally poor, often due to a combination of low population coverage of primary health services, inadequate recipient education and counselling by health care providers, and inadequate and/or insufficient supplies of products at the health facilities. Reliable data is not available on the actual population coverage of the national network of public health clinics in Afghanistan, or on the proportion of pregnant women or preschool children who have received micronutrient supplements through public health facilities as required by BPHS. Also it is not known as to what proportion of the population utilizes private health care facilities and providers. However, it is believed that a relatively small proportion of the population accesses preventive health services, such as antenatal care or “well-child” care, although the network of public health facilities has the potential to cover more than 80% of the population. For example, only about 24% of postpartum women, mostly in urban areas, reported receiving high-dose Vitamin A capsules⁸. Similarly, although 75% of infants <24 months are fully immunized, they are not screened for anaemia during immunization sessions, and few children are seen at health facilities for “well-child” visits. Thus, the majority of pregnant women and preschool children do not receive preventive vitamin and mineral deficiency interventions through the public health system, as required by the BPHS.

Recent evidence from a number of developing and developed countries indicates that innovative “performance based financing” (PBF) strategies, including “conditional cash transfer” (CCT) programs, have effectively increased population coverage of routine preventive maternal and child health (MCH) services, including nutrition/micronutrient interventions⁹. Such approaches may also help increase the coverage of preventive vitamin and mineral deficiency interventions among women and young children in Afghanistan. The Ministry of Public Health/department of Health System Strengthening (HSS) is piloting such programmes for maternal and child health interventions and the results could guide future nutrition interventions.

On a different but related note, in a review of perceptions of iron deficiency prevention and control across eight developing countries, Galloway et al. reported that cultural beliefs against use of medications during pregnancy was one factor affecting women’s compliance with iron supplementation¹⁰. In a study in Gaza, it was found that consumers considered iron supplements as “medicines” which are used during “illness” and for about 10 days¹¹. Yet international guidelines on preventive micronutrient supplementation, for example iron and folic acid supplementation for children and pregnant women, call for much longer periods of supplement use by (otherwise) “healthy” subjects.

Although a specific investigation has not been done in Afghanistan, it is nonetheless likely that similar consumer perceptions and beliefs may affect routine “preventive” use of micronutrient supplements. Thus, strategies to help Afghan consumers to

⁸ CDC. Summary report of the national nutrition survey: Afghanistan, 2004. Atlanta, Georgia, May 2005.

⁹ World Bank, 2009. <http://www.cgdev.org/content/publications/detail/1422178/> (accessed June 26, 2009),

¹⁰ Galloway, R. et al. Women’s perceptions of iron deficiency and anaemia prevention and control in eight developing countries. World Bank, Washington, DC. (http://pdf.dec.org/pdf_docs/PNACL180.pdf).

¹¹ Corneli, A L. Final Report: Qualitative findings Gaza Nutrition Survey, October 1998, CDC, Sept. 15, 1999.

dissociate “nutritional supplements” from “medicines” may be needed to help encourage prolonged preventive use of artificial supplements and fortificants. In addition to appropriate consumer education and information efforts, enabling more people to access micronutrient products through non-pharmacy retail outlets or health centres (as is done in most developed nations) could help “de-medicalize” people’s perceptions about vitamins and increase preventive use of supplements and “in-home fortificants”, particularly among women of childbearing age and young children.

Presently, various brands of vitamin and/or mineral syrups and tablets (the quality of which is not legally monitored) are sold through pharmacies in Afghanistan. Although available data indicate that up to 84% and 47% of (educated) men and women respectively¹², have heard of vitamins, the proportion of people using supplements preventively is believed to be very low. Thus, partnerships with the private sector could be explored to promote the appropriate use of vitamin and mineral supplements and in-home fortificants among pregnant women and young children.

1.5.2. Recognize and Acknowledge the Essential Role of the National Food Industry

Micronutrient fortification of commonly and widely consumed foods and condiments is recognized as a low-cost and sustainable strategy to improve the nutritional status of populations. To be successful and achieve population-based impact, strong ongoing and transparent partnership between the public, private and civic sectors is required. Also, national laws, regulations and policies are necessary to ensure the production and marketing of quality fortified foods, together with social marketing and communication to encourage consumption of such foods. Furthermore, a feasible and sustainable program monitoring and surveillance system should be established to help policy and decision makers evaluate the effectiveness of the programs, and guide future policy decisions.

The experience with the development of the national salt iodization program in Afghanistan, which included collaboration between the public sector and private salt producers, could be adapted and built upon. In this case, the public sector acknowledged the important role and responsibility of the national salt producers in improving iodine intakes of the population, established standards for salt iodization, provided partial funding support and technical assistance to the local industry, funded communication and social marketing efforts to promote the use of iodized salt among the population and issued a ‘Presidential Decree’ requiring iodization of all industrially produced salt. The salt producers understood and accepted their role in improving the nation’s health by producing a more nutritious condiment and co-invested towards the construction of industrial salt iodization plants. The overall result is that more and more people of all socio-economic classes can now access iodized salt across the country.

¹² CDC. Summary report of the national nutrition survey: Afghanistan, 2004. Atlanta, Georgia, May 2005.

1.5.3. Build National Capabilities: Strengthen Human Capacity in Nutrition in Afghanistan

1.5.3.1. The Public Sector

The Public Nutrition Department (PND) within the MoPH (Ministry of Public Health) was established in 2002 with technical support of experts from the partners. The current composition of the staff of the Department includes physicians, some of whom have attended national and international short courses on various nutrition topics. However, they have not completed formal academic programs in human or public nutrition. There has also been a high turnover of PND staff since its inception, primarily due to lack of adequate salaries. None of the primary health centres or hospitals in the country has adequately trained nutrition or dietetics staff.

Despite the limited technical nutrition expertise at the central and local levels, the PND and its international agency partners have implemented a number of national and local public nutrition programs and projects to improve the nutrient intakes of the population, especially women and young children. The leadership of the MoPH is also supportive of nutrition and micronutrient deficiency interventions.

