



Nutrition at the World Food Programme

Programming for Nutrition-Specific Interventions

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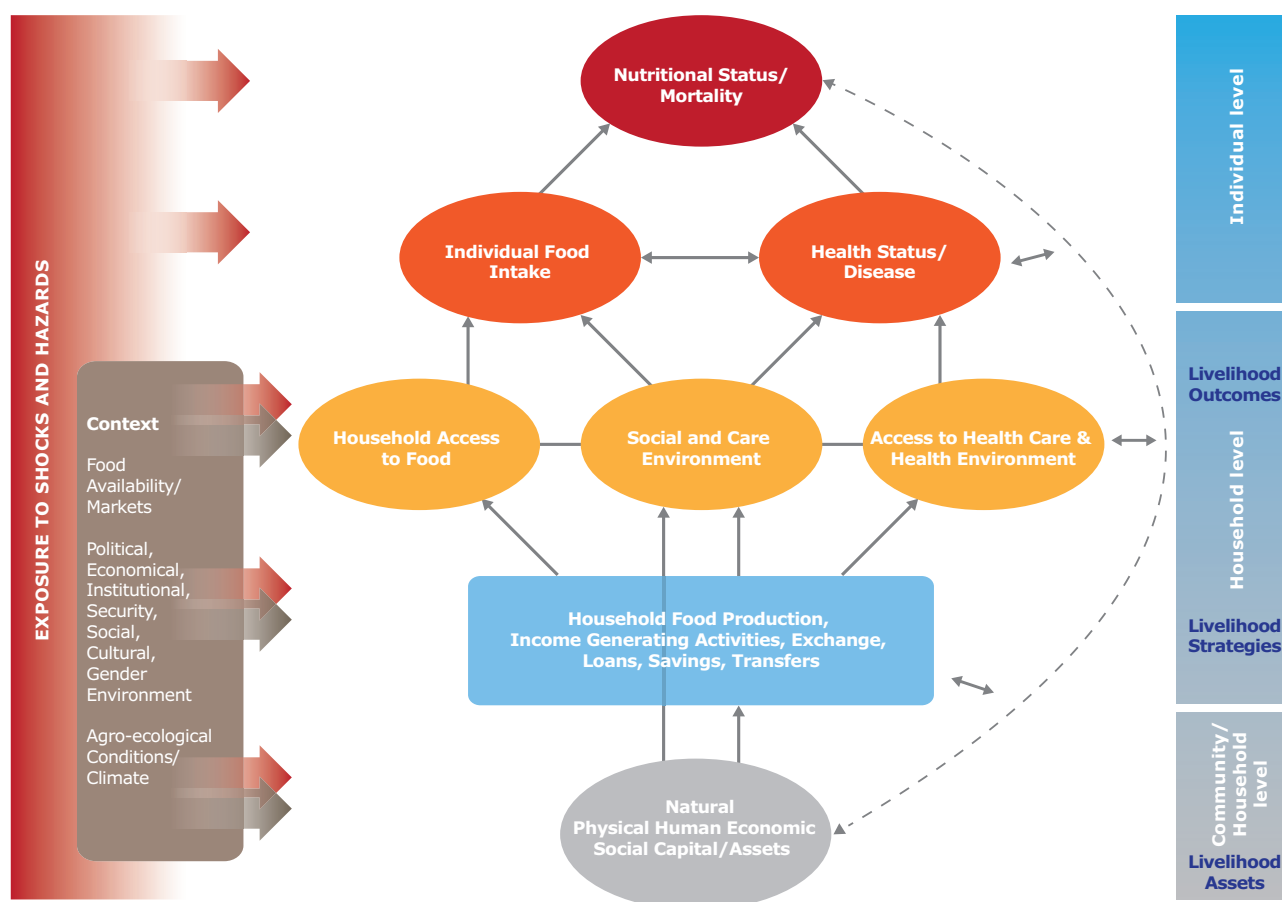
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Introduction

WFP's nutrition response is based on a thorough understanding of the nutrition situation, in order to deliver the most appropriate response. This entails identifying who is suffering from undernutrition, what type of undernutrition, when undernutrition is occurring, where undernutrition is occurring, and why undernutrition is occurring. This also entails understanding the nutrient gap and access to

nutrients. WFP uses an expanded version of the UNICEF conceptual framework on the causes of malnutrition to guide information gathering, to facilitate identification of possible causes of the nutrition situation, to understand the relationship between immediate and underlying causes of malnutrition as well as basic determinants, and to design the most appropriate responses.¹

Food and Nutrition Security Conceptual Framework



1. WFP's operational focus is on the left side of this conceptual framework, i.e. on improving household access to food and individual dietary intake of sufficient food and nutrients.

The immediate causes of undernutrition are inadequate dietary intake and disease. The framework also shows that many factors in addition to nutrient intake or consumption of special foods are important for nutritional status. For example, clean water, health care and hygiene, good caring practices, maternal education, household food security and economic development are all important for good nutrition.

WFP aims to address within a comprehensive response the Individual Food Intake and the Household Access to Food. Without adequate nutrients, a child's bone and muscle growth may not be adequate to gain in height/length, immune system performance may be undermined making the child more susceptible to disease, and brain development may be particularly affected. The nutrients required for optimal growth and development are diverse, including essential amino acids, macro-minerals (e.g. calcium, phosphorus, magnesium), and micronutrients (vitamins, minerals). As a rule of thumb, a diet that consists largely of plant-source foods (e.g. cereals, vegetables, fruits), with virtually no animal-source foods (milk products, fish, meat, eggs) or fortified foods, does not provide all these required nutrients for a young child's growth, health and development.

WFP works in partnership with governments in support of national priorities. A core component of the way in which WFP designs and delivers nutrition programming is capacity development to design, implement, and support national policy and programming for reducing undernutrition in partnership with UN sister agencies, NGOs, the private sector, and academia. WFP's efforts in nutrition are focused on improving availability and access to adequate complementary foods to ensure that nutrient needs are met, which means that where necessary specific nutrient-dense foods may be used. In addition to meeting nutrient needs, and using specialized nutritious foods where necessary, WFP supports a multisectoral response to undernutrition



which includes disease prevention, promotion of optimal breastfeeding practices, and good hygiene.

The primary intent of this booklet is to assist in the design of nutrition-specific programmes in WFP country offices, but may also serve as a resource for training or advocacy activities. The following sections offer introductions to acute malnutrition, chronic malnutrition and micronutrient deficiencies and summarize evidence around WFP's nutrition-specific interventions. The booklet also includes information to support WFP staff in applying the current evidence base to programme design, implementation, monitoring and evaluation activities.

For more information, please contact nutrition@wfp.org.

2012 Nutrition Policy

The Nutrition Policy was approved by the WFP Executive Board in February 2012. It encompasses the previous policies on nutrition topics and sets the way forward for WFP to engage in nutrition by outlining nutrition-specific and nutrition-sensitive programmes. The new policy demonstrates WFP's commitment to addressing undernutrition and describes different areas where WFP will focus its efforts.

Saving lives has always been a WFP priority, particularly in emergencies. Because of their high nutritional needs and vulnerability, children are at particular risk of stunting and even death when access to a diet that meets all their nutrient needs is lacking. Poor nutrition for pregnant women can cause mortality but can also impede foetal growth, resulting in low birthweight and increasing the risk that children's growth will be stunted. Undernutrition weakens the immune system and increases the risk and severity of infections. One-third of all child deaths are related to undernutrition, which kills a child every ten seconds. Wasting and stunting are responsible for approximately 20 percent of childhood mortality, and micronutrient deficiencies in non-wasted, non-stunted children another 8–10 percent. More child deaths and disability² in children younger than five years of age are attributable to stunting and micronutrient deficiencies – with nearly all this burden due to deficiencies of vitamin A and zinc – than to severe acute malnutrition because they affect many more children and reduce productivity and quality of life.³

Not only does undernutrition kill, it also prevents children from growing up to live productive lives. Children without access to an adequate diet during the first 1,000 days between conception and 2 years of age suffer irreversible, long-term consequences such as impaired physical and cognitive development. They are also at higher risk of chronic conditions such as cardiovascular disease, obesity

and diabetes later in life. Stunting holds back development, so preventing it can protect and improve the livelihoods of entire societies.

Treating and preventing undernutrition is therefore very important in both emergency and non-emergency settings, to reduce mortality and to protect and improve livelihoods. The Lancet medical journal has indicated that if undernutrition can be overcome – especially during the first 1,000 days – not only can lives be saved, but children can also grow up to realize their full potential.

Undernutrition has many causes, so efforts to tackle it must be multi-disciplinary, engaging diverse stakeholders in line with national priorities. Based on its mandate and comparative advantage, WFP can help to ensure physical and economic access to a nutritious, acceptable and age-appropriate diet for those who lack it. While reaching more than 90 million beneficiaries every year – many of them children – and meeting both their caloric and nutrient needs, WFP can also have an indirect impact on the lives of many more people by advocating for comprehensive solutions and developing the capacity of governments and other partners to include food-based components in their strategies for tackling undernutrition.

2. Disability-adjusted life-years (DALYs) refer to the sum of years of potential life lost due to premature mortality and the years of productive life lost due to disability (WHO). While disease may not always lead to death, it reduces productivity and quality of life.

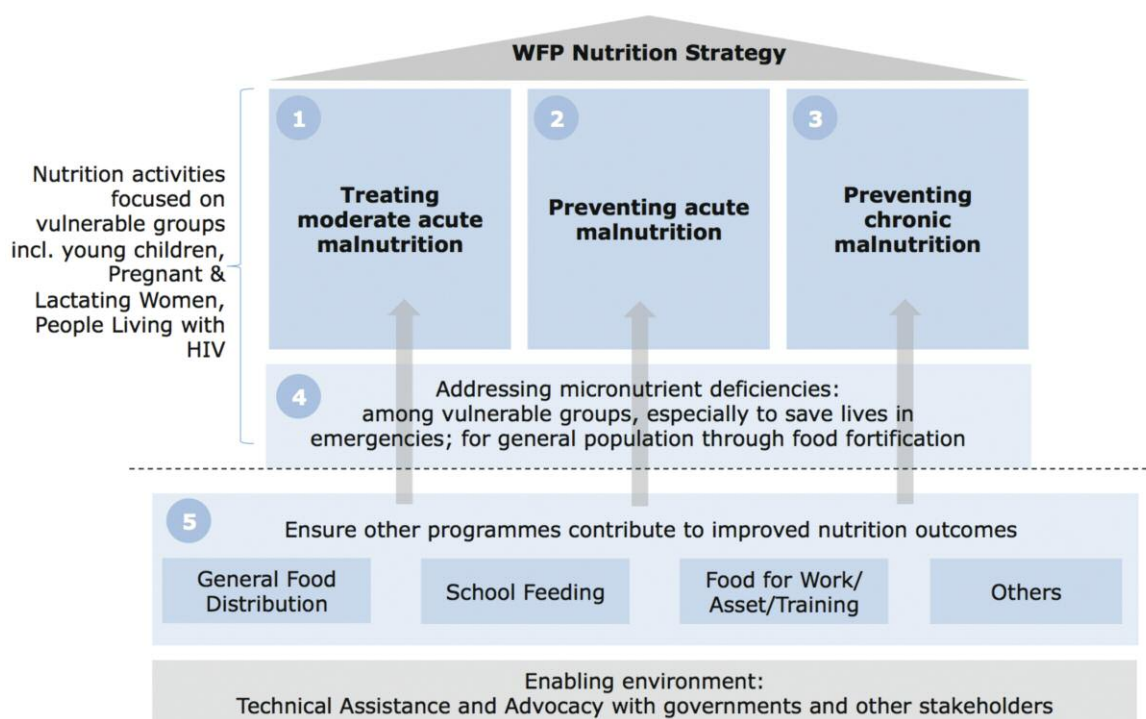
3. Bhutta ZA, Ahmed T, Black RE, Cousens S, Dewey K, Giugliani E, Haider BA, Kirkwood B, Morris SS, Sachdev HP, Shekar M. What works? Interventions for maternal and child undernutrition and survival. *Lancet* 2008; 371:417-40.

WFP's mission in nutrition is focused on its comparative strengths related to food:

... to work with partners to fight undernutrition by ensuring physical and economic access to a nutritious and age-appropriate diet for those who lack it and to support households and communities in utilizing food adequately. WFP ensures access to the right food, at the right place, at the right time.

WFP will strive to accomplish this mission by designing and supporting the implementation of programmes and operations in the five areas covered by its policy framework:

1. treating moderate acute malnutrition (wasting);
2. preventing acute malnutrition (wasting);
3. preventing chronic malnutrition (stunting);
4. addressing micronutrient deficiencies among vulnerable people, to reduce mortality and improve the health of all groups, through fortification;
5. strengthening the focus on nutrition in programmes without a primary nutrition objective and, where possible, linking vulnerable groups to these programmes.



WFP will continue to improve its internal processes and capacity to support food-based solutions where appropriate. It will leverage its expanded toolbox – which now includes a greater variety of specially formulated, nutritious food products, and cash and voucher distribution – ensuring that all tools contribute to the achievement of nutrition objectives.

WFP will also expand its focus on research, assist partners in developing improved and more cost-effective products, and ensure an adequate supply to meet growing demand for these products. Undernutrition is a complex, multi-faceted problem, and responses need to include many diverse actors. WFP's contribution is essential: in a context of poverty, the right food, at the right place at the right time is a prerequisite for a successful response.

Nutrition Terminology

General Nutrition Terms:

Malnutrition: Occurs when the nutrient and energy intake does not meet or exceeds an individual's requirements to maintain growth, immunity and organ function. Malnutrition is a general term and covers both undernutrition and overnutrition (overweight/obesity).

