



**UNHCR Strategic Plan for
Anaemia Prevention, Control and
Reduction**

**Reducing the Global Burden of
Anaemia in Refugee Populations**

2008 - 2010

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Abbreviations

GAM	Global Acute Malnutrition
IEC	Information, Education and Communication
IPT	Intermittent Preventive Treatment (for malaria)
IDP	Internally Displaced Person
IYCF	Infant and Young Child Feeding
JAM	Joint Assessment Mission (UNHCR/WFP)
JPA	Joint Plan of Action (UNHCR/WFP)
LLIN	Long Lasting Insecticide Treated Nets
MOU	Memorandum of Understanding
MNP	Micronutrient Powders
NGO	Non-Governmental Organisation
RUF	Ready to Use Foods
RUTF	Ready to Use Therapeutic Foods
RulbF	Ready to Use Lipid* Based Foods
SAM	Severe Acute Malnutrition
SFPs	Supplementary Feeding Programmes
SP	Sulphadoxine-Pyrimethamine
TFP	Therapeutic Feeding Programmes
UNHCR	United Nations High Commissioner for Refugees
WCBA	Women of Child Bearing Age
WFP	World Food Program
WHO	World Health Organization

UNHCR Strategic Plan for Anaemia Prevention, Control and Reduction

Background

Anaemia is defined as having an abnormally low haemoglobin concentration. The low concentration of haemoglobin results in inefficient oxygen transport and leads to fatigue, loss of learning potential and economic productivity and, in its severe form, is a life threatening condition. The prevalence of anaemia, defined by low hemoglobin or hematocrit, is commonly used to assess the severity of iron deficiency in a given population. In order to define anaemia, a criterion is applied according to age and gender groups, as the following chart describes:

Table 1. Cut-off points used to define Anaemia (in people living at sea level)

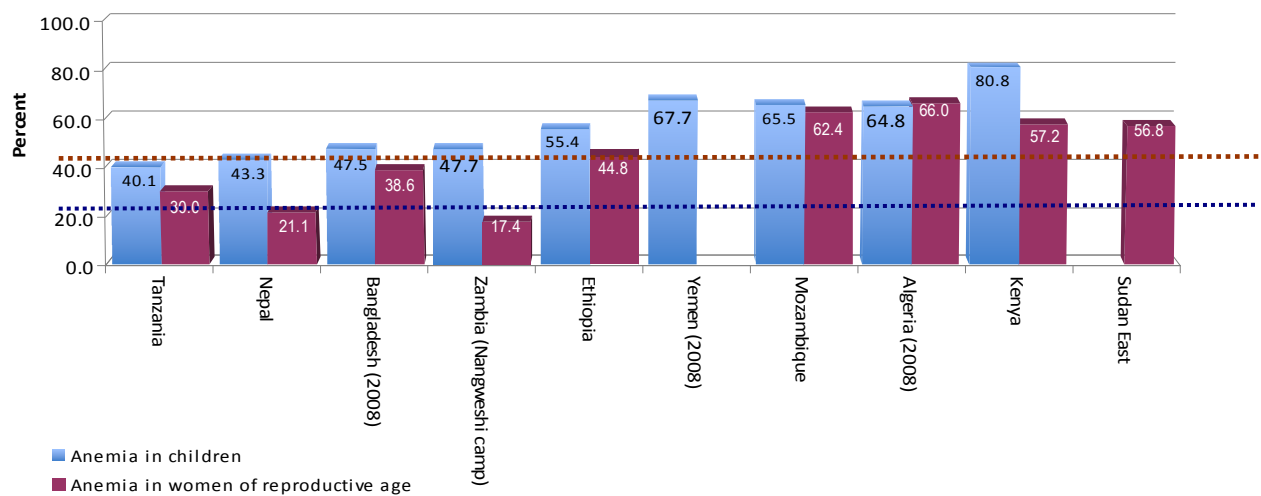
Age or sex group	Hemoglobin below:	Hematocrit below g/dL %
<i>Children 6 months to 5 years</i>	11.0	33
<i>Children 5-11 years</i>	11.5	34
<i>Children 12-13 years</i>	12.0	36
<i>Non Pregnant women</i>	12.0	36
<i>Pregnant women</i>	11.0	33
<i>Men</i>	13	39

Source: WHO/UNICEF/UNU, 1997

Despite efforts to control and reduce anaemia in refugee populations the problem remains very serious. Survey data indicate an extremely high level of anaemia affecting young refugee children and women worldwide. In the past two years, surveys conducted on refugees found that in ten countries, the prevalence of anaemia in young children was above the WHO cut-off points for defining a “public health problem”, (>20% of population with anaemia); in eight countries, the prevalence fell above 40% which describes a “severe public health problem”, and six of these eight fell above 60% which is described as a “public health emergency”. Thus, more recently, UNHCR has determined the need to mobilize concerted efforts with various partners, to introduce a number of specific interventions, in order to reverse this negative trend.

It is the youngest children, between six months and two years who tend to have highest rates of acute malnutrition and anaemia, and these conditions are correlated in refugee settings. The high prevalence of anaemia in young children, besides increasing mortality risk in its severe form, is of concern in cognitive development, given that the human brain is developing in the first four years of life, and the immune system is developing in the first two years. Thus, it is extremely important to target interventions for women as well young children in order to improve the metabolic health and outcomes of young refugee children.