To help strengthen the public nutrition sector in Afghanistan, enable it to be more self-sufficient and better able to develop, implement and monitor appropriate nutrition policies, strategies, and programs, it is essential to build human capacity in the field of nutrition in the country. Potential opportunities exist to develop formal nutrition training tracks through public and private institutions of higher learning (e.g. Kabul University and Ibn Sina Public Health Program). Training fellowships or scholarships to foreign academic or technical institutions could also provide opportunities to build needed professional capacity.

1.5.3.2. The Private Sector

Private salt production plants and industrial flour mills have been operational in Afghanistan only in the last few years. However, the majority of them are keen to improve the nutrient content of their products, and have been fortifying salt and wheat flour with partial funding support and technical assistance of international development organizations. To help further improve their fortification capacities and capabilities, and keep them abreast of new developments in their relevant industries, the Afghan producers would benefit from interaction with their international trade associations (e.g. International Association of Operative Millers (IAOM), the Salt Institute and EuSalt) and participating in relevant international and regional industry conferences and trade shows.

Domestic food importers are another relevant group whose business practices directly affect the vitamin and mineral intakes of the Afghan population. For example, a large proportion of wheat flour, almost all of the cooking oil and ghee (clarified butter) as well as commercially produced infant complementary foods are imported into Afghanistan from several countries. Educating food importers about their critical role and responsibility in improving the nutritional health of their communities and customers is a first step in the process of promulgation and enforcement of regulations requiring the importation of fortified foods.

2. The Way Forward: Proposed Strategy for National Vitamin and Mineral Deficiency Interventions

2.1. Vision, Mission, Goals and Objectives

2.1.1. Vision

Our vision is to see Afghanistan free of vitamin and mineral deficiencies (VMD), also known as “hidden hunger”.

2.1.2. Mission

To implement and monitor innovative, cost effective and sustainable solutions for hidden hunger in Afghanistan,

2.1.3. Goal

Contribute to the reduction of infant, child and maternal mortality and morbidity caused by malnutrition.

2.1.4. Objectives

By the end of 2013 in Afghanistan:

1. Reach and sustain $\geq 90\%$ coverage of high dose Vitamin A capsule distribution among children 6 – 59 months.
2. Enable $\geq 50\%$ of households to regularly access Vitamin A and D fortified cooking oil and ghee (clarified butter).
3. Enable $\geq 90\%$ of households to regularly access and consume iodized salt.
4. Increase the coverage of iron and folic acid (IFA) supplementation for pregnant and lactating women and iron supplementation of children less than 24 months of age through Basic Package of Health Services to 50%.
5. Fortify all industrially produced flour produced or imported into the country with vitamins and minerals according to international recommendations.
6. Enable 30% of households to utilize commercially or home-fortified complementary foods to feed their children.
7. Increase use of zinc supplementation as a component of diarrhoea treatment among more than 80% of affected preschool children.
8. Build national human capacity in nutrition science and food science and industry to adequately prevent and control vitamin and mineral deficiency in Afghanistan.

The overall aim of the “National Nutrition Policy and Strategy” of the MoPH is to *“prevent, control and treat major micronutrient deficiency disorders and their outbreaks throughout the country with a major focus on iodine, iron, zinc, folic acid, Vitamin A and Vitamin C”*. Some population-based interventions as well as a number of targeted local projects have been implemented to address vitamin and mineral deficiencies with support from international donor agencies such as UNICEF, WFP, FAO, USAID, and The Micronutrient Initiative. These programs should be

strengthened or expanded while additional evidence-based interventions could be implemented to help improve the micronutrient status of the Afghan population, especially among women and young children.

Based on experiences from successful vitamin and mineral deficiency intervention programs in other countries, evidence from published literature, and the current public nutrition situation and capacity in Afghanistan, recommendations are proposed based on three broad themes:

- 1) Strengthen micronutrient deficiency prevention (and treatment) through the BPHS;
- 2) Expand and strengthen public-private-civic sector partnerships; and
- 3) Develop public and private sector human capacity and expertise.

2.2. Three Pillars of the Proposed Strategy

2.2.1. Strengthen Preventive and Therapeutic Micronutrient Deficiency Interventions through the BPHS

To improve the coverage and effectiveness of micronutrient supplement and in-home fortificants distribution through the public health facilities and the BPHS, innovative and appropriate strategies are needed to encourage and enable large proportions of women and children to access health facilities for preventive and therapeutic services. In the past few years, the MoPH and its partners have been working to increase population access to primary health care and to improve the quality of preventive and therapeutic health services in the country. Such efforts have helped to decrease infant mortality rate from 165 to 129 and under-five mortality rate from 257 to 190 (per 1000 live births).

2.2.1.1. Program Strengths

- There is a nationwide primary health care network of Basic Package of Health Services (BPHS) with the potential to cover more than 80% of the population.
- The BPHS guidance recognizes the need for preventing and controlling key vitamin and mineral deficiencies.
- Vitamin A capsule distribution for children is an integral component of the NID program which has been able to sustain high population coverage despite the political and security instability in Afghanistan.
- Distribution of IFA tablets to all pregnant and lactating women is included in the BPHS.
- Zinc supplementation as an adjunct to diarrhoeal disease treatment is a new intervention included in the BPHS guidance, and is being implemented in a few sites.

2.2.1.2. Program Weaknesses

- The majority of the population does not routinely access health facilities for preventive services, especially prenatal and “well-child” “care.
- The BPHS guidelines do not include operational procedures to help standardize the delivery of preventive or therapeutic vitamin and mineral deficiency interventions.
- The BPHS guidelines only emphasise screening and treatment of anaemia in children, which is not a primary prevention approach. The potential damage to the developing brains of young children before they are identified as iron deficient through anaemia screening would not be fully reversible with therapeutic iron supplementation.