Undernutrition: The consequence of an insufficient intake of energy, protein and/or micronutrients, poor absorption or rapid loss of nutrients due to illness or increased energy expenditure. Undernutrition encompasses low birth weight, stunting, wasting, underweight and micronutrient deficiencies.

Undernourishment: Food intake that is insufficient to meet dietary energy requirements continuously, which is reported on an annual basis by the Food and Agriculture Organization of the United Nations (FAO) as an indicator for the first Millennium Development Goal (MDG) which aims to halve the prevalence of undernourishment in the developing world by 2015.⁴ Undernourishment is not assessed at the individual level.

Nutrient gap: The difference between nutrient requirements and nutrient intake. While diets may be adequate in terms of energy (kcal), they may still be inadequate in terms of nutrients, leaving individuals at risk of undernutrition. Nutrient gap analysis can be a critical step in developing WFP programming that is appropriate to the context.

Micronutrient deficiency: A lack or shortage of a micronutrient (also called vitamins or minerals). Micronutrients are essential components of enzymes and hormones and are therefore key in bodily

processes, immunity, proper growth and metabolism of an individual. Micronutrient deficiencies often occur simultaneously and can arise due to lack of intake, absorption, or utilization of one or more vitamins or minerals. It is referred to as hidden hunger because a large percentage of the population may be deficient without showing any clinical symptoms or signs of deficiency.

Growth failure: The condition where an individual is shorter and/or thinner than their well-nourished counterparts and where the individual does not meet her/his growth potential. Growth may fail due to deficiencies of various micronutrients, energy, protein and/or macro-minerals.

Nutrition Situation Assessment Terms:

Acute malnutrition: Acute malnutrition, also known as wasting, develops as a result of recent rapid weight loss or a failure to gain weight. In children, it is assessed through the nutritional index of weight-for-height (WFH) or mid-upper arm circumference (MUAC). Acute malnutrition is also assessed using the clinical signs of visible wasting and nutritional oedema. In adults, wasting is assessed through MUAC or Body Mass Index (BMI). In pregnant and lactating⁵ women (PLW), wasting can be assessed through MUAC. The degree of acute malnutrition of an individual is classified as either moderate (MAM) or severe (SAM) according to specific cut-offs and reference standards. At the population level, acute malnutrition is categorized in three ways:

- **Global acute malnutrition (GAM):** represents the proportion of children 6-59

4. The 2012 State of Food Insecurity in the World report presents new estimates from 1990-2012, reflecting key improvements in data and FAO's methodology. For more information on the revised methodology, see <http://www.fao.org/publications/sofi/en/>

5. Please note that "breastfeeding" or "nursing" are the preferred terms for "lactating" when communicating with the media or non-specialists.

months in the population classified with MAM + SAM according to their weight-for-height (WFH) (Z-score), and/or nutritional oedema.⁶ GAM is an indicator of acute malnutrition in a population, and is used to assess the severity of the situation.

- **Moderate acute malnutrition (MAM):** represents the proportion of children 6-59 months in the population who are classified with WFH ≥ -3 and < -2 (Z-score).
- **Severe acute malnutrition (SAM):** represents the proportion of children 6-59 months in the population who are classified with WFH < -3 (Z-score) and/or presence of nutritional oedema.

Nutritional oedema: Nutritional oedema indicates a serious type of acute malnutrition in which nutritional deficiencies lead to swelling of limbs (feet, hands) due to retention of fluids. Children with nutritional oedema are automatically classified with severe acute malnutrition (SAM), and often require therapeutic feeding and medical treatment to recover. Also known as bilateral oedema.

Chronic malnutrition: Chronic malnutrition is also referred to as stunting and develops as a result of inadequate nutrition or repeated infections or both; typically, during the critical window of opportunity of the first 1,000 days from conception to two years of age. It is measured by the nutritional index of height-for-age (HAZ) and is manifested by a child being too short for his or her age. Unlike wasting, the development of stunting is a slow cumulative process that may not be evident immediately. Chronic malnutrition cannot generally be reversed, only prevented.

Nutrition Product Terms:

Specialized nutritious foods⁷: Refers to the range of specialized food products and supplements that provide varying levels of energy, micronutrients, and macronutrients necessary for growth and health in order to prevent or treat undernutrition. Specialized nutritious foods are often defined or categorised as follows:

Ready-to-Use foods (RUF): is the existing generic term that refers to foods that do not need to be prepared, cooked, or mixed with water. RUFs used in nutrition programmes are generally made with peanuts, sugar, milk powder, vegetable oils, and vitamins and minerals, though they may be made with chickpeas or other commodities. The package can be opened and the food can be eaten directly. RUFs do not require water or cooking, and have low moisture content, so the risk of contamination is low.

- **Ready-to-Use Therapeutic Food (RUTF)** is an energy-dense mineral and vitamin-enriched RUF, specifically designed to treat SAM without medical complications at the community level. RUTF is given over a period of approximately eight weeks until the child recovers. During treatment, the child will need no other foods other than breastmilk.
- **Ready-to-Use Supplementary Food (RUSF)** is a type of RUF that is specifically designed for the treatment of moderate acute malnutrition in children 6-59 months of age. RUSFs are fortified with micronutrients and contain essential fatty acids and quality protein to ensure a child's nutritional needs are met.

Lipid-based nutrient supplement (LNS) is a term used to describe a product, i.e., a lipid-based spread or paste. They have different formulations and dosages and can be used for different purposes. They can generally be grouped into three categories. They are described as LNS Small Quantity, LNS Medium Quantity, and LNS Large Quantity (same as RUSF) in order to indicate the amount of product that is used. Current available LNS products are ready-to-use foods (RUF).

Fortified blended foods (FBFs)⁸ are a mixture of cereals and other ingredients (such as soya beans or pulses) that have been milled, blended, pre-cooked by extrusion or roasting, and fortified with a premix and with a wide range of vitamins and minerals. In order to overcome constraints with earlier formulations (bulky, poor absorption, incomplete range of vitamins and minerals), FBFs have been improved and now include a more comprehensive vitamin and mineral profile and some ingredients

6. MUAC can be used to identify children to enrol in nutrition programming (cut-offs are established) and to present a degree of the problem, but thresholds to signal the severity of the nutrition situation have not been established.

7. Please refer to the Nutrition Product Sheet *The Right Food at the Right Time* for more information on specialized nutritious foods currently in use. Other products may be approved for use in future.

8. WFP has renamed its range of fortified blended foods as follows: CSB+=Super Cereal-CSB; CSB++=Super Cereal Plus-CSB; WSB+=Super Cereal-WSB; WSB++=Super Cereal Plus-WSB, RSB+=Super Cereal-RSB; RSB++=Super Cereal Plus-RSB.

are specially processed to decrease the anti-nutrient properties. In addition, some improved FBFs used for treatment of moderate acute malnutrition (MAM) in children 6-59 months also include milk.

Micronutrient powders (MNPs) are a mix of multiple micronutrients used in programmes to prevent micronutrient deficiencies (MNDs) among children 6-59 months, and are also increasingly to prevent MNDs among school-age children through

school feeding programmes. MNPs are distributed in small sachets that are added to solid or semi-solid foods after preparation and prior to consumption. MNPs are tasteless, odourless and easily dissolvable in most warm foods. MNPs do not provide energy, but do provide the complete FAO/WHO recommended daily intake (1 Recommended Nutrient Intake (RNI)) of each micronutrient per dose. Most countries use the 15 micronutrient formulation.



Treating Moderate Acute Malnutrition

WFP Nutrition-specific pillar 1:

To treat moderate acute malnutrition – wasting – particularly among children aged 6–59 months, pregnant and lactating women, and malnourished people in treatment for HIV and tuberculosis.

What is acute malnutrition?

At the individual level, acute malnutrition (wasting) refers to a form of malnutrition that reflects recent weight loss. The effects of acute malnutrition are reversible with treatment. Individuals often appear very thin. Acute malnutrition is assessed through weight-for-height or mid-upper arm circumference (MUAC) in children, with MUAC for pregnant and lactating women (PLW), and by Body Mass Index (BMI) for adults. The individual is then classified as overweight/obese, normal, with moderate acute malnutrition (MAM), or severe acute malnutrition (SAM) based on specific cut-offs for interpretation of anthropometric measures. Acute malnutrition is also assessed through the presence of nutritional oedema (swelling due to excess fluid retention on both sides of the body which indicates severe acute malnutrition).

Nutritional status at the population level is estimated based on the proportion (prevalence) of global acute malnutrition (GAM) in children 6–59 months in the population. The prevalence of GAM refers to the proportion of all of the children classified with MAM plus all of the children classified with SAM. GAM is often used as a proxy indicator for the severity of a crisis. Other members of the household may be affected in addition to children 6–59 months. Prevalence of GAM should always be interpreted for programming in light of

the broader context, taking into account aggravating and risk factors.

Why should WFP engage in the treatment of moderate acute malnutrition?

- Acute malnutrition is a major risk factor for child mortality. A child with MAM is up to three times as likely to die as a well-nourished child. A child with SAM is nine times as likely to die as a well-nourished child. While the immediate risk of mortality is higher for a child with SAM than with MAM, the total number of children affected by MAM is much greater, and therefore absolute mortality is higher for MAM than SAM. [1-3]
- As of 2011, it was estimated 8 percent of children under five worldwide had moderate and severe acute malnutrition. This figure translates into over 52 million children under five. [4]
- SAM treatment requires very strong linkages with medical screening and services. By reaching children before they develop SAM, treatment of MAM can help to ease the burden on already overstretched health systems in most developing countries. If there are no programmes to treat MAM in an emergency, the prevalence of SAM often increases, which puts additional strain on available health system and on programmes to manage SAM.

What is WFP's nutrition-specific programming to treat moderate acute malnutrition?

- **What:** Targeted supplementary feeding programmes (TSFP)
- **Why:** There are five objectives of targeted SFPs, specifically (i) to rehabilitate individuals with MAM from specific target groups, (ii) to prevent individuals with MAM from developing SAM, (iii) to prevent mortality associated with MAM, (iv) to provide follow-up support for individuals who have been treated for SAM to prevent a relapse and (v) to prevent deterioration of maternal nutritional status and subsequent poor birth weight.
- **Who:** Admission depends on whether or not the individual has MAM. Target groups for TSFP include: children 6-59 months of age with MAM, PLW⁹ with MAM (up to six months after giving birth), malnourished individuals (children 5-19, women, and men) on Anti-retroviral Therapy (ART) and/or Direct Observed Treatment Short-course (DOTS) treatment (for people living with HIV and TB). The specific target groups that are included will depend on country level nutrition situation analysis. The number of planned beneficiaries is calculated based on the prevalence of MAM in the population, the estimated number of new cases of malnutrition in that target group over the duration of the project (incidence), and the expected coverage of the programme.
- **How:** TSFPs provide a specialized nutritious food to individuals on a regular basis according to specific admission and discharge criteria based on nutritional status. Discharge criteria should be reached within a reasonable amount of time (generally three to four months).¹⁰ TSFPs include screening for medical conditions that may need further treatment, routine health-related interventions (supplementation with vitamin A, deworming) and nutrition education programmes for caregivers to promote healthy behaviour. Individual recovery is monitored biweekly. Individuals who meet the discharge criteria are considered recovered. If their nutritional status

deteriorates or stays the same, individuals are often referred to SAM treatment or to medical services to address underlying illnesses. WFP should implement programmes to treat MAM according to national guidelines for MAM treatment, but if these guidelines are out of date in relation to international standards, WFP should advocate with partners and the government to undertake a process to update the guidelines.

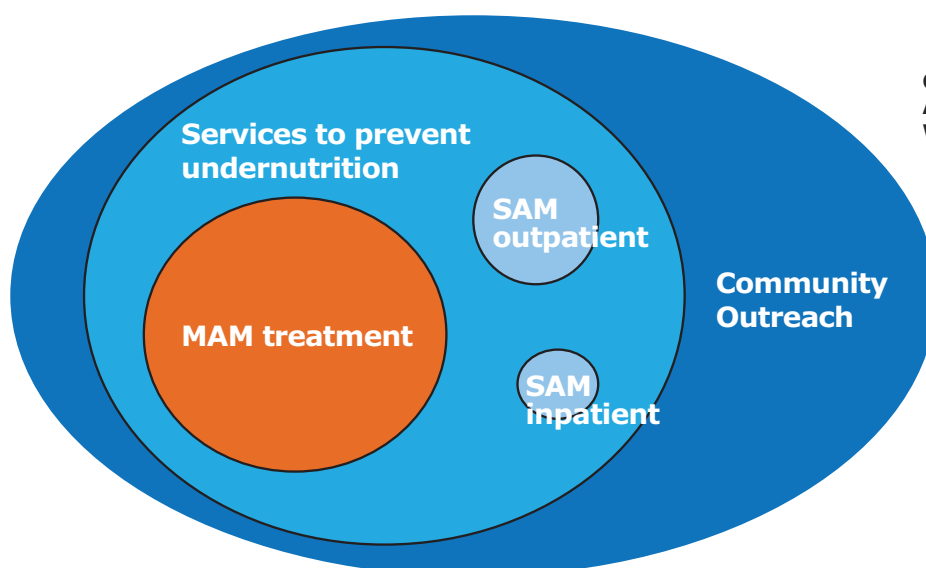
- **What specialized nutrition foods to provide:** The specific specialized nutritious food used will depend on the context and target group. Options include¹¹:
 - For children 6-59 months: Large Quantity Lipid-based nutrient supplements (LNS) (Plumpy'sup, AchaMum, and eeZeeRUSF) and improved fortified blended food (Super Cereal Plus)
 - For PLW and malnourished individuals on ART/DOTS treatment: fortified blended food (FBF) (Super Cereal) with oil and sugar added at the distribution site
- **Where/When:** Treatment of MAM is one component of the larger community-based management of acute malnutrition (CMAM) framework, the recommended response to acute malnutrition. Treatment of MAM can be implemented in both emergency and development contexts (i.e., Strategic Objectives 1, 3 and 4)¹². In emergencies, the context –as well as pre-existing GAM levels and other indicators of vulnerability – should guide when a TSFP is part of the emergency nutrition response. TSFPs are commonly established in countries, provinces or districts where GAM prevalence is at least 10 percent among children aged 6–59 months, or where GAM is 5–9 percent but aggravating factors exist. Programmes are generally run the whole year, though an individual will only participate in the programme for a specific period of time.

