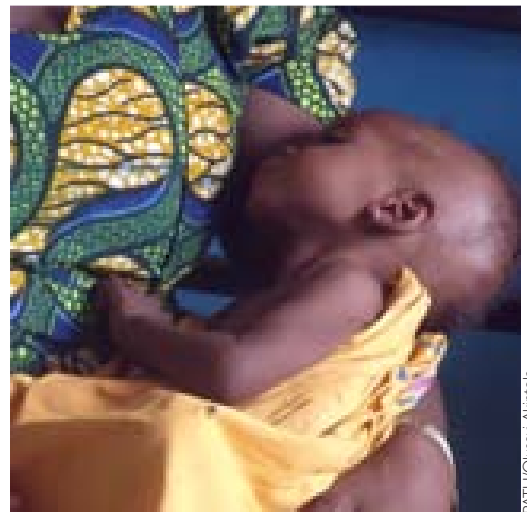




# **NUTRITIONAL CARE AND SUPPORT FOR VULNERABLE CHILDREN**

## **A RESOURCE MANUAL**





## Preface

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The National Plan of Action on Orphans and Vulnerable Children identified the need for information and training at different levels on nutritional care and management of vulnerable children (VC). This resource manual will help to meet this objective by providing basic information and referring those working with VC to more detailed information on specific aspects of nutrition for VC. This resource manual is especially important given the rapidly rising numbers of VC in Nigeria. Currently, about 9.7 million children are orphaned by all causes in Nigeria, with 1.2 million orphaned by AIDS and 1.7 million double orphans by all causes (UNAIDS 2008).

Specifically, the resource manual is designed for programme managers, service providers, and support groups involved in designing, managing, supervising, and implementing services that provide care and support to improve the well-being of VC in Nigeria. This manual provides implementers with information on key issues in nutritional care for VC and strengthens their skills in order to:

- Improve the quality of nutrition services provided to VC.
- More effectively meet the nutritional needs of VC.
- Improve programme implementation and cost-effectiveness of VC nutrition services.

An important feature of the manual is the careful mix of background nutrition information relevant to VC, as well as examples of nutrition interventions. These programmatic approaches can be effectively integrated into current VC programmes to optimise VC nutrition with a high potential for cost-effectiveness and relative ease of implementation. The first chapter on the basic principles and issues in nutrition provides the basis for understanding the nutritional needs of VC. Community-based activities such as growth monitoring and promotion, positive deviance/Hearth, and promotion of home gardens provide opportunities for communities to actively participate in improving the well-being of VC in their communities. Community-Based Management of Acute Malnutrition (CMAM) supports the rehabilitation and follow-up of severely acutely malnourished children while they remain in their homes.

This resource manual provides information and tools that can substantially improve the knowledge and skills of programme managers and service providers to improve the nutrition and well-being of the growing numbers of VC in Nigeria.

## Acknowledgments

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This resource manual was adapted from the draft resource manual developed by the Community Participation for Action in the Social Sector (COMPASS) Project and used as a tool for providing a wraparound nutrition programme for vulnerable children in Nigeria with funds provided by the United States Agency for International Development (USAID).

Significant portions of Chapter 2 (basic facts about food and nutrition) and Annex D (nutrient-rich local foods) were adapted from *Guidelines on Nutritional Care and Support for People Living with HIV in Nigeria* (Federal Ministry of Health [FMOH] 2011).

Nutrition stakeholders agreed on the need for an updated and harmonised VC resource manual that can be championed by the Federal Ministry of Women Affairs and Social Development (FMWASD). The Infant & Young Child Nutrition (IYCN) Project took up the challenge to review and update the resource manual for use in Nigeria.

We appreciate the hard work and contributions of the IYCN team in Nigeria, especially Dr. Omo Ohiokpehai, Babajide Adebisi, and the Consultant, Dr Wasiu Afolabi, for the review and update of the manual. The review and update would not have been possible without the support and critical backstop review by the IYCN team in Washington, DC.

Many other agencies and organizations were instrumental to the review of this resource manual, especially United States Government VC implementing partners. We also appreciate the contributions of the USAID Nigeria team, especially Philomena Irene, Olubunmi Dili-Ejinaka, and a host of others.

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## Acronyms

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ANC	antenatal care
ART	antiretroviral therapy
ARV	antiretroviral
CBGMP	community-based growth monitoring and promotion
CBO	community-based organization
CMAM	Community-Based Management of Acute Malnutrition
COMPASS	Community Participation for Action in the Social Sector Project
EBF	exclusive breastfeeding
FAO	Food and Agriculture Organization of the United Nations
FMOH	Federal Ministry of Health
FMWASD	Federal Ministry of Women Affairs and Social Development
GMP	growth monitoring and promotion
HAART	highly active antiretroviral therapy
HIV	human immunodeficiency virus
IYCN	Infant & Young Child Nutrition Project
LBW	low birth-weight
MAM	moderate acute malnutrition
MDG	Millennium Development Goal
MUAC	Mid-Upper Arm Circumference
NDHS	Nigeria Demographic and Health Survey
NGO	nongovernmental organization
NRU	nutritional rehabilitation unit
PD	positive deviance
PDI	positive deviance inquiry
PLHIV	people living with HIV
PMTCT	prevention of mother-to-child transmission
RUTF	ready-to-use therapeutic food
SAM	severe acute malnutrition
USAID	United States Agency for International Development
VC	vulnerable children

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## **Chapter 1. Why is the vulnerable children resource manual needed for Nigeria?**

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Nigeria is the most populous country in Africa, with a population of over 140 million (NPC 2006), a rapid population growth rate of 3.2 percent, and a large population of young people. The country also has one of the highest HIV prevalence rates in the world with a 3.6 percent prevalence rate in 2010 translating to an estimated 3.3 million people living with HIV (USAID 2011). In 2003, an estimated 800,000 children were reported to be orphaned by AIDS. In 2005, figures indicated that 1.3 million children had lost one or both parents to AIDS in Nigeria (UNAIDS 2006). Overall, there are an estimated 7.3 million orphans in Nigeria [Federal Ministry of Women Affairs and Social Development 2008]. Apart from HIV and AIDS, other causes of orphaning in Nigeria include road accident, maternal mortality, sectarian and ethnic conflict, poverty, and gender inequality.

This situation is worsened by the general poor state of the health and nutrition of children. Nigeria has one of the highest under-five mortality rates in the world as one in every six children born in Nigeria is likely to die before their fifth birthday. Available data from the Nigerian Demographic and Health Survey (NDHS, 2008) indicate that only 23 percent of eligible children were fully immunised and that exclusive breastfeeding coverage was 13 percent, having declined from 17 percent in 2003. Sub-optimal feeding practices are rampant, as 34 percent of infants are not exclusively breastfed, but rather are given water and other foods before the age of 6 months. Malnutrition among children less than 5 years of age is very high in Nigeria, as 23 percent are underweight (low weight for age). Data also show that 41 percent are stunted (low height for age), indicating chronic malnutrition that causes life-long physical and cognitive deficits, and 14 percent are wasted or extremely thin (low height for weight), indicating acute malnutrition, often linked with illness (NDHS 2008).

Until recently, the response to the vulnerable children (VC) crisis has been driven by communities, which provide the initial safety net to affected children outside their immediate families. However, in many places the needs overwhelm the community's capacity to care for and protect VC. This has necessitated a larger response, driven by nongovernmental organizations, with variable quality, effectiveness, and sustainability. However, as part of the national response to the VC crisis, a National Plan of Action (2006–2010) was developed in 2005 to assure and improve the quality of services provided for the well-being, protection, and development of the children considered most vulnerable in Nigeria. The focus of the concept of improving the quality of care include meeting the needs of the children, the family, and the community as well as providing an enabling environment for all stakeholders to ensure quality in the provision of care, support, and protection to VC in compliance with national guidelines and standards of practice. In March 2011 during the children's forum on quality services, children identified food and nutrition as top priority among the seven service areas thus underlying the importance to children's need.

The Federal Ministry of Women Affairs and Social Development developed national guidelines and standards of practice on VC in 2007. That document provides guidelines and specific standards on seven programme areas including food security and nutrition, with the aim of

strengthening existing safety nets and providing additional resources without undermining community and family capacity to care for and protect VC.

Specific standards on food security and nutrition as contained in the national guidelines and standard of practice are as follows:

National standards on food security and nutrition
<ul style="list-style-type: none"><li>• The nutritional status of the children in the programme must be assessed through a growth monitoring schedule in line with the Ministry of Health standards.</li><li>• Food should be available for the children and their families in the programme at least once a day in sufficient quantities and adequate quality with at least three varieties.</li><li>• Food should be available (whether harvested or bought), stored appropriately, and prepared safely and hygienically.</li><li>• Food aid/support through, donor organizations, churches, or mosques should be provided to the children's caregivers and families or institutions.</li><li>• Food support through donor organizations should be locally produced</li><li>• If food aid is being provided there should be a mechanism in place to wean the children or family off the food aid.</li><li>• Immediate efforts to improve nutrition, for example, by providing food should be complemented with longer-term efforts to increase household and community self-sufficiency.</li><li>• Nutrition education should be provided to parents and caregivers and should emphasise locally available and affordable nutrient-dense foods.</li><li>• School feeding programmes should target all children in the school, rather than only vulnerable children.</li><li>• Programmes should, together with children, families, and communities, identify barriers to boys' and girls' access to food security and nutrition. Appropriate interventions to address these barriers should be developed based on this disaggregated information.</li></ul>

Source: Federal Ministry of Women Affairs and Social Development (2007)

## Chapter 2. Basic facts about food and nutrition

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### 2.1. Nutrition

Nutrition refers to how the body utilises food for the maintenance of life, growth, normal functioning of organs and tissues, production of energy, and prevention of diseases. This chapter discusses basic facts about nutrition, along with how to improve nutrient intake through use of our local foods.

#### 2.1.1. Why is nutrition important?

Nutrition is important for:

- Maintenance of life, growth, and development, and repair of cells, tissues, and organs.
- Production of energy, maintenance of body temperature, and work.
- Carrying out of chemical processes in the body.
- Prevention of disease and aiding recovery from disease.

When the body does not get enough good-quality food, it becomes weak and susceptible to infections and cannot function properly.

In early childhood, adequate nutrition is fundamental to the development of any child to be able to achieve his or her full potential both mentally and physically. A child who suffers malnutrition in early childhood will be susceptible to significant illnesses, delayed mental and physical development, and death. Poor nutrition is also linked to impaired work capacity, poor reproductive outcomes, and overall poor health during adolescence and adulthood. Adequate nutrition has been found to mitigate the effect of HIV/AIDS on the body system. Nutrition is key to the achievement of the Millennium Development Goals (MDGs), especially 1 and 4.

Nutrients required by the body are available in foods. Those required in large quantities (such as carbohydrates, protein, and fat) are known as macronutrients while those required in smaller quantities (such as vitamins and minerals) are known as micronutrients.

#### 2.1.2. What is an adequate diet?

An adequate diet, formerly referred to as balanced diet is one that has a variety of foods containing all the nutrients in the right amounts and combinations to meet the body's functional needs. No single food, except breastmilk for the first six months of life, gives all the nutrients that the body needs to function well.

Eating a variety of foods is a key factor for good health for everyone, especially for people with special needs, such as infants and young children, adolescents, pregnant and lactating women, the elderly, and the sick.

#### Principles of diet planning and food enrichment

The amount of food we eat depends on our sex, level of activities, and age (period of life) (see Table 1). A healthy meal should contain no more than 50 percent carbohydrate (e.g yam, maize, rice, potatoes, bread), 15 percent protein (e.g beans, fish, beef, chicken, eggs, wara [local

cheese]), a little fat (such as oil), and the rest vitamins and minerals (mostly from vegetables and fruit). Diet planning should be based on selecting food from the four food groups and combining them at every meal. In this way, we can ensure that our diets are varied (diversified) and we obtain adequate macro- and micronutrients.

**Table 1. Sample daily food requirements of different people**

Family member	Maize flour	Beans	Greens	Cooking oil
	# cups	# cups	# teaspoons	# teaspoons
Child (2–3 years)	1	$\frac{1}{2}$	16	6
Child (5–6 years)	$1\frac{1}{4}$	$\frac{3}{4}$	20	6
Child (10–12 years)	$1\frac{1}{2}$	1	20	6
Child (14–16 years)	2	$1\frac{1}{4}$	24	6
Woman (childbearing age)	$2\frac{1}{2}$	$\frac{3}{4}$	20	8
Woman (pregnant)	$2\frac{1}{2}$	$\frac{3}{4}$	22	8
Woman (breastfeeding)	$2\frac{1}{2}$	1	32	8
Elderly people (60 years+)	2	$\frac{3}{4}$	22	8
Man (10–60 years)	$3\frac{1}{2}$	$1\frac{1}{2}$	22	8

1 cup = about 200 g

1 teaspoon = about 5 g

Sources: FAO 2001 and King & Burgess 1998

### 2.1.3. Nutrients

Nutrients are substances contained in food that are necessary to maintain life and allow for growth and reproduction, provide energy, and enable development and repair of body tissues, maintenance of the body system, and regulation of body process.

#### Examples of nutrients

There are over 40 essential nutrients including carbohydrates, proteins, fats, vitamins, minerals, and water. Nutrients can be classified into two categories based on the quantity required to support growth and body processes:

- **Macronutrients** are nutrients needed in large quantities for energy, growth, and development and hence are quantified in grams. Proteins, carbohydrates, and fats are macronutrients.
- **Micronutrients** are nutrients needed in small quantities for proper growth and functioning and hence are quantified in milligrams or micrograms. Vitamins and minerals are micronutrients.

#### Classes of food

Foods can be generally classified into the groups listed below:

- Grains and cereals
- Roots and tubers
- Pulses and legumes
- Fruits and vegetables
- Meat, fish, eggs, and milk
- Fats and oil

These classes of food are important because they contain the nutrients needed for the body to function properly. Table 2 gives examples of the food classes/groups and the nutrients that they supply.

**Table 2. Food sources of some nutrients categorised according to food group**

Food group	Food	Major nutrients
Grains and cereals	Bread, cooked cereal, dry cereal, rice, sorghum, millet, maize	B vitamins, iron, carbohydrates
Roots and tubers	Yam, cassava, potatoes, cocoyam	Carbohydrates
Pulses and legumes	Beans, peas, nuts, seeds (meat substitutes)	Protein, fat, iron, other minerals
Fruits and vegetables	All varieties of fruits and vegetables, including green and yellow leafy vegetables	Vitamin C, vitamin A precursors, iron
Meat	Meat, poultry, fish, eggs	Protein, fat, iron, other minerals
Milk	Milk, cheese, yogurt, ice cream	Calcium, protein, riboflavin
Fats and oil	Palm oil, groundnut oil, cotton seed oil, soybean oil, fish oil, shea butter, margarine, butter, lard	Vitamin A precursors, other vitamins

### **Meeting nutrient requirements using local food sources**

It is important to encourage and promote variety of foods (dietary diversification) so that the meal contains the nutrients the body needs in the right quantity and quality. To deliver high-quality nutritional care and support, it is essential to understand the types of foods available in the community and which nutrients these supply. The different types of foods can be considered under the following groupings.

#### **2.1.4. Energy-giving foods**

The major energy-giving foods in Nigeria are carbohydrate-rich foods (e.g., staples, sugars), fats, and oils.

#### **Carbohydrate-rich foods**

Staples such as cassava, yam, cocoyam, Irish potato, sweet potato, and rice make up the bulk of the foods consumed by Nigerians. They are generally cheap and readily available. There are regional/zonal variations in the staple foods commonly consumed. In the northern part of the country, for example, millet, sorghum, and acha are the major staples, whereas in the southern part, yam, cassava, and plantain are the staple foods. Rice, bread, and maize are commonly eaten throughout the country.

These staples are important sources of energy for the body because they contain high amounts of carbohydrates, which provide energy. Some of these staples also contain some protein, minerals,

vitamins, and fibre, although usually in amounts inadequate for body needs. Since these staples alone cannot provide enough of the other nutrients, they need to be consumed in combination with other foods.