Figure 1: The Prevalence of Anaemia in Selected Refugee Camp Populations (WHO cut-offs for moderate and severe public health problems indicated by dashed lines)



* Data from 2007 unless otherwise indicated. Anaemia is defined using haemoglobin cut-offs of <11.0 g/dl for children and pregnant women, and <12.0 g/dl for non-pregnant women.

Renewed effort and innovative approaches are required to effectively tackle the problem of anaemia among refugees. This paper outlines a recommended strategy for UNHCR to take forward in combating this important public health challenge.

Multi Dimensional Causes of Anaemia

Anaemia has multiple causes and in refugee situations is a public health problem in all regions of the world. In the context of refugee (and displaced) populations, the most important cause is inadequate dietary intake of micronutrients (especially iron, folic acid, vitamin B12), and a lack of appropriate complementary foods given dependency on food aid. There are also often high rates of infections given crowded refugee environments and poor access to water and sanitation, thus the high prevalence of anaemia in refugees is often stemming as well from infections of malaria, hookworm and schistosomiasis.^{1, 2, 3, 4}

Preventing and treating anaemia among refugees and other persons of concern to UNHCR demands a multi dimensional and comprehensive approach in public health and nutrition, and will require funding and donations of both technical support and commodities/funds beyond the normal programming needs of UNHCR. Anaemia

¹ Seal, A. J., Creeke, P. I., Mirghani, Z., Abdalla, F., McBurney, R. P., Pratt, L. S., Brookes, D., Ruth, L. J., & Marchand, E. (2005) Iron and vitamin A deficiency in long-term African refugees. *J.Nutr.* 135: 808-813.

² An Effectiveness Trial Of Antenatal Multiple Micronutrient Supplementation: Report On Main Findings And Provisional Recommendations; Dadaab Refugee Camp, NE Kenya, June 2001 - September 2002; Institute of Child Health/UNHCR.

³ Kemmer, T. M., Bovill, M. E., Kongsomboon, W., Hansch, S. J., Geisler, K. L., Cheney, C., Shell-Duncan, B. K., & Drewnowski, A. (2003) Iron deficiency is unacceptably high in refugee children from Burma. *J.Nutr.* 133: 4143-4149.

⁴ Tomashek, K. M., Woodruff, B. A., Gotway, C. A., Bloland, P., & Mbaruku, G. (2001) Randomized intervention study comparing several regimens for the treatment of moderate anaemia among refugee children in Kigoma Region, Tanzania. *Am J Trop.Med.Hyg.* 64: 164-171.

prevention and reduction is emphasised as a priority in the UNHCR Nutrition and Food Security Strategic Plan for 2008-2012, and eventually all successful interventions will need to be streamlined and integrated into all refugee situations on a global scale.

In order to ensure the most cost effective solutions, UNHCR will consolidate and extend activities in seven pilot countries, chosen on the basis of need and feasibility. The initial seven countries to be included are: Algeria, Bangladesh, Djibouti, Ethiopia, Kenya, Nepal and Yemen. As funds are available more countries will be included. A full roll out of this nutrition support to all 18 countries in the original plan is hoped to be feasible by 2011.

The specific activities to be supported are included in Annex A, and encompass the reinforcement of existing activities (such as malaria control and strengthening antenatal activities), introduction of new activities (such as use of lipid based ready to use foodstuff, micronutrient powders, etc), building on cross thematic efforts which simultaneously develop multiple preventive actions, and increasing the ability to measure outcome and results, through strengthening and standardizing assessment and monitoring/evaluation activities.

In terms of food aid, and in areas such as fortification, the World Food Programme (WFP) is the key partner in refugee food aid activities and will become instrumental to combat anaemia in refugees in the long term. In 2007, a review of food commodities supplied by WFP indicated that only 20% of total food aid (600,000 metric tonnes) was fortified. However, by 2010-2012, WFP has a target of meeting 100% of the micronutrient needs of its beneficiaries. Thus the project will work closely with this partner agency especially, to explore cost effective ways of improving the quality of the diet consumed by refugees, and in testing new strategies and products.

It must be noted, that in 2009, current global economic and food shortage trends do not offer a stable backdrop to UNHCR activities to prevent and control anaemia among refugees. Even greater advocacy will be needed to ensure that the fundamental nutrients are available and accessible to refugees, in order for efforts to reduce anaemia to be successful. UNHCR will work with WFP, other UN agencies and donors to advocate for a multi-dimensional approach to food insecurity among refugees: use of cash, vouchers, income generating and cash and food for work programmes and augmenting safety net programmes for vulnerable groups, as well as vital ongoing monitoring through jointly supported nutrition surveys, Joint Assessment Missions (JAM), and Joint Plans of Action (JPA).

UNHCR will also work with health partners to ensure that the multi-dimensional causes are tackled within the public health context. Iron is the number one nutrient required to combat anaemia, and the contribution of iron deficiency to anaemia in refugees has been demonstrated in camps in Algeria, Ethiopia, Kenya, Uganda, and Zambia.^{5, 6, 7} However, concern over conventional blanket iron supplementation

⁵ In terms of diet, most refugee rations, especially those in Sub-Saharan Africa, are greatly lacking in the fresh fruits, vegetables, animal proteins and nuts needed to supply adequate intakes of folate and Vitamin B12, as well as iron. To maximise the impact of an anaemia reduction strategy due consideration is required for overall diet quality, as well as the amounts of iron.

approaches has received attention following a recent study on the island of Pemba, Tanzania.⁸ This indicated that iron supplementation of children in malarial endemic areas may result in an increase in hospitalisation and possibly death. As a priority, therefore, UNHCR will strive to ensure adequate malaria prevention and treatment programmes in all camps as a prerequisite to any blanket micronutrient strategies.