9. In the case of children under 6 months with MAM, the mother as opposed to the child is admitted into the programme, and exclusive breastfeeding is promoted. The mother is discharged once the child reaches 6 months and then the child is enrolled in the programme if they have MAM.

10. Recent research has shown shorter recovery times with specialized nutritious foods. [5-8]

11. Please refer to the Nutrition Product Sheet *The Right Food at the Right Time* for more information on specialized nutritious foods currently in use. Other products may be approved for use in future.

12. Largely in EMOP: Emergency Operations and PRRO: Protracted Relief and Recovery Operations, but also possible in CP: Country Programme or DEV: Development programmes if there is an SO3.



**CMAM Framework:
As agreed in the
WFP-UNICEF Global MOU**

What is new in WFP's approach to the treatment of moderate acute malnutrition?

I. **Decision-making tool and evolving guidance:**

There have been significant changes to programming for nutrition in emergencies over the past years including the development of new specialized nutritious foods and new evidence on programming to prevent acute malnutrition. TSFPs are no longer the sole response to the management of MAM in an emergency response. The Global Nutrition Cluster (GNC) convened a MAM Working Group under the leadership of WFP to develop a decision-making tool for MAM programming design (including prevention, treatment, and monitoring) in emergencies¹³. The tool is intended as an interim operational guidance while further normative guidance is developed. For the non-emergency context, WFP now works on engagement in protocol development or revision, providing technical and implementation support where MAM programmes are operating and supporting the use of new specialized nutritious foods.

II. **New specialized nutritious foods:** In response to increased understanding of the nutrient needs for children with MAM¹⁴, new specialized nutritious foods have been

developed. The nutrients in specialized nutritious foods are more easily absorbed (fewer anti-nutrients), contain animal proteins (which have been found to be superior than plant proteins in terms of recovery from acute malnutrition), and have an improved micronutrient profile. WHO has developed a technical note that serves as a reference for recommendations on the composition of supplementary foods used to treat children with MAM. Treatment costs using the new products are not significantly greater than those associated with previous products, though the cost per metric ton may be somewhat higher, because they are often more effective and duration of treatment is often shorter. WFP has developed a product sheet for the specialized nutritious foods currently in use entitled: *The Right Food at the Right Time*. This document includes information on each food and ration size indicated for each nutrition intervention and target group; as well as information on shelf life and other characteristics.

III. WFP is working to improve overall **monitoring and evaluation** for TSFPs, including data quality, data analysis, data aggregation, interpretation and use. TSFP performance indicators (e.g. recovery, default, death, non-response) are now WFP corporate indicators for treatment of MAM. One area of collaboration is between WFP, Save the Children-UK, and other

13. The decision tool is available from http://www.unicef.org/nutritioncluster/files/MAM_DecisionTool_July_2012_with_Cover.pdf

14. The 2012 WHO technical note on supplementary foods for the management of moderate acute malnutrition in infants and children 6-59 months of age can be accessed from http://apps.who.int/iris/bitstream/10665/75836/1/9789241504423_eng.pdf

partners to pilot a Minimum Reporting Package (MRP) to improve the monitoring, evaluation and reporting of TSFP.

How do we know that WFP's approach to the treatment of moderate acute malnutrition works?

A recent cost benefit analysis of TSFPs in 3 countries found that programme costs were almost entirely offset by the immediate benefits of the programme (return on investment), with additional value created through enabling beneficiaries to lead a longer and more productive life.

Recent research shows that TSFP can result in high recovery rates, in particular with use of the new specialized nutritious foods. For example:

- A study in **Malawi** showed that in a food-insecure setting, infants and children receiving supplementary feeding for 12 weeks with lipid-based nutrient supplement (LNS) or maize-soya flour fortified blended food (FBF) showed recovery from MAM of 93 percent and 75 percent respectively. [5]
- The new formulation of Corn Soya Blend (Super Cereal *Plus* (CSB++)) was shown to be equally effective as Large Quantity LNS/Ready-to-use supplementary food (RUSF) (peanut and soya-based supplementary food) in the treatment of MAM in **Malawi**. [6]
- The new specialized nutritious foods have better results than the previous formulation of Corn Soya Blend (CSB):
 - In **Malawi**, children receiving LNS showed significantly higher recovery rates (80 percent) after only eight weeks of treatment, compared to the previous formulation of CSB (72 percent). [7]
 - In **Niger**, children receiving LNS showed higher weight gain, higher recovery rates (79 percent versus 64 percent), a shorter length of stay and lower transfer rates compared to the previous formulation of CSB. [8]

How does the treatment of moderate acute malnutrition relate to WFP's other nutrition-specific programming?

- **Relation to addressing micronutrient deficiency disorders:** The specialized nutritious foods used in the treatment of MAM contain adequate micronutrients to meet micronutrient requirements without additional use of Micronutrient Powders (MNPs). Routine supplementation of vitamin A at admission, and treatment of anaemia with iron/folate where appropriate, are part of routine medical care in TSFP and also address specific micronutrient intake shortfalls for individuals with MAM.
- **Relation to general food distribution (GFD):** Depending on the context, TSFPs may take place where GFDs or other food security interventions are being provided to food-insecure households. Overall impact of the TSFP may be limited if household food insecurity is not addressed at the same time.

Who are the key partners in the treatment of moderate acute malnutrition?

Key partners in the treatment of MAM include the government, UN agencies, and NGO partners. The government has the overall responsibility for the welfare of its population. WFP is the lead United Nations agency responsible for treatment and prevention of MAM. WFP coordinates with UNICEF (the lead agency for treatment of SAM) regarding links between treatment of MAM and SAM. Furthermore, in emergencies, WFP works under the Inter-Agency Standing Committee (IASC) Global Nutrition Cluster. In the context of nutrition needs of refugees, asylum seekers, returnees and, in some circumstances, internally displaced persons, WFP coordinates with UNHCR as the lead agency. Additionally, WFP works with a variety of NGO partners in distribution and monitoring activities. WFP also collaborates with a range of UN agencies and NGO partners to ensure that the underlying causes of undernutrition are addressed, including improvements in care practices, health, water and sanitation, and food security.

References

1. Black RE, et al. Maternal and Child Undernutrition: Global and regional exposures and health consequences. *The Lancet* 2008; 371: 243-260.
2. Pelletier DL, et al. Epidemiological Evidence for a Potentiating Effect of Malnutrition on Child Mortality. *American Journal of Public Health* 1993; 83: 1130-1133.
3. Habicht JP, et al. Malnutrition Kills Directly, Not Indirectly. *The Lancet* 2008; 371: 1749-1750.
4. UNICEF, WHO, The World Bank (2012). UNICEF, WHO, World Bank Joint Child Malnutrition Estimates. (UNICEF, New York; WHO, Geneva; The World Bank, Washington DC)
5. Phuka J, Thakwalakwa C, Maleta K, et, al. Supplementary feeding with fortified spread among moderately underweight 6-18 month-old rural Malawian Children. *Maternal and Child Nutrition* 2009, 5:159-170.
6. LaGrone LN, et al. A novel fortified blended flour, corn-soy blend “plus-plus,” is not inferior to lipid based ready to use supplementary foods for the treatment of moderate acute malnutrition in Malawian children. *American Journal of Clinical Nutrition* 2012; 95(1): 212-9.
7. Matilsky DK, Maleta K, Castleman T, Manary M. Supplementary feeding with fortified spreads results in higher recovery rates that with corn-soy blend in moderately wasted children. *Journal of Nutrition* 2009; 139(4): 773-778.
8. Nackers F, et al. Effectiveness of ready-to-use therapeutic food compared to a corn/soy-blend-based pre-mix for the treatment of childhood moderate acute malnutrition in Niger. *Journal of Tropical Pediatrics* 2010; 56(6):407-13.



WFP/Amjad Jamal

Preventing Acute Malnutrition

WFP Nutrition-specific pillar 2:

To prevent acute malnutrition, particularly among children aged 6–23 months (sometimes 6–59 months in sudden-onset emergencies) and pregnant and lactating women.

What is acute malnutrition?

At the individual level, acute malnutrition (wasting) refers to a form of malnutrition that reflects recent weight loss. The effects of acute malnutrition are reversible with treatment. Individuals often appear very thin. Acute malnutrition is assessed through weight-for-height or mid-upper arm circumference (MUAC) in children, and MUAC for pregnant and lactating women (PLW), and Body Mass Index (BMI) for adults. The individual is then classified as overweight/obese, normal, with moderate acute malnutrition (MAM), or with severe acute malnutrition (SAM) based on specific cut-offs for interpretation of anthropometric measures. Acute malnutrition is also assessed through the presence of nutritional oedema (swelling due to excess fluid retention on both sides of the body which indicates severe acute malnutrition).

Nutritional status at the population level is assessed through the prevalence of global acute malnutrition (GAM) among children 6-59 months in the population. The prevalence of GAM refers to the proportion of all of the children classified with MAM plus all of the children classified with SAM. GAM is often used as a proxy indicator for the severity of a crisis. Other members of the household may be affected in addition to children 6-59 months. Prevalence of GAM should always be interpreted for programming in light of the broader context, taking into account aggravating or risk factors.

Why should WFP engage in prevention of acute malnutrition?

- Acute malnutrition is a major risk factor for child mortality. A child with MAM is three to four times as likely to die as a well-nourished child. A child with SAM is nine times as likely to die as a well-nourished child. While the immediate risk of mortality is higher for a child with SAM than with MAM, the total number of children affected by MAM is much greater, and therefore absolute mortality is higher for MAM than SAM. [1-3]
- As of 2011, it was estimated 8 percent of children under five worldwide had moderate and severe acute malnutrition. This figure translates into over 52 million children under five. [4]
- Prevalence of MAM can double during the lean season when food availability is low ahead of the next harvest. The lean season also often coincides with a rainy season which brings an increase in the incidence of both acute respiratory infections as well as episodes of diarrhoeal disease. The combination of reduced caloric intake and an increase in morbidity can result in a sharp increase in the prevalence of acute malnutrition in children. These increases can be even greater in emergencies. Prevention can mitigate the increase and the associated risks related to mortality, morbidity and overall child development.

- SAM treatment requires strong linkages with medical screening and services. By reaching children before they develop SAM, prevention of acute malnutrition can help to ease the burden on already overstretched health systems in most developing countries.
- Preventing acute malnutrition has the potential to reduce child mortality and morbidity, and also reflects WFP's focus on the window of opportunity by targeting children 6-23 months of age and PLW.

What is WFP's nutrition-specific programming to prevent acute malnutrition?

- **What:** Blanket Supplementary Feeding Programmes (BSFP)¹⁵
- **Why:** To prevent nutritional deterioration and related mortality in vulnerable populations and high risk groups.
- **Who:** The target group will depend on the context, however the default target group is children 6-23 months of age. The prevalence of acute malnutrition is often higher in this age group. They have an increased risk of mortality, and a tendency to deteriorate more quickly than older children. When the food security situation is extremely severe or when coverage and quality for the treatment of MAM is limited, the age group for children can be extended to 6-35 months or 6-59 months of age. Where prevalence of low birthweight or prevalence of undernutrition among women of reproductive age is high, and the crisis is likely to impact infant and young child feeding practices and where resources and capacity are not limiting, PLW should also be included in the BSFP. The number of planned beneficiaries is calculated based on the estimated number of individuals in the specific target group in the specific geographic area of programming and an estimate of programme coverage.
- **How:** BSFPs provide a specialized nutritious food to all individuals in the selected target group on a regular basis. Admission into the programme does not depend on nutritional status, and individuals

participate for a specific period of time (generally 3-6 months). Programme delivery can be community-based with a separate independent distribution, or it can be linked to a general food distribution or other platform when appropriate. WFP implements programmes to prevent acute malnutrition in line with national guidelines, but if these guidelines are out of date in relation to international standards, WFP advocates with the government and partners to undertake a process to update the guidelines.

- **What to provide:** The specific specialized nutritious food used will depend on the context and target group. Options include¹⁶:
 - For children 6-23 months: Medium Quantity lipid-based nutrient supplements (Plumpy'doz, eeZeeCup, WawaMum) or fortified blended foods (Super Cereal Plus)
 - For PLW: fortified blended food (Super Cereal) plus oil and sugar
- **When/Where:** BSFPs can be implemented in both emergency and transition contexts (i.e., Strategic Objectives 1 and 3)¹⁷. BSFPs are part of the standard response to prevent acute malnutrition in young children in an emergency, particularly an emergency that impacts on food availability or where the prevalence of acute malnutrition and micronutrient deficiencies (MNDs) are already high prior to the emergency. BSFPs are also recommended when wasting increases seasonally in a predictable manner, usually during the agricultural lean season. BSFPs can also be considered when access to programmes to treat MAM and SAM is low. BSFPs are generally implemented during specific parts of the year, and are not generally in place the whole year.

What is new in WFP's approach to prevent acute malnutrition?

- I. **Decision-making tool and evolving guidance:** There have been significant changes to programming for nutrition in emergencies over the past years including the development of new specialized nutritious foods and new evidence on programming to prevent acute

15. Evidence is being compiled on alternative responses and as it becomes available WFP may expand its programming options.

16. Please refer to the Nutrition Product Sheet *The Right Food at the Right Time* for more information on specialized nutritious foods currently in use. Other products may be approved for use in future.