### **Sugars and sugary foods**

Sugars are carbohydrates and therefore energy-giving, but they should be eaten only in small quantities as excessive intake can lead to obesity and diabetes. In Nigeria, sugars and sugary foods include sugar cane, honey, sweets, jams, marmalade, cakes, and cookies. Many drinks now consumed also qualify as sugary, including fruit juices, fruit drinks, and carbonated beverages.

### **Fats and oils**

Fats and oils are also very rich sources of energy. One gram of fat provides the body with twice the energy that one gram of carbohydrate provides. For this reason, fats are needed only in small quantities. Excessive intake may lead to obesity and cardiovascular diseases. Fats and oils add flavour and taste to food, thus increasing palatability and stimulating appetite. In the body, fats are used as components of body cells, are essential for body processes, and are needed for absorption and utilization of vitamins A, D, E and K. In Nigeria, the most common dietary oils are palm oil, groundnut oil, cotton seed oil, soybean oil, shea butter, and margarine. Common animal fats include lard and butter. Fatty fish also contributes to dietary fat consumption.

#### **2.1.5. Body-building foods (protein-rich foods)**

Foods rich in protein are usually called body-building foods. Protein is a very important nutrient; it helps with growth of body cells, enzymes, and hormones, and functioning of the general structure of all tissues. Protein-rich foods can come from plants or animals.

##### **Protein-rich foods from plant sources**

Beans (cowpeas) and groundnuts are important protein-rich plant foods commonly consumed in Nigeria. Others include pigeon peas, soya bean, and bambara nuts. Plant protein foods also contain other nutrients, especially oils, vitamins, and minerals. In general, plant foods are cheaper sources of protein than animal foods. Protein from plant sources is not as easy for the body to utilise, so higher quantities are needed of these foods than of animal sources of protein.

##### **Protein-rich foods from animal sources**

Animal protein (e.g cattle, sheep, goat, pig, poultry, snail, eggs, fish and other seafoods, milk, yoghurt, and wara [local cheese]) are good sources of high-quality proteins. These products also generally contain other nutrients, such as fat, vitamins, and minerals.

#### **2.1.6. Protective foods**

Fruits and vegetables are protective foods because they are rich in vitamins and minerals, which are essential for proper functioning of the immune system. They should therefore be components of a healthy and nutritious diet. A wide variety of fruits and vegetables grow in Nigeria and they vary in their contents of fibre, vitamins, and minerals.

##### *2.1.6.1. Vitamins*

Vitamins are required by the body in small quantities for normal physiological functions. They are water-soluble vitamins and fat-soluble vitamins. The body uses water-soluble vitamins (such

as vitamin C and B groups) as they are consumed and the excess excreted. For this reason, water-soluble vitamins should be consumed continually in the diet. The body stores fat-soluble vitamins (such as vitamins A, D, E, and K). Consequently, vegetable sources of these vitamins can be cooked with some fat to make them most easily absorbed and used by the body.

#### *2.1.6.2. Minerals*

Minerals are non-organic materials contained in foods. They are needed for the formation of skeletal tissue (bones and teeth) and circulatory (blood), immune, and digestive systems, among others. The most important minerals include calcium, magnesium, iron, iodine, selenium, and zinc.

#### *2.1.6.3 Vegetables*

Vegetables are important in the diet for many reasons, including provision of minerals, vitamins, and dietary fibre. Apart from their nutritional value, they add colour, flavour, taste, and variety to our meals. Vegetables can be classified as leafy or non-leafy. Both types are plentiful in Nigeria, especially during the rainy season. Dark green leafy vegetables are especially important as a source of iron and vitamin A. The leafy vegetables include jews mallow (ewedu), spinach, spring onions (lowogi), pumpkin leaf, water-leaf, bitter-leaf, zogale, ugu, oha, sorrel (yakuwa), and cassava leaf. Others include worowo, amunututu, sokoyokoto, ujuju, elemionu, kerenkere, afang, okazi, gbologi, aleho, sweet potato leaf, and cocoyam leaf. Other common non-leafy vegetables include okra, carrot, green peppers, tomatoes, and onions.

#### *2.1.6.4. Fruits*

Fruits are important components of meals in many communities. Fruits contain minerals, vitamins, water, carbohydrates, and fibre. The deep yellow or orange coloured fruits are particularly rich in vitamins, especially beta-carotene (a substance that is converted into vitamin A in the body). In Nigeria such fruits include avocado pears, local pears (ube), bananas, guavas, mangoes, oranges, pawpaws, pineapples, and many less common wild fruits. In general, most fruits are good sources of vitamin C but the richer sources include guava and citrus fruits.

### **2.1.7. Water**

Water has numerous functions in the body. The adult human body is made up of about 60 percent water and we require about 2 litres of water daily. Fruits and vegetables (for example oranges and watermelons) are rich in vitamins and also provide an important part of the daily requirements for water.

People should drink only boiled and/or filtered water where possible. Other recommended water treatment devices/methods may also be used. Water is a major component of drinks such as tea, coffee, and chocolate, but tea, coffee, and alcoholic drinks are not recommended to be used as major sources of water. This is because they contain substances that can interfere with absorption of nutrients and may also interact negatively with medicines.

### **2.1.8. Dietary fibre**

Dietary fibre or roughage is that portion of our food that is not digested or is poorly digested by our digestive system. Even though it may not be fully digested, our bodies require fibre in our foods because it is important for the regular movement of our bowels. Excessive dietary fibre

intake may hinder the absorption of some minerals, such as iron and zinc. Too much fibre in children's foods may make it bulky, thus limiting the amount of energy and other important nutrients that are available in their foods. Dietary fibre is found only in plant foods. In Nigeria, the common sources are garden eggs, maize, fruits, and vegetables as well as cassava, yam, sweet potatoes, cocoyam, and their products.

## 2.2. Malnutrition

### 2.2.1. What is malnutrition?

Malnutrition is when a person's health is affected as a result of a deficiency, excess or imbalance of one or more nutrients. Forms of malnutrition include the following:

- **Overnutrition**—an excess of one or more nutrients and usually excess energy due to eating more food than required. Overnutrition is more common among the affluent and also during old age if people reduce their activities that use energy.
- **Undernutrition**—a deficiency of one or more nutrients due to any of the following:
  - Low intake of energy or nutrients (such as a child not eating enough protein for growth and development).
  - Increased requirements (such as extra iron needed by women during pregnancy and breastfeeding).
  - Inability to absorb or use nutrients (e.g., when the body doesn't effectively use food due to a sickness such as diarrhoea or AIDS).

Inadequate intake of energy and or other nutrients is common in families or communities where the poverty level is very high and people lack sufficient food or aren't aware of the best foods to eat, which nutrients are required by different members of the family and the nutritional value of local foods. VC often lack enough food to eat, especially when family members who provide for them have died or become incapacitated due to illness such as AIDS.

Types of malnutrition in infants and children are:

- **Stunting** (low height for age)
- **Wasting** (low weight for height)
- **Underweight** (low weight for age)
- **Micronutrient deficiencies** (specific deficiencies of one or more vitamins and minerals)

Manifestation of undernutrition among adults includes:

- Thinness or chronic energy deficiency
- Specific deficiency of vitamins and minerals

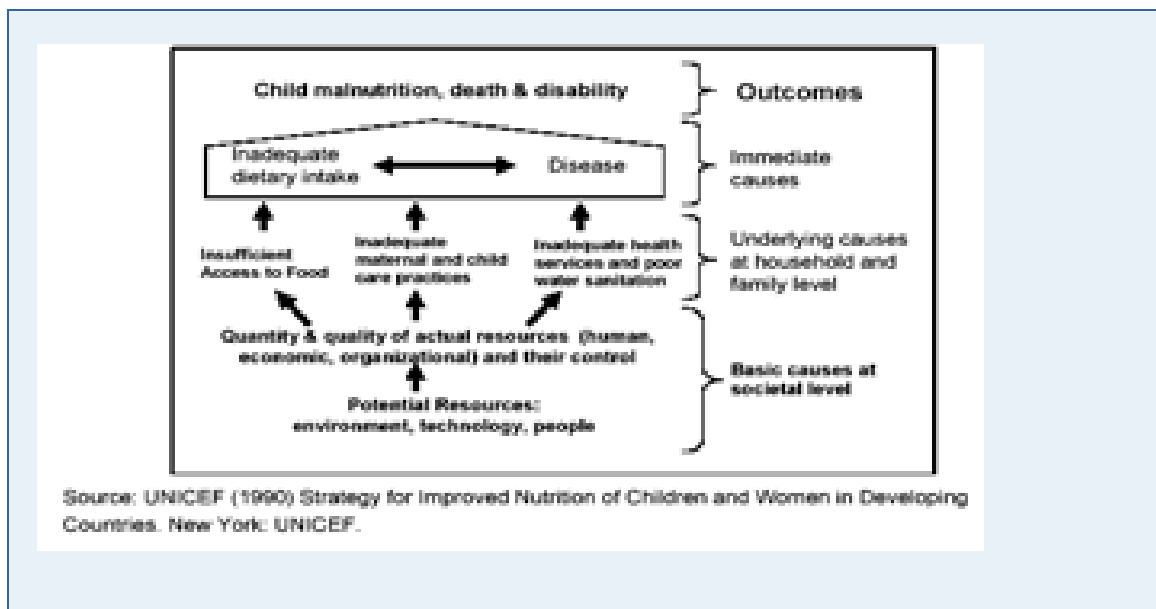
Overnutrition, or an excess of nutrients and energy, is related to negative health outcomes including:

- Overweight and obesity
- Increased risk of high blood pressure
- Heart disease and other chronic heart problems
- Diabetes



### 2.2.2. Causes of malnutrition

Malnutrition occurs as a result of many determinant factors, which are usually classified as immediate, underlying, or basic causes. A conceptual framework that captures the interrelations among the various factors is presented in Figure 1.



**Figure 1. UNICEF conceptual framework of the determinants of malnutrition**

#### **Immediate causes of malnutrition**

There are two major significant causes of malnutrition in infants and young children, school-aged children, and women. These are:

- Inadequate dietary intake (of energy, protein, fat, and micronutrients).
- Disease or infections.

#### **What are the causes of inadequate dietary intake?**

- Inadequate meal frequency.
- Inadequate quantity of food per meal (especially for young children, who require frequent small meals due to their small stomachs).
- Low nutrient density of meal (for example: sugary drinks that reduce hunger but don't contain nutrients, or bulky porridges that feel filling but don't contain adequate iron, protein, fats, or micronutrients).
- Poor food utilization by the body due to disease or infection.
- Lack of active and responsive feeding by caregivers (for infants over six months and young children who need to be fed).

#### **What are the causes of disease or infection?**

- Poor hygiene practices (such as hand-washing and treating drinking water).
- Poor environmental hygiene/sanitation (such as lack of latrines and clean drinking water).
- Eating contaminated or unsafe food.

- Exposure to viral illnesses (such as a cold, rotavirus or HIV).

**Underlying causes of malnutrition**

The underlying causes that lead to inadequate dietary intake and disease include inadequate access to food at the household or individual level, inadequate caring practices at home, and lack of access to basic health services and water/sanitation infrastructure. Poverty, gender inequality, lack of education, livelihood insecurity, and vulnerability to natural or political disasters are basic causes leading to the underlying causes.

The conceptual framework enables the analysis of the causes of malnutrition and death in any community as it indicates the interrelationship between the various contributory factors. By understanding which factors are causing malnutrition in a programme area, programme implementers can target resources appropriately to improve those specific factors.

## Chapter 3. Nutritional requirements and care for mothers and infants and children under 24 months

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### 3.1. The cycle of malnutrition in Nigeria

Infants and young children are much more vulnerable to malnutrition than adults because they are growing rapidly and need more nutrients per kilogram body weight compared to adults. They face risks for long-term physical and cognitive effects of malnutrition, because infancy is a time of rapid brain development and physical growth. As mentioned previously, malnutrition is common in Nigeria, particularly for groups at high risk, such as infants, young children, pregnant women, and HIV-infected individuals. VC face special risks because they may have lost a parent who provided income, food, and special attention or live with parents or other family members who are ill.

Generally, infant feeding practices in Nigeria are suboptimal, leading to high levels of infant and childhood malnutrition, particularly stunting. Children in Nigeria also suffer from micronutrient deficiencies, especially iron and vitamin A deficiencies. Similarly, pregnant women and lactating mothers also suffer from malnutrition, which manifests itself in poor nutritional status of the women themselves, as well as their infants. To improve the nutritional status of VC, it is essential for VC programme implementers to understand the nutritional needs of VC at different stages and to address those needs in their programming.

### 3.2. Maternal nutritional care and support

The nutritional status and well-being of a newborn depends on the mother's nutritional status during pregnancy (and even before pregnancy). Mothers who do not eat enough food during pregnancy will have smaller babies. Mothers who are anaemic (i.e., who lack iron) are also more likely to give birth to smaller babies. Babies whose weight at birth is below 2500 grams have low birth-weight (LBW). In Nigeria, the average national prevalence of LBW is about 8 percent, ranging from 6 to 13 percent in different geographic areas. These small babies are at risk of illness (for example acute respiratory illness), malnutrition and death, as well as long-term risks to cognitive and physical development.



Pregnant women need to eat about 25 percent more energy (calories) than before pregnancy. Particularly, pregnant women require extra protein (such as beans, eggs, or meat) and much more iron, optimally from animal foods or iron supplements. Other vitamins are also needed in greater amounts, such as zinc (best from animal foods or some plant-based foods such as greens and beans) and calcium (particularly found in animal milk). Iodised salt is important since iodine is needed for development of the foetus.

While eating a variety of foods will supply most of the nutrients that a pregnant woman needs, iron tablets are usually necessary to prevent a woman from becoming anaemic (iron-deficient). In Nigeria, the FMOH makes iron tablets available to all pregnant women from the third month of pregnancy, in addition to other health interventions that help a woman avoid losing iron due to

causes such as malaria or stomach worms. Sleeping under a mosquito net, taking malaria prophylaxis, and de-worming pregnant women after the first trimester of pregnancy are key strategies. In addition, it is important for families to wait at least 24 months before having another child, as the woman's body needs at least that long to replenish nutrient stores and give her (and her baby) the best chance for survival.

**Breaking the cycle of malnutrition so that an undernourished pregnant adult woman can give birth to a well nourished baby**

*Improve women's nutrition and health during pregnancy by:*

- Increasing the food intake of women during pregnancy: one extra meal or “snack” (food between meals) each day; during breastfeeding two extra meals or “snacks” each day.
- Encouraging consumption of different types of locally available foods. All foods are safe to eat during pregnancy and while breastfeeding.
- Giving iron/folate supplementation (or other recommended supplements for pregnant women) to the mother as soon as the mother knows she is pregnant and continuing for at least three months **after** delivery of the child.
- Giving vitamin A to the mother within 6 weeks after birth.
- Preventing and seeking early treatment of infections:
  - Completing anti-tetanus immunizations for pregnant women (five injections in total).
  - Using of insecticide-treated bed nets.
  - De-worming and giving antimalarial drugs to pregnant women between fourth and sixth month of pregnancy.
  - Prevention and education on sexually transmitted infections and HIV/AIDS transmission.
- Encouraging good hygiene practices.



*Help the woman gain weight by decreasing the amount of energy she uses (i.e., decreasing the calories she burns):*

- Delaying the first pregnancy to 20 years of age or more.
- Encouraging families to help with women's workload, especially during late pregnancy.
- Resting more, especially during late pregnancy.

*Encourage men's participation so that they:*

- Accompany their wives/partners to antenatal care (ANC) and reminding them to take their iron/folate tablets.
- Provide extra food for their wives/partners during pregnancy and lactation.
- Help with household chores to reduce wives/partners' workload.

- Encourage their wives/partners deliver at health facility.
- Make arrangements for safe transportation to facility (if needed) for birth.
- Encourage their wives/partners to put the babies to the breast immediately after birth.
- Encourage their wives/partners to give the first thick yellowish milk to babies immediately after birth.
- Provide insecticide-treated nets for their families and make sure that their pregnant wives/partners and small children get to sleep under the net every night.