Simultaneously, improvements in detection of anaemic individuals will need to be supported through improvements in public health and antenatal activities, as well as investment in equipment for measuring anaemia.^{note}

Assessment and Monitoring /Evaluation

A very important aspect of this strategy is the study of the underlying causes of anaemia, and attention to measuring the impact of interventions in the short term. This aspect of the 2008 project is essential, both to ensure standardized baseline data and to allow a consistent approach to assessment overall. This part of the strategy will serve the interests of many groups working both within and without the refugee setting.

For this aspect, UNHCR will develop a sub agreement with the London University College for offering technical support and for conducting the anaemia component of nutrition surveys. This will allow a centralizing of data collected on anaemia and a standardization of methodology. Because the underlying causes of anaemia are multi-dimensional, a centralized coordination of assessment and monitoring/ evaluation will allow for a more complete understanding of efficacy and efficiency of interventions.

Overview of Strategy

This programme of anaemia control and reduction activities will be targeted *initially* in **seven priority countries during the first year of strategy implementation**. The priority refugee populations that have been identified are located in camps in **Algeria, Bangladesh, Djibouti, Ethiopia, Kenya, Nepal, and Yemen**. These camps have been identified due to the high burden of anaemia currently experienced and the

⁶ Seal, A. J., Creeke, P. I., Mirghani, Z., Abdalla, F., McBurney, R. P., Pratt, L. S., Brookes, D., Ruth, L. J., & Marchand, E. (2005) Iron and vitamin A deficiency in long-term African refugees. *J.Nutr.* 135: 808-813.

⁷ Seal, A., Kafwembe, E., Kassim, I. A., Hong, M., Wesley, A., Wood, J., Abdalla, F., & van den, B. T. (2007) Maize meal fortification is associated with improved vitamin A and iron status in adolescents and reduced childhood anaemia in a food aid-dependent refugee population. *Public Health Nutr.* : e-publication.

⁸ Sazawal, S., Black, R. E., Ramsan, M., Chwaya, H. M., Stoltzfus, R. J., Dutta, A., Dhingra, U., Kabole, I., Deb, S., Othman, M. K., & Kabole, F. M. (2006) Effects of routine prophylactic supplementation with iron and folic acid on admission to hospital and mortality in preschool children in a high malaria transmission setting: community-based, randomised, placebo-controlled trial. *Lancet.* 367: 133-143.

^{no} Current diagnostic methods include the Sahli, Lovibond, and Copper Sulphate methods.⁹ However, these are laboratory based methods which involve collection of relatively large volumes of blood which have to be stored and processed. In contrast, measurement using the Hemocue photometer⁹ is a point-of-care method which utilises minimal quantities of blood, is quick and easy to use, allows immediate feedback of the results to the patient, and maximises blood safety and hygiene. Currently, use of the Hemocue is generally restricted to surveys due to its relatively high cost.

The use of a paper haemoglobin colour scale is a low technology, low cost alternative that has proved useful in increasing the detection of severe anaemia in primary health care settings.⁹ A recent study has demonstrated that the proportion of sick, anaemic children visiting peripheral health facilities in western Kenya that would be diagnosed and treated for anaemia would increase from 3% to 65%.⁹ Within refugee operations the colour card method shows potential for screening, but for accurate diagnosis and follow up of anaemic patients' measurement of haemoglobin using the Hemocue is the preferred option.

potential for effective intervention. The high anaemia burden in these camps is almost certainly associated with concurrent multiple micronutrient deficiencies.

In terms of nutritional interventions, UNHCR will strive to introduce new commodities such as blanket micronutrient powder use at household level, and targeted use of ready to use foods for especially vulnerable individuals. The following table provides a summary of this approach:

Table 2. Summary of Specific Nutrition Interventions and Protocol

Category	Prevention of Anaemia	Treatment of Anaemia
	<i>Objective:</i> Having acceptable quantities and quality of the general food ration meeting 100% of Recommended Nutrient Intake (RNI) by age group	<i>Objective:</i> To treat severe anaemia among refugees and prevent excessive mortality.
Infants Birth to 6 months	Through interventions provided to the pregnant and lactating woman (to avoid low birth weight).	
Children 6-23 months	General ration plus a blanket feeding of Lipid-based Ready to Use Foods	General ration plus a blanket feeding of Lipid-based (RUTF) plus (INACG) treatment protocol with Fe/folic acid supplements.
Children 24-56 months (2 to 5 years)	General ration plus Micronutrient Powders (MNP) given at household (HH) level.	General ration plus MNP given at HH level, plus Lipid-based RUF plus (INACG) treatment protocol with Fe/folic acid supplements.
Adolescent Girls	General ration plus MNP given at HH level.	General ration plus MNP given at HH level, plus (INACG) treatment protocol with Fe/folic acid supplements. Consideration of supplementary foods through selective feeding, where very high prevalence of malnutrition and anaemia in population
Pregnant and Lactating Women	General ration plus MNP given at HH level. Supplementary- foods (RUF or blended foods) through selective Feeding .	General ration plus MNP given at HH level, (INACG) treatment protocol with Fe/folic acid supplements plus Supplementary- foods (RUF or blended foods) through selective Feeding .