17. Largely in EMOP: Emergency Operations and PRRO: Protracted Relief and Recovery Operations, but also possible in CP: Country Programme or DEV: Development programmes if there is a Strategic Objective 3.

malnutrition. As a result of these changes, TSFPs are no longer the sole response to the management of MAM in an emergency response. The Global Nutrition Cluster (GNC) convened a MAM Working Group under the leadership of WFP to develop a decision-making tool for MAM programming design (including prevention, treatment, and monitoring) in emergencies. The tool is intended as an interim operational guidance while further normative guidance is developed.¹⁸

II. **New specialized nutritious foods:** In response to increased understanding of the nutrient needs for children, new specialized nutritious foods have been developed. The nutrients in these specialized nutritious foods are more easily absorbed (fewer anti-nutrients), contain animal proteins (which have been found to be superior to plant proteins in terms of recovery from acute malnutrition), and a more well developed micronutrient profile. Products for the prevention of acute malnutrition are nutrient dense and contain fewer kilocalories than products for treatment of MAM. WFP has developed a product sheet for the specialized nutritious foods currently in use called: The Right Food at the Right Time. This document includes information on each food and ration size indicated for each nutrition intervention and target group; as well as information on product cost, shelf life and other characteristics.

III. There are a number of studies on-going to measure the impact of BSFPs. In addition, efforts are under way within WFP to strengthen the framework for **monitoring and evaluation** of indicators and the analysis of BSFP programming.

How do we know that WFP's approach to prevention of acute malnutrition works?

- In **Haiti**, a fortified blended food (FBF) was given to all children 6-23 months for prevention and to children 6-59 months for treatment. At the end of the intervention, there was a lower prevalence of acute malnutrition among children in the preventive group compared to the prevalence in the population of children who had access to treatment of undernutrition when required. [5]
- In **Niger**, provision of RUTF for three months to non-malnourished children resulted in a significant reduction in the incidence of MAM and SAM compared to children who did not receive the intervention. [6]
- Another study in **Niger** showed provision of LNS (Plumpy'doz) for six months reduced the incidence of SAM in a large population of children 6-36 months of age. [7]
- In **South Darfur, Sudan** there was no observed increase in GAM during the acute hunger period, where a four-month prevention programme was implemented using either LNS (Plumpy'doz) or improved CSB (oil, sugar, DSM). [8]
- In **Haiti** following the nutrition response to the 2010 earthquake where a large scale BSFP targeting children 6-23 months and PLW was implemented, WFP observed no difference in the prevalence of GAM after the crisis compared to pre-crisis levels. [9]
- A recent evaluation of a WFP programme to prevent acute malnutrition during the lean season in **Sudan** suggests that caseloads of SAM children can be kept low. [10]
- WFP also has significant operational learning of programming to prevent MAM in emergencies. In **Haiti, Niger, Pakistan** and the **Horn of Africa**, WFP addressed the needs of more than 4 million children.

How does prevention of acute malnutrition relate to WFP's other nutrition-specific programming?

- **Relation to nutrition-specific programming:** The specialized nutritious foods used in the prevention of acute malnutrition are also recommended for use to improve nutrient intake as one element of comprehensive programmes to prevent stunting. Both programmes use the same "blanket" distribution approach (e.g. not targeted by nutritional status). These two programme approaches however differ in terms of duration as well as other aspects of programme design.

18. The decision tool is available from http://www.unicef.org/nutritioncluster/files/MAM_DecisionTool_July_2012_with_Cover.pdf

- **Relation to general food distribution (GFD):** Nutrition interventions will be more effective if they are linked to interventions that address household food insecurity.

Who are the key partners in the prevention of acute malnutrition?

Key partners in the prevention of acute malnutrition include national governments, UN agencies, and NGO partners. The government has the overall responsibility for the welfare of its population. WFP is the lead UN agency responsible for treatment of MAM and prevention of acute malnutrition. WFP coordinates with UNICEF (the lead agency for treatment of SAM) regarding links between treatment of MAM and SAM. Furthermore, in emergencies, WFP works under the Inter-Agency Standing Committee (IASC) Global Nutrition Cluster

and needs to take a lead role with UNICEF for emergency nutrition response. In the context of nutrition needs of refugees, asylum seekers, returnees and, in some circumstances, internally displaced persons, WFP coordinates with UNHCR as the lead agency. Additionally, WFP works with a variety of NGO partners in distribution and monitoring activities. WFP also collaborates with a range of UN agencies and NGO partners to ensure that the underlying causes of undernutrition are addressed, including improvements in care practices, health, water and sanitation, and food security. Depending on the context and capacity, BSFPs can provide a point of contact with the population for other supportive measures to prevent acute malnutrition (such as education on infant and young child feeding (IYCF) practices and deworming) as well as screening and referral for treatment of SAM and MAM.

References

1. Black RE, et al. Maternal and Child Undernutrition: Global and regional exposures and health consequences. *The Lancet* 2008; 371: 243-260.
2. Pelletier DL, et al. Epidemiological Evidence for a Potentiating Effect of Malnutrition on Child Mortality. *American Journal of Public Health* 1993; 83: 1130-1133.
3. Habicht JP, et al. Malnutrition Kills Directly, Not Indirectly. *The Lancet* 2008; 371: 1749-1750.
4. UNICEF, WHO, The World Bank (2012). UNICEF, WHO, World Bank Joint Child Malnutrition Estimates. (UNICEF, New York; WHO, Geneva; The World Bank, Washington DC)
5. Ruel MT, et al. Age-based preventive targeting of food assistance and behaviour change and communication for reduction of childhood undernutrition in Haiti: a cluster randomised trial. *The Lancet* 2008; 371: 588-595.
6. Isanaka S, Nombela N, Dijibo A, et al. Effect of preventive supplementation with ready-to-use therapeutic food on the nutritional status, mortality, and morbidity of children aged 6 to 60 months in Niger: a cluster randomized trial. *Journal of the American Medical Association* 2009; 301(3): 277-285.
7. Defourmy I, Minetti A, Harczy G, Doyon S, Shepherd S, Tectonidis M, Bradol J, Golden H. A large-scale distribution of milk-based fortified spreads: Evidence for a new approach in regions with high burden of acute malnutrition. *PLoS ONE* 2009; 4(5): e5455.
8. Boyd E, Talley L., et al. Prevention of Acute Malnutrition during the Lean Season: A Comparison of a Ready to Use Supplementary Food and an Improved Dry Ration, South Darfur, Sudan. Under review.
9. WFP. Evidence-based Programming: Treatment and Prevention of Acute Malnutrition. PowerPoint, 2011.
10. Acharya P, Kenefick E. Improving Blanket Supplementary Feeding (BSFP) Efficiency in Sudan. *ENN Field Exchange* 2012; 42: 59-61.

Preventing Chronic Malnutrition – Stunting

WFP Nutrition-specific pillar 3:

To prevent chronic malnutrition – stunting and micronutrient deficiencies – particularly among children aged 6–23 months and pregnant and lactating women.

What is stunting?

At the individual level, stunting (chronic undernutrition) refers to the failure to grow adequately in length or height in relation to age. [1] Though stunting is defined as being short for one's age¹⁹, it is also a reflection of a larger problem that includes inadequacy to attain optimal cognitive development. Stunting is also associated with higher morbidity and mortality. Stunting largely occurs during the 1,000 days from conception until two years of age, and therefore must be prevented during this short window of opportunity. [2, 3] Stunting is assessed through the measure of height-for-age. Individuals can be classified with moderate or severe stunting according to specific cut-offs. However given that stunting cannot generally be reversed or treated, individual classification is not used for targeting.

At the population level, prevalence of stunting refers to the proportion (prevalence) of children 6-59 months who are classified with moderate and severe stunting. The overall prevalence of stunting at the population level is used as the basis of programming decisions as it gives an indication of the likelihood that a child under 2 years of age in a given population is not receiving adequate nutrition to

reach optimal growth and development. Since stunting accumulates over time, it is helpful to look at the proportion of stunting among children under and above 2 years of age, which reflects the age at which growth failure has accumulated. The proportion of stunting among infants and young children is often lower compared to older children. Stunting often goes unrecognized in children who live in communities where short stature is so common that it seems normal. [4, 7]

Stunting has multiple causes. An analysis of main determinants of stunting is needed, including the identification of shortfalls in nutrient access and the nutrient gap for children 6-24 months and pregnant and lactating women (PLW) to understand what barriers exist. The effects of stunting are intergenerational and efforts to address chronic undernutrition must adopt a lifecycle approach. From conception to 2 years of age, limited access to required nutrients, inadequate breastfeeding and poor complementary feeding and care practices undermine child growth. Stunting can be aggravated by repeated episodes of infections and illness, especially diarrhoea. Adolescent girls who are undernourished may not be prepared for a healthy pregnancy. If a woman's nutrient intake during pregnancy is inadequate, there is further risk that her child will be born with low birth weight. Low

19. Height-for-age <-2 SD of the WHO Child Growth Median Standards of the reference population of the same age and sex is the cut-off for classifying stunting in a child under five years of age.

birth weight infants have less chance of survival and experience poor health throughout their lifetime. Underlying these direct causes of stunting are poverty and its social and economic determinants at the household, community and country levels, such as food insecurity, lack of access to water and sanitation services, lack of women's education, and low family incomes. [2, 3, 5]

Why should WFP engage in the prevention of stunting?

- Stunting and micronutrient deficiencies are associated with increased morbidity and mortality. Stunting accounts for 15 percent and micronutrient deficiencies for 10 percent of child mortality. More child deaths and disability-adjusted life-years (DALYs) in children under five are attributable to stunting and micronutrient deficiencies mainly due to deficiencies of vitamin A and zinc than to severe acute malnutrition (SAM) because they affect many more children [2, 6, 12].
- In 2011, it was estimated that 165 million children were stunted. More than 90 percent of the world's stunted children live in Africa and Asia. While there has been progress at the global level, with a decrease in the prevalence of childhood stunting from 39.7 percent in 1990 to 26 percent in 2010, there is still much work to be done. [7]
- Stunting is also associated with reduced physical and cognitive capacity for life. Longitudinal studies have shown that early childhood stunting has implications for cognition, educational achievement, and worker productivity/adult wages, with a negative impact of gross domestic product (GDP). [4, 5, 8, 9] The 2008 Lancet Series on Maternal and Child Undernutrition reported that height-for-age at 2 years of age was the best predictor of human capital. [10]
- Stunting has also been linked to poor health later in life. A child that is stunted and then gains weight later in childhood has an increased risk of nutrition-related chronic diseases such as diabetes, hypertension and coronary heart disease. [3, 5]

- The effects of stunting are intergenerational: infants born to women²⁰ who were stunted are smaller than infants born to better-nourished women. [4] Maternal stunting is consistently associated with an elevated risk of perinatal mortality related to obstructed labour and birth asphyxia due to a narrower pelvis in short women. [11, 12]

What is WFP's nutrition programming to prevent stunting?

- **What:** There are three elements to a comprehensive portfolio of programmes to prevent stunting, specifically, in areas with high levels of stunting: (i) complementary feeding through the provision of specialized nutritious foods for children 6–23 months and pregnant and lactating women (PLW) along with behaviour change communication (BCC) activities to promote appropriate infant and young child feeding (IYCF) practices²¹ and hygiene; (ii) promotion of activities that can impact nutrition indirectly, most often through addressing the underlying causes of undernutrition across multiple sectors (nutrition-sensitive interventions); and (iii) strengthening the capacity of national governments to assess, identify, design, deliver, monitor and evaluate intersectoral programming that directly and indirectly prevent stunting. BCC and monitoring and evaluation (M&E) activities are a fundamental part of all interventions.
- **Why:** To prevent stunting in children under 24 months of age and to promote the nutritional status of adolescents and women in their reproductive years in order to: (i) address the intergenerational cycle of undernutrition; (ii) bring about a positive impact in health, education and productivity during the life cycle; and (iii) support social and economic development at country level.
- **Who:** The priority target groups reflect those most vulnerable to undernutrition through addressing the 1,000 days window of opportunity²²: children 6–23 months and PLW, as well as adolescent girls when possible. Complementary feeding interventions must

20. A woman who is less than 145 cm or 4'7" is considered to be stunted.

21. Including exclusive breastfeeding up to 6 months of life, continued breastfeeding to two years and timely and appropriate complementary feeding such as use of specialized nutritious foods plus other nutritious family foods from 6 months up to the first two years.

22. From conception to the first two years of life.

23. From birth until 6 months of age, infants should be exclusively breastfed.

ensure that children aged 6–23 months²³ and PLW get the nutrients they need, irrespective of their nutritional status. Where the context suggests the need and resources allow, adolescent girls may be included in order to ensure adequate nutrient status of women prior to conception and/or in the first trimester. The number of planned beneficiaries is based on the estimated number of individuals of the specific target groups in the geographic area of operation and an estimate of programme coverage. Beneficiaries can often be identified and reached through existing health systems or social protection mechanisms. As this intervention is preventative and designed to prevent a predictable shortfall in meeting nutrition needs, targeting is not based on individual nutritional status but based on risk factors, which may be geographic or socio-economic (low socioeconomic status or areas with high or very high prevalence of stunting and micronutrient deficiencies, mainly anaemia). WFP will work with governments to leverage existing programmes for reaching those at the highest risk of stunting. Nutrition-sensitive programming and capacity development interventions to prevent stunting can impact infant and young child, adolescent and adult nutrition.