- Sufficient supplies of vitamin and mineral supplements are not regularly available across all BPHS providers to cover the needs of their catchment population.
- Sustainability of the national Vitamin A capsule distribution is entirely dependent on donor supply of capsules and funding support. Though specific cost estimates are not available for the Afghan program, the overall cost of program delivery may be about US\$1 per capsule¹³. Sustaining the high Vitamin A supplement coverage post-NID has not been planned for yet.
- Since the majority of Afghan mothers do not deliver their babies in health care settings, the population coverage of post-partum Vitamin A capsule administration through the health system will be limited.
- There is an overall lack of nutrition expertise in health facilities and the programmatic capacity of many public health agencies is less than adequate. Furthermore, the nutrition curriculum of Afghan medical and nursing schools is limited and outdated.

2.2.1.3. Recommendations

- Explore alternative and feasible strategies to increase population coverage of preventive health and nutrition services through the public health network.
- Explore the feasibility of regularly delivering preventive micronutrient supplements and in-home fortificants to 6 – 24 month old children and pregnant women, through community health workers (adapt and build on lessons learned through the OMID Program implemented in selected districts of Kabul by CARE-International).
- Explore the feasibility of “performance based financing” and “conditional cash transfer” programs to improve population coverage and quality of primary health facilities, as well as preventive health behaviours of pregnant women and young children. One or both of two approaches could be considered.
- Pregnant women and children must meet selected program criteria (e.g. regular attendance for a series of prenatal check-ups or “well-child”/immunization sessions) to receive a small cash stipend (refer to *Oportunidades* Program in Mexico as an example).
- BPHS providers who meet defined population coverage of vitamin and mineral supplementation would receive additional funding bonus.
- Explore the feasibility of partnering with the retail sector to deliver micronutrient products to target beneficiaries in exchange for vouchers or other appropriate reimbursement mechanisms (see Section 2.2.2. below). Such a strategy should also include an appropriate consumer education and communication component.
- Implement interventions to promote local vitamin and mineral rich food utilization and good cooking practices.
- Develop/revise standard operational protocols and guidelines to help deliver preventive and therapeutic micronutrient deficiency interventions (especially iron), targeting pregnant women and children less than 36 months old, consistently and sustainably across all health facilities (public and private) and develop easy-to-use tools to help health facility pharmacies better estimate their supply needs .

¹³ Neidecker-Gonzales O, Nestel P, Bouis H. “Estimating the global costs of Vitamin A capsule supplementation: a review of the literature”. Food Nutrition Bulletin. 2007 Sep;28(3):307-16.

- Develop guidelines requiring all BPHS facilities to distribute standard doses (based on WHO/UNICEF recommendations) of preventive multi-nutrient supplements or in-home fortificants (including iron and zinc) to all children 6 – 36 months. Inform and encourage private paediatric medical care providers to do the same.
- Strengthen and revise guidelines for the treatment of anaemia in children 6 to 36 months old, including dosage of iron and follow-up assessment (see <http://www.cdc.gov/mmwr/PDF/rr/rr4703.pdf> as a potential reference).
- Scale-up the use of zinc supplementation as an adjunct to the paediatric diarrhoeal disease treatment regimen (per BPHS guidance).
- Develop guidelines requiring all BPHS facilities to distribute daily doses of preventive iron (30 mg) and folic acid (400 µg) supplements to all pregnant women as early in pregnancy as possible (see <http://www.cdc.gov/mmwr/PDF/rr/rr4703.pdf> as a potential reference).
- Develop easy-to-use tools to help health facility pharmacies better estimate their supply needs for paediatric and prenatal vitamin and mineral supplements and appropriate supply procurement schedules.
- Continue the Vitamin A capsule distribution program through the NID and begin exploring potential options for post-NID distribution.
- Develop a system for regular and periodic continuing education of public health care providers and community health workers on nutrition in general, and vitamin and mineral deficiency interventions in particular.
- Work with international donor organizations to support the implementation of public nutrition training seminars and short-courses for clinical and public health professionals (see section below for further discussion of professional capacity building).

2.2.2. Public-Private Sector Partnerships: Recognizing the Role, Responsibility and Potential Capacity of the Food Industry and Local Markets in Afghanistan

It should be understood that the food industry – producers, importers, wholesalers and retailers have an essential role in enabling the majority of the population of Afghanistan to access vitamin and mineral rich foods and supplements. The role of government is to implement appropriate policies, and promulgate and enforce needed laws, regulations and standards to allow for the production, importation and sale of nutrient-rich foods, especially quality fortified products and vitamin and mineral supplements.

2.2.2.1. Food Fortification: Sustain and Build on the Success of National Salt Iodization

2.2.2.1.1. Iodized Salt

Iodized salt is an effective and sustainable strategy to prevent iodine deficiency in populations. The first iodized salt production factory was established in Kabul in 2003. Based on the 2007 National Risk and Vulnerability Assessment, 50% of Afghan households used iodized salt¹⁴. The current household iodized salt coverage

¹⁴ The National Risk And Vulnerability Assessment, 2007.

is likely even higher as 25 iodized salt production plants are now operating in Afghanistan, each with 6-8 MT/hour production capacity.

The approximate annual need for iodized salt for human consumption in Afghanistan is 91,000 MT. Based on an estimated cost of US\$20/kg of potassium iodate, and an additional rate of 30mg per kilogram of salt, we estimate that the total cost of the fortificant would be about US\$55,000 or \$0.002/person/year- a very low cost intervention indeed!

Because iodized salt coverage is continuing to increase across Afghanistan, including among rural residents who may not have access to industrially fortified flour, double fortification of salt with iodine and iron offers an excellent opportunity to help improve the iodine and iron intake of the population. Such an approach has been effectively implemented in some parts of the world¹⁵.