**To support maternal nutrition (for women who are pregnant, lactating, or could become pregnant), vulnerable children programme implementing partners can:**

- Promote foods high-nutrient foods, including protein foods, such as animal-source foods, legumes, and fortified foods; as well as protective foods, such as fruits and vegetables.
- Promote iron supplementation (usually tablets) for pregnant women.
- Support malaria control and treatment strategies.
- Support family planning services to couples can delay pregnancy until the woman is at least 20 years old and space children at least 24 months apart, in order to protect the health of the mother and children.
- Provide additional food for pregnant or lactating women, particularly those infected with HIV (if the VC programme provides food supplements).
- Involve male partners in activities to improve the health and nutrition of women and children.

### **3.3. Importance of exclusive breastfeeding**

The Nigerian government supports the World Health Organization in its declaration that breastmilk contains the ideal combination of nutrients for the baby during the first six months of life. The baby does not need any other foods or liquids for the first six months, not even water, tea, milk, infant formula, concoction, or porridge. Breastmilk is easy to digest and contains antibodies that protect the child from infection, offering “babies first immunisation.” Breastmilk does not need to be purchased, is always clean and requires no special preparation. As an added benefit, mother/infant interaction and bonding takes place during breastfeeding. Even when the weather is very hot, breastmilk is all the baby needs to satisfy its thirst.



While breastfeeding is practiced by nearly all in Nigeria, it is extremely common to give other liquids while breastfeeding, soon after birth. However, exclusive breastfeeding is defined as:

Definition <sup>1</sup>	Requires that the infant receive	Allows the infant to receive	Does not allow the infant to receive
Exclusive breastfeeding	Breastmilk (including milk expressed, or from a wet nurse)	Drops, syrups, (vitamins, minerals, medicines)	Anything else

**For the infant/young child, breastmilk:**

- Saves infants' lives.
- Perfectly meets the needs of human infants.
- Is a whole food for the infant, and covers all babies' needs for the first six months.
- Promotes adequate growth and development, thus helping to prevent stunting.
- Is always clean.
- Is easy to digest; nutrients are well absorbed.
- Contains enough water for the baby's needs.
- Helps jaw and teeth development; suckling develops facial and jaw structure.
- Leads to bonding and better psychomotor, affective, and social development of the infant through frequent skin-to-skin contact between mother and infant.
- Benefits the infant from the nutritious first milk (colostrum, described below).
- Has long-term benefits, including reduced risk of obesity and diabetes.
- Contains antibodies that protect against diseases, especially against diarrhoea and respiratory infections.
- Is always ready and at the right temperature.

**For the mother, breastfeeding:**

- Is more than 98 percent effective as a contraceptive method during the first six months if the mother is exclusively breastfeeding day and night and if her menses/period has not returned.
- Facilitates the expulsion of placenta when the baby is put to the breast immediately after birth, because the baby's suckling stimulates uterine contractions.
- Reduces the risk of bleeding after delivery.
- Reduces the mother's workload (no time is involved in going to buy the formula, boiling water, gathering fuel, or preparing formula).
- Is available at anytime and anywhere, is always clean, nutritious and at the right temperature.
- Is economical: formula costs a lot of money, and the non-breastfed baby or mixed-fed baby is sick much more often, which involves costs for health care.
- Stimulates a close bond between mother and baby.
- Reduces risks of breast and ovarian cancer.

**To support exclusive breastfeeding, VC implementing partners can:**


- Provide mothers and other caregivers (such as grandmothers and fathers) with information about the importance of exclusive breastfeeding and the many financial and health benefits for mother and child.

<sup>1</sup> *Indicators for assessing infant and young child feeding practices, Part 1. Definitions.* Conclusions of a consensus meeting held 6–8 November 2007 in Washington, DC, USA

- Help families of VC discuss issues related to HIV-positive pregnant women and become informed about the ways to minimise the risk of passing HIV to the baby.
- Make sure that programmes for VC address common breastfeeding difficulties, such as poor positioning and attachment, perceived poor milk supply, and breast infections, by providing community-based guidance (through trained counsellors or peer support) and referrals to health services.

### 3.4. Immediate initiation of breastfeeding

It is very important that infants have immediate skin-to-skin contact with their mothers and initiate breastfeeding within an hour after birth. During the first few days after delivery, the mother produces thick, yellowish milk called colostrum. Colostrum is very important for the baby, as it protects the baby from many diseases and the babies suckling during the early days also helps the mother's milk to come in. The regular milk, which is whitish, comes in gradually several days after birth.

<p><b>Giving colostrum</b></p> 	<ul style="list-style-type: none"> <li>• Local belief: Colostrum should be discarded; it is 'expired milk,' not good, etc.</li> <li>• What we know: Colostrum contains antibodies and other protective factors for the infant. It is yellow because it is rich in vitamin A.</li> <li>• The newborn has a stomach the size of a marble. The few drops of colostrum fill the stomach perfectly. If water or other substances are given to the newborn at birth, the stomach is filled and there is no room for the colostrum.</li> </ul>
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#### To support early initiation of breastfeeding, VC programme implementing partners can:

- Work with clinical partners to assure that health facility protocols encourage immediate skin-to-skin contact between mother and baby, and that infants are encouraged to breastfeed within an hour after birth.
- Include messages and activities on immediate initiation of breastfeeding in all community-level activities, including activities for HIV-positive mothers and pregnant teen VC.
- Train health workers and community volunteers on breastfeeding support for new mothers, including attachment, low milk supply and other common breastfeeding problems.

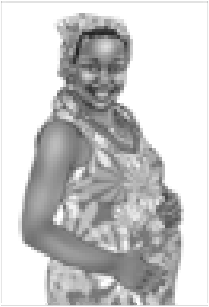

### 3.5. Challenges to breastfeeding

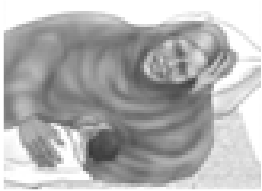


Even though most families in Nigeria breastfeed their children, there are common challenges that frequently cause women to stop breastfeeding, or introduce other liquids or foods before their infants are ready at six months of age.

The following table describes some of the common challenges to breastfeeding and the key messages that VC programme implementation partners can promote in their programming.

Challenge	Key messages
<b>Twins</b> 	<ul style="list-style-type: none"> <li>• A mother can exclusively breastfeed both babies.</li> <li>• <b>The more a baby suckles and removes milk from the breast, the more milk the mother produces.</b></li> <li>• Mothers of twins produce enough milk to feed both babies if the babies breastfeed frequently and are well attached.</li> <li>• The twins need to start breastfeeding as soon as possible after birth. If they cannot suckle immediately, help the mother to express and cup feed. Build up the milk supply from very early to ensure that breasts make enough for two babies.</li> <li>• Explain different positions—cross cradle, one under arm, one across, feed one by one etc. Help mother to find what suits her.</li> </ul>
<b>Refusal to breastfeed</b> 	<b>Baby who refuses the breast</b> <p>Usually refusal to breastfeed is the result of bad experiences, such as pressure on the head. Refusal may also result when mastitis changes the taste of the breastmilk (more salty).</p> <ul style="list-style-type: none"> <li>• Check baby for signs of illness that may interfere with feeding, including looking for signs of thrush in the mouth.</li> <li>• Refer baby for treatment if ill.</li> <li>• Let the baby have plenty of skin-to-skin contact; let baby have a good experience just cuddling mother before trying to make baby suckle; baby may not want to go near breast at first—cuddle in any position and gradually over a period of days bring nearer to the breast.</li> <li>• Let mother baby try lots of different positions.</li> <li>• Wait for the baby to be wide awake and hungry (but not crying) before offering the breast.</li> <li>• Gently touch the baby's bottom lip with the nipple until s/he opens his/her mouth wide.</li> <li>• Do not force baby to breastfeed and do not try to force mouth open or pull the baby's chin down—this makes the baby refuse more.</li> <li>• Do not hold baby's head.</li> <li>• Express and feed baby by cup until baby is willing to suckle.</li> <li>• Express directly into baby's mouth,</li> <li>• Avoid giving the baby bottles with teats or dummies.</li> </ul>



Challenge	Key messages
<p><b>New pregnancy</b></p> 	<ul style="list-style-type: none"> <li>• Local belief: A woman must stop breastfeeding her older child as soon as she learns she is pregnant.</li> <li>• What we know: It is important that a child be breastfed until s/he is at least one year old.</li> <li>• A pregnant woman can safely breastfeed her older child, but should eat very well herself to protect her own health (she will be eating for three: herself, the new baby, and the older child).</li> <li>• Because she is pregnant, her breastmilk will now contain small amounts of colostrum, which may cause the older child to experience diarrhoea for a few days (colostrum has a laxative effect). After a few days, the older child will no longer be affected by diarrhoea.</li> <li>• Sometimes the mother's nipples feel tender if she is pregnant. However, it is perfectly safe to breastfeed two babies and will not harm either baby, as there will be enough milk for both.</li> </ul>
<p><b>Mother away from baby</b></p> 	<ul style="list-style-type: none"> <li>• Local belief: A mother who works outside the home or is away from her baby cannot continue to breastfeed her infant (exclusively).</li> <li>• What we know: If a mother must be separated from her baby, she can express her breastmilk and leave it to be fed to the infant in her absence.</li> <li>• Help mother to express her breastmilk and store it to feed the baby while she is away. The baby should be fed this milk at times when he or she would normally feed.</li> <li>• Teach caregiver how to store and safely feed expressed breastmilk from a cup. It may be stored safely at room temperature for up to 8 hours.</li> <li>• Mother should allow infant to feed frequently at night and whenever she is at home.</li> <li>• Mother who is able to keep her infant with her at the work site or to go home to feed the baby should be encouraged to do so and to feed her infant frequently.</li> </ul>
<p><b>Crying baby</b></p>	<ul style="list-style-type: none"> <li>• Help mother to try to figure out the cause of baby's crying and listen to her feelings: <ul style="list-style-type: none"> <li>○ Discomfort: hot, cold, dirty.</li> <li>○ Tiredness: too many visitors.</li> <li>○ Illness or pain: changed pattern of crying.</li> <li>○ Hunger: not getting enough breastmilk; growth spurt.</li> <li>○ Mother's foods: can be a certain food; sometimes cow's milk.</li> <li>○ Mother's drugs.</li> <li>○ Colic</li> </ul> </li> </ul>

Challenge	Key messages
<b>Sick mother</b> 	<ul style="list-style-type: none"> <li>When the mother is suffering from common illnesses, she <b>should continue to breastfeed her baby</b>. (Seek medical attention for serious or long lasting illness).</li> <li>The mother needs to rest and drink plenty of fluids to help her recover.</li> </ul>
<b>Stress</b> 	<ul style="list-style-type: none"> <li>Mother's stress does not spoil breastmilk, or result in decreased production. However, milk may not flow well temporarily.</li> <li>If mother continues to breastfeed, milk flow will start again.</li> <li>Keep baby in skin-to-skin contact with mother if she will permit.</li> <li>Find reassuring companions to listen, give mother an opportunity to talk, and provide emotional support and practical help.</li> <li>Help her to sit or lie down in a relaxed position and to breastfeed baby.</li> <li>Show her companion how to give her a massage, such as a back massage, to help her to relax and her milk to flow.</li> <li>Give her a warm drink such as tea or warm water, to help relax and assist the let down reflex.</li> </ul>
<b>Thin or malnourished mother</b> 	<ul style="list-style-type: none"> <li>Local belief: A thin or malnourished mother cannot produce 'enough breastmilk.'</li> <li>What we know: It is important that a mother be well-fed to protect her own health.</li> <li>A mother who is thin and malnourished will produce a sufficient quantity of breastmilk (better quality than most other foods a child will get) if the child suckles frequently.</li> <li>More suckling and removal of the breastmilk from the breast leads to production of more breastmilk.</li> <li>Eating more will not lead to more production of breastmilk.</li> <li>A mother needs to eat more food for <b>her own health</b> ("feed the mother and let her breastfeed her baby").</li> <li>Mothers need to take vitamin A within 8 weeks after delivery, and a daily multivitamin, if available.</li> <li>If the mother is severely malnourished, refer to health facility.</li> </ul>

### 3.6 Complementary feeding and nutritional support after 6 months

In the first 6 months of life, all the infant's nutritional needs are met by the mother's breastmilk, but from the age of six months onward, breastmilk alone cannot provide all the nutrients required.

To address the different aspects of an infant or young child's complementary feeding, it is helpful for VC programme implementation partners to consider the following topics (given the acronym FATVAH):



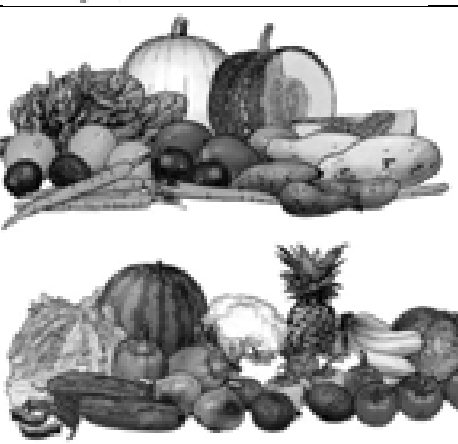
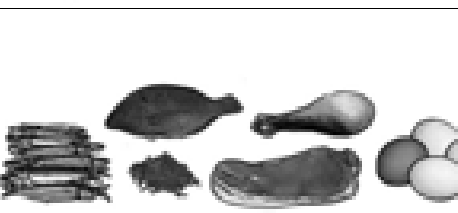

- **Frequency:** Given a child's small stomach, food must be offered frequently to the child as required for that age group, i.e. starting at 6 months 2–3 times per day and increasing to 5 times per day at 12 months.
- **Amount:** The portion size must be sufficient to meet the child's needs at different stages, such as 2–3 tablespoons of food beginning at 6 months and up to a teacup-full at 12 months.
- **Texture:** Thickness/consistency should be increased gradually and a variety of food added as the child grows older, according to the child's requirements and abilities.
- **Variety:** Foods must provide sufficient energy, protein, fat and micronutrients from a variety of foods.
- **Active or responsive feeding:** Encouraging children to eat, using warmth and patience, i.e., never forcing a child to eat.
- **Hygiene:** Caregivers should practice hand-washing before preparing food, after having contact with faeces, and use proper food handling.

### 3.7. Types of complementary foods

The first foods need to be soft and without strong spicy flavour (e.g., curry or pepper). The staple diet or the cereal in the community is an optimal first food for an infant. It should be well cooked, mashed, and made into porridge with an added protein source, such as mashed meat, groundnuts, or beans. Some oil can be added to increase the energy found in the food. Mashed fruits or vegetables can also be mixed into the porridge or given separately. The digestibility of the complementary food can be improved through germination of the grain before grinding into a paste for porridge.

In Nigeria, a suggested recipe is a porridge of local grain (maize, millet, or guinea corn) cooked with fish meal, groundnut paste, or mashed beans. Palm oil can be added to the porridge for extra calories. The consistency of this porridge should be thick enough that it gradually falls off the spoon. This complementary food is usually referred to as “enriched pap.” Other complementary food recipes are provided in Annex C.

### 3.7.1. Locally available foods for complementary feeding

<p><b>Staples:</b> grains such as maize, wheat, rice, millet, and sorghum; and roots and tubers such as cassava and potatoes</p>		
<p><b>Legumes</b> such as beans, lentils, peas, and groundnuts <b>and seeds</b> such as sesame/benniseed</p>		
<p><b>Vitamin A-rich fruits and vegetables</b> such as mango, pawpaw, passion fruit, oranges, dark-green leaves, carrots, yellow sweet potato, and pumpkin; as well as other fruits and vegetables such as banana, pineapple, avocado, watermelon, tomatoes, eggplant, and cabbage</p> <p>NOTE: include locally-used wild fruits and other plants.</p>		
<p><b>Animal-source foods</b> including flesh foods such as meat, chicken, fish, liver, eggs, and milk and milk products</p> <p>Note: animal foods should be started at 6 months</p>		
<p><b>Oils and fats</b> such as oil seeds, margarine, ghee, and butter added to vegetables and other foods will improve the absorption of some vitamins and provide extra energy. Infants only need a very small amount (no more than half a teaspoon per day).</p>		

### 3.8. Active/Responsive feeding for young children

Active/responsive feeding is being alert and responsive to the baby's signs that she or he is ready-to-eat; actively encouraging, but not forcing the baby to eat.