- **How:** The activities depend on the specific components of the prevention of stunting portfolio and alignment with government national nutrition policies and plans. For (i) complementary feeding, specialized nutritious foods are recommended for a minimum of six months during a one year cycle. Research is ongoing to define the optimal duration of these interventions. Specialized nutritious foods with BCC can be delivered through different mechanisms, including the health sector, and social protection programmes, among others. WFP activities should be complemented by health, water and sanitation, and agricultural activities implemented by partners. For (ii) nutrition-sensitive programming, WFP can improve household food security and increase the access and availability of nutritious foods, as well as minimizing barriers to optimal nutrition practices and behaviours for vulnerable populations through several programmes and modalities. These include school feeding (especially if adolescent girls can be reached), promotion of livelihoods and livelihood assets

through food for work (FFW) and purchase for progress (P4P), as well as increased access to fortified foods for PLW and children 6-23 months through cash and voucher (C&V) initiatives. Food and C&V transfers targeting poor people are often implemented through social protection and safety net programmes (especially where there is government interest and, ultimately, possible funding around social protection programmes). For (iii) improving government capacity to prevent stunting, WFP should strengthen the technical and managerial capacity of human resources, strategic partnerships, supporting the nutrient gap analysis for children under two years of age and PLW. WFP should also support advocacy, policy dialogue, local production of foods, and monitoring and evaluation.

- **What to provide:** WFP's efforts in nutrition are focused on supporting the governments to improve availability and access of timely and adequate complementary foods (from 6 months), in addition to encouraging continued breastfeeding, improved feeding practices and promoting the use of nutritious local foods, to ensure that the nutrient needs of young children and other vulnerable groups are met. This means that where access and availability issues exist, specific nutrient-dense products may be used. The type of food used in complementary feeding interventions will depend on the nutrient gap in the diet, the context and target group. [13] The commodity should also take into consideration cultural practices and preferences. Options include²⁴:
 - For children 6-23 months: Medium Quantity lipid-based nutrient supplements (LNS) such as Plumpy'doz, eeZeeCup, WawaMum and Nutributter; micronutrient powders (MNP) to be used as home fortification, and fortified blended foods (Super Cereal *Plus*)
 - For PLW: fortified blended food (Super Cereal) plus oil and sugar
- **Where/when:** Currently, complementary feeding interventions for the prevention of stunting can be incorporated into PRRO, CP and DEV programmes²⁵. WFP has committed to initiating programmes to prevent stunting in countries where the prevalence of stunting is at least 30 percent, or at a lower threshold established in national policies or programmes, or

24. Please refer to the Nutrition Product Sheet *The Right Food at the Right Time* for more information on specialized nutritious foods currently in use. Other products may be approved for use in future.

25. PRRO: Protracted Relief and Recovery Operations; CP: Country Programme; DEV: Development programmes.

in high-risk situations. Within countries, WFP prevention of stunting programmes should be targeted to areas with high stunting rates, high poverty and high food insecurity. While prevention of stunting may not be an explicit strategic objective of emergency programming, emergency nutrition programmes need to be developed with the understanding that nutritional needs that are not met during the emergency may have negative impacts on stunting and micronutrient deficiencies. Complementary feeding interventions to prevent stunting can be in place the whole year round, as opposed to seasonal blanket supplementary feeding programmes (BSFP) for the prevention of acute malnutrition.

How is WFP's approach to prevention of stunting different than before?

- **Improved situation analysis:** WFP is in the process of strengthening its nutrition situation analysis capacity, in particular around the nutrient gap (especially of children under 2 years of age and PLW), i.e. the difference between nutrient intake and nutrient needs (both in quality and in quantity). The Cost of Diet (COD) tool helps identify the gap between the incomes of families and the local cost of a nutritious diet. The COD tool calculates the minimum amount of money a family will have to spend to meet its energy, protein, fat and micronutrient requirements using locally available foods. Understanding the nutrient gap is essential to ensure that appropriate programmes using the right food at the right time are developed to address the nutrient shortfalls that contribute to stunting.
- **New specialized nutritious foods:** New specialized nutritious foods have been developed to deliver the appropriate quantity and quality of nutrients in order to more precisely address the nutrient gap of target groups. Macronutrients and energy are needed, but most importantly micronutrients and macro-minerals, essential amino acids, essential fatty acids and animal proteins (milk) are also required as they are critical for linear growth.
- **The comprehensive model for the prevention of stunting:** WFP has been laying the foundation to address stunting over the last decade, by promoting government capacity and supporting household food security and fortification of staple foods and condiments. With the increasing recognition of the role of food and dietary intake in the prevention of stunting, in particular with the Lancet review in 2008, WFP has integrated a comprehensive approach based on recent innovations into its portfolio of stunting programming in order to contribute to bring about sustainable changes in stunting worldwide, though further efforts in terms of evidence and guidance are required.
- **Further development of the evidence base and strengthened monitoring and evaluation (M&E):** WFP is in the process of strategically gathering lessons learned on specific aspects of its current prevention of stunting programmes. In addition, WFP is supporting two new large-scale multi-year programmes in Malawi and Mozambique to comprehensively address stunting, which will feed into more knowledge on targeting, type of foods, delivery channels, identification mechanisms and complementary activities and the development of a common M&E framework that could then be mainstreamed throughout other programmes in other countries. [14] WFP is also engaging in operational research in other priority countries in addition to various collaborations with academia and research institutions to strengthen the evidence base for prevention of stunting around effectiveness on the utilization/consumption of specialized nutritious foods, i.e. the Right food at the Right time.

How do we know that WFP's approach to the prevention of stunting works?

There is evidence that complementary feeding interventions using specialized nutritious foods *on their own* can prevent stunting, for example:

- A longitudinal and long-term follow-up study (1969 and 1977, 1988-1989, and, 2002-2004) in **Guatemala** highlighted positive short and long term health, education and productivity impacts of complementary food supplements (which

26. The findings relate to male wages only.

included a substantial amount of dried skim milk) when given during first three years of life: i.e. greater growth in height, better learning capacity and reading/intelligence scores; increased productivity, 46 percent greater wages²⁶, and the next generation of children with higher birthweight and head circumference. [3, 8, 9] This is the most convincing worldwide evidence of the role of nutritious foods in reducing the impact of childhood stunting, and it was used by the 2008 Lancet Series on Maternal and Child Undernutrition.

- In **Malawi**, 12 months of complementary feeding intervention using a Medium Quantity LNS had a positive impact on stunting by reducing the incidence of severe stunting when compared to no intervention. [15]
- In **Algeria**, provision of a LNS was shown to induce catch-up growth and reduce anaemia in children up to six years. [18]
- In **Nepal**, from 2008-2010, WFP developed a large-scale intervention through the distribution of micronutrient powders (MNP) which resulted in a reduction of anaemia, and a contributed to a significant relative decrease of 40 percent of stunting prevalence in children 6-59 months. [19]
- In **Bangladesh**, WFP also developed a large-scale MNP intervention for children 6-59 months (August 2008-January 2009). Among children in the intervention area, those who consumed at least 75 percent of the recommended micronutrient powder had a lower prevalence of stunting than those who consumed less than 75 percent of the MNPs [20]²⁷
- Recent reviews have found that complementary feeding support, both with and without nutrition education, can result in gains in height and reduced stunting. [2, 21, 22].

There is also significant evidence for the use of specialized nutritious foods to prevent stunting

through nationwide comprehensive social protection programmes in:

- **Mexico** (“Oportunidades” formerly known as “Progresa” National Social Protection Conditional Cash Transfer Programme, 1988-2006). In poor, rural communities, distribution of special nutritious foods to children 6-23 months and PLW in addition to nutrition-sensitive programming that included improvements in education and access to public services in combination had an impact on stunting reduction. [23-25]
- **Brazil** (“Bolsa Familia” National Social Protection-Conditional Cash Transfer Programme, 1996-2006, 2003-2006) where changes in macroeconomic and social policies as well as maternal schooling and increased purchasing power contributed to improved quality and quantity of nutrient intake and reduced stunting by 50 percent. [26-28]
- **Chile** has demonstrated one of the largest impacts on stunting reduction; it is one of the few countries worldwide that has reached the “normal” expected proportion of children of low stature for age (2.3 percent). It has a well-established long-term national nutrition policy and programmes which include special fortified complementary foods for children 6-59 months and PLW and intersectoral interventions, which are currently integrated into a nation-wide social protection system “Chile Solidario”. [29, 30]
- Experiences in **South East Asia** and **South America** show that stunting can be reduced substantially within a decade when both underlying²⁸ and basic or structural²⁹ causes of undernutrition are also addressed. [31] Nutrition-specific programming can build upon these positive changes to the underlying and basic causes of undernutrition to help accelerate reduction in the prevalence of stunting.

27. The decrease in stunting in both Nepal and Bangladesh suggest that other micronutrients in the MNP formulation (zinc in particular) may have had a positive impact on child health and development. This area is being explored as part of current operational research on prevention of stunting and prevention of MNDs.

28. Underlying causes: inadequate access to nutritious foods, inappropriate care practices, and insufficient/poor health services and environment.

29. Basic causes: poverty, inequality, women education and empowerment, access to land, among others.

How does prevention of stunting relate to WFP's other nutrition programming?

- **Relation to nutrition-specific programming:** There is a range of specialized nutritious foods that can be used to prevent several forms of undernutrition. Micronutrient Powders (MNPs) and Nutributter can be used in complementary feeding interventions for the prevention of stunting depending on whether there is a gap in energy intake that needs to be addressed at the same time.
- **Relation to nutrition-sensitive programming:** By definition, the comprehensive programme to prevent stunting makes linkages with nutrition-sensitive programming. As mentioned previously, WFP can improve household food security and increase the access and availability of specialized nutritious foods.

Who are the key partners in the prevention of stunting?

WFP recognizes that efforts to sustainably address stunting must be based in country leadership and ownership, in line with national priorities and that it must engage multiple stakeholders and sectors. In support of national governments WFP's partners range from UN agencies i.e. UNICEF, WHO and FAO; NGOs, private sector, academia and research institutions and the communities themselves. WFP is also engaged in the global multi-stakeholder movement Scaling Up Nutrition (SUN), [31]; the country-led approach Renewed Efforts for Ending Child Hunger and Undernutrition (REACH), and the Global Health Initiative (GHI). They aim to scale up proven and effective interventions to achieve a sustainable reduction of undernutrition, prioritizing the 1,000 days window of opportunity period.

References

1. WHO, WHO child growth standards methods and development: Length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age. 2006, Geneva: World Health Organization.
2. Bhutta ZA, Ahmed T, Black R, Cousens S, Dewey K, Giugliani E, Haider BA, Kirkwood B, Morris SS, Sachdev HP, Shekar M. Maternal and child undernutrition 3. What works? Interventions for maternal and child undernutrition and survival. *Lancet* 2008; 371: 417–40
3. Black RE, Allen LH, Bhutta ZA, et al. Maternal and child undernutrition: global and regional exposures and health consequences. *The Lancet* 2008; 371: 243–60.
4. Alive&Thrive. Insight: Why stunting matters. A&T Technical Brief 2010 Sep;(2)
5. Victoria, C G, et al. Maternal and child undernutrition: consequences for adult health and human capital. *The Lancet* 2008; 371: 340 – 357.
6. UNICEF. Tracking progress on child and maternal nutrition. A survival and development priority. New York, 2009
7. UNICEF, WHO, The World Bank (2012). UNICEF, WHO, World Bank Joint Child Malnutrition Estimates. (UNICEF, New York; WHO, Geneva; The World Bank, Washington DC)
8. Mercedes de Onis, Monika Blössner, Elaine Borghi. Prevalence and trends of stunting among pre-school children, 1990–2020 *Public Health Nutrition* 2012; 15:142–8.
9. Martorell R, et al. History and design of the INCAP longitudinal study (1969–77) and its follow ups (1988–89). *J Nutr* 1995 Apr; 125(4 suppl):1027S–41S.
10. Hoddinott J, Maluccio J, Behrman J, Flores R, Martorell R. Effect of a nutrition intervention during early childhood on economic productivity in Guatemalan adults. *Maternal and Child Undernutrition. The Lancet* 2008; 371: 411–16.
11. Kramer MS, Olivier M, McLean FH, Willis DM, Usher RH. Impact of intrauterine growth retardation and body proportionality on fetal and neonatal outcome. *Pediatrics* 1990 Nov; 86(5):707–13.
12. Lee AC, Darmstadt GL, Khatry SK, LeClerq SC, Shrestha SR, Christian P. Maternal-fetal disproportion and birth asphyxia in rural Sarlahi, Nepal. *Arch Pediatr Adolesc Med* 2009 Jul;163(7):616–23
13. WFP Nutrition Policy. WFP/EB.1/2012/5-A, January 2012, available on WFP's Website (<http://executiveboard.wfp.org>).
14. de Pee S, Bloem MW. Current and potential role of specially formulated foods and food supplements for preventing malnutrition among 6- to 23-month-old children and for treating moderate malnutrition among 6- to 59 month-old children. *Food Nutr Bull* 2009 Sep; 30 : S434–63