Program Strengths

- The national salt iodization effort has been an excellent model of public-private sector partnership in improving public health in Afghanistan. It has also been a very good example of effective international agency technical and funding support to relevant Afghan government institutions (e.g. MoPH and MoM) and the private sector (i.e. salt producers).
- Awareness and use of iodized salt is increasing among consumers.
- An Afghan Salt Producers Association has been established, and the industry has indicated commitment to manufacturing adequately iodized salt provided that they can procure sufficient good quality raw salt at a reasonable price.
- A school-based household iodized salt coverage monitoring system has recently been established, but needs additional support.

Program Weaknesses

- The process of salt mining and harvesting (from salt lakes) in Afghanistan is quite primitive and results in rock salt contaminated with dirt and mud, but the salt iodization plants do not have the capacity to wash and clean the salt. Thus, the final iodized salt is darker in colour and not preferred by the Afghan consumer. The impure rock salt may also be contaminated with toxic metals, such as lead (known to damage the brain of children and adults), which could be present in the dirt and mud mixed with the salt. However, the iodized salt producers do not have any legal recourse to alternate sources because imports of foreign rock salt have been officially banned since 2008.
- Although the iodized salt production plants have implemented internal quality assurance procedures, there is no systematic external and legal quality control monitoring process in place to regularly ensure the quality of iodized salt. Currently MoPH physicians at the national and local levels periodically monitor the quality of iodized salt at the 25 salt production factories. However, such monitoring is not done on a regular basis because of the other responsibilities of the physicians. Control and monitoring of processed food is the responsibility of MoPH, while for non-processed food, this is the responsibility of the newly established Afghan National

¹⁵ Double Fortified Salt: Solution in a Pinch, 2009

Standards Agency (ANSA). However, this agency does not yet have the requisite human or technical capacity to appropriately discharge this responsibility.

- As yet, there is no systematic monitoring system to track the household coverage and impact of iodized salt across the country.
- The fortificant (potassium iodate) is currently procured through partners' funding support. Although the overall cost of the fortificant is not very high. Long term sustainability of salt iodization can only be achieved by enabling the Afghan salt industry to procure its own supply of fortificant.

Recommendations

- Continue the successful partnership with the iodized salt producers in the country.
- Urgently establish one or two national salt processing plants to supply clean and dry raw salt to the iodization plants.
- Determine if the domestic rock salt is contaminated with toxic metals, especially lead.
- Work towards promulgation and enforcement of a national Universal Salt Iodization (USI) law.
- Coordinate with the ANSA to establish an on-going external quality control monitoring system to ensure that iodized salt is fortified to conform to the government standards.
- Establish a schedule for ending the public sector financing of potassium iodate; encourage the Afghan Salt Producers Association to establish a revolving fund that would cover the costs of a joint purchase of potassium iodate to meet the needs of all iodized salt production plants. This would help minimize the cost of the fortificant for all producers through bulk purchase.
- Strengthen the capacity of the PND (Public Nutrition Department) within MoPH to sustainably monitor household coverage of iodized salt.
- Explore the feasibility of double fortification of salt with iodine and iron.

2.2.2.1.2. Fortified Wheat Flour

Nearly 80% of the Afghan population is rural and the majority (81%) of rural households use flour milled locally by small village mills. In contrast, of the 20% urban population of the country, 73% of households reported buying flour/bread from the market¹⁶. Currently 8 private industrial flour mills with 10 production lines and daily production capacity of 500-600MT are operating in Afghanistan. The partners have supported the installation of micro-feeders in all mills which voluntarily fortify flour with iron and folic acid and received the fortificant premix.

Based on the request of MoPH in May 2009 the composition of the premix which previously was iron (FeNa EDTA) and folic acid has now been changed to also include Vitamin B12, and zinc. This composition complies with the latest WHO standards recommended for flour fortification.

Assuming an average daily production of 125 MT/day in each of the 8 private mills and the equivalent of 250 days of operation per year, we estimate that 250,000 MT of nationally produced industrial flour would be produced annually. Assuming daily

¹⁶ CDC. Summary Report Of The National Nutrition Survey: Afghanistan, 2004. Atlanta, Georgia, May 2005.

per capita consumption of 500g of wheat flour, the 5 million urban population of Afghanistan would require approximately 900,000 MT of flour per year. Thus the production of the 8 industrial flour mills could meet the daily needs of about 27% of the urban population.

Official figures on the quantity of imported flour are not readily available. Based on discussions with some importers in Kabul, about 25% of the national flour supply is imported into Afghanistan, mostly from the Central Asian countries and Pakistan. Some donated wheat and flour also enters the country through donor relief projects.

Program Strengths

- All the industrial mills in the country could potentially fortify all flour they produce, provided they receive technical (and if needed, funding) assistance with installation and proper operation of micro-feeders. The private mills currently fortify about 74,000 MT of the flour which is enough for about 10% of urban and semi-urban population, with partial funding and technical support of partners.
- Assuming that the bulk of the industrially milled flour is marketed in urban areas, potentially about 27% of those populations could consume fortified flour on a regular basis.
- The relative success of the national salt iodization program offers experiences to help expedite national flour fortification²

Program Weaknesses

- The Afghan government has not yet formalized the national flour fortification standards; however the MoPH determines the composition of the premix.
- The quality assurance capabilities of the flour mills is not fully developed, nor is there a national capacity to perform legal quality control checks on fortified flour. Although the technology exists, it requires capacity for its proper utilization.
- The private industrial milling sector is only a few years old and the establishment of an industry association is just beginning, making it more difficult for the public sector to collectively communicate with the industry.
- Commercially imported flour is not fortified; the importers are unaware of the importance of fortified flour and there is no national regulation requiring importation of fortified flour even though all the exporting countries have the capacity to fortify flour sent to Afghanistan.
- There is no system to monitor household coverage of fortified flour in urban populations.
- The vast majority of the rural population of Afghanistan would not benefit nutritionally from fortification of industrially milled flour.