Because there is often a correlation between anaemia and general malnutrition within the camp environment, the project will tackled anaemia within the general context of rehabilitating children and vulnerable adults, considering blanket and household level targeting within a comprehensive approach. Thus there will be a concerted effort to find and treat moderately and severely malnourished individuals within the refugee camp context, and improve outreach, screening and catering selective feeding programmes to better address the problem of anaemia as well. The table below provides the interventions in this regard:

Table.3. Management of Anaemia and Malnutrition

Nutrition/Anaemia	Mild/Moderate	Severe
Well Nourished	MNP at HH level	<ul style="list-style-type: none"> • MNP at HH tablets/syrup (Fe /folic acid)
Moderately Malnourished	In supplemental feeding programme (SFP; RUF or corn soy blend (CSB). MNP at HH level.	<ul style="list-style-type: none"> • MNP at HH level • SFP with Lipid-based RUF, and • Tablets/syrup (Fe/folic acid)
Severely Malnourished	In therapeutic feeding programme (TFP; ready to use therapeutic food (RUTF) with MNP at HH level.	<ul style="list-style-type: none"> • MNP at HH level • In TFP – Lipid-based RUTF and, • Tablets/syrup (Fe/Folic acid).

In terms of treating severe anaemia, the supplementation of individuals with iron and folic acid in tablet or syrup form will be continued, according to standard protocol, as indicated in Table 4 below.

Table. 4. Guidelines for oral and folic acid therapy to treat severe anaemia

Age Group	Dose	Duration
< 2 years	25 mg of iron plus 100 to 400 ug of folic acid	3 months
2-12 years	60 mg of iron plus 400 ug of folic acid	3 months
Adolescents and adults including pregnant women	120 mg of iron plus 400 ug of folic acid	3 months
<p>Notes:</p> <ul style="list-style-type: none"> • After completing 3 months of therapeutic supplementation, pregnant women and infants should continue preventive supplementation regime. • Children who are severely malnourished (kwashikor or marasmus) should be assumed to be severely anaemic. However, oral iron supplementation should be delayed until the child regains appetite, and starts gaining weight, usually after 14 days. <p>-----</p> <p>Source: Stolfus R. and Dreyfuss M. Guidelines for the use of iron supplements to prevent and treat iron deficiency anemia. International Nutrition Anemia Consultative Group (INACG), 2001.</p>		

Principles and Action Points

The following principles and proposed actions have stemmed from the conclusions of the “First Technical meeting on Anaemia in Refugees”, which was held on October 28, 2008 at UNHCR in Geneva. At this meeting, eighteen technicians participated from an array of UN agency, non-government, academic and private sector institutions. In addition to the action points described in this section, Annex A provides an overview of specific activities within all sectors that will be included in the strategy.

1. General Anaemia Programme

Action 1.1. UNHCR’s anaemia strategy will be broadened to include the prevention and control of micronutrients deficiencies. Anaemia, where attributed primarily to nutrition intake, would then become a proxy indicator of overall nutritional well-being.

Rationale: The poor nutritional status of most refugees is resulting from a lack of qualitative and, at times, quantitative, food in the diet that is generally inadequate for individuals with special dietary needs (e.g. pregnant and lactating women and children under five years). Anaemia in refugees must be tackled within the context of the overall dietary deficits, and through strengthening public health measures where needed, namely: malaria prevention/treatment, parasite control, and strengthening antenatal programmes.

Action 1.2. The current proposal will be considered as a transitional strategy until such time that all micronutrients can be provided to refugees through WFP, UNHCR and other organisations; through a more diversified diet containing animal source-foods, fortified foods and/or greater food security and access to livelihoods.

Rationale: As a comprehensive approach to refugee protection, UNHCR is obligated to ensure that refugees live in a dignified manner that is aligned with international human rights norms and standards.

Action 1.3. UNHCR will “roll-out” its strategy in a more gradual and focussed number of locations to ensure proper preparation, implementation and study to evaluate the efficacy of the various interventions.

Rationale: Given that such interventions have not been undertaken at such a scale in refugee settings before, UNHCR and its partners in 2009 will take a more limited scope of countries, in order to learn from these programmes. Such an approach will allow UNHCR to broaden and strengthen its partnerships, compile the evidence from the targeted countries, and search for sufficient funds to undertake larger programmes in the future. UNHCR will initiate the anaemia strategy in seven of the original 12 countries envisaged in 2009: Algeria, Bangladesh, Djibouti, Ethiopia, Kenya, Nepal and Yemen.

Action 1.4. UNHCR will make sure that costs are factored in and documented from the start in order to assess the cost-effectiveness of the proposed interventions. Sustainability and maximization of resources for greatest impact will be used as guiding principles.

Rationale Global trends in nutritional emergencies point toward an increased demand for specialized food products in the future, and thus it is important to coordinate adequately among aid and humanitarian agencies, with regards to coordination and management of demand, and oversight in the expansion of production, of adherence to standards and norms, and in the monitoring and control of quality and safety.

Action: 1.5. UNHCR will expand its partnership base to aid the organisation in this endeavour and to obtain greater commitment of partners. Specific roles for UN agencies (WFP, UNICEF, and WHO), non-governmental organisations (NGOs), private sector and Governments are foreseen according to mandates, interests and needs. Such roles include, but are not limited to: a) development of safe food stuff and products, (such as fortified staples, and supplementary and therapeutic foods); b) creating norms and standards; c) quality control and technical support; d) monitoring and evaluation; and, e) advocacy and funding.