- Let the child eat from his/her own plate (caregiver then knows how much the child is eating).
- Sit down with the child, be patient and actively encourage him/her to eat.



- Offer food the child can take and hold; the young child often wants to feed him/herself. Encourage him/her to, but make sure most of the food goes into his/her mouth.
- Mother/father/caregiver can use her/his fingers (after washing) to feed child.
- Feed the child as soon as he or she starts to show early signs of hunger.
- If your young child refuses to eat, encourage him/her repeatedly; try holding the child in your lap during feeding.
- Engage the child in “play” trying to make the eating session a happy and learning experience—i.e., not just an eating experience.
- The child should eat in his/her usual setting.
- As much as possible, the child should eat with the family support his/her psycho-affective development.
- Help older child eat.
- Do not insist if the child does not want to eat. Do not force feed.
- If the child refuses to eat, wait or put it off until later.
- Do not give child too much drink before or during meals.
- Congratulate the child when he or she eats.
- Parents, family members (older children), child caretakers can participate in active/responsive feeding.

### **3.9. Feeding recommendations for infants 6 up to 9 months of age**

- An 8-month old stomach holds about 200 ml or less than a cup.
- Add colourful (variety) foods to enrich the staple, including beans, peanuts, peas, lentils, or seeds; orange/red fruits and vegetables (such ripe mango, pawpaw, carrots, and pumpkin); dark-green leaves (such as kale, fluted pumpkin leaf/ugu, spinach, and chard); and avocado. Soak beans and legumes before cooking to make them more suitable for feeding children.
- Add animal-source foods: meat, chicken, fish, liver; and eggs and milk and milk products (whenever available).
- Mash and soften the added foods so the baby/child can easily chew and swallow.
- By 8 months, the baby should be able to begin eating finger foods. It is important to give finger foods to children to eat by themselves only after they are able to sit upright.
- Use iodised salt.
- Continue breastfeeding.
- Additional nutritious snacks (such as fruit or bread or bread with nut paste) can be offered once or twice per day, as desired.
- Foods intended to be given to the child should always be stored and prepared in hygienic conditions to avoid contamination, which can cause diarrhoea and other illnesses.

### 3.10. Feeding recommendations for infants 9 up to 12 months of age

- Add colourful (variety) foods to enrich the staple including, beans, peanuts, peas, lentils, or seeds; orange/red fruits and vegetables (such ripe mango, pawpaw, carrots, and pumpkin); dark-green leaves (such as kale, fluted pumpkin leaf/ugu, spinach, and chard); and avocado.
- Add animal-source foods: meat, chicken, fish, liver, eggs, and milk and milk products (whenever available).
- Give at least 1 to 2 snacks each day such as ripe mango, pawpaw and avocado, banana, other fruits and vegetables, fresh and fried bread products, boiled potato, and sweet potato.
- Use iodised salt.
- Continue breastfeeding.
- Foods intended to be given to the child should always be stored and prepared in hygienic conditions to avoid contamination, which can cause diarrhoea and other illnesses.

### 3.11. Feeding recommendations for children 12 up to 24 months of age

- Add colourful (variety) foods to enrich the staple, including beans, peanuts, peas, lentils, or seeds; orange/red fruits and vegetables (such ripe mango, pawpaw, carrots, and pumpkin); dark-green leaves (such as kale, fluted pumpkin leaf/ugu, spinach, and chard); and avocado.
- Add animal-source foods: meat, chicken, fish, liver, eggs, and milk and milk products every day at least in one meal (or, at least 3 times/week).
- Give at least 1 to 2 snacks each day, such as ripe mango, pawpaw, avocado, banana, other fruits and vegetables, bread products, boiled potato, and sweet potato.
- Use iodised salt.
- Continue breastfeeding to 24 months or beyond.
- Foods intended to be given to the child should always be stored and prepared in hygienic conditions to avoid contamination, which can cause diarrhoea and other illnesses.

### 3.12. Role of fathers/men

Fathers/men can actively participate in improving the nutrition of their babies/children in the following ways:

- Encouraging wife/partner to put the baby to the breast immediately after birth.
- Encouraging wife/partner to give the first thick yellowish milk (colostrum) to the baby.
- Talking with his mother (mother-in-law of wife) about feeding plan, beliefs, and customs.
- Making sure the baby exclusively breastfeeds for the first 6 months.
- Providing a variety of food for child over six months. Feeding the child is an excellent way for fathers to interact with their child.
- Helping with the active and responsive feeding of child older than six months, several times a



day (more often and in bigger portions as the child gets bigger).

- Accompanying wife/partner to the health facility when infant/child is sick.
- Accompany wife/partner to the health facility for infant/child's growth monitoring and promotion (GMP) and immunisations.
- Provide bed-nets for his family in epidemic malaria areas and make sure the pregnant wife/partner and small children get to sleep under the net every night.
- Encourage education of his girl children.

### 3.13. Programmatic recommendations

In summary, to break the cycle of malnutrition so that an undernourished baby can become a well-nourished child, programming should focus on the key protective actions that can give VC the strongest nutritional start.

*Prevent growth failure by:*

- Encouraging early initiation of breastfeeding.
- Promoting exclusive breastfeeding 0 up to 6 months.
- Encouraging timely introduction of complementary foods at 6 months with continuation of breastfeeding up to two years or beyond.
- Feeding different food groups at each serving. For example:
  - Animal-source foods: flesh foods such as *chicken, fish, liver, and eggs, milk, and milk products* (Note: animal foods should be started at 6 months).
  - Staples: grains such as *maize, rice, millet, and sorghum* and roots and tubers such as *cassava and potatoes*.
  - Legumes such as *beans, lentils, peas, groundnuts* and seeds such as *sesame*.
- Feeding vitamin A-rich fruits and vegetables such as *mango, pawpaw, passion fruit, oranges, dark-green leaves, carrots, yellow sweet potato, and pumpkin*; and other fruits and vegetables such as *banana, pineapple, watermelon, tomatoes, avocado, eggplant, and cabbage*.
- Providing oils and fats, such as oil seeds, margarine, ghee, and butter added to vegetables and other foods, which improves the absorption of some vitamins and provides extra energy. Infants only need a very small amount (no more than half a teaspoon per day).
- Using iodised salt.
- Feeding sick child frequently for two weeks after recovery.

*Other 'non-feeding' actions:*


- Appropriate hygiene.
- Attending GMP and immunisation sessions.
- Use of insecticide-treated nets.
- De-worming.
- Prevention and treatment of infections.

- Vitamin A supplementation.




**To support optimal complementary feeding and health of children under age 24 months, VC programme implementing partners can:**

- Support mothers to breastfeed on demand during the day and night, even after introducing complementary food.
- Teach mothers to gradually increase food thickness and add variety by including fruits, vegetables, fortified foods, and foods of animal origin to improve the quality of diets as the child gets older. (See Table 3 for specific amounts).
- Discuss the importance of responsive feeding of infants and children, and use recipe demonstrations and other activities as opportunities to model interactive, encouraging feeding practices. It is important to talk to the baby and encourage the baby to eat, but never force-feed.
- Promote hygienic infant feeding practices and sanitation in general by promoting hand-washing at key times before eating/preparing food and after contact with faeces. Additionally, implementers can support water, sanitation, and hygiene activities such as water treatment and sanitation facilities.
- Assure that all VC services are linked with routine child health services, such as regular growth monitoring, immunisations and vitamin A supplementation.

**Table 3. Summary of recommended complementary feeding practices**

Age	Recommendations			
	Frequency (per day)	Amount of food an average child will usually eat at each meal (in addition to breastmilk)	Texture (thickness/consistency)	Variety
Start complementary foods when baby reaches six months 	2 to 3 meals, plus frequent breastfeeds	Start with 2 to 3 tablespoons  Start with 'tastes' and gradually increase amount	Thick porridge/pap	Breastmilk (Breastfeed as often as the child wants)  PLUS Animal foods (local examples)
From 6 up to 9 months	2 to 3 meals plus frequent breastfeeds  1 to 2 snacks may	2 to 3 tablespoonfuls per feed  Increase gradually to half (½) 250 ml cup/bowl	Thick porridge/pap  Mashed/ pureed family	PLUS  Staples (porridge, other




Age	Recommendations			
	be offered		foods	local examples) PLUS Legumes (local examples) PLUS Fruits/ Vegetables (local examples)
From 9 up to 12 months 	3 to 4 meals plus breastfeeds  1 to 2 snacks may be offered	Half ( $\frac{1}{2}$ ) 250 ml cup/bowl	Finely chopped family foods  Finger foods  Sliced foods	
From 12 up to 24 months 	3 to 4 meals plus breastfeeds  1 to 2 snacks may be offered	Three-quarters ( $\frac{3}{4}$ ) to one 250 ml cup/bowl	Sliced foods  Family foods	
<b>Note:</b> If child is less than 24 months and not breastfed	Add 1 to 2 extra meals  1 to 2 snacks may be offered	Same as above according to age group	Same as above according to age group	Same as above; in addition 1 to 2 cups of milk per day  PLUS 2 to 3 cups of extra fluid, especially in hot climates

## Chapter 4. Recommendations for feeding infants and young children in especially difficult circumstances

### 4.1. Low birth-weight (LBW) infants

At least 8 percent of Nigerian infants are born with a birth weight below 2.5 kilograms (DHS, 2008). Major problems of LBW infants include feeding difficulties, inability to maintain body temperature, and increased vulnerability to common childhood infections. Infants that are born before their due date (less than 37 weeks of gestation) and all babies under 1.5 kilograms face the greatest risks and should be referred immediately to health facilities.

Challenge	Key messages
<b>Low birth-weight or premature baby</b> 	<ul style="list-style-type: none"><li>• <b>Local belief:</b> The low birth-weight baby or premature baby is too small and weak to be able to suckle/breastfeed.</li><li>• <b>What we know:</b> A premature baby should be kept in skin-to-skin contact with the mother; this will help to regulate his body temperature and breathing, and keep him in close contact with the breast.</li><li>• A full-term low birth-weight infant may suckle more slowly; allow him/her the time.</li><li>• The breastmilk from the mother of a premature baby is perfectly suited to the age of her baby, and will change as the baby develops (i.e., the breastmilk for a seven-month old newborn is perfectly suited for an infant of that gestational age, with more protein and fat than the milk for a full-term newborn).</li><li>• A mother needs support for good attachment, and help with supportive holds.</li><li>• <b>Feeding pattern:</b> Long slow feeds are acceptable—keep baby at the breast.</li><li>• Direct breastfeeding may not be possible for several weeks, but mothers should be encouraged to express breastmilk and feed the breastmilk to the infant using a cup.</li><li>• If the baby sleeps for long periods of time, and is wrapped up in several layers, open and take off some of the clothes to help waken her/him for the feed.</li><li>• Crying is the last sign of hunger. Earlier signs of hunger include a <b>combination</b> of the following signs: being alert and restless, opening mouth and turning head, putting tongue in and out, and sucking on hand or fist. One sign by itself may not indicate hunger. Therefore, explain that she should respond by feeding the baby when the baby shows these signs.</li></ul>

**Kangaroo mother care**

- Position (baby is naked apart from nappy and cap and is placed in skin-to-skin contact between mother's naked breasts with legs flexed and held in a cloth that supports the baby's whole body up to just under his/her ears and which is tied around the mother's chest). This position:
  - Provides skin-to-skin contact.
  - Provides warmth.
  - Stabilises breathing and heart beat.
  - Positions the baby close to the breast.
  - Helps to stimulate the baby to establish successful breastfeeding through mother's smell, touch, warmth, voice, and taste of the breastmilk.
  - Promotes breastfeeding (early and exclusive breastfeeding by direct expression or expressed breastmilk given by cup).
- Mother and baby are rarely separated

**To assist with the nutritional concerns surrounding babies with LBW, VC programme implementing partners can work with health services to:**



- Ensure that maternity facilities allow skin-to-skin contact between mother and infant immediately after birth (and promote skin-to-skin contact for home births).
- Support "kangaroo mother care" for LBW infants, as described above.
- Encourage all women to breastfeed within half an hour of birth.
- Give mothers of LBW infants extra support to establish proper positioning and attachment during breastfeeding.
- Encourage mothers of LBW infants to practice frequent breastfeeding including night feeds and administration of expressed breastmilk in a clean cup between suckling.
- Support the FMOH protocol of iron supplementation from the age of 3 months for LBW infants.
- Provide extra follow-up of LBW infants through home visits or a tracking system to assure they receive regular growth monitoring and routine immunisations.
- Refer LBW infants for more specialised care if they do not gain weight appropriately.

**4.2. Feeding infants and young children during illness and recovery**

When infants and children are ill, it is common to restrict liquids as some people believe that more liquids will cause additional diarrhoea or vomiting. However, a child who is losing water through diarrhoea or vomiting needs to avoid becoming dehydrated, which can lead to death. Breastmilk has a protective effect during illness as it provides the perfect combination of water, nutrients and antibodies to fight the infection. Additionally, when they are ill, many children will lose their appetite for food, but will still breastfeed well.

The relationship between illness and feeding is as follows:

- A sick child (diarrhoea, acute respiratory infection, measles, fever) usually does not feel like eating.
- However, he or she needs even more strength to fight sickness.
- Strength comes from the food he or she eats.
- If the child does not eat or breastfeed during sickness, he or she will take more time to recover or the child's condition may worsen; he or she might even die.
- The child is more likely to suffer long-term sickness and malnutrition that may result in a physical or intellectual disability.,
- Therefore, it is very important to encourage the sick child to continue to breastfeed or drink fluids and eat during sickness, and to eat even more during recuperation in order to quickly regain strength.

Challenge	Key messages
<b>Sick baby under six months</b> 	<ul style="list-style-type: none"> <li>• <b>Local belief:</b> Fluids should be withheld from the sick baby/baby with diarrhoea.</li> <li>• <b>What we know:</b> A sick child often does not feel like eating, but needs even more strength to fight the illness.</li> <li>• Breastfeed more frequently during diarrhoea to help the baby fight the sickness and not lose weight.</li> <li>• Breastfeeding also provides comfort to a sick baby.</li> <li>• If the baby is too weak to suckle, express breastmilk to give to the baby (either by cup or by expressing directly into the baby's mouth). This will help the mother keep up her milk supply and prevent engorgement.</li> </ul>
<b>Sick baby over six months</b> 	<ul style="list-style-type: none"> <li>• <b>Local belief:</b> Fluids should be withheld from the sick baby/baby with diarrhoea.</li> <li>• Increase breastfeeding during diarrhoea, and continue to offer favourite foods in small quantities.</li> <li>• During recovery, offer more foods than usual (an additional meal of solid food each day) during recuperation (for the next two weeks) to replenish the energy and nutrients lost during illness.</li> <li>• Offer the young child simple foods like porridge, even if s/he does not express interest in eating.</li> <li>• Avoid spicy or fatty foods.</li> <li>• Breastfeed more frequently during two weeks after recovery.</li> <li>• Animal milks and other fluids may increase diarrhoea (the origin of the belief that milk brings about diarrhoea). However, this is not true</li> </ul>

Challenge	Key messages
	of breastmilk. Stop giving other milks or fluids, even water (except oral rehydration salts—ORS—if child is severely dehydrated).

**VC programme implementing partners can support the key messages above by:**

- Assuring that educational materials and activities promote continued drinking/feeding during illness and afterwards to support catch-up growth.