Recommendations

- Continue the public-private sector partnership with the industrial wheat flour mills and encourage and enable them to fortify ALL (low and high extraction) flour.
- Establish a national flour fortification standard and regulations requiring the addition of at least iron, zinc, folic acid, and vitamin B12 to fortified flour; adding vitamin B1, B2 and B3 could also be considered.
- Encourage flour importers across the country to order ONLY fortified flour from the neighbouring countries.

- Promulgate and enforce a national law and regulations requiring fortification of all industrially milled domestic and imported flour.
- Coordinate efforts with the Afghan National Standards Authority (ANSA) and the Customs Authority to establish a monitoring system to ensure that nationally produced and imported flour meets government fortification standards.
- Establish a schedule for ending donor financing of premix for flour fortification; encourage the wheat milling companies to establish a revolving fund to cover the cost of joint premix procurement to help minimize costs through bulk purchase.
- Establish a monitoring system to track the population coverage and impact of fortified flour.
- Assess feasible ways to extend flour fortification to small scale mills.

2.2.2.1.3. Fortified Cooking Oil and Ghee (clarified butter)

Based on the 2004 National Nutrition Survey, about 36% of Afghan households purchase liquid vegetable cooking oil, while about 75% purchase ghee (clarified butter)¹⁷. Between 85% and 90% of the brands were labelled as “Vitamin A Fortified”. However, upon testing, it was revealed that only about 10% of the labelled products contained any vitamin A fortificant. This owes to the fact that Afghan merchants do not specify that the oil or ghee (clarified butter) imports be fortified with vitamin A, as a result of which the exporters do not ensure that correctly labelled containers are used to package the products destined for Afghanistan. However, this clearly illustrates that it is possible for Afghan importers to order vitamin A and vitamin D fortified vegetable oils and ghee (clarified butter) with correct labelling.

Recommendations

- Establish a national cooking oil/ghee (clarified butter) fortification standard and regulations requiring the addition of vitamin A and D, and if at all possible, vitamin D.
- Actively engage Afghan producers and importers to produce or order only fortified cooking oil and ghee (clarified butter) with appropriate labelling.
- Coordinate efforts with the Afghan National Standards Authority (ANSA) and the Customs Authority to establish a monitoring system to ensure that all imported cooking oil and ghee (clarified butter) is fortified according to government standards.

2.2.2.1.4. Fortified Complementary Foods

Healthy growth and development of infants and young children not only affects their learning and educational capacity, but also sets the stage for their future health status as adults. It is well recognized that to help ensure adequate nutritional status of infants, exclusive breastfeeding during the first six months of life is essential and needs to be promoted as a national health and nutrition policy. It is also established that after six months of age, all healthy children require additional sources of nutrient-rich complementary foods, such as cereals, meat, poultry, dairy products, legumes, fruits and vegetables to meet their nutritional needs, while continuing to breastfeed up to 24 months of age. However, such variety of nutrient-rich foods is not regularly accessible by large proportions of households in Afghanistan. Furthermore, because infants and young children can consume only small quantities of complementary foods, it is difficult to meet their daily vitamin and mineral

¹⁷ CDC. Summary Report of the National Nutrition Survey: Afghanistan, 2004. Atlanta, Georgia, May 2005.

requirements except with substantial diligence and meal planning and with regular access to a variety of foods.

Even in developed countries, commercially produced complementary foods for infants and young children are fortified with essential vitamins and minerals. Such imported products are also found in the Afghan markets, primarily in urban settings, but are often not affordable for the average consumer. However, it may be possible to engage the private sector to develop and market quality fortified complementary foods priced for the general markets in Afghanistan. Such work is currently being supported in other developing countries by donor organizations. For more details please see the National Infant and Young Child Feeding Strategy, 2009.

Recommendations

Use of fortified complementary foods should be promoted along with advocacy for the use of local micronutrient-rich foods, through an appropriate and on-going social marketing and nutrition/health communication strategy. The following interventions should be undertaken:

- Develop national standards and regulations on fortification of complementary foods for children 6 – 24 months of age.
- Engage local entrepreneurs, businesses and NGOs to produce and/or import easy-to-use, hygienic and appropriately priced complementary foods for children 6 – 24 months of age that could be marketed across the country, or at least within urban and peri-urban settings.
- Promote the importation or local production, distribution and marketing of “in-home fortificants” - MNPs (Micronutrient Powders), to enable families to fortify home-prepared complementary foods.
- Develop and implement a culturally and socially appropriate social marketing and communication program to encourage the population to support and practice the recommended infant and young child feeding practices.

2.2.2.2. *Partner with the Retail Sector to Help Increase Population Access to Vitamin and Mineral-Rich Foods and Supplements.*

The Government of Afghanistan, with support from international donor agencies, and in collaboration with national and international NGOs, has implemented a number of local projects to deliver nutrient-rich foods and vitamin and mineral supplements to high risk and low-income population, especially women and children. All of these projects involve local health centres and/or NGOs directly distributing various fortified food or supplements directly to their beneficiaries.

A substantial portion of the costs of public nutrition intervention programs which include direct distribution of food or supplement products to beneficiaries is associated with transportation, storage and maintenance of logistics and inventory of the products by the government or civic agencies. By partnering with the local retail sector, public nutrition programs may be able to substantially reduce their logistics related expenditures, utilizing the expected savings instead to increase the caseload or coverage of the target population. Such a public-private sector partnership could also help economic development and promote increased availability of micronutrient products in local communities targeted by public nutrition interventions. For example, the Women, Infants and Children's Supplemental Nutrition Program (WIC) in the United States (<http://www.fns.usda.gov/wic/>) provides vouchers which

beneficiaries exchange for specific micronutrient fortified foods at their local retail outlets. In addition to reducing the costs to the government associated with direct distribution of the approved foods, the program led to the availability of more products in local markets (Ref 15). In a demonstration project in rural Kenya supported by the U.S. Centres for Disease Control and Prevention (CDC), single-dose sachets of Sprinkles are marketed through small retail outlets and door-to-door sales by local community vendors. The public sector monies were used for the initial studies of market feasibility and acceptance of Sprinkles in the target communities, and also to fund the social marketing and promotion campaigns. Local vendors earn a nominal profit through sales of Sprinkles and are motivated to promote the product in their communities. Initial results of this public-private sector partnership are encouraging and show fairly good population coverage of up to 50%, and substantial improvements in iron status of the target children (personal communication, Mr. Laird Ruth, CDC/IMMPaCt Program, May 2009).