15. Phuka J C et al. Post intervention growth of Malawian children who received 12mo dietary complementation with a lipid-based nutrient supplement or maize-soy flour. *Am J Clin Nutr* 2009;89:382-90
16. Ruel M, Menon P, Habicht JP, Loechl C, Bergeron G, Pelto G et al. Age-based preventive targeting of food assistance and behaviour change and communication for reduction of childhood undernutrition in Haiti: a cluster randomized trial. *The Lancet* 2008; 371: 588-95.
17. IFPRI. Timing is everything. Preventing child undernutrition, IFPRI 2008.
18. Lopriore C et al. Spread fortified with vitamins and minerals induces catch-up growth and eradicates severe anemia in stunted refugee children aged 3-6 y. *Am J Clin Nutr* 2004;80:973-81
19. de Pee S et al. Assessing the impact of micronutrient intervention programs implemented under special circumstances-Meeting Report. *Food Nutr Bul* 2011; 32(1): 255-302.
20. Rah JH, de Pee S, Halati S, Parveen M, Mehjabeen SS, Steiger G, Bloem MW, Kraemer K. Provision of micronutrient powder in response to the Cyclone Sidr emergency in Bangladesh: cross-sectional assessment at the end of the intervention. *Food Nutr Bull* 2011; 32:276-84.
21. Dewey K.G. et al. Systematic review and meta-analysis of home fortification of complementary food. Maternal and child nutrition. Blackwell Publishing Ltd, 2009.
22. Imdad, A, M Yakoub, Z Bhutta. Impact of maternal education about complementary feeding and provision of complementary foods on child growth in developing countries. *BMC Public Health* 2011; 11 (Suppl 3) 1-14.
23. Rivera J, Sotres-Alvarez D, Habicht JP, Shamah T, Villalpando S. Impact of the Mexican program for education, health, and nutrition (Progresa) on rates of growth and anemia in infants and young children: A randomized effectiveness study. *Journal of the American Medical Association* 2004; 291 (21): 2563-70
24. Presidencia de la Republica de Mexico-Algunos derechos reservados, 2010. Oportunidades (online) available at: <http://www.oportunidades.gob.mx/Portal/wb/Web/english>.
25. Fernald LCH et al. The Importance of Cash in Conditional Cash Transfer Programs for Child Health, Growth and Development: An Analysis of Mexico's Oportunidades. *Lancet*. 2008 March 8; 371(9615): 828-837
26. Monteiro C A et al. Causes for the decline in child under-nutrition in Brazil, 1996-2007. *Rev Saude Publica* 2009;43(1)
27. Lindert K. "Brazil Bolsa Familia program: Scaling up cash transfers for the poor". *MfDR Principles in Action: Sourcebook on Emerging Good Practices*, The World Bank pp67-74.
28. Paes-Sousa R et al. Effects of a conditional cash transfer programme on child nutrition in Brazil. *Bull World Health Organ* 2011; 89:496-503.
29. Monckeberg, F. Nutrition in Chile, Past, present and future, 2008
30. La desnutricion infantil en Chile. Informe Ministerio de Salud, 2008.
31. Scaling- up nutrition. Progress report from countries and their partners in the movement to Scale Up Nutrition (SUN): UN, SUN: 2011

Addressing Micronutrient Deficiencies

WFP Nutrition-specific pillar 4:

To address micronutrient deficiencies among vulnerable people – children aged 6-59 months and pregnant and lactating women – especially to reduce the risk of mortality during emergencies and to improve health, through fortification.

What is micronutrient deficiency?

Micronutrients (vitamins and minerals), although only needed in small amounts, are as essential as macronutrients (protein, fat, and carbohydrates) for ensuring the life and health of an individual. Micronutrient deficiencies (MNDs) often result from inadequate dietary consumption, and infectious diseases which decrease the absorption of nutrients while at the same time increasing individual nutritional requirements. Underlying these direct causes, inadequate health care and sanitation, poor infant and young child feeding practices, and household food insecurity contribute to MNDs, influencing intake and illness at the individual level.

MNDs of particular concern include vitamin A deficiency, iodine deficiency disorders, iron deficiency anaemia, and zinc deficiency. Even mild to moderate deficiencies of micronutrient have negative effects on well-being, such as poor intellectual development, poor vision, suboptimal growth and morbidity. For example, zinc deficiency alone has been shown to increase the risk of diarrhoea in young children by 33 percent, pneumonia by 69 percent, and malaria by 56 percent. [1] Adequate intake of vitamin A among children under five years can reduce mortality due to infectious diseases (most notably measles, diarrhoea, and malaria) by approximately 23-35 percent.

At the population level, information on the prevalence of MNDs may be assessed through a nutrition survey, though this information is not always available when planning for a new intervention. Proxy information should therefore be used to estimate the nutrient gap and the need for micronutrients, including existing data on MND prevalence, stunting prevalence, and on risk factors such as dietary intake, complementary feeding practices and household food insecurity.

Why Should WFP engage in addressing MNDs?

- Micronutrient deficiencies represent a largely invisible but devastating form of malnutrition that affects 2 billion people worldwide. People with MNDs may not show specific signs of deficiency, and may not be aware of their deficiency. This phenomenon is often referred to as “Hidden Hunger”.
- An estimated 190 million (33 percent) of preschool-age children and 19 million (15 percent) of pregnant women are **vitamin A deficient**.
- **Iron deficiency** which contributes to anaemia affects about 25 percent of the world’s population, most of them children of preschool-age and women.

- **Iodine deficiency** still affects millions of people, despite programmes of Universal Salt Iodization. [2]
- Zinc, iron, and vitamin A deficiencies are in the top ten causes of death through disease in developing countries.
- With rising food prices and climate change, it is likely that an increasing proportion of the world's population will develop MNDs.
- Cost-effective, evidence-based strategies to address MNDs are available. The 2008 Copenhagen Consensus ranked micronutrient supplements for children (vitamin A and zinc) as first among all development interventions in terms of spending priorities based on benefit-cost ratios.
- WFP operates in many of the most food-insecure contexts where MNDs are also common. WFP has the infrastructure, opportunity, and comparative advantage to address MNDs.

There are several ways to address MNDs, including:

- **Home fortification** (also known as point-of-use fortification) to increase micronutrient intake of specific groups. This is a particularly effective method for children 6-23 months since it is generally difficult for them to meet their high nutrient intake needs due to their small stomach size and intake of complementary foods that are often not adequate in terms of micronutrient content.
- **General fortification** (adding one or more nutrients during processing) of staple foods and condiments, which offers the possibility of increasing micronutrient intake and improving the quality of the daily diet of the general population, including that of adolescent girls and pregnant and lactating women (PLW), in a cost-effective and sustainable manner. In addition to distributing fortified food commodities in food security operations, WFP and private partners work with governments to establish the general fortification of staple goods and condiments and to introduce innovations such as fortified rice.
- **Education to promote a more diverse food basket** in areas where foods with sufficient macronutrients and micronutrients are available and accessible. Diets that are heavily plant-based and contain few animal-source or fortified foods

are often unlikely to meet the nutrient needs of children 6-23 months.

- **Supplementation** (distribution of concentrated doses in pill, capsule or drop form) for specific micronutrients for specific groups, such as vitamin A for children 6-59 months, postnatal vitamin A supplementation, and in rare instances iodised oil capsules for children 6-59 months. While there is an on-going discussion on either continuing the use of iron folate or switching to multiple micronutrient capsules (MMC) by PLW, the latter which provide more nutrients are the preferred option, especially when obstetric services are available because MMC supplementation can increase birth weight which may cause obstetric complications among short women. When PLW are malnourished, it is also important to ensure that their other nutrient needs (calories, and fatty acids) are met. Supplementation is generally administered through health programmes.
- **Promotion of public health measures**, such as deworming, and assuring adequate water and sanitation, in order to reduce illness and therefore increase absorption of nutrients.

What is WFP's nutrition-specific response to addressing MNDs?

- **What:** Home fortification with Micronutrient Powder (MNP) or Small Quantity lipid-based nutrient supplement (LNS)
- **Why:** To improve the quality of the diet and thus nutrient intake for nutritionally vulnerable groups to the point where the combination of the existing diet and the home fortificant meets the daily Recommended Nutrient Intake (RNI) for all nutrients. Improvement of nutrient intake and infant and young child feeding (IYCF) practices ultimately aims to contribute to improvements in micronutrient status and therefore promote growth, development and health of target groups.
- **Who:** Children 6-23 months, and in the case of high prevalence of MNDs, children 6-59 months, are the primary target group. Secondary target groups consist of school-age children, adolescents, and adults. Inclusion in the programme is not based on assessment of micronutrient status among the target group. Caseload is calculated based on the number of individuals in the specific

target group in the geographic area of activity and an estimate of programme coverage.

- **How:** Provision of a home fortificant to individuals from the target group on a regular basis for a specific period of time, generally 6-18 months. In addition, education on the use of the home fortificants and positive health and nutrition practices is provided. There are two options for home fortificants³⁰:
 - Nutributter (Small Quantity lipid-based nutrient supplement (LNS)) for children 6-23 months
 - Micronutrient powder (MNP) for children 6-59 months, or other target groups

Nutributter provides both micronutrients and macro-minerals, essential fatty and amino acids, while MNPs provide only micronutrients. As a principle, the frequency and duration of use should be such that it contributes an adequate quantity of the required micronutrients. WFP uses the standard WFP-UNICEF-WHO formulation for MNPs containing 15 micronutrients. [13] The process of designing local packaging for MNPs and implementing the behaviour change communication strategy for the home fortificant at country level are both parts of home fortification programming.

Where/When: Home fortification is recommended where the micronutrient requirements of children 6-23 months are not met in the typical diet, i.e. where appropriate complementary foods with sufficient macronutrients is locally available and affordable but lacking in micronutrients. Home fortification with MNPs should also be considered in school feeding programmes where school meals are predominantly composed of unprocessed locally available ingredients, as micronutrient content is almost always inadequate. Home fortification can be implemented in both emergencies and development contexts (EMOP/PRRO/DEV or CP)³¹. Programmes are generally run the whole year round, though individuals only participate for a specific period of time.

How is WFP's response to addressing MNDs with home fortification different than before?

- **New specialized nutritious foods and operational evidence of effectiveness:** MNPs were developed as a way to provide iron and other nutrients required for treating anaemia, because iron and folic acid tablets cannot be swallowed by young children and syrups are bulky, stain teeth and are more easily over-dosed. The strategy of home fortification with MNPs appeared to be well accepted by beneficiaries, and able to achieve high coverage. Its impact on nutritional anaemia has been proven [3-6]. As a result, MNPs are increasingly used for prevention of MNDs and are composed of a wider range of micronutrients. In addition, Nutributter, a Small Quantity LNS, was developed to deliver micronutrients as well as macro-minerals (calcium, magnesium, phosphorus) essential fatty acids and amino acids required for growth. Operational research in the use and effectiveness of Small Quantity LNS in addressing MNDs is on-going but indicates that it is a promising option.

How do we know that WFP's approach to addressing MNDs with home fortification works?

- MNPs have been proven to have a positive impact on nutritional anaemia. Given that individuals often have more than one MND, MNPs are assumed to have a positive impact on other MNDs as well. MNPs have also been shown in certain contexts to have contributed to a positive impact on stunting, for example with long term use among refugees in Nepal. [7-8] In the same study, MNPs also appeared to have a positive impact on morbidity associated with diarrhoea. The decrease in both stunting and diarrhoea suggest that other micronutrients in the formulation (zinc in particular) may have had a positive impact on child health and development. However, at this stage it is unknown if these positive benefits can be directly attributed to the use of MNP or/and other possible factors such as improved child feeding practices because of the introduction of MNP. Future, large-scale, multiple-year MNP programmes will need to confirm these benefits.

30. Please refer to the Nutrition Product Sheet *The Right Food at the Right Time* for more information on specialized nutritious foods currently in use. Other products may be approved for use in future.

31. EMOP: Emergency Operations; PRRO: Protracted Recovery and Relief Operations; CP: Country Programme; DEV: Development programmes

- The positive impact of LNS on MNDs, linear growth, and motor development has been proven. [9-11]

In a relatively short time, since initial pilots in 2008, WFP has built strong technical and operational expertise in distributing MNPs with various partners in emergencies, refugee and development settings. [7] Programmes in Bangladesh, eastern Nepal, Kenya, Philippines, Dominican Republic, Colombia and Haiti have targeted various groups including children under five years of age, PLW, and refugees. School-age children have been reached with MNP through school feeding in Tanzania, Cambodia, Ghana, Madagascar and Afghanistan. Additional MNP programs are underway in Indonesia, Niger, Mali and Cote d'Ivoire. The provision of MNP to children aged 6-59 months and school-age children in different settings within regular WFP programming scaled up from 350,000 in 2010 to more than 2 million children in 2012. This considerable experience has translated into strong analysis, enhanced programme design and improved delivery tools, including a toolkit to guide successful implementation of large-scale MNP programmes. WFP endeavours to develop the same experience, evidence, and tools for home fortification with LNS in the near term.

How does WFP's nutrition-specific response to addressing MNDs with home fortification relate to other types of WFP programming?

- **Relation to other nutrition-specific programmes:** The specialized nutritious foods used in the treatment and prevention of MAM are designed to provide all of the required micronutrients to beneficiaries. MNPs and Nutributter are not distributed in these programmes. MNPs and Nutributter are, however, two of several specialized nutritious foods that may be used to improve nutrient intake as one component of comprehensive programmes to prevent stunting.
- **Relation to fortification:** WFP collaborates with the government and the private sector in many countries, where fortified staple foods such as maize or wheat flour or oil are not yet available, or national fortification guidelines are not yet in line with current WHO guidance or national standards on food fortification.

- **Relation to school feeding:** Where the prevalence of MNDs have reached public health significance, and where the nutrient gap analysis shows that it is appropriate, MNPs can, and have been, used in school feeding programmes to increase the micronutrient content of local school meals. Reduction of iron and zinc deficiencies have been observed in school-age children in South Africa given MNPs with low doses of highly absorbable iron and zinc. [12] Other options to improve micronutrient content in school feeding interventions include provision of fortified foods or high energy biscuits.
- **Relation to general food distribution (GFD):** WFP distributes food commodities that are fortified, including oil fortified with vitamins A and D, iodized salt, and fortified maize meal, wheat flour and fortified blended foods (FBF). MNPs and Nutributter can be distributed with the GFD to specifically address the high micronutrient needs of young children, when there is limited capacity or access to other, more targeted, distribution channels to reach the nutritionally vulnerable group.
- **Relation to treatment of severe acute malnutrition (SAM):** Home fortification is not included in the treatment of SAM since all required macronutrients and micronutrients are supplied through therapeutic products specially formulated to meet the nutrient needs of children with SAM.