### **4.3. Feeding motherless or adopted infants and young children**

These groups of VC may have lost their mothers from pregnancy or delivery related problems, severe illnesses, abandonment, accidents, or disasters. In addition to adequate nutrition, in order to survive, these infants require psychosocial care from warm and attentive caregivers. The following recommendations are adapted from the National Guidelines on Infant and Young Child Feeding. If at all possible, the guidelines support an HIV-negative foster mother or caregiver to re-lactate. It is essential for the breastfeeding caregiver to take precautions to remain HIV negative. If the infant cannot be breastfed, support should be provided to feed infants a breastmilk substitute, i.e., commercial infant formula.

For motherless infants aged 6 months and above, it is appropriate to follow the age-specific recommendations for healthy infants and young children. However, without breastmilk in the diet, infants and children 6 to 24 months of age will require additional energy and nutrient-rich foods (preferably from animal milks).

Specifically, non-breastfed children require:

- 1–2 extra meals per day
- 1–2 snacks per day
- 1–2 cups of milk per day
- 2–3 cups of extra fluid (particularly in hot climates)
- Animal foods, such as meat, poultry, fish, and eggs daily (or as often as possible).
- A source of fat (such as oil; or fat-rich foods, such as animal foods, groundnuts, or avocado).
- Fortified foods or vitamin supplements containing iron.

**VC programme implementing partners can support adopted or motherless VC through:**

- Prioritising youngest VC and their caregivers for nutritional support, preferably to establish re-lactation by an HIV-negative caregiver.
- Targeting caregivers of youngest VC for interventions which support food security and income generation, along with nutrition education.
- Providing targeted food supplements (such as fortified foods) to youngest VC who are not able to breastfeed.
- Promoting regular growth monitoring, immunisation, and all health services for youngest VC.

## Chapter 5. Issues of nutritional care and support related to HIV

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### 5.1. Nutritional care and support for HIV-positive pregnant and lactating women

Pregnant and lactating women who are HIV infected are particularly vulnerable to undernutrition because they require extra calories, as well as specific nutrients. In addition to the energy requirements due to pregnancy and breastfeeding, a woman who is HIV infected requires 25 percent more calories. For women with opportunistic infections related to AIDS (i.e., not just having the HIV virus), the nutritional requirements are even greater and will depend on the specific illnesses she is experiencing. Vulnerable children programme implementing partners can provide nutritional support, in collaboration with antiretroviral (ARV)/HIV health services, which must monitor her care.

Steps to assess the woman's nutritional and health status include the following:

- Checking the woman's weight and record the weight on her card, if available.
- Assessing how many meals a pregnant woman is eating each day and the diversity of her diet.
- Using a list of locally available and affordable foods to show how much extra food she needs to eat and how to vary her diet.
- Asking the woman whether she is experiencing any symptoms that affect eating. (HIV-related symptoms include nausea, vomiting, diarrhoea, constipation, mouth sores, and heartburn).
- Finding out whether the woman is aware of and practicing good hygiene and food safety.
- Asking whether she is taking any medications, including multivitamin supplements and ARVs.
- Finding out whether she is experiencing symptoms from the medications that make it difficult for her to eat.
- Checking whether the woman is taking, has taken, or has been given iron folic acid tablets, antimalarial drugs, or antihelminthic drugs for hookworm management.
- Finding out what the woman has heard about HIV transmission to her baby.
- Finding out where the mother intends to deliver her baby.

**To support the nutritional status of HIV-infected pregnant and lactating women, VC programme implementing partners can support the following services:**

- Assess the woman's nutrition and health status (with the steps detailed above).
- Refer the woman to a prevention of mother-to-child transmission (PMTCT) clinic. Inform her about ARV prophylaxis during pregnancy and delivery to prevent transmission of HIV to her baby. If she is not taking ARVs, provide information on where to get ARVs.

- Refer her to an ANC clinic or other health centre for iron folic acid tablets, antimalarials (in a malaria-endemic area) or de-worming medications.
- Counsel her on adherence to any medications she is taking and on their safety and side effects (or refer her to other services).
- Counsel on the need to eat a variety of foods from each of the food groups to ensure adequate weight gain
- Praise and reaffirm her good eating habits and behaviours.
- Counsel her on managing the HIV-related symptoms and any other feeding and appetite problems during pregnancy.
- Counsel on good hygiene and food safety.
- Encourage pregnant/lactating women to use iodised salt in food preparation
- Advise her to seek prompt medical attention for any infections and seek immediate medical attention if symptoms get worse.
- Make sure she knows how to negotiate safe sex to avoid HIV re-infection, which increases the risk of mother-to-child transmission of HIV.
- Encourage her to deliver at an ANC clinic or hospital and talk to her about any fears she may have about hospital or ANC delivery.
- Advise her to try to get extra rest.

## **5.2. Recommendations on HIV and infant feeding**

In 2010, the World Health Organization released updated guidelines on HIV and infant feeding, which focused on helping countries avoid both HIV transmission to infants and other causes of child mortality due to not breastfeeding (such as diarrhea, pneumonia, and malnutrition). WHO looked at global studies which show that when HIV-positive women or their infants take ARVs, the risk of HIV transmission from breastfeeding is extremely low—below 3 percent. WHO determined that for many countries it is much safer for HIV-positive women to breastfeed their babies rather than give infant formula.

Now, WHO recommends that each country decide which infant feeding strategy it will promote to give infants the greatest chance of HIV-free survival; either (1) breastfeed and receive ARV interventions, or (2) avoid all breastfeeding. When selecting a national strategy, countries must consider socioeconomic and cultural factors, availability and quality of health services, local epidemiology, and the main causes of undernutrition and infant and child mortality.

After reviewing the research HIV and infant feeding, Nigeria held a national consultative meeting and reached a consensus on the following points:

- The goal of all PMTCT interventions in Nigeria is HIV-free survival, which focuses on both prevention of HIV transmission and child survival.
- All mothers, including HIV-infected mothers, should exclusively breastfeed their infants for the first six months of life and introduce complementary foods at 6 months of age.

However, HIV-infected mothers should breastfeed until 12 months, while mothers who are HIV-negative should continue breastfeeding for up to 2 years and beyond.

- Improved complementary feeding of all infants, especially those born to HIV-infected mothers, should be promoted and supported.
- The FMOH will continue to provide ARV interventions to reduce the risk of HIV transmission through breastfeeding, and strongly recommends that all mothers, including those known to be HIV infected, breastfeed their infants.
- HIV-infected mothers should be assessed to determine if they need lifelong antiretroviral therapy (ART), according to national recommendations, and if so, should start as early as possible after HIV diagnosis.
- If HIV-infected mothers do not require ART for their own health, ARVs should be started to reduce the risk of HIV transmission, and provided until one week after the end of all breastfeeding.

Nigeria's protocols for HIV-infected mothers are the following:

***A) HIV-infected woman in need of ART for her own health***

**Mother:** Start antiretroviral therapy irrespective of the gestational age and continue throughout pregnancy, labour, delivery and thereafter.

**Baby:** Daily nevirapine for six weeks only. Exclusive breastfeeding for the first 6 months of life. Introduce complementary foods thereafter and continue breastfeeding for the first 12 months of life.

***B) HIV-infected woman who does not need ART for her own health***

1st option: Centres with capacity for HAART

**Mother:** Start HAART prophylaxis from 14 weeks gestation or as soon as possible after presentation to ANC /HIV diagnosis and continue till one week after cessation of breastfeeding.

**Baby:** Daily nevirapine for the first 6 weeks of life only.

2nd option: Centres without capacity for HAART

**Mother:** Start daily AZT from 14 weeks gestation or as soon as possible after presentation to ANC /HIV diagnosis, single dose Nevirapine at onset of labour, AZT + lamivudine during labour, delivery and for seven days after delivery.

**Baby:** Daily nevirapine from birth until one week after cessation of breastfeeding. Breastfeed exclusively for the first 6 months, introducing complementary foods thereafter and continue breastfeeding up to 12 months of age.

***C) HIV-positive pregnant woman detected for the first time in labour***

**Mother:** Evaluated for HAART eligibility and started on treatment accordingly.

**Baby:** Daily nevirapine until one week after cessation of breastfeeding.

***D) HIV positive mother who is tuberculosis co-infected***

**Mother:** Start anti-tuberculosis first.

Evaluate and start ARV from 14 weeks gestation or as soon as possible after commencement of anti-tuberculosis.

**Baby:** INH prophylaxis for the first six months of life. Daily nevirapine for the first six weeks of life.



### **5.3. Optimal feeding practices for HIV-positive mothers**

As described above, exclusive breastfeeding by HIV-infected mother results in significant survival and economic benefits, while formula feeding is associated with increased infant mortality from malnutrition, diarrhoea, and pneumonia. Despite this, in Nigeria, a large number of HIV-infected women practice mixed feeding (giving both infant formula and breastmilk), which has been proven to significantly increase the risk of HIV transmission to the baby.

#### **5.3.1. Risks of mixed feeding**

The risks of mixed feeding (i.e., giving both breastmilk and other foods/fluids in the first six months of life) are as follows:

- Much more likely to be infected with HIV than exclusively breastfed babies, because their guts are damaged by the other liquids and foods and thus allow the HIV virus to enter more easily.
- Have a higher risk of death.
- Are ill more often and more seriously, especially with diarrhoea: due to contaminated milk and water.
- More likely to get malnourished: gruel has little nutritional value, formula is often diluted, and both displace the more nutritious breastmilk.
- Get less breastmilk because they suckle less and then the mother makes less milk.

#### **5.3.2. When HIV-positive mothers stop breastfeeding**

Mothers known to be HIV infected who decide to stop breastfeeding at any time should stop gradually within one month. Stopping breastfeeding abruptly is not advisable. Mothers or infants who have been receiving ARV prophylaxis should continue prophylaxis for one week after breastfeeding is fully stopped. However, if the mother is receiving antiretroviral treatment for her own health, she should continue prophylaxis.

### **5.4. What to feed infants when mothers stop breastfeeding**

Infants face high risks to their health and nutrition when they are not breastfed. The younger the infant is, the greater these risks.

For the infant, the risks include the following:

- Greater risk of death (a non-breastfed baby is 14 times more likely to die than an exclusively breastfed baby in the first 6 months).
- Formula has no antibodies to protect against illness; the mother's body makes breastmilk with antibodies that protect from the specific illnesses in the mother/child environment.
- Do not receive their "first immunisation" from the colostrum.
- Struggle to digest formula: it is not at all the perfect food for babies.
- Frequent diarrhoea, ill more often and more seriously (mixed-fed infants less than 6 months who receive contaminated water, formula, and foods are at higher risk).
- Frequent respiratory infections.
- Greater risk of undernutrition, especially for younger infants.
- More likely to get malnourished: family may not be able to afford enough formula.

- Underdevelopment: retarded growth, underweight, stunting, and wasting due to higher incidence of infectious diseases such as diarrhoea and pneumonia.
- Poorer bonding between mother and infant.
- Lower scores on intelligence tests and lower ability to learn at school.
- Greater likelihood of being overweight.
- Greater risk of heart disease, diabetes, cancer, asthma, dental decay etc. later in life.

For the mother, the risks include the following:

- Mother may become pregnant sooner.
- Increased risk of anaemia if breastfeeding is not initiated early (more bleeding after childbirth).
- Interferes with bonding with the child.
- Increased risk of postpartum depression.
- Ovarian cancer and breast cancer occurrence are higher.

When mothers known to be HIV infected decide to stop breastfeeding at any time, infants and young children need feeding support to ensure their normal growth and development.

**For feeding infants younger than 6 months of age, VC programme implementing partners should note:**

- Use expressed, heat-treated breastmilk (see Section 5.6).
- Note: Home-modified animal milk is **not** recommended as a replacement food in the first 6 months of life.

**For feeding non-breastfed children from 6 months up to 24 months of age, VC programme implementing partners should note:**

- At about 6 months, an infant is better able to tolerate undiluted animal milk and a variety of semi-solid foods.
- Add 1–2 extra meals and, depending on the child's appetite, offer 1–2 snacks.
- Add 1–2 cups of milk per day.
- Add about 2 cups/day of extra fluids (in addition to the 1–3 cups/day of water that is estimated to come from milk and other foods in a temperate climate, and 3–4 cups/day in a hot climate).
- Mother or caregiver needs to feed infant with animal foods (meat, poultry, fish, eggs, or milk products), additional meals and/or specially formulated fortified foods where suitable breastmilk substitutes are not available.
- Calcium-rich foods such as pawpaw, orange juice, guava, green leafy vegetables, and pumpkin should be consumed daily.
- Infants not fed milk should be offered plain, clean, boiled water several times a day to satisfy thirst.
- For non-breastfed infants 6 up to 12 months old, substitute milks provide many essential nutrients and satisfy most liquid requirements. If milk and other animal-source foods are not eaten in adequate amounts, both grains and legumes should be consumed daily, if possible within the same meal, to ensure adequate protein quality. Where neither breastmilk substitutes nor animal milk or animal foods are available, nutrient requirements cannot be met unless specially formulated fortified foods (kwash pap/Tom

Brown, ACTION Meal, etc.) or nutrient supplements (e.g., vitamin A, Combined Mineral and Vitamin mix [CMV], etc.) are added to the diet. In case of severe acute malnutrition, ready-to-use therapeutic foods (RUTFs) may also be used to supplement children's diets.

**When HIV-infected mother is breastfeeding, how should she feed her child from 6 up to 24 months of age?**

- Once an infant reaches 6 months of age, the mother should continue to breastfeed (along with ARVs for mother and child) up to 12 months, but then should stop breastfeeding when a nutritionally adequate diet without breastmilk can be provided.
- Same recommended complementary feeding practices that apply for HIV-negative mother and mother of unknown status apply in case of mothers who are HIV positive.

**5.5. HIV-infected women with breast problems**

An HIV-infected mother with cracked nipples, mastitis (inflammation of the breast), abscess, or thrush/Candida (yeast infection of the nipple and breast) has increased risk of transmitting HIV to her baby and so should do the following:

- Stop breastfeeding from the infected breast and seek prompt treatment.
- Continue breastfeeding on demand from uninfected breast.
- Express breastmilk from the infected breast(s) and either discard it or heat-treat it before feeding to baby.
- In case of thrush, no breastfeeding from either breast; heat-treat expressed breastmilk; treat both mother and infant.

**5.6. Heat-treated, expressed breastmilk**

HIV-infected mothers may consider expressing and heat-treating breastmilk as an interim feeding strategy in the following scenarios:

- In special circumstances such as when the infant is born with low birth-weight or is otherwise ill.
- In the neonatal period when unable to breastfeed.
- When the mother is unwell and temporarily unable to breastfeed or has a temporary breast health problem such as mastitis.
- To assist mothers to stop breastfeeding.
- If ARV drugs are temporarily not available.

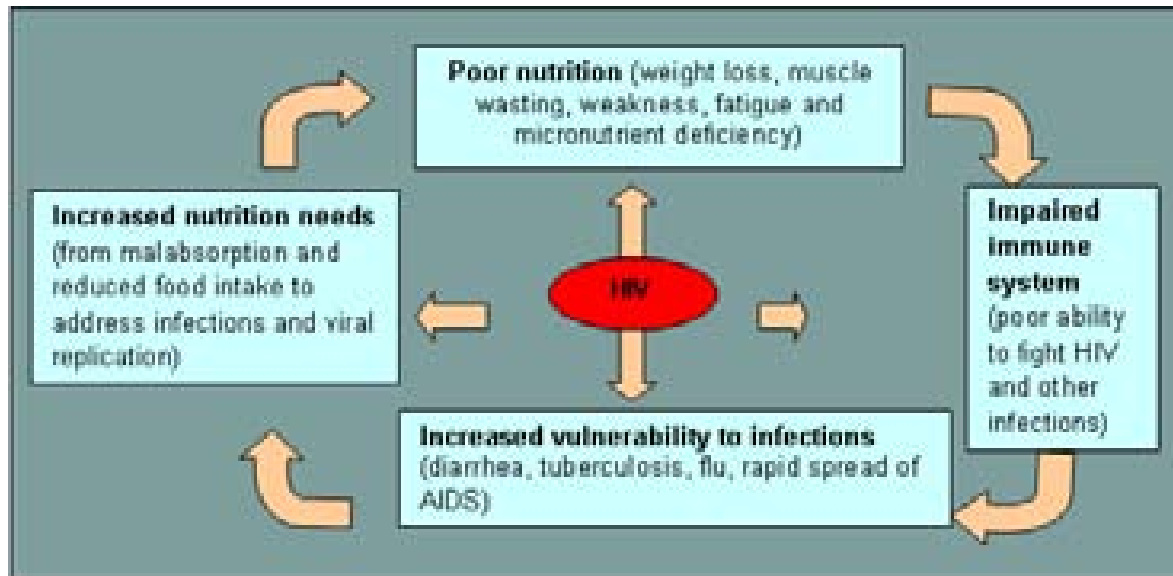
**5.7. HIV counselling and testing of the infant**

- Allows for early diagnosis of an HIV-infected child
- An HIV-infected child can then be treated early with ARVs, which improves chances of survival.
- An HIV-infected child should be breastfed to two years or beyond and can be breastfed with confidence, as this helps protect the child from malnutrition and illness like diarrhoea.
- If the child is HIV negative, the mother continues to implement the feeding practice she has chosen to give the best chance of HIV-free survival and reduce death and sickness.