Retail food shops and pharmacies in Afghanistan market a variety of food products and micronutrient supplements. Thus, it may be possible to develop sustainable public-private sector partnerships to increase access to such products in communities across the country, especially in urban/peri-urban areas, simultaneously reducing the high costs of direct product delivery and distribution by the public sector.

Recommendations

- Explore the feasibility of partnerships with food retailers to distribute specified vitamin and mineral rich products (e.g. iodized salt, fortified flour, fortified vegetable oil or ghee (clarified butter), fortified complementary cereal, MNPs, and vitamin and mineral supplements) to public nutrition program beneficiaries in exchange for government/public sector issued vouchers. If found feasible, pilot an appropriate program based on the findings, and expand accordingly.

2.2.3. Strengthen National Nutrition Capacity

2.2.3.1. *Public Nutrition*

To help enable the national and local public nutrition and health personnel to advocate for, plan, design, implement, monitor, and evaluate effective population based vitamin and mineral deficiency prevention and control programs, it is essential that they have the needed technical and programmatic skills and expertise. Although participation in short-term training programs has helped to increase the knowledge of the limited number of Public Nutrition Department (PND) staff within MoPH at the Central level, most staff at the local levels does not have the minimum needed skills in public nutrition. Further, as mentioned above, there has been substantial turnover of PND staff since the Department was established in 2002. Currently, Afghanistan has no academically trained nutritionists with public health or clinical expertise, and the nutrition curriculum offered to medical and nursing students is reported to be relatively weak.

It is therefore recommended that a cadre of post-graduate Afghan nationals be encouraged and supported to attend graduate level training abroad in human and public nutrition science, policy and epidemiology, as well as food science. The existing nutrition curriculum offered to medical and nursing students should be

evaluated and appropriately modified to help meet the training needs of future Afghan physicians and nurses who make up the back-bone of the national health care system. To build a solid foundation for the future, bachelor and graduate level academic degree programs in nutrition and food science as well as public nutrition should be offered through public and private academic institutions within Afghanistan.

Recommendations:

- Establish on-going relationships with well-recognized academic institutions abroad to offer fellowships and scholarships for Afghan health professionals interested in specializing in graduate level training in human and public nutrition and related fields (e.g. nutrition epidemiology, food science, nutrition and health communication, nutrition policy, etc.)
- Support national academic institutions such as Kabul University and Ibn Sina Public Health Program to establish accredited degree programs to help develop the future cadre of Afghan nutrition professionals.
- Work closely with academic institution such as University of Massachusetts at Amherst in the U.S.A. which is developing a nutrition curriculum for the Medical University in Kabul.
- Review and update the nutrition curriculum required for medical and nursing students.
- Actively seek inclusion of nutrition/micronutrient related topics in existing and future donor supported training programs. One potential upcoming opportunity is to work with the U.S. CDC (Center for Disease Control and Prevention) to incorporate nutrition/micronutrient epidemiology as a component of the soon to be established Field Epidemiology Training Program (FETP) in Kabul, and recruit fellows accordingly.

2.2.3.2. Food Control

Given that substantial efforts are underway to mandatorily require fortification of selected nationally produced and imported staples and condiments (e.g. salt, flour, vegetable oil and ghee (clarified butter), complementary foods for children, etc.), it is essential that the Afghan government has the requisite capacity to legally monitor and ensure the quality of such fortified products. Current capacity is quite weak and almost non-existent.

Recommendation:

- Coordinate with, and support, the Afghan National Standards Agency (ANSA) to develop the needed personnel expertise and laboratory capacity to legally monitor the quality of nationally produced and imported fortified food products.

2.2.3.3. Private Sector

Industrial food production is a growing private sector economy in Afghanistan. To help ensure that they produce quality, sanitary and nutritious foods for the national markets, the industries need technical assistance, information and training so as to manufacture adequately fortified products. Also because substantial proportions of food commodities are imported into Afghanistan, importers need to be educated and informed about the importance of ordering fortified products instead of non-fortified ones.

Recommendation:

▪ The international donor and development agencies could help introduce the Afghan food industry including importers, to relevant international or regional industry organizations and associations. One approach is to support (at least in part) Afghan food industry representatives to periodically attend international and regional conferences and trade shows convened by related industry groups. Such support of international agencies and networks in the past few years has been instrumental in helping flour millers in Central Asian and Eastern European countries to engage with their international counterparts by attending annual meetings of the International Association of Operative Millers (IAOM).

Similarly, public and private sector partnerships can lead to sustainable fortification of all nationally milled and imported industrial flour, cooking oil and ghee (clarified butter), as well as centrally produced or home-prepared complementary foods.

3. Cross cutting issues**3.1. Monitoring, Surveillance and Evaluation**

To help assess and track progress in the implementation and public health impact of population based micronutrient interventions, appropriate, feasible and sustainable approaches will need to be implemented to enable monitoring of program implementation and surveillance of nutritional impact. Program monitoring would focus on continued and systematic collection and analysis of key data, and interpretation and use of the resulting information on program inputs, implemented activities, and outputs to assess how the program is performing compared to predefined criteria. Surveillance activities would focus on continuous and systematic collection, analysis, and interpretation of data and dissemination of information regarding measures of micronutrient and health status. The program monitoring and surveillance information would help inform evaluation studies that might be required from time-to-time to assess (and improve) the effectiveness of interventions and enable decision makers to make appropriate judgments about their continuation or expansion.