Rationale: The problem of anaemia and micronutrient deficiencies is a reflection of overall humanitarian gaps in assistance and will require a broad based involvement of various actors and institutions in order to be effective.

2. Preventive Interventions

Action 2.1. Population level interventions will be oriented to household and individual supplementation where a very high prevalence of anaemia is found among pregnant women and young children, as follows:

- ✓ **Micronutrient powders (MNP) will be provided through the general ration for use at household (HH) level, with community-based education and instructions on the need for individual dosage within HH of vulnerable groups;**
- ✓ **In malarial zones, MNP will only be given where malaria preventive activities are implemented at full scale to avoid possible negative health effects. The efficacy of providing a reduced iron content of higher bio-availability will be tested in Kenya in 2009, and based on findings – further recommendations formulated.**
- ✓ **Targeted nutritional interventions will be given to anaemia prone individuals as follows: a) infants/children from 6 months to two years, b) pregnant and lactating women, and c) adolescent girls.**

Rationale: Surveys have shown that there are high levels of mild and moderate anaemia in most refugee populations, warranting a blanket and widespread population-based approach. Equally, studies have shown evidence of the importance of a general improvement of micronutrients at household level to improve individual outcomes.

Action 2.2. Actions using micronutrient supplements (e.g. MNP) and Ready to Use Foods (RUF) will be simultaneously coupled with nutrition education to promote better infant feeding practises, better understanding of micronutrients and sources, and better understanding of the impact of nutrition on health. This education will be especially important to avoid dependency on “specially-formulated” products and to advocate for positive behavioural change of certain habits, particularly the consumption of tea in some cultures.

Rationale: Use of MNP and RUF are considered ‘emergency or transition’ measures in situations where chronic food insecurity and displacement have reduced livelihoods have occurred. It is essential to ensure a core nutrition education component so that mothers and other caregivers better understand what such foods represent in a normal context, have reinforcement for correct breastfeeding and infant feeding practises, and know how to select and prepare foods when available again within their normal food choices and customs. In addition, tea has a chelating effect on iron and reduces absorption of non haem iron, and refugees often consume greater amounts of this substance when facing food shortages. Some research is required to look for healthier tea substitutes, and develop nutrition information/education/communication messages among tea drinking refugee groups.

Action 2.3. As part of the means to address anaemia and other micronutrient deficiencies in very young children, especially where prevalence of global anaemia is high, UNHCR will use Ready to Use Lipid-based Foods (RULbF) in blanket feeding of children 6 to 24 months.

Rationale: Current research points to the effective use of lipid based RUTF in children 6 to 24 months for nutritional rehabilitation of severe acute malnutrition, which is required if a refugee child is both anaemic and severely underweight, as is often the case. Haemoglobin synthesis is a result of complex multi-factor elemental and nutrient interactions. Research shows that the greatest opportunity to reverse detrimental affects on child development and stunting is in children 6 to 24 months. Furthermore, the human immune system is evolving and reaching its potential formation by two years of age.

Action 2.4. UNHCR will target efforts to prevent and control anaemia and micronutrient deficits throughout the reproductive cycle of a female through concentrating efforts on nutrition interventions and anaemia prevention of adolescent females, pregnant and lactating women (for the first six months of breastfeeding). Nutrition interventions will include MNP and where high prevalence of malnutrition is found, a complementary food (RULbF) or blended fortified foods will also be provided to women in a supplementary feeding programme.

Rationale: The numbers of mild and moderately anaemic women often represent the highest proportion of anaemia found in refugee camps. Broad-based prevention efforts are required that target adolescent growth, pregnancy, birth and postnatal stages. The prevalence of under nutrition in women of reproductive age is most often high in refugee settings, thus nutritional interventions through supplementary feeding is most

often required. This, in time, will help prevent anaemia and nutritional deficits in breastfeeding infants under six months.

Action 2.5. All existing general assistance and public health programmes that are implemented to control the multi-dimensional causes of anaemia in refugees will be strengthened by UNHCR through reinforcement of existing interventions. These include, but are not limited to: improving the (fortified) general ration content, de-worming, schistosomiasis control, strengthening of antenatal care (ANC) activities and outreach, malaria control measures, as well as nutrition education (in terms of locally available iron sources and reduction of tea consumption strategies).

Rationale: Anaemia and other micronutrient deficiencies are the result of multi-dimensional factors. There is a need to strengthen already existing efforts for prevention, case detection and treatment of refugees in all situations where high prevalence is detected.

3. Treatment

Action 3.1. UNHCR will continue treatment using iron/folic acid tablets/syrup as per International Nutrition Anaemia Consultative Group (INACG) recommendations for individuals with severe anaemia. MNP will also be given to such individuals, as it will be added to the household ration.

Rationale: The use of broad-based MNP (and eventually improved fortified foods) as well as therapy for young children should begin to treat those with mild and moderate anaemia. This will prevent severe anaemia and eventually produce a more limited demand for screening and treatment. Evidence is mixed with regards to the benefit of providing multivitamin/mineral tablets with iron/folic acid supplements in treatment, but where UNHCR is providing MNP through the household food ration system, this would not be required. UNHCR will continue to look at the possibility of some select micronutrient tablet distribution with iron/folic acid, such as vitamin C, through analysing deficits in diet on a contextual basis.