## 5.8. Breastfeeding the infant or child who is HIV infected

If infants and young children are known to be HIV infected, mothers are strongly encouraged to exclusively breastfeed for the first 6 months of life and continue breastfeeding up to two years or beyond.

## 5.9. Relationship between nutrition and HIV/AIDS



**Figure 2. HIV/AIDS and malnutrition: A vicious circle.**

From: Cycle of malnutrition and infection in the context of HIV/AIDS (Food and Nutrition Technical Assistance Project, 2002)

The relationship between nutrition and HIV/AIDS can be seen in three main areas:

- HIV/AIDS and malnutrition have a relationship that creates a vicious cycle that weakens the immune system.
- Persons with HIV/AIDS are at increased risk of malnutrition through various mechanisms, some of which are not related to food intake.
- Poor nutrition increases susceptibility to opportunistic infections and may accelerate the progression of the disease.

## 5.10. Effect of HIV/AIDS on nutrition of people living with HIV (PLHIV)

### Figure 3. Effect of HIV/AIDS on nutrition of people living with HIV

Source: Lwanga and Piwoz 2003

#### **HIV/AIDS increases nutritional needs**

In order to fight infections, the immune system requires more energy and nutrients. When HIV/AIDS weakens the immune system, other infections start to arise, and fighting them also raises the need for nutrients and energy. Worry and high anxiety about the disease further weakens the immune system, leading to more need for nutrients to boost the immune system.

#### **HIV/AIDS lowers food intake**

Infections and illness lead to poor appetite, which leads to reduction in food intake. Mouth and throat infections are common in HIV/AIDS and this can cause difficulties with eating. Some medicines cause a poor sense of taste as a side effect, which may lower food intake. Depression, fear, and anxiety contribute to the loss of appetite, while isolation of people with HIV/AIDS due to social discrimination may lead to loneliness, which may affect the way a person eats. In late stages of the disease, people with HIV/AIDS may find it difficult to take care of themselves and this may lead to reduced food intake.

#### **HIV/AIDS causes digestive problems**

The lining of the intestine deteriorates due to HIV and other infections and this affects the ability of the gut to digest and absorb food. The inability of the intestines to take up nutrients from foods is called malabsorption. The result of malabsorption is diarrhoea, leading to loss of water and nutrients.

## 5.11. Weight loss and wasting in HIV/AIDS

Weight loss normally follows one of two patterns in PLHIV. There may be a slow and progressive weight loss from anorexia and gastrointestinal disturbances, or a rapid, episodic weight loss from secondary infections (even relatively small losses in weight of about 5 percent have been associated with decreased survival—and are therefore important to monitor). Wasting

syndrome typically found in adult AIDS patients is a severe nutritional manifestation of the disease. Wasting is usually preceded by decrease in appetite, repeated infections, and weight fluctuations.

There may also be slight changes in body composition, e.g., changes in lean body mass and body cell mass, which are more difficult to measure than weight alone.

### **5.12. Effect of good nutrition for PLHIV**

Nutritional care promotes well-being, self-esteem, and a positive attitude to life for people with HIV/AIDS in various ways. Good nutrition prevents malnutrition and wasting by maintaining body weight and strength. It improves the function of the immune system and the body's ability to fight infections. Good nutrition replaces lost vitamins and minerals and may help delay the progression of the disease. It also improves the response to treatment, reducing time and money spent on health care. It keeps HIV-infected people productive, able to work, grow food, and contribute to family income as well as improving the quality of life.

HIV-positive infants and children have special nutritional challenges, including poor growth or growth faltering, feeding difficulties, frequent opportunistic infections, and moderate or severe undernutrition.

**Vulnerable children programme implementing partners can meet the needs of HIV-positive infant and young children by prioritising them for nutritional services and food support, including the following:**

#### **Poor growth or growth faltering**

- Promoting continued breastfeeding up to 24 months and beyond.
- Weighing the child regularly to assess growth, identify slow growth, and promote optimal infant and child feeding practices.
- Counselling caregivers to give HIV-positive children at least one additional meal or snack every day as HIV-positive children need more energy than uninfected children of the same age and sex.

#### **Feeding difficulties**

- Assessing child feeding on every contact.
- Referring the caregiver to medical treatment for any health issues that affect the child's eating (e.g., difficulty chewing, swallowing, or suckling; dental problems; loss of appetite; vomiting).
- Counselling caregiver to modify food as needed for sick children (making it soft and palatable, making it more nutrient-dense).
- Counselling caregiver to use encouragement to feed a sick child, and feed more frequently.

#### **Frequent opportunistic infections**

- HIV-positive children are at risk of infections like diarrhoea from poor hygiene and sanitation.
- Children who take medications may suffer side effects such as loss of appetite and altered taste.

- Referring children with oral thrush or mouth sores, pneumonia, or tuberculosis to a health worker.
- Counselling caregivers to make sure sick children continue to take their medicines, with clean, safe water.

**Moderate or severe undernutrition**

- Severely undernourished HIV-positive children need clinical rehabilitation with special food (i.e., RUTFs). These children often take longer to rehabilitate than uninfected severely undernourished children.
- HIV-positive children need energy-dense foods fortified with micronutrients after they are rehabilitated.
- HIV-positive children with severe or moderate undernutrition should be followed up at least every two weeks for the first two months and after that every month for at least one year.

## Chapter 6. Nutritional care of older vulnerable children<sup>2</sup>

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### 6.1. Nutrition of children 2–9 years old

In Nigeria, VC programme implementing partners observe that undernourished VC children are at heightened risk to become undernourished teens and adults. In order to break the cycle so that an undernourished child can become a well-nourished teen, VC programme implementing partners can intervene in important ways.

Children 2–9 years old have distinct nutritional needs. Although the rapid growth rate experienced in the first 2 years of life slows down, the body continues to increase steadily in size. Appetite declines, and protein, mineral, and vitamin requirements increase.

### 6.2 Feeding recommendations for children 24 to <60 months of age

- Add colourful (variety) foods to enrich the staple, including beans, peanuts, peas, lentils, or seeds; orange/red fruits and vegetables (such as ripe mango, pawpaw, carrots, and pumpkin); dark-green leaves (such as kale, fluted pumpkin leaf/ugu, spinach, and chard); and avocado.
- Add animal-source foods: meat, chicken, fish, liver, eggs, milk, and milk products every day at least in one meal (or at least 3 times per week).
- Give at least 1 to 2 snacks each day, such as ripe mango and pawpaw, avocado, banana, other fruits and vegetables, bread products, boiled potato, and sweet potato.
- Use iodised salt.
- Continue breastfeeding if desired.
- Foods intended to be given to the child should always be stored and prepared in hygienic conditions to avoid contamination, which can cause diarrhoea and other illnesses.



### Vulnerable children programme implementing partners can promote appropriate growth of children by:

- Encouraging those who care for VC to provide different types of low-cost, high nutrient density, locally available foods.
- Helping VC to prevent infections and seek early treatment for infections (such as malaria, hookworm, and diarrhoea).
- Encouraging parents to give girls and boys equal access to education—undernutrition decreases when girls/women receive more education.

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<sup>2</sup> Chapter 6 content was adapted from: The East, Central, and Southern African Health Community (ECSA-HC), Food and Nutrition, Technical Assistance Project (FANTA), and LINKAGES Project. *Nutrition and HIV/AIDS: A Training Manual for Nurses and Midwives*. Arusha, Tanzania: ECSA-HC; 2008.



- Encouraging good hygiene practices, supporting the construction of water and sanitation facilities, and promoting their use.
- Encouraging use of Long Lasting Insecticide-treated Nets.

### 6.3. Adolescent nutrition

Adolescence is an important period during which major biological, social, physiological, and cognitive changes take place. Adolescents have special nutritional needs due to rapid growth (lean body mass, fat mass, and bone mineralisation) and maturational changes associated with the onset of puberty. For girls, puberty typically occurs between ages 12 and 13, whereas for boys it occurs between ages 14 and 15. It is one of the fastest growth periods of a person's life. During this time, physical changes affect the body's nutritional needs, and changes in one's lifestyle may affect eating habits and food choices. Nutritional health during adolescence is important for supporting the growing body and for preventing future health problems.



Nutritional needs of adolescents are higher than those of children because of growth spurts, sexual maturation, changes in body composition, skeletal mineralization, and changes in physical activity. Physical activity is not necessarily increased, but total energy needs are increased due to larger body size. Nutrient needs are increased for calories, protein, calcium, iron, and zinc. While all adolescents have high nutritional needs, adolescent VC are at increased risk of not meeting their nutritional requirements. In addition, increased nutritional requirements occur with pregnancy (which affects 25 percent of Nigerian girls under 20 years), chronic diseases (such as HIV and tuberculosis), and rigorous physical activity (such as that required by many VC who are working to support themselves and their families).

- **Energy:** Peak energy requirements occur in girls at 11 to 14 years of age and in boys at 15 to 18 years, corresponding to the increased needs of puberty.
- **Protein:** Adolescent girls 11 to 14 years of age and boys 15 to 18 have the highest requirements. Adolescent VC at highest risk for protein deficiency are those who are pregnant, have chronic diseases (such as HIV and tuberculosis), and who come from extremely food insecure homes.
- **Calcium:** As calcium is essential for development of strong and dense bones during the spurt of adolescent growth, teens are encouraged to consume three to four servings of calcium-rich foods each day. Good sources include milk, yogurt, green vegetables, soko, etc.
- **Iron:** Due to increases in blood volume and muscle mass, iron needs are high during adolescence. Adolescent girls' iron needs are further increased by menstrual losses. A deficiency of iron causes anaemia, which leads to fatigue, confusion, and weakness. Adolescent boys need 12 milligrams of iron each day, while girls need 15 milligrams. Good sources of iron include beef, chicken, pork, legumes (including beans and peanuts), enriched or whole grains, and leafy green vegetables such as spinach.

**Vulnerable children programme implementing partners can promote appropriate growth of adolescents by:**

- Providing nutrition education to VC and those who care for them to provide different types of low-cost, high nutrient density, locally available foods.
- Helping VC to prevent infections and seek early treatment for infections (such as malaria, hookworm, and diarrhoea).
- Educating adolescents about the lowest-cost, highest protein options for available foods, such as legumes, beans, groundnuts, and lower-cost animal foods.
- Encouraging parents to keep adolescents in school (particularly girls).
- Encouraging good hygiene practices, supporting the construction of water and sanitation facilities, and promoting their use.
- Encouraging use of Long Lasting Insecticide-treated Nets.
- Encouraging families to delay marriage for girls; in some settings, it may be more politically acceptable to use the wording ‘delay pregnancy’ than ‘delay marriage.’
- Assure that family planning services are available and accessible to VC adolescents who need them.



**6.4. Support for pregnant adolescents**

When a teenager becomes pregnant, she needs enough nutrients to support both her baby and her own continued growth and physical development. If her nutritional needs are not met, her baby may be born with low birth weight or other health problems. Adolescent pregnancy is associated with higher rates of illness and death for both the mother and infant. Teenage girls are not only less ready emotionally than older women to have a baby; they are less ready physically to have healthy babies. Pregnant teens are at much higher risk of having serious medical complications. For the best outcome, pregnant teens need to seek prenatal care and nutrition advice early in their pregnancy.

**Vulnerable children programme implementing partners can support pregnant adolescents’ special needs by:**

- Prioritising adolescents at highest nutritional risk (such as pregnant adolescents) for supplemental food, income-generating activities, nutrition education, or other targeted activities.
- Prioritising pregnant VC for nutritional education, community follow-up, food supplements, and other support services to break the cycle of risk for her and her baby.
- Particularly prioritising and following up on the nutritional status, well-being of pregnant VC to be sure that they are reached by PMTCT services.

- Providing pregnant VC with extra nutritional support to meet the extra nutritional needs of pregnancy, if food supplementation is available.

## **6.5. HIV in children 2–9 years old**

Most children 2–9 years old who are infected with HIV were infected during pregnancy, labour and delivery, through breastfeeding, contaminated needles or blood, and sexual abuse.

HIV infection affects the nutritional needs of children. Undernutrition tends to increase in HIV-infected children, even more so in resource-limited settings where undernutrition is already an endemic problem. Moreover, the effects of undernutrition in the HIV-infected child are further compounded by repeated infections.

HIV-infected children have more frequent common childhood infections such as ear infections and pneumonia than non-infected children. Other common infections include gastroenteritis and tuberculosis. Diarrhea and fever are usually more persistent and severe in children with HIV. In addition to the opportunistic infections, such children also experience developmental delays.

Routine diagnosis for paediatric AIDS is not done in many developing countries. This poses a problem because early diagnosis of HIV can help provide effective intervention to reduce morbidity and mortality. The World Health Organization therefore has provided some clinical signs and symptoms that can be used to make HIV diagnosis. However, these signs and symptoms also overlap with those of other common childhood diseases. Nonetheless, the presence of these clinical signs and conditions may indicate HIV infection in a child and thus serve to alert the health worker to obtain further history on the child such as the mother's health status and laboratory tests (where available). The most common signs and symptoms found in HIV-infected children according to the World Health Organization include the following:

- Weight loss
- Chronic diarrhoea
- Failure to thrive
- Oral thrush
- Fever

### **6.5.1. Purpose of nutrition care for children 2–9 years old in the context of HIV**

Because of the many complications experienced by the HIV-infected child, nutritional care and support should be an integral component of treatment. Early nutrition intervention can help delay HIV disease progression or death in the HIV-positive child.

Nutrition interventions for HIV-infected children should have the following objectives:

- Maintain and promote healthy weight, normal growth, and development.
- Preserve lean body mass.
- Prevent malnutrition and its effects on immunity.
- Provide adequate energy and nutrients.
- Minimise effects of gastrointestinal symptoms like diarrhoea and vomiting.
- Prevent food and waterborne illness by promoting hygiene and food and water safety.
- Enhance response to therapy.
- Reduce morbidity and mortality.

Ongoing nutrition monitoring and subsequent interventions are necessary for all children with HIV, starting from the asymptomatic phase to AIDS. The earlier the monitoring, the better; as growth may be impaired even before the onset of symptomatic HIV disease.

## Chapter 7. Community-based programmes to optimise nutrition of vulnerable children

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As described in Chapter 2, there are immediate and underlying causes of malnutrition among children. Vulnerable children are even more susceptible to these causes than children in the general population and face additional risks related to the impact of HIV/AIDS on families and communities. In addition to the causes of malnutrition children may experience psychosocial distress (confusion, guilt, grief, anger) over family members' illness or death. Healthy emotional development—based on close attachments with caregivers during the first few years of life—may be disrupted if attachment figures die or are otherwise unavailable to form close bonds with young children. HIV-positive children frequently experience motor and/or cognitive delays, which in turn can affect their ability to play and learn, as well as to access an adequate and healthy diet.