The design of a Nutrition Program Monitoring and Surveillance System (NPMSS) would be based on the following “formula”:

Quality Interventions + High Population Coverage + Time = Improved Nutritional Status
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Specific and measurable indicators of program “quality” would be defined for each intervention. For example, an appropriate measure of the quality of iodized salt would be the concentration of iodine in the salt compared to the national standard. In contrast, the quality of a health worker delivered nutrition education/counseling program could be assessed based on the minimum skills and knowledge requirements of the health workers and their patient or client caseloads. Table 4 below illustrates potential indicators of micronutrient program input and output, and expect outcome (or impact) indicators.

To achieve public health impact, a quality micronutrient intervention program must cover or reach at least 80% of the target population¹⁸, and be sustained for a sufficient period of time for improvements in nutritional status of the population to be readily measurable.

Recommendations:

- Convene a multi-sectoral technical workgroup to advice on the design of a feasible and sustainable NPMSS to track the quality, population coverage and impact of various micronutrient deficiency intervention programs.

¹⁸ Pena-Rosas JP, Parvanta I, Van der Haar F, Chapel T. Monitoring and evaluation in flour fortification programs: design and implementation considerations. *Nutr Review* 2008; 66 (148-162).

Table 4: Potential micronutrient program monitoring and surveillance indicators,

Intervention	Indicator Type	Indicators
Pediatric Vit. A Supplementation	Input	<u># of available doses of Vitamin A supplement</u> Estimated # of children to be supplemented
	Output	<u># of children who received Vitamin A supplement</u> # of children surveyed in target area
	Outcome	<u># of children with low serum retinol</u> # of children tested in target area
Prenatal Fe/FA Supplementation	Input	<u># of available doses of prenatal Fe/FA supplement</u> Estimated # of pregnant women to be covered
	Output	<u># of pregnant women who received supplement</u> # of target pregnant women surveyed
	Outcome	<u># of pregnant women with anemia</u> # of pregnant women tested for hemoglobin levels
Iodized Salt Promotion	Input	<u>Quantity of quality iodized salt produced and/or imported</u> Quantity of salt needed by target population
	Output	<u># of households using quality iodized salt</u> # of target households surveyed
	Outcome	<u># of women or school-age children with low urinary iodine</u> # of target women or school-age children tested
Flour Fortification	Input	<u>Quantity of quality fortified flour produced and/or imported</u> Quantity of flour needed by target population
	Output	<u># of households using quality fortified flour</u> # of target households surveyed
	Outcome	<u># of women of with iron deficiency</u> # of target women tested <u># of birth with neural tube defects</u> # of live births among target population
Cooking Oil/Ghee Fortification	Input	<u>Quantity of quality fortified oil/ghee produced and/or imported</u> Quantity of oil/ghee needed by target population
	Output	<u># of households using quality fortified oil/ghee</u> # of target households surveyed
	Outcome	<u># of women of with vitamin A deficiency</u> # of target women tested

Institutional framework

3.1.1. National level

- A micronutrient working group will be established and activated with representation from all partners involved and management at various levels in the micronutrient program in Afghanistan. The working group would consider the developed strategy and prepare strategic plans for its various parts. The annual plans of action will be developed in-line with the national strategic plan and will

have details on activities, stakeholders, timelines, and inputs / resources allocation. The plan will be presented at the national nutrition task-force committee and finalized through the comments and inputs of the participants.

- Training material for every aspect of the strategy (strengthen preventive and therapeutic micronutrient deficiency interventions through the BPHS, Public-Private Sector Partnerships, strengthen national nutrition capacity) would be prepared at the national level).
- Advocacy regarding micronutrient would be carried out at different level at capital Kabul with different public and private sector policy/ decision makers.
- The reporting tools for different intervention would be developed at central level and will be shared with lower levels.

3.1.2. Provincial level

- The provincial nutrition officer will be responsible to coordinate the micronutrient related programs and activities in the province with health facilities, health post, private sector and community-based networks.
- The provincial level staffs are also responsible to ensure the quality of the program and training at the district level through planned supervision.
- The provincial nutrition officer is responsible for the regular monitoring of supply and coverage of micronutrients in BPHS health facilities.
- The reporting tools for different interventions would be used by provincial and district levels.

3.1.3. District level

- The community awareness will be performed mainly by community health *shura* and community health workers. Using other resources such as school, mosque and community development committee will also be considered.
- Proper documentation of all micronutrient interventions will be kept and maintained in districts level, shared with provincial nutrition officers and through them to Public Nutrition Department.
- A mechanism will be established to identify the role and responsibilities of every one on different levels of health system in terms of micronutrient program.

As the micronutrient program is wide and is related to different public and private sectors, institutional framework for each intervention will be worked out accordingly.

Mechanisms for coordination

The national micronutrient strategy envisions instituting an effective coordination mechanism for communication and joint decision making by key stakeholders. There should be a National Micronutrient Task force comprised of the representatives of all governmental/ non-governmental and private sector partners to plan, implement and monitor the micronutrient program.

The main public sector collaborating partners (within the MoPH) identified are the Public Nutrition Program, Child and Adolescent Health Department, Reproductive Health Department, National EPI Program, National Community Based Health Care Program, under the oversight of Directorate of Preventive Medicine and Primary Health Care. The main technical partners are listed at the end of this document.

An adequate mechanism for coordination at various level (national, provincial and districts) of health system has already been established by Ministry of Public Health. This tailored system will facilitate long-term coordination mechanism among mentioned departments of MoPH as well as partners working for the Ministry of Public Health, as well as with other ministries and private sector.

As mentioned, at national level the Directorate Preventive Medicine and PHC and its Public Nutrition Department will be responsible to oversee the overall program management of micronutrient program within the various department of MoPH.

At provincial levels the Provincial Nutrition Officer will coordinate the nutrition/ micronutrient program with all public and private sector partners.