4. Screening and Diagnosis

Action 4.1. Screening activities will geared to detect severely anaemic individuals for treatment purposes.

Rationale: Highest mortality and impairment are among severely anaemic individuals who are often malnourished and ill. By concentrating on the screening of high-risk individuals, resources will be targeted on preventing mortality and severe morbidity. Screening strategies will depend upon the level of severe anaemia found in the different subgroups of the population.

Action 4.2. Use of Hemocue® will be the prime method of screening for and diagnosing persons with severe anaemia.

Rationale: Research has demonstrated that **Hemocue®** testing is more sensitive and specific on an individual level than colour cards or diagnosis by clinical symptoms alone.

Action 4.3. Hemocue® screening of all pregnant women will occur at the first ANC visit. Improved ANC outreach will occur to find pregnant women at the earliest stage of their pregnancy.

Rationale: Research shows that by through detecting and treating severely anaemic pregnant women, excess mortality among women and their infants will be reduced

Action 4.4. For children and youth: depending upon the prevalence of severe anaemia, screening among children under 5 years may be initiated on all acutely malnourished children who enter the health care system (e.g. clinics, feeding centres and hospital). All severely malnourished children will be screened for anaemia. Depending upon the prevalence of moderate and severe anaemia, UNHCR may promote the identification of adolescent females at health care entry points, schools and literacy training programmes, and continue to devise screening methods for early detection of anaemia.

Rationale: Severe acute malnutrition, illness/infection and anaemia tend to be correlated in refugee settings.

5. Commodities

Action 5.1. UNHCR, with partners, will identify countries where Micronutrient Powders (MNP) and Ready to Use/Therapeutic Foods (RUF and RUTF) have already been accepted for import and/or are being produced, to begin country selection. With the assistance of UN sister agencies and other partners, UNHCR will begin the preparatory work of introducing these as relief commodities for import in other countries.

Rationale: Due to the time it takes to get new nutrient supplements or items into countries, it is important to begin in appropriate countries that already have an approved process of imports. MNP is considered a food in some countries and a pharmaceutical product in others. There are various constraints to either category. Overall, the introduction of this as an emergency relief commodity can sometimes assist in receiving a government approval for important on a more timely basis.

Action 5.2. UNHCR will work with partners to support the evaluation of the cost effectiveness of these new products and to ensure cost considerations in all choices of relief interventions, products and inputs.

Rationale: Due to the varied numbers and types of relief foods, complementary foods, ready to eat foods and spreads, and micronutrient powders that are now on the market, and because of the recent budgetary constraints due to global economic conditions, UNHCR will need to weigh the cost effectiveness and opportunity costs in the choice of products used.

Action 5.3. UNHCR will work with manufacturers to encourage the continued research into packaging that will ensure adequate shelf life at affordable prices for various commodities. UNHCR will also consider environmental issues related to packaging, and strive to support proper disposal and/or recycling of waste generated from MNP and RUF/RUTF use.

Rationale: At present, about 70 to 80% of the cost of RUF and MNP is respectively in their packaging. This is necessary to ensure a package for an individual dosage as well as to prevent deterioration of unstable vitamins (such as vitamin C), which oxidise rapidly in high temperatures. The current packaging is highly effective for sustaining quality but is costly and is not biodegradable, and therefore not environmentally friendly. There is a need to keep investigating more efficient packaging, without compromising safety or quality.

6. Assessment and Evaluation/Monitoring

Action 6.1. UNHCR will initiate a subcontract for baseline data collection, monitoring and evaluation of the anaemia strategy. Partners are encouraged to work with the subcontractor on monitoring and evaluation components to have a standardised approach.

Rationale: Cost and management efficiency will be improved. UNHCR does not have large numbers of technical staff and use of an external partner will allow more cost effective channelling of resources and implementing of assessments as well as monitoring and evaluation.

Action 6.2. The monitoring and evaluation strategy will ensure that:

- **Partners are well versed and on the requirements to prepared and implement such programmes. Guidance will be provided on ways to deal with compliance, nutrition education components, and community preparation;**
- **Initial assessment and collection to determine baseline data (including qualitative and quantitative) are standardised but can be modified according to context;**
- **A monitoring scheme is built into the programme and staff are trained accordingly;**
- **A standardised evaluation with agreed upon indicators will be conducted to determine the impact of the programme including areas such as cost effectiveness and compliance.**

Rationale: UNHCR needs to ensure that result-based programmes are implemented and that proper measurement can show that investments are well used with the greatest impact possible. It is therefore justified to invest funds in assessment, monitoring and evaluation to ensure that the best possible interventions are chosen and are tailored to various settings.

Action 6.3. UNHCR will reiterate to all partners that data collection for the purpose of research can be conducted in refugee populations only with the prior consent of UNHCR to ensure that ethical standards are met according to UNHCR mandate. In addition, no data collected under UNHCR auspices on refugees can be published without the final consent of UNHCR.

Rationale: Under the 1951 Geneva Convention on Refugees, UNHCR is given a protection mandate for all identified refugees and asylum seekers to ensure that their legal rights are respected and upheld.

BUDGET

The strategy will be dependent on ample funds to support the implementation of strategies and this will include the need to procure commodities (micronutrient powders and ready to use foods) and equipment, (hemocue machines, and bed nets and insecticide for malaria prevention), as well as support the cost of personnel for providing nutrition education, to assess the prevalence and causes of anaemia and to measure the efficacy and effectiveness of interventions.