Experience in Nigeria has shown that promoting improved nutrition, care, and hygiene/sanitation behaviours, and mobilising support for those behaviours in families and communities, can improve the nutritional status of VC, even in very poor areas. This chapter highlights a few effective community-based behaviour change programmes that can be integrated into VC programmes, and closes with a summary of interventions that can be linked to or implemented when there is not enough food available in the programme area (food-insecure areas).

### 7.1 Community-based growth monitoring and promotion (CBGMP)

Growth monitoring means keeping track of changes in weight for age (sometimes also weight for height and/or height for age) for an individual. Growth monitoring involves monthly weighing and charting of the growth of children from birth until 2 years old. Growth promotion includes growth monitoring of children (weighing and charting), but goes beyond that to identifying growth problems (in partnership with the mother or caregiver), formulating actions in response to problems, and following up on the effects of agreed-upon interventions, using a counselling approach.

Community-based growth monitoring and promotion (CBGMP) is a way for communities to take responsibility for all of the community's children to grow well. The promoters, families, and community must be involved in providing the necessary care required for a child to grow healthy and fit. Those to be involved in CBGMP are:

- The family/households.
- The promoters or community volunteers.
- Community-based organisations, faith based organisations, and nongovernmental organisations.
- Traditional leaders.
- Local authorities.

A successful and effective growth monitoring programme must be conceived and implemented as a communication strategy for behavioural change that promotes, pre-empts, and community-based. It should promote linkages with other child needs and health- and agriculture-related services. Only growth monitoring programmes that are linked with adequate nutrition

counselling and referrals can directly contribute to reduction of undernutrition in children. Growth monitoring without *action* has no value as a growth promotion endeavour. Critical actions that must be taken based on weighing and charting include nutrition counselling and negotiation, referrals, and follow-ups.

**Vulnerable children programme implementing partners can support CBGMP through the following:**

*Step 1: Establishment of the CBGMP involves:*

- Planning.
- Identifying the leaders of the community.
- Presenting the programme to the community.
- Identifying the promoters/community volunteers.
- Training volunteers (training content should focus on the *National Guidelines on Infant and Young Child Feeding*).
- Conducting baseline assessment.
- Presenting baseline result to the community.

*Step 2: Weighing and growth charting*

- As much as possible, monitoring of weight for the individual child should begin at birth and be done frequently (monthly) for the first 24 months.
- A growth chart should be used to record the child's growth progress and to make his or her growth status visible to the child's caregiver.
- The child's caregiver should be involved in the process of monitoring.
- Universal coverage should be the goal.

Weighing and charting takes place once every month in a centre that is easily accessible to all mothers. Standardised instruments are used and monthly weighing can be accompanied by food demonstration. The weights of children are charted on child's growth card with the chart interpreted and explained to the mother/caregiver. The mother/caregiver is counselled where necessary using appropriate counselling card.

*Step 3: Counselling*

Although trainers or supervisors will not need to be experts in nutrition to train the promoters on growth monitoring and promotion, they will, however, need to have a certain amount of knowledge specifically related to the nutritional needs of young children. The *Nigerian Community Infant and Young Child Feeding Counselling Package* contains the basic nutritional information that the promoters will use in their work.

- Adequate growth (weight gain), rather than nutrition status, should be the indicator for action, by itself or combined with other easily obtained information on the child's condition.
- An analysis of the causes of inadequate growth is required and should lead to clear and feasible options for action.
- Negotiation should take place with families, guided by tailored recommendations for what they will do to improve their children's growth.

#### *Step 4: Follow-up and referral*

- Scheduling next weighing; checking understanding of action to be taken; referring to health facility for medical care; referring to community programmes such as income generation, household gardens, or available Hearth programmes. If a child is severely acutely malnourished, refer the child to the nearest health facility or Community-Based Management of Acute Malnutrition (CMAM) programme for management. The nature of actions and referrals depends on programme objectives, resources availability of other complementary services, and what level of integration exists across the various programmes.
- There should be a referral system in place to follow up on children who do not return for monthly weighing, as these are often the children most vulnerable to malnutrition. Simple neighbourhood registers maintained by volunteers can help with this.

## **7.2 Positive Deviance/Hearth nutrition programme**

The Positive Deviance (PD)/Hearth nutrition programme is a community-based programme designed to prevent malnutrition in children, rehabilitate moderately malnourished or growth faltering children, and sustain these children's improved nutritional status. The PD/Hearth model has a three-dimensional approach:

- Rehabilitate malnourished children.
- Teach families how to sustain their children's enhanced nutritional status.
- Dramatically reduce malnutrition among children born in the community in the future.

The PD/Hearth approach also helps to achieve the following benefits:

- Raises community awareness of malnutrition.
- Empowers the community to seek existing local solutions.
- Teaches families healthy behaviours in hands-on demonstrations.

Through PD/Hearth, practices currently being carried out in the community by poor families with well-nourished children are identified. These are called "positive deviant practices." Growth faltering or moderately malnourished children less than two (or five) years of age are usually identified during the course of CBGMP and their caregivers are invited to a Hearth session. During the Hearth intervention, every child gets a nutrient-dense meal, prepared together with caregivers based on the positive deviant practices identified at that time in that community. More general nutrition, caring, and hygiene/sanitation skills and knowledge are also taught and modelled in the Hearth session. Children who participate in Hearth are followed up for six months after the Hearth session. If they become malnourished again, they are re-invited to participate in Hearth, as well as linked to complementary programmes where they exist.

### **7.2.1 Steps in the Positive Deviance/Hearth programme**

During a positive deviance inquiry (PDI), volunteers do a home observation with poor families (as defined by the community) who have well-nourished children. There are three basic categories of behaviours that are observed during the observation:

- **Food behaviours:** a particularly nutritious food, food frequency, amounts.
- **Caring behaviours:** family member and caregiver interaction, hygiene, stimulation.
- **Health-promoting behaviours:** home case management, referrals, preventive health practices.

The PDI is a process that occurs prior to the Hearth session. The PDI identifies which practices are working today and informs the Hearth sessions.

The PDI guides the decisions on:

- Which foods to prepare during the Hearth session.
- Which behaviours to promote during the session.
- What information to share so that others can practice and internalise PD behaviours.

The new feeding, caring, and hygiene practices are demonstrated and practiced in a group during the Hearth sessions and, later, individually at home. It is also through the daily Hearth sessions that children will receive the extra nutrition necessary for their rehabilitation.

Vulnerable children programme implementing partners can learn more about PD/Hearth and whether it is appropriate for their areas at <http://coregroup.org/component/content/article/84>.

Vulnerable children programme **implementing partners can support PD/Hearth programmes through the following:**

- Train a Hearth trainer and mobilise community leaders.
- Conduct a nutrition assessment of all children between 6 and 36 months of age to detect both malnourished and positively deviant children (those who are well-nourished despite poverty).
- Select and train volunteers.
- Conduct a PDI to find local solutions to malnutrition.
- Enrol families of malnourished children in a two-week nutrition education and rehabilitation session (Hearth).
- Guide volunteers to visit participating families at home for two weeks after the Hearth session; children return for weighing for six months after the Hearth session.
- Weigh children again and repeat both the Hearth session and the follow-up visits with the families of children who are still malnourished.
- Continue the Hearth programme in the community for at least six months to ensure sustainability.
- Monitor nutritional status of children monthly (done by the community).

### **7.3 Promoting home gardens for improved nutrition**

This section of the manual is drawn from *Healthy Harvest: A Training Manual for Community Workers in Good Nutrition, and the Growing, Preparing, and Processing of Healthy Food*, produced through a collaborative effort from the Food and Nutrition Council of Zimbabwe, the Food and Agriculture Organization (FAO) and the United Nations Children's Fund (UNICEF) (available at: <http://motherchildnutrition.org/healthy-nutrition/pdf/mcn-healthy-harvest.pdf>).



### 7.3.1 What is a home garden?

A home garden is a place where crops are grown to satisfy the nutritional needs of the family and other groups in the community. These include their needs for carbohydrates, fats, protein, vitamins, and minerals. Nutritious crops can be integrated into vegetable gardens, around the homestead, in orchards, in woodlots, and in the field. Home gardens have been adapted for VC in their households, and also at community centres and schools (FAO, 2007).

### 7.3.2 Benefits of home gardens

Home gardens have many benefits, including:

- A continuous supply of fresh and organic vegetables to the family.
- Fresh fruits and vegetables contain more nutrients than stored fruits and vegetables.
- Fresh fruits and vegetables have essential nutrients that will help protect the body from infections and chronic health conditions.
- Home gardening saves money because you do not have to buy the vegetables and fruits.
- Home gardens in containers or pots give good production with little input. It is the cheapest way of gardening in small spaces. You can plant vegetables, shrubs, and even small trees in containers, pots, boxes, or jars, and use the fresh produce in your kitchen. Home gardening can be done in windows, terraces, and balconies to save space.
- Home gardening is a green and environment-friendly activity. It helps to reduce pollution in the community. It makes the surrounding near the home cool and reduces pollution in the home environment.

Vulnerable children programme **implementing partners can support home gardens through the following:**

#### *Planning home gardens*

Gardens can be set up at household level, at community level, in schools, around centres of worship, and in fields. When a school or community garden is to be established, it is important to identify existing resources and to locate at least one home gardener for potential as a demonstration or model garden. The issue of motivation, household needs, pupils' perceptions about gardening, and the availability of community resources must be addressed during community meetings. Such problems as lack of space, lack of planting materials, lack of water, insects and disease, stray animals, lack of time, and theft must be considered so that possible solutions can be developed with participation of all members of the community. The following are factors that need to be taken into account during the planning process:

- Availability of water, especially during dry season.
- Availability of space and tools.
- The nature and condition of the soil.
- The landscape (hills, flat area, etc.).
- Common insects, pests, and diseases in the environment.
- Marketability of the surplus produce.
- Variety of plants for nutritional value.

### ***Making maps***

Making maps is a good way for people to look at the environmental resources that are available to them. They show the potential and disadvantages of an area clearly, helping people to understand their own situation. Groups studying the map together can discuss and solve the problems the maps identify.

### ***Choosing the right crops***

If a gardener plants different crops that could be harvested at different times of the year, food will be available from the garden all the year round. If plants that live for more than one year, such as pumpkin, moringa, pigeon pea, cassava, and fruit trees are included, then food security in that home will be improved. Pumpkin is a green leafy vegetable that lives for more than one year. Moringa is a tough, fast-growing tree that produces very nutritious edible leaves and pods. It can also be used for live fencing, and the seeds can be used to purify water. Pigeon pea is a tough bush that lives for about four years. It produces nutritious seeds and the plant helps to improve the soil. Cassava is a tough bush that can live for two to four years. The roots and leaves may be eaten. Other suggested crops for home gardeners are shown in Table 4.

**Table 4. Sample crops for home gardeners**

<b>Carbohydrate</b>	<b>Plant protein</b>	<b>Fat</b>	<b>Fruit</b>	<b>Vegetable</b>
Maize Millet Guinea corn Cassava Yam Orange Fleshed Sweet potato	Cowpea Soya bean	Palm oil Melon Avocado	Mango Tangerine Orange Cashew Papaya	Fluted Pumpkin( ugu) Water leaf Celosia Spinach Pumpkin (Kabewa) Okro Tomato Pepper

### ***Including livestock production***

Livestock are an important component of the home garden. They provide high-protein food and valuable organic waste matter that can be used for fertilizer. Livestock often feed off the excess and unusable plant refuse of the household, such as rice hulls, corn stalks, leaves, and weeds. Ducks, rabbits, pigs, and chickens scavenge for food and yet provide quality meat. Fish ponds can serve as pest managers, because fish often eat harmful (as well as beneficial) insects.

### ***Maximising the nutritional benefits of produce during cooking***

Nutrients can be retained or lost during cooking depending on the methods employed in processing or cooking. Remember that:

- Fat-soluble plant vitamins (such as vitamin A, found in dark green leafy vegetables) are lost during frying.
- Water-soluble vitamins (such as B complex and C, found in orange fruits and vegetables) are reduced during prolonged water soaking, boiling and oxidation, early preparation, and long periods before cooking or serving.

- Vegetables should be cooked for just a few minutes and served with the cooking water to retain nutrients.

### ***Optimising storage and preservation***

When not all the garden products are consumed or sold immediately after harvest, fruits and vegetables can be preserved and stored as follows:

**Home preservation**—root crops, wax gourds, and pumpkins can be stored on a shelf for three months. Legumes can be stored for longer periods of time.

**Dehydration of root crops and fruits**—crops high in starch such as sweet potatoes, yams, cassava, cocoyam, and ginger are easily processed. Some fruits like mango, pineapple, and plantain can be sliced and placed in trays to dry in the sun for days, and then sealed and stored up to six months. Be careful to dry completely so that mould does not grow.

## **7.4 Integrating water, hygiene, and sanitation interventions to improve nutrition**

Many life-threatening opportunistic infections are caused by exposure to unsafe water, inadequate sanitation, and poor hygiene. Diarrhoea, a very common symptom that can occur throughout the course of HIV/AIDS, affects 90 percent of PLHIV and results in significant morbidity and mortality, especially in HIV-infected children.

At least 30 percent of diarrhoeal diseases could be prevented through integrated programmes that involve providing water treatment and safe storage, safe disposal of faeces, and promotion of key hygiene practices. Vulnerable children programmes should consider building links among the health, water, and sanitation sectors to improve the number of safe water supply points and latrines that are accessible and close to where they are needed.

Vulnerable children programme **implementing partners can support water, hygiene, and sanitation interventions through the following:**

### ***Promoting access to safe drinking water***

Even where a reliable source of safe water is available, it is often difficult to assure safe transport and storage practices; it is therefore good practice to treat drinking water where it is needed, using chlorination systems, solar disinfection, boiling, or filtration. Ideally, treated water should be stored in a vessel or container with a narrow mouth and lid to prevent recontamination of treated water, and preferably a tap.

### ***Promoting hand-washing practices***

Washing hands at critical times, with soap and proper technique, is an extremely important hygiene measure to be integrated across all VC programmes. Programmes should at least provide guidance and training on washing hands and proper technique. Hand-washing stations with soap (or soap substitute, such as ash) can be created in facilities, community care points, and households. In water-scarce situations, programmes should consider using a tippy tap—that is, a simple plastic jug, gourd, or vessel made from local material that regulates the flow of water—to allow for hand washing with a very small quantity of water.

### ***Improving sanitary practices***

Many VC in Nigeria lack access to basic sanitation systems; therefore, it is important to focus on simple efforts (e.g., safe handling and disposal of faeces) that have the biggest health implications. Disposing of faeces safely, keeping faeces away from flies and other insects, and preventing faecal contamination of water supplies can greatly reduce the spread of diseases.

Vulnerable children programme implementing partners can assist health workers, caregivers, family members, and children can learn how to build a latrine and how to use existing latrines safely. Further, installing poles or stools in a latrine will help weak or ill family members to use the latrine. If a latrine is not available, faeces must be collected in a bedpan and buried away from the facility, clinic, or home, and away from where animals can dig it up.

Programmes should make sure that people with diarrhoea are supported to protect their skin, sheets, clothing, and mattress from becoming soiled with faeces. Strategies such as placing a plastic sheet covered by paper or a cloth under the client's buttocks are very simple and cost-effective measures that can ease the caregiving burden.

Menstruation should be managed by providing private and clean facilities for adolescent girls and women, disposing safely of items soaked in menstrual blood, or cleaning them for re-use.

### ***Promoting environmental hygiene***

Simple steps can prevent the spread of infection and improve the health of children and HIV-affected persons in the communities. These steps include controlling animals, sleeping under long lasting insecticide-treated nets in malaria-endemic areas, and clearing trash, high weeds, and stagnant water from homes, schools, facilities, and compounds.

## **7.5 Food security**

Food security is described as the ability of individuals, families or households, and communities to have access to nutritious, safe, and reliable food all year round. Food security exists when all people at all times have physical and economic access to food. The three essential elements of food security are:

- **Availability of food**, which has to do with agricultural production and functioning markets.
- **Access to food**, which can mean the ability to buy food or the ability to access the food that is in the household (gender inequality and the inability of small children to feed themselves are two examples of limited access).
- **Utilisation of food**, which refers to the body's ability to effectively absorb nutrients from the food consumed (which parasites, disease, and infections prevent).