District Public Health officers (DPHO) will be responsible for coordination of Micronutrient program at the district level from MoPH side; where they are available otherwise it will be lead through community network and supervised by the provincial level supervisors.

At the community level Community Health *Shura* will facilitate coordination and program implementation.

This existing platform for partners will facilitate to openly and frequently communicate on matters of mutual concern, ensure the degree of mutual understanding and trust among them.

This strategy is consistent with National Nutrition Policy and Strategy and will be implemented in close link with the following policies and strategies of MoPH:

- National IYCF strategy,
- Improved Diarrhea Treatment Plan (Introduction of Zinc and new formula ORS),
- National Child and Adolescent Health Policy/ Strategy,
- Reproductive Health Policy/ Strategy
- Vitamin A supplementation Strategy (in current and post NIDs),

Advocacy and Communication

As the micronutrient program is a wide and extensive program, it needs comprehensive communication strategy, (as there is a separate communication strategy for USI (Universal Salt Iodization)). We will make certain that every communication activity ensures the right message to the right target audiences through the right channel at the right time. The communication strategy may have the following components:

- Vision,
- Mission
- Goals and Objectives of the programme
- Stakeholders
- Responsible parties
- Resources required
- Core messages
- Approaches
- Persuasion techniques
- Implementation
- Monitoring and evaluation
- Plan of Action

In common with other health promotion programmes, all micronutrient programs share two objectives:

- (i) To create an enabling environment;
- (ii) To help individuals adopt healthful behaviors.

Table 5: Nutrition promotion methods defined

Concept	Definition
Nutrition education	Any set of learning experiences designed to facilitate the voluntary adoption of eating and other nutrition-related behaviors conducive to health and well-being.
Health communication	The crafting and delivery of messages and strategies, based on consumer research, to promote the health of individuals and communities.
Social marketing	“The design, implementation, and control of programmes aimed at increasing the acceptability of a social idea, practice [or product] in one or more groups of target adopters. The process actively involves the target population, who voluntarily exchange their time and attention for help in meeting their health needs as they perceive them”.
Advocacy	Persuading others to support an issue of concern to an individual, group or community. May involve, “the strategic use of the mass media as a resource to advance a social or public policy initiative”.
Social mobilization	A broad scale movement to engage large numbers of people in action for achieving a specific development goal through self-reliant effort. Social mobilization is most effective when it is composed of a mix of advocacy, community participation, partnerships and capacity-building activities that together create an enabling environment for sustained action and behavior change.

The chances of success of a micronutrient programs are greatly improved if it is supported by a range of activities that collectively help to create an enabling environment for fortification/ supplementation. In practice this means promoting change at all levels – individual, community, corporate and political.

Various ways of communicating messages about the benefits of fortification and supplementation of micronutrients exist, including nutrition education, social marketing and advocacy. Education strategies work best when the benefits of change are obvious (the perceived benefits are high) and the change does not appear costly to the individual or group being asked to make the change (i.e. perceived costs are low). Conversely, regulatory approaches may be more

appropriate when the perceived benefits of the change are low and the perceived costs are high. All fortification/ supplementation programs will benefit from some form of social marketing, i.e. the use of commercial marketing techniques to achieve public sector goals. Social marketing is at its most effective when it involves the consumer in every aspect of a programme, from product development to product positioning, placement, pricing and promotion, and is based on qualitative and quantitative research that has defined the key consumer groups, their attitudes and barriers to change. Messages must be unambiguous and tailored to match the information needs and cognitive abilities of the recipient.

Establishing some form of collaborative network or alliance can be a good way of opening and maintaining communication channels among principal stakeholders. This can also provide a forum for negotiating any conflicts of interest that may arise between the private and public sectors.

The Health Promotion Department of MoPH will be involved in all stages of communication activities of this strategy. The advocacy and communication will be mainly carried out in three levels:

3.1.4. Advocacy

A national champion will be identified for micronutrient program in the country. The champion, Public Nutrition Department and National Micronutrient Task-force will strongly advocate to seek the support of Afghan leaders and policy makers for successful implementation of the strategy and securing fund from the national and international sources.

3.1.5. Program Communication/ social - community mobilization

There will be strategies to help us gain support from the partners and those interacting and influencing the program. The program will be largely communicated to all partners, stakeholders and beneficiaries. There will be targeted IEC/ BCC (Information, Education, Communication/ Behavioral Change Communication) activities on specific interventions for specific groups. These could be comprehensive media plans, public awareness campaign for interventions, documentation and dissemination plan for sharing the evidences of the innovative programs, conference or symposiums on some important topics and other relevant activities. Different communication tools will be developed, tested and used for various interventions. Support from district counsels, CHW/CHS, elders, mullah, teachers, women's groups will be obtained.

3.1.6. Marketing communication

Strategies will be developed to enable us in gaining support from new partners or funders. The evidence will be documented comprehensively to attract the trust, confidence and support of the partners on sustainability, efficiency and viability of the solution available for combating hidden hunger.

Annex 1. Partners in Micronutrient Programs in Afghanistan

ANSA	Afghanistan National Standards Agency
BASICS	Basic Support for Institutionalizing Child Survival
BPHS implementing NGOs	Basic Package of Health Services Implementing Non-Governmental Organizations
EC	European Commission
FAO	Food and Agriculture Organization (United Nations)
FMS	Flour Millers Association
MAIL	Ministry of Agriculture, Irrigation and Livestock
MI	Micronutrient Initiative
MoC	Ministry of Commerce
MoM	Ministry of Mines
MoPH	Ministry of Public Health
PND	Department of Public Nutrition
SMA	Salt Millers' Association
SC UK	Save the Children UK
SC US	Save the Children US
UNICEF	United Nation's Children Fund
UN WFP	United Nation's World Food Program
USAID	United States Agency for International Development
WHO	World Health Organization (United Nations)
WB	World Bank

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