The budget below is presenting the original full cost project that was to be implemented in three years for 18 countries where refugees reside. At present, because of UNHCR funding deficits, there will be a slow roll out and phased approach to implementation, starting with the seven countries mentioned in this document. However, at this time, only four countries can be covered. The outstanding needs for 2009 are US\$ 11.2 million. At present (December 2008), only US\$ one million has been funded.

Budget by Country, 2008-2010

Country	Annual Costs in USD			Total
	2008	2009	2010	
<i>Year 1</i>				
Algeria	157,455	1,255,280	1,130,320	2,543,055
Bangladesh	137,010	556,284	542,858	1,236,153
East Sudan	363,425	643,805	721,255	1,728,485
Ethiopia	560,714	627,566	758,557	1,946,837
Kenya	764,378	2,341,936	2,222,942	5,329,256
Nepal	199,459	961,335	739,730	1,900,524
Yemen	319,350	431,934	428,014	1,179,298
<i>Year 2 phase-in</i>				
Cameroon	113,000	575,415	608,508	1,296,923
Chad	283,000	2,343,315	2,481,222	5,107,538
Djibouti	73,000	218,190	202,582	493,772
<i>Year 3 phase-in</i>				
Botswana	0	131,000	212,457	343,457
Burundi	94,000	81,000	334,155	509,155
Eritrea	0	81,000	181,211	262,211
Mozambique	0	181,000	224,584	405,584
Rwanda	41,000	81,000	590,607	712,607
Tanzania	0	151,000	767,240	918,240
Uganda	0	201,000	1,434,470	1,635,470
Zambia	0	181,000	552,797	733,797
<i>Years 1 through 3</i>				
Geneva	60,000	160,000	0	220,000
TOTAL	3,165,791	11,203,060	14,133,510	28,502,362

Budget by Activity, 2008-2010

Activity	Annual Costs in USD			Total
	2008	2009	2010	
Fortified complementary food for infants 6 to 24 months (weaning foods)	464,247	2,641,748	3,519,018	6,625,013
Nutritional products for anaemia treatment	125,270	186,141	198,661	510,071
Nutritional products for anaemia prevention	0	3,700,636	5,411,576	9,112,213
Laboratory diagnostic equipment and supplies	225,274	620,535	812,256	1,658,065
Impregnated bed nets for malaria control	1,055,000	0	0	1,055,000
Food security and livelihoods	175,000	1,300,000	1,100,000	2,575,000
Training and IEC for partners and beneficiaries	140,000	130,000	210,000	480,000
Support costs for country offices	80,000	120,000	185,000	385,000
Staffing - nutrition officers/consultants	111,000	396,000	549,000	1,056,000
Programme support for IPs/OPs, including lab technicians	130,000	300,000	500,000	930,000
Surveys, assessments, M&E, and Partnership with UCL-CIHD for tech. expertise	600,000	1,648,000	1,648,000	3,896,000
Anaemia consultant (based in Geneva; incl. travel)	60,000	160,000	0	220,000
TOTAL	3,165,791	11,203,060	14,133,510	28,502,362

ANNEX -A

Summary of Detailed Activities – Anaemia Strategy

(A) Reinforcement of Existing Activities

The reinforcement of current activities is of crucial importance to a successful anaemia control strategy. In each of the priority countries an examination of key programme activities on the control of anaemia will be carried out. The assessment will include:

1. Clinical diagnosis and treatment of anaemia according to existing protocols (including appropriate treatment with iron in malaria endemic areas).
2. Micronutrient content of general food aid rations.
3. Homestead small scale food production.
4. Targeted supplementary feeding programmes (SFPs) to pregnant and lactating women and blanket supplementary feeding children 6 to 24 months
5. Promotion of appropriate infant and young child feeding (IYCF) practices, including complementary infant foods.
6. Antenatal care services including adherence of women to iron and folate supplementation, intermittent preventive treatment (IPT) of pregnant women with sulphadoxine-pyrimethamine (SP) and distribution of long-lasting insecticide treated nets (LLINs), as appropriate.
7. Appropriate obstetric care including the use of delayed cord clamping.
8. Postnatal care according to established guidelines.
9. Malaria prevention and control activities including case management with appropriate antimalarial drugs, vector control activities, and distribution of LLINs.
10. Water and sanitation provision and promotion.
11. De-worming programmes.
12. Schistosomiasis control programmes, where appropriate.

If gaps are identified in any of these areas additional information and training will be provided for UNHCR implementing partners (IPs) and additional resources will be sought to fill any identified funding gaps.

(B) New Priority Actions

With a focus on the most vulnerable groups, young children, adolescents, and women, it is proposed that UNHCR and partners undertake an integrated set of activities that include a combination of public health and food-related activities.

1. Expand the use of point-of-care diagnostic technology for diagnosing cases of moderate and severe anaemia in primary and secondary health care facilities; this will include capacity building for staff.
2. Implement preventive actions for moderate anaemia through HH based interventions and targeted feeding of vulnerable groups, and treatment of severe anaemia through improved screening of high risk individuals.
3. Develop a simplified treatment action flow chart for diagnosing and treating anaemia in individuals and for determining interventions at the camp level.
4. Universalise and standardise the measurement of anaemia in surveys.
5. Revise policy and the WFP/UNHCR MOU (2002) with regards to responsibilities in commodity provision and fortification responsibilities.
6. Advocate for additional funds and donations in kind to prevent and treat micronutrient malnutrition.