The priority target groups for food security and nutrition interventions should include but not be limited to:

- Households with children under 5 years.
- Households with children living with HIV.
- Child-headed households.
- Households with chronically or terminally ill parent(s) or caregiver(s).

- Households with internally displaced children.

Some households caring for VC lack access to nutritionally adequate food and suffer chronic food insecurity. Thus VC in such households suffer malnutrition, which compromises their growth, learning, and survival. Vulnerable children in such circumstances often embark on socially unacceptable ways of accessing food.

**In accordance with the National Guidelines and Standard of Practice, VC programme implementing partners can improve food security through the following:**

- Providing nutrient-dense and adequate food to households caring for VC in emergency situations.
- Providing nutritional support for infants born to mothers living with HIV.
- Providing food and nutrition to households with children living with HIV.
- Improving productivity, quality, and storage of food in households caring for VC.
- Helping the community to identify sources of food, and mobilise capital assets, tools, and equipment to assist in strengthening the food security of such households.
- Ensuring food insecure households have access to nutrient-dense food on a sustainable basis by encouraging them to undertake income-generating activities.
- Providing and strengthen nutrition education for such households.
- Supporting vulnerable households to undertake gardening—for instance, growing legumes and poultry.
- Establishing community-based food security systems and mechanisms, such as barns and silos for storage of farm produce and improved agriculture practices (e.g., mulching) and food-processing methods.
- Improving linkages with agricultural development programmes and organizations.
- Providing appropriate guidance on managing food resources.
- Teaching families on ways to store food for future use (refer to Section 7.3).
- Encouraging home gardens (refer to Section 7.3) to produce nutritious crops that can supplement diets, as well as provide VC and their caregivers with additional income.
- Promoting income generating and economic strengthening activities for VC.
- Counselling families on good cooking and eating practices, including conducting cooking demonstrations and recipe trials to demonstrate nutritious recipes that can be prepared easily with local products.
- Assisting food insecure families to carry out the administrative processes that are needed to access food rations.

## **7.6 Supplementary feeding and community-based management of acute malnutrition**

If a child is severely acutely malnourished according to national definitions, he or she may be referred to a community-based management of acute malnutrition program. Through CMAM, children with severe acute malnutrition (SAM) can be rehabilitated at home, with only very complicated cases being admitted for inpatient care. For more information on CMAM, please see Annex E.

In non-emergency programmes, as considered most applicable to Nigeria and in the context of VC, the supplementary feeding component for the management of MAM is dropped or adapted because MAM can be addressed through other prevention and treatment programmes, such as community-based growth monitoring and promotion (CBGMP) and the Positive Deviance/Hearth model amongst others.

### **Vulnerable children programme implementing partners can strengthen CMAM and prevention of acute malnutrition through the following:**

- Looking for signs of acute malnutrition, including being able to recognise visual signs like oedema, and being proficient in taking Mid-Upper Arm Circumference (MUAC) measurements.
- Conducting ongoing and periodic monitoring at home/community/other health facilities, including conducting home visits.
- Referring the child to the health care facility for the care and treatment of health-related problems likely to have a negative effect on the child's appetite and use of nutrients.
- Staying alert for any social and economic factors that could explain the occurrence of malnutrition (e.g., death of a relative, decreased household revenue, etc.).
- Encouraging mothers to take part in community-based care groups, such as infant and young child feeding support groups.
- Mobilising and facilitating community-based care groups.
- Strengthening infant and young child feeding practices, including breastfeeding and complementary feeding using locally available foods.
- Linking mothers to community health workers.
- Providing malnourished VC and their caregivers the support that they need to access care and treatment for acute malnutrition at a facility or in the community, including referring a child to the facility and accompanying the child [and the caregiver(s)] to the facility—if needed.
- Actively monitoring VC after they have left the facility or CMAM programmes, in order to ensure proper rehabilitation after treatment.
- Linking treatment of acute malnutrition (both facility- and community-based) to other community-based prevention programmes, such as CBGMP, community-based care groups, etc.

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## Annex A. Nutrition baseline assessment

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### Conducting a nutrition baseline assessment

To improve the nutritional status and overall living conditions of vulnerable children (VC), it is necessary to generate baseline information on the nature, magnitude, and causes of malnutrition and define risk groups for adequate interventions.

The nutrition baseline assessment is a standardised methodology providing objective data that can be used to assess, monitor, and evaluate the nutritional situation of a population. The nutrition baseline assessment combines internationally used techniques and procedures that usually include:

- A standardised questionnaire that covers standardised socioeconomic and health-related questions.
- Anthropometric measurements, which include weight and physical measurement of children in order to calculate their anthropometric indices for nutritional classification.

On the basis of adequate and simple statistical tests and standardised procedures and analysis, nutritional problems are described and their determinants identified.

Given the complexity of nutrition, however, a combination of different quantitative and qualitative methodologies is usually necessary. During the preparation phase of the survey, it is crucial to obtain nutritional, socioeconomic, and cultural information available in the local setting, and to analyse secondary literature and observational issues, in order to interpret the situation in a holistic manner. An understanding of the perceptions and needs of the population is necessary as well.

Data collected during the nutrition baseline assessment are used for:

- **Appraisal:** to analyse the causal relationships of a nutritional problem.
- **Planning:** to determine adequate and problem-oriented activities, indicators, and interventions.
- **Monitoring and evaluation:** to be able to compare the situation at the beginning of an intervention with the situation at later times.

### Advantages of a nutrition baseline assessment

More broadly, a baseline assessment has the following advantages:

- Identifies malnourished children and serves as a community mobilization tool.
- Provides objective, measurable, and representative data for problem analysis, planning, and evaluation purposes
- Facilitates comparison of situations at the beginning and end of the project cycle for impact assessment.
- Helps determine causes or determinants of the nutritional problems.

- Enables construction of statistical relationships between factors and the nutritional status for intervention planning.
- Provides information for indicators (planning matrix).
- Contribute to quality management issues.
- Gives justification for interventions and activities in certain populations and the surveyed region.
- Provides valid results for resource allocation and policymaking.

## **Main steps in conducting a nutrition baseline assessment**

### **Step 1: Collect available information on the nutritional situation of the population and other demographic, socioeconomic, ecological, and cultural data in the survey region**

This involves reviewing literature and obtaining information from local settings through observational techniques and group discussions.

### **Step 2: Plan and prepare for the survey**

This involves discussing and taking decisions on assessment objectives and methodologies, organizing the assessment team, training, and addressing materials supply and basic logistics.

### **Step 3: Implement the survey**

This involves mobilising the community, administering data-collecting instruments, and implementing planned procedures and techniques.

### **Step 4: Process and analyse the data**

This involves analysing data using standard software such as Epi Info™ or SMART/ENA and summarising qualitative data around major themes.

### **Step 5: Disseminate results and use them for project-related decision-making, intervention planning, and project monitoring and evaluation**

This involves developing reports that discuss the main findings and provide conclusions and recommendations based on information generated on major indicators of nutritional status assessed. Findings and reports serve as basis for project monitoring and evaluation.

## Annex B. Steps in taking anthropometric measurements (mid-upper arm circumference, height, weight)

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Anthropometric measurement means body measurement. Changes in body dimensions reflect the overall health and welfare of individuals and populations. Anthropometry is a widely used, inexpensive, and non-invasive measure of the general nutritional status of an individual or a population group.

Body measurement can be used to determine growth especially in children. Measurements that are commonly used to determine growth are:

- Weight
- Height
- Mid-upper arm circumference

In addition to these, the age and sex of the individual are also important. For the measurements to be meaningful, they must be compared to another parameter or standard; when they are used together they can provide important information about a person's nutritional status. When two of these variables are used together they are called an index.

Three indices are commonly used in assessing the nutritional status of children:

- Weight-for-age
- Height-for-age (or length-for-age)
- Weight-for-height (or weight-for-length)

### Weight-for-age

A low weight-for-age index identifies the condition of being **underweight**, for a specific age. The weight-for-age index is a reflection of both past (chronic) and/or present (acute) undernutrition (although it is unable to distinguish between the two).

### Height-for-age

A low height-for-age index identifies past undernutrition or chronic malnutrition. It cannot measure short-term changes in malnutrition. A deficit in height-for-age is referred to as **stunting**.

### Weight-for-height

A low weight-for-height index helps to identify children suffering from current or acute undernutrition or **wasting** and is useful when exact ages are difficult to determine. It is appropriate for examining short-term effects such as seasonal changes in food supply or short-term nutritional stress brought about by illness.

### Underweight

Underweight, based on weight-for-age, is a composite measure of stunting and wasting and is recommended as the indicator to assess changes in the magnitude of malnutrition over time.

### **Stunting**

Could stem from a slowing in the growth of the fetus during conception and resulting in a failure to achieve expected length as compared to a healthy, well-nourished child of the same age, indicating signs of **past growth failure**. Stunting is associated with a number of long-term factors including chronic insufficient protein and energy intake, frequent infection, sustained inappropriate feeding practices, and poverty. In children over 2 years of age, the effects of these long-term factors may not be reversible.

### **Wasting**

Wasting is the result of a weight falling significantly below the weight expected of a child of the same length or height. Wasting indicates **current or acute malnutrition** resulting from failure to gain weight or actual weight loss. Causes include inadequate food intake, incorrect feeding and disease or infection.

### **Mid-upper arm circumference**

MUAC is relatively easy to measure and a good predictor of immediate risk of death. It is used for rapid screening of acute malnutrition from the 6 to 59 month age range (MUAC overestimates rates of malnutrition in the 6 to 12 month age group). A non-stretchable tape measure is used to measure MUAC. MUAC is recommended for assessing acute adult undernutrition and for estimating prevalence of undernutrition at the population level.

### **Z-score or standard deviation (SD) unit**

This is defined as the difference between the value for an individual and the median value of the reference population for the same age or height, divided by the standard deviation of the reference population.

$$\text{Z-score} = \frac{(\text{observed value}) - (\text{median ref. value})}{\text{SD of reference population cut-offs}}$$

The use of a cut-off enables the different individual measurements to be converted into prevalence statistics. A cut-off is also used for identifying those children suffering from or at a higher risk of adverse outcomes. The children screened under such circumstances may be identified as eligible for special care. The most commonly used cut-off with Z-scores is -2 standard deviations, irrespective of the indicator used. This means children with a Z-score below -2 SD for underweight, stunting, or wasting are considered moderately or severely malnourished. For example, a child with a Z-score for height-for-age of -2.56 is considered stunted, whereas a child with a Z-score of -1.78 is not classified as stunted.

Cut-off value	Classification of malnutrition
< -1 Z-score > -2	Mild
< -2 Z-score > -3	Moderate
Z-score < -3	Severe

From: WHO global database on child growth and malnutrition (World Health Organization, 1997)

### **Considerations in anthropometric measurement**

When possible, two trained people should measure a child's height and length, using appropriate scales and height-measuring boards or instruments. The measurer holds the child and takes the measurements. The assistant helps hold the child and records the measurements on the questionnaire.

### **Measuring board and scale placement**

Be sure that you have a sturdy, flat surface for measuring boards, a strong place to hang scales from, and adequate light so the measurements can be read with precision.

### **When to weigh and measure**

Weighing and measuring should not be the first thing you do when you start an interview. It is better to begin with questions that need to be answered. This helps make the mother and child feel more comfortable before the measurements begin.

### **Weigh and measure one child at a time**

You should complete the questions and measurements for one child at a time. This avoids potential problems with mix-ups that might occur if you have several children to measure.

### **Control the child**

When you are taking weight and length/height measurements, the child needs to be as calm as possible. A child who is excited or scared can make it difficult to get an accurate measurement.

### **Recording measurements**

All measurements should be recorded in pencil. If a mistake is made when recording a measurement, it can be corrected.

### **How to measure height and weight**

#### **Height**

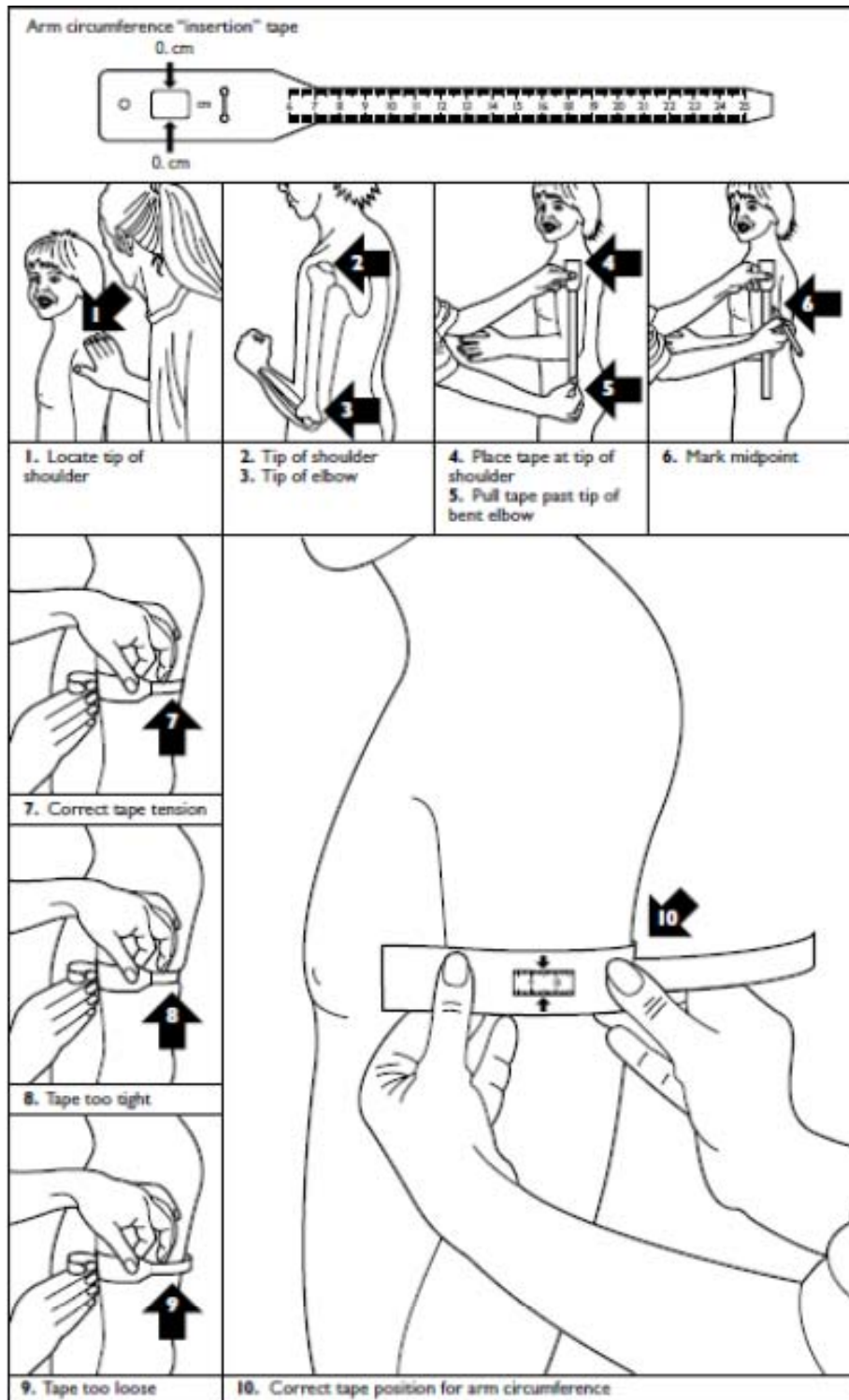
The subjects should be made to stand erect with the back of their feet touching the meter rule and without shoe. Height is then gauged with a flat ruler above the head while reading should be taken at eye level. Height measurements will be taken to the nearest 0.1 cm.

**Weight**

The weight of each respondent should be measured using a digital bathroom weighing scale. The respondents will be made to stand erect on the scale, barefooted and with light clothing. The weight measurements will be read at eye level to the nearest 0.1 kg.