How does WFP's programming to address MNDs with home fortification relate to the work of partners?

Key partners in addressing MNDs include national governments, UN agencies, and NGO partners. The government has the overall responsibility for the welfare of its population. WFP and UNICEF collaborate in the design, implementation and evaluation of home-fortification programs and jointly advocate to address micronutrient deficiencies. UNHCR and WFP jointly implement and monitor micronutrient interventions involving the provision of MNPs and lipid-based nutrient supplements in refugee settings.

WFP is also part of the Home Fortification Technical Advisory Group (a community of stakeholders including members of public, private, academic, and non-governmental organisations) which in 2011

developed technical programme guidance on the use of MNPs to address MNDs in order to harmonise home fortification programming. [13] Members of this group include WFP, UNICEF, Micronutrient Initiative, Global Alliance for Improved Nutrition, Helen Keller International, Sprinkles Global Health Initiative, U.S. Centers for Disease Control and

Prevention, Sight and Life and UC Davis. WFP collaborates with the government as well as the private sector around supporting local fortification capacity. In addition, WFP coordinates with partners and the government around supplementation, promotion of public health measures, and nutrition education to improve nutrient intake.

References

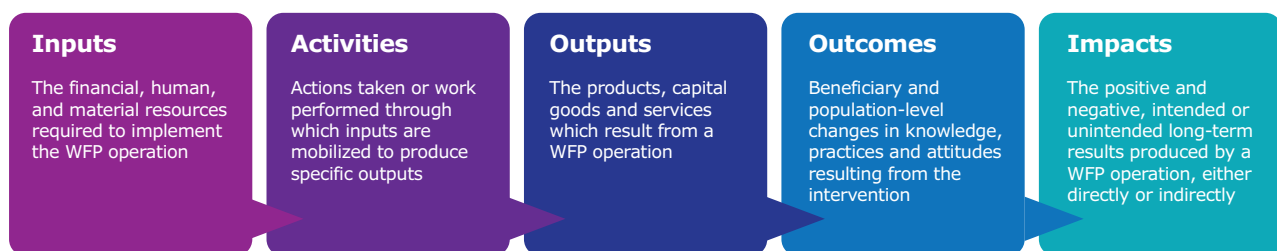
1. Caulfield et al. 2004. Zinc Deficiency. Comparative Quantification of Health Risks, World Health Organization. Pp. 256-79
2. UNICEF. 2009. Tracking Progress on Child and Maternal Nutrition: A survival and development priority
3. Menon P, Ruel MT, Loechl CU, Arimond M, Habicht J-P, Pelto G, Michaud L. Micronutrient sprinkles reduce anemia among 9- to 24-mo old children when delivered through an integrated health and nutrition program in rural Haiti. *J Nutr* 2007; 137: 1023-30
4. De Pee S, Moench-Pfanner R, Martini E, Zlotkin S, Darnton-Hill I, Bloem MW. Home fortification in emergency response and transition programming: Experiences in Aceh and Nias, Indonesia. *Food Nutr Bull* 2007; 28: 189-197
5. De-Regil LM, Suchdev PS, Vist GE, Walleser S, Peña-Rosas JP. Home fortification of foods with multiple micronutrient powders for health and nutrition in children under two years of age. *Cochrane Database of Systematic Reviews* 2011, Issue 9. Art. No.: CD008959
6. WHO. 2011. Guideline: Use of multiple micronutrient powders for home fortification of foods consumed by infants and children 6–23 months of age.
7. Rah JH, de Pee S, Kraemer K, Steiger G, Bloem MW, Spiegel P, Wilkinson C, Bilukha O. Program experience with micronutrient powders and current evidence. *J Nutr* 2012; 142: 1915-1965
8. Bilukha O, Howard C, Wilkinson C, Bamrah S, Husain F. Effects of multimicronutrient home fortification on anemia and growth in Bhutanese refugee children. *Food Nutr Bull*. 2011 Sep;32(3):264-76.
9. Adu-Afarwuah S, Lartey A, Brown KH, Zlotkin S, Briend A & Dewey KG. Randomized comparison of 3 types of micronutrient supplements for home fortification of complementary foods in Ghana: effects on growth and motor development. *American Journal of Clinical Nutrition* 2007; 86: 412–420
10. Phuka J.C., Maleta K., Thakwalakwa C., Cheung Y.B., Briend A., Manary M. et al. Complementary feeding with fortified spread and incidence of severe stunting in 6- to 18-month-old rural Malawians. *Archives of Pediatric and Adolescent Medicine* 2008; 162: 629–626
11. Phuka J.C., Maleta K., Thakwalakwa C., Cheung Y.B., Briend A., Manary M. et al. Post intervention growth of Malawian children who received 12-mo dietary complementation with a lipid-based nutrient supplement or maize-soy flour. *American Journal of Clinical Nutrition* 2009; 89: 382–390.
12. Troesch B, et al. A Micronutrient Powder with Low Doses of Highly Absorbable Iron and Zinc Reduces Iron and Zinc Deficiency and Improves Weight-For-Age Z-Scores in South African Children. *Journal of Nutrition* 2010.
13. Home Fortification Technical Advisory Group (HF-TAG). Programmatic Guidance Brief on Use of Micronutrient Powders (MNP) for Home Fortification. 2011. <http://hftag.gainhealth.org/resources/programmatic-guidance-brief-use-micronutrient-powders-mnp-home-fortification>

Monitoring & Evaluation – Logic Models

Monitoring and evaluation (M&E) are closely linked and mutually supportive. **Monitoring** is the routine tracking of data on inputs, outputs and outcomes within programme operations. The information collected allows WFP to assess progress towards stated objectives, as well as identify whether any aspects of the operation need adjustment.

Evaluation is the process of using data to ascertain the effectiveness, impact, efficiency, relevance and sustainability of an operation.

An **indicator** is a quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement or to reflect the changes connected with a WFP operation. In the results chain (below), indicators for each of the elements are used to measure performance.³²



Definitions adapted from M&E Knowledge Base, WFPgo

Monitoring focuses on the appropriate and timely provision and use of project resources focusing primarily on inputs, activities, outputs, and outcomes; evaluation focuses on whether the expected impacts were achieved. In addition to the more immediate role that M&E plays in measuring progress towards objectives, an **effective M&E system** will ultimately improve the quality of activities; improve management-oriented decision making; improve accountability to donors, partners, host governments and beneficiary communities; and improve WFP and partners' ability to conduct evidence-based advocacy.

M&E for WFP Nutrition

A new approach to M&E for nutrition has the following objectives: 1) ensure a smooth scaling-up of nutritional interventions; 2) ensure populations

most in need are covered/have access to the interventions; 3) increase appropriate utilization of the nutrition interventions, including consumption of sufficient quantities of the rations; and 4) measure how the nutrition programme has contributed to preventing malnutrition and subsequently, morbidity and mortality.

The approach has several different components: 1) a logical pathway 2) indicator frameworks that measure each step in the logical pathway and 3) data management and reporting. The approach helps to measure results as well as to explain how the project is working and the expected and unexpected results obtained. This approach is being developed for different pillars of nutrition programming, as shown on the following pages.

32. WFP, 2011. The M&E Guide for HIV and TB Programming.

Inputs

Activities

Policies, production, delivery, quality, & behaviour change communication

Outputs

Access & coverage

Outcomes

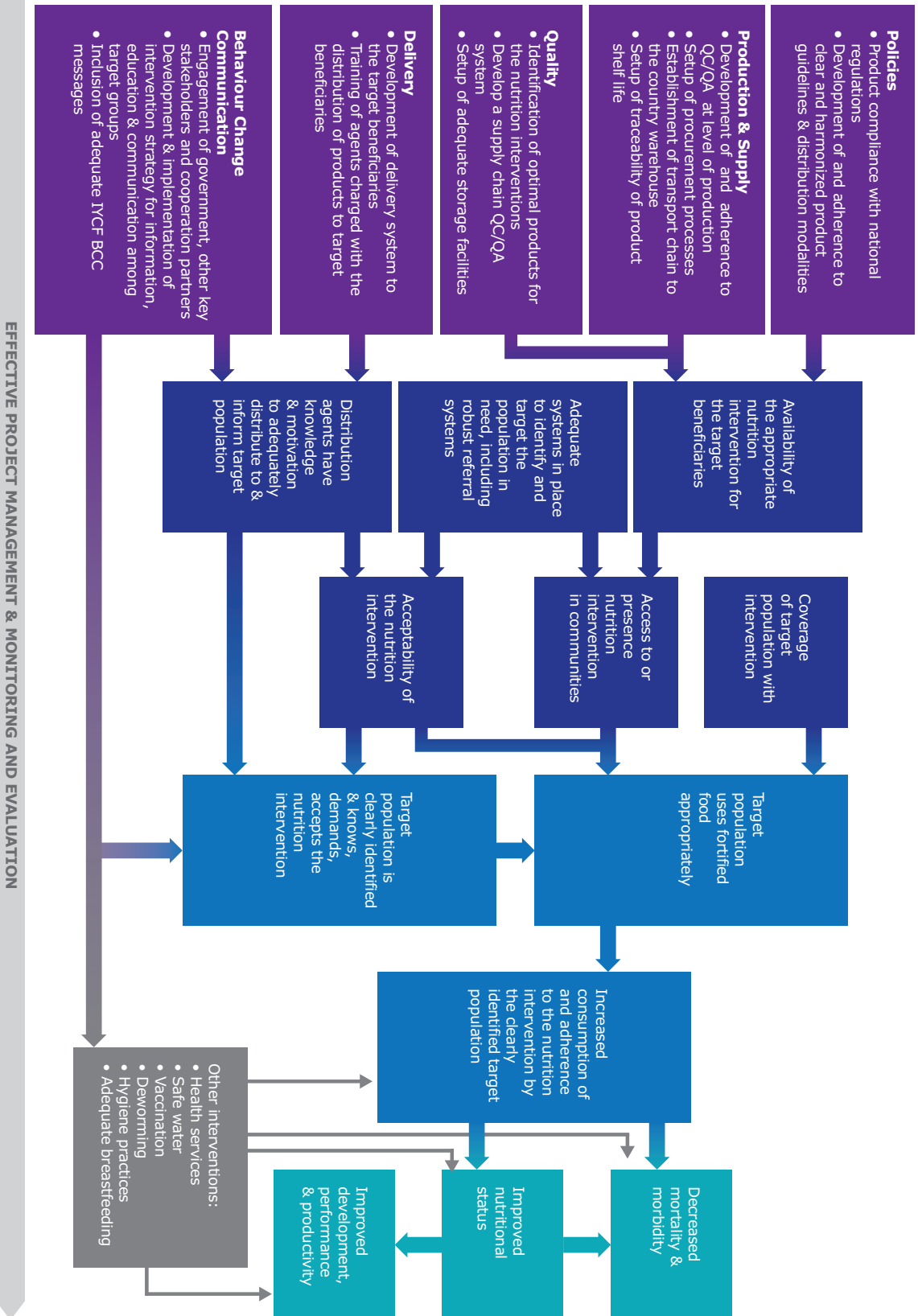
Knowledge, appropriate use, increased intake

Impacts

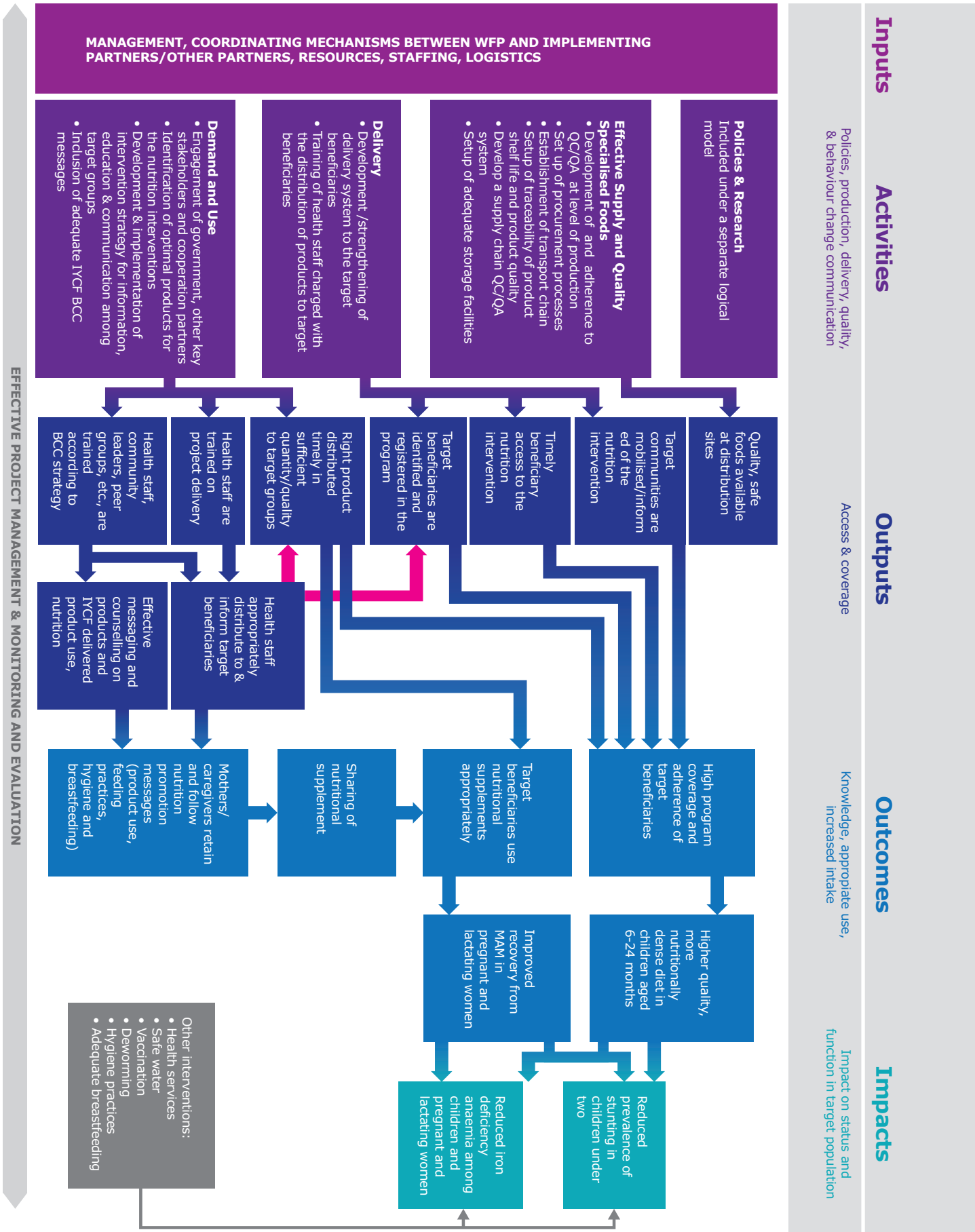
Impact on status and function in target population