7. Other agencies, such as UNICEF, have been working on various approaches for improving the micronutrient content of food aid.¹⁰ UNHCR will explore areas of potential collaboration at an operational level with these agencies.
8. Develop IEC for anaemia prevention and reduction and to support compliance through interagency collaboration (eg. UNICEF), and to develop behaviour change in areas such as tea consumption and/or consumption of foods that enhance iron absorption (e.g. fermented food and animal protein, etc.).

(C) Monitoring and Evaluation, and Operational Research

A number of areas have been identified where additional monitoring and evaluation, and operational research are required to ensure the successful implementation of the proposed strategy.

1. Compliance. The acceptability of some new therapeutic products for the treatment of moderate and severe anaemia requires confirmation in refugee settings. A simple acceptability and adherence measurement tool will be developed to allow monitoring and evaluation of these aspects during their introduction. A similar tool will also be used to investigate adherence to established iron tablet supplementation programmes where the need for this information is established.
2. Malaria Control. The distribution of LLINs is relatively easy to monitor and the desired distribution coverage can usually be obtained with knowledge of household number and average size. However, understanding how people actually use, retain and dispose of bed nets is much more challenging. It is also essential information for designing and monitoring effective malaria control programmes. Methods will be developed to allow a standardised monitoring system for this component of the Anaemia Control and Reduction strategy.
3. Standardize Measurements. Measurement of anaemia prevalence by survey is currently undertaken using different measurement and analysis procedures, due to the wide numbers of partners implementing surveys. To improve the monitoring and evaluation of the UNHCR Anaemia Control and Reduction strategy, a standardised survey protocol and analysis procedure will be developed with the London University College, who will also – via a sub agreement – oversee the conducting of most surveys in the seven countries.
4. Iron Dosage. An area of uncertainty raised by field operations concerns the appropriate dose of iron that should be provided. Published evidence on this issue will be reviewed and practical guidance produced and disseminated via UNHCR Health Coordinators. This guidance will form part of a simplified anaemia diagnosis and treatment flow chart that will be developed for use by implementing partners.

¹⁰ Guiding Principles For The Use Of Multiple Vitamin and Mineral Preparations In Emergencies WHO/UNICEF April 2007.

ANNEX -B Key Indicators from the Priority Country Operations

Indicator	Algeria	Bangladesh	Ethiopia	Kenya	Nepal	Yemen	Total or average
Total camp population	124,960	26751	77,935	264,601	110,863	45,420	608,046
Under-fives	NA ⁺	4884	14,722	41,812	8,463	7,775	73,442
Women (15-49 yrs)	NA	5350	15,587	52,920	23,633	9,100	96,632
Pregnant and lactating women	NA	1338	3,118	11,803	5,543	1,440	20,165
Crude death rate (deaths/1000/month)	NA	0.18	0.14	0.21	0.28	0.33	0.17
Under-5 death rate (deaths/1000/month)	NA	0.26	0.27	0.51	0.34	0.64	0.69
Measles vaccination (9-59 months)	NA	91.6	90.8%	181.8%*	95%	90.0%	104.5%
Prevalence of Anaemia in U5 (%)	68.5%	47.5%	43.2-7.5%	81.4-86.4%	43.3%	59.1-67.7%	43.2-86.4%
Prevalence of Anaemia in WCBA (%)**	76.5%	38.6%	34.5-55%	40.7-58.7	13.6%	NA	34.4-76.5%
Global Acute Malnutrition (GAM)	7.7%	8.6%	4.0-13.5%	9.0-12.5%	4.2%	6.5-13.6%	4.0-22.7%
Severe Acute Malnutrition (SAM)	2.3%	0.3%	0.4-1.1%	0.9-2.3%	0.2%	0.7%	0.4-2.3%
Kcal distributed per person per day (annual average)	1796	1780	2240	2139	2100	2100	1733
Vitamin A capsule coverage under 5 yrs (U5)	NA	76%	91.5%	92.7%	95%	88.5%	95.0%
Malaria Incidence U5 (new cases/ 1000/ month)	NA	0.35	25.3	114.4	1.3	3.1	102.4
Non-bloody Diarrhoea Incidence U5 (new cases/ 1000/ month)	NA	51.5	30.69	29.98	91.3	33.43	37.41
Malnutrition Incidence U5 (new cases/ 1000/ month)	NA	2.7	4.56	1.82	2.0	1.29	2.79
U5 mortality rate Malaria (death/1000/month)	NA	0.0	0.03	0.13	0.0	0.00	0.30
U5 mortality rate Malnutrition (death/ 1000 / month)	NA	0.0	0.05	0.07	0.0	0.04	0.39
Litres of potable water (per person per day)	13.2	24	14.4	22.9	25	70.0	18.4
Coverage of complete antenatal care	NA	100%	85.2%	87.4%	83.8%	73.5%	89.5%
Proportion of births attended by skilled health workers	NA	2.4%	40.2%	34.0%	99.2%	100.0%	54.3%
Proportion of live births with birth weight < 2500g	NA	17.7%	5.3%	5.5%	6.2%	9.7%	3.7%

⁺ Not available

* This indicator gives an unexpected result in Kenya due to problems with the population denominator

** WCBA, women of child bearing age

(Note: Djibouti will be included as data is collected and reviewed.)