Logical pathway for Treating and Preventing Acute Malnutrition

MANAGEMENT, COORDINATING MECHANISMS BETWEEN WFP AND IMPLEMENTING PARTNERS/OTHER PARTNERS, RESOURCES, STAFFING, LOGISTICS

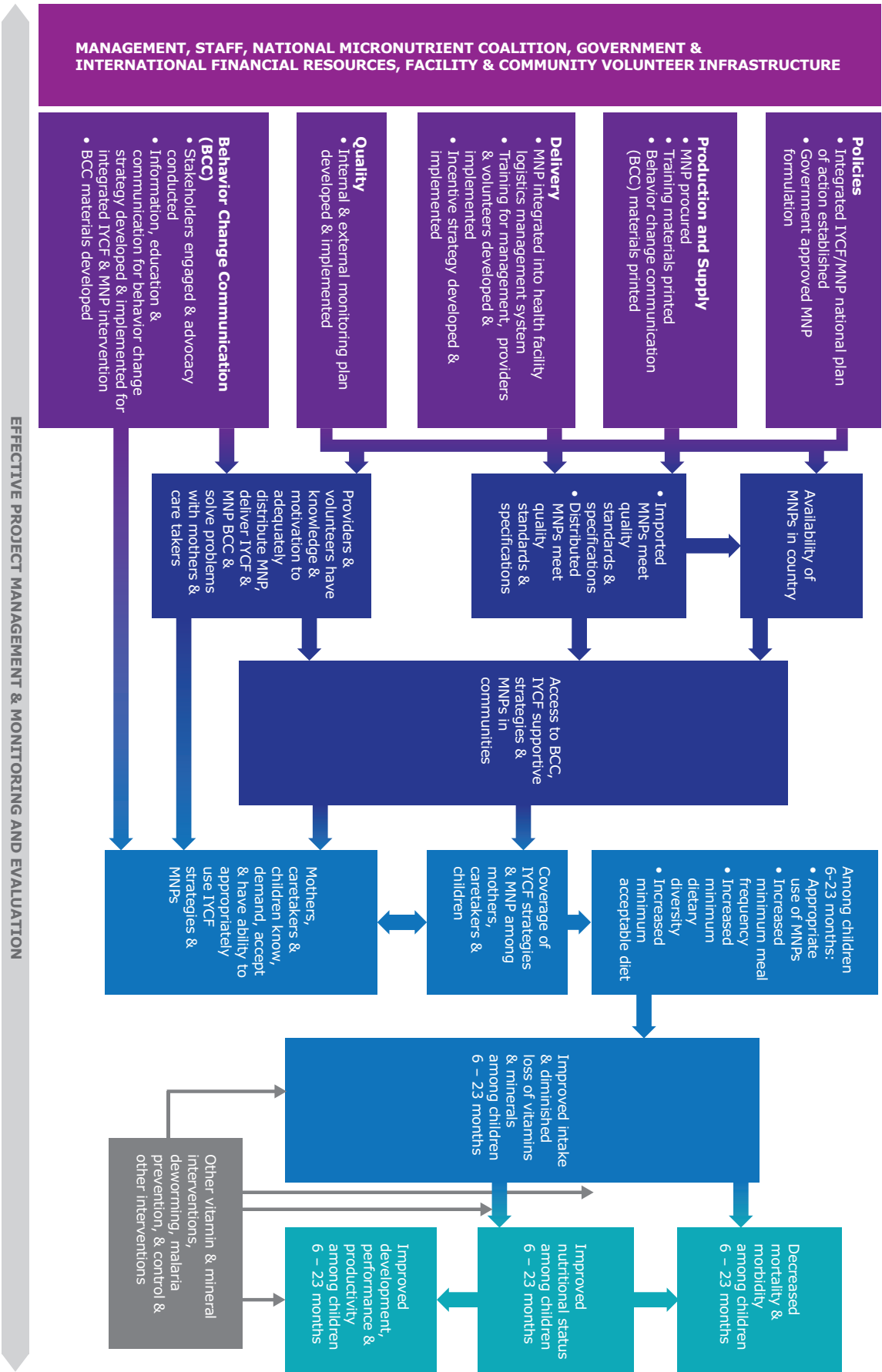


Logical pathway for Preventing Chronic Malnutrition



Abbreviations: IYCF= infant and young child feeding, BCC= behaviour change communication, QC/QA= quality control/quality assurance
 Source: Adapted from CDC/WHO, 2011

Logical pathway for Home Fortification



Inputs	Activities	Outputs	Outcomes
	Policies, production, delivery, quality, & behaviour change communication	Access	Knowledge, coverage and appropriate use
			Impact on Intake, Status and Function

Abbreviations: IYCF= infant and young child feeding, BCC= behaviour change communication, QC/QA= quality control/quality assurance
 Source: Adapted from CDC/WHO, 2011. Home Fortification Technical Advisory Group (HF-TAG). A Manual for Developing and Implementing Monitoring Systems for Home Fortification, 2012.

WFP Specialized Nutritious Foods Sheet

Programme

Treating Moderate Acute Malnutrition (MAM)

Generic product term

Lipid-based Nutrient Supplement (LNS)
Large Quantity (92-100 g)¹

Fortified Blended Foods (FBF)
(200-250g)

Current WFP nutrition products

Plumpy'sup^{®2}
(Peanut-based)



eeZeekRUSF[™]
(Peanut-based)



Acha Mum
(Chickpea-based)



Super Cereal Plus



Super Cereal³



Target group

Children 6-59 months

Children 6-59 months

Children 6-59 months

Children 6-59 months

Pregnant and Lactating Women (PLW)
Malnourished individuals on ART/
DOTS

Key Ingredients

Peanuts, sugar, whey, vegetable oil, milk, soy protein, cocoa, V&M

Peanut, sugar, milk solids, vegetable oil, V&M

Chickpeas, vegetable oil, milk powder, sugar, V&M, soya lecithin

Corn/wheat/rice soya, milk powder, sugar, oil, V&M

Corn/wheat/rice soya, V&M

Daily ration

92g sachet

92g sachet

100g sachet

200g (includes provision for sharing)

200-250g (includes provision for sharing)

Nutrient profile

500 kcal, 13g protein (10%), 31g fat (55%). Contains EFA, meets RNI and PDCAAS

500 kcal, 13g protein (11%), 31g fat (56%). Contains EFA, meets RNI and PDCAAS

520 kcal, 13g protein (10%), 29g fat (50%). Contains EFA, meets RNI and PDCAAS

787 kcal, 33g protein (17%), 20g fat (23%). Contains EFA, meets RNI and PDCAAS

752-939 kcal, 31-38g protein (16%), 16-20g fat (19%). Meets RNI and PDCAAS

Duration of intervention⁴

60-90 days

60-90 days

60-90 days

60-90 days

PLW: 180 days, ART & DOTS: 180 days (estimated)

Shelf life⁵

24 months

24 months

6 months

12 months

12 months

Packaging details

Carton: 14.7kg (gross) and 13.8kg (net) has 150 sachets

Carton: 14.9kg (gross) and 13.8kg (net) has 150 sachets

Carton: 10.5kg (net) has 105 sachets

Primary: 1.5kg (net) bag; Secondary: 1.5kg (net) carton has 10 bags; or 18kg sack has 12 bags

25kg (net) bags

¹Also referred to as RUSF. ²Plumpy'sup is formerly known as Supplementary Plumpy (same product). Note: Plumpy'nut is a different product used for the treatment of severe acute malnutrition (SAM). ³Super Cereal is usually mixed with 20g oil and 15g sugar before distribution (total est. 989-1176 kcal, 31-38g protein (12-13%), 16-20g fat (31-32%)). ⁴Can vary in different situations and contexts. ⁵Shelf life indicated is valid for storage at temperatures less than 30 degrees C. **Abbreviations:** LNS = Lipid-based Nutrient Supplement, RUSF = Ready-to-Use Supplementary Food, FBF = Fortified Blended Food, EFA = Essential Fatty Acids, ART = Anti-Retroviral Therapy (treatment for AIDS), DOTS = Directly Observed Treatment (treatment for TB), RNI = Recommended Nutrient Intakes (FAO/WHO), PDCAAS = Protein Digestibility-Corrected Amino Acid Score (min. 70%), V&M = Vitamins and Minerals, mt = Metric Ton.

WFP Specialized Nutritious Foods Sheet

Programme

Preventing Stunting: All products listed below can be used for the prevention of stunting

Preventing Acute Malnutrition:
Four products specifically for the prevention of acute malnutrition

Addressing Micronutrient Deficiencies¹:

Generic product term
Lipid-based Nutrient Supplement (LNS)
Medium Quantity (20-50g)

Fortified Blended Food (FBF)
(100-200g)

LNS Small Quantity
(≤20g)

Micronutrient Powders (1g)

Current WFP nutrition products

Plumpy'doz®
(Peanut-based)



eeZeeCup™



Wawa Mum
(Chickpea-based)



Super Cereal Plus



Super Cereal²



Nutributter®
(Peanut-based)



Micronutrient Powders (MNP)



Target group
Children 6-23 months

Children older than 6 months

Children 6-23 months

Children 6-23 months

Pregnant and Lactating Women

Children 6-23 months

Children 6-59 months
School age children

Key Ingredients

Vegetable fat, peanut, sugar, milk powder, whey, V&M, cocoa

Vegetable fat, peanut, sugar, skimmed milk powder, V&M

Chickpeas, vegetable oil, milk powder, sugar, V&M

Corn/wheat/rice soya, milk powder, sugar, oil, V&M

Corn/wheat/rice soya, V&M

Peanuts, vegetable fat, sugar, skim milk powder, whey, V&M

Vitamins and minerals (V&M)

Daily ration

46g portion (1/7 portion of a pot)

46g portion (1/7 portion of a pot)

50g sachet

100-200g (200g includes provision for sharing)

100-200g (200g includes provision for sharing)

20g sachet

1g sachet every second day

Nutrient profile

247 Kcal, 5.9g protein (10%), 16g fat (58%). Contains EFA, meets RNI and PDCAAS

253 Kcal, 6.0g protein (10%), 15g fat (56%). Contains EFA, meets RNI and PDCAAS

260 Kcal, 6.5g protein (10%), 14.5g fat (50%). Contains EFA, meets RNI and PDCAAS

394-787 Kcal, 16-33g protein (17%), 10-20g fat (23%). Contains EFA, meets RNI and PDCAAS

376-752 Kcal, 15-31g protein (16%), 8-16g fat (19%). Meets RNI and PDCAAS

108 Kcal, 2.6g protein (10%), 7g fat (59%). Contains EFA, meets RNI and PDCAAS

Meets RNI (No energy, fat or protein content)

Duration of intervention³

90-180 days

90-180 days

90-180 days

90-180 days

90-180 days

180-545 days

180-545 days

Shelf life⁴

24 months

Minimum 12 months from manufacturing date when stored at warehouse conditions

6 months

12 months

12 months

18 months

24 months

Packaging details

Primary packaging: 325g pots. Carton: 12.7kg (gross) and 11.7kg (net) has 36 pots

Primary packaging: 325g pots. Carton: 12.7kg (gross) and 11.7kg (net) has 36 pots

Carton: 10.5kg (net) has 210 sachets

Primary: 1.5kg (net) bag; Secondary: 15kg (net) carton has 10 bags; or 18kg sack has 12 bags

25kg (net) bags

Carton: 11.95kg (gross) and 10.92kg (net) has 546 sachets

Carton: 14kg (gross) has 240 boxes; 30 sachet in each box. *Packaging varies with supplier

¹All nutrition products address the prevention of micronutrient deficiencies, but small quantity LNS and MNP do not prevent acute malnutrition. ²Super Cereal is usually mixed with 20g oil and 15g sugar before distribution (total est. 613-989 Kcal, 15-31g protein, (10-12%), 8-16g fat (33-41%)). ³Can vary with different situations, contexts and objectives. ⁴ Shelf life indicated is valid for storage at temperatures less than 30 degrees C. **Abbreviations:** LNS = Lipid-based Nutrient Supplements; RUSF = Ready-to-Use Supplementary Food; FBF = Fortified Blended Food; MNP = Micronutrient Powders; EFA = Essential Fatty Acids; RNI = Recommended Nutrient Intakes; PDCAAS = Protein Digestibility-Corrected Amino Acid Score (min 70%) V&M = Vitamins and Minerals; mt = Metric Ton.



“Preventing the loss of another generation of children to malnutrition requires that women and their children must have adequate access to sufficient nutrition – including the right nutritional practices such as proper breastfeeding, adequate hygiene, and nutritious foods as well as, when required, life-saving micronutrient supplements. The capacity to contribute to this generation and the next is in our collective hands.”

Ertharin Cousin, Executive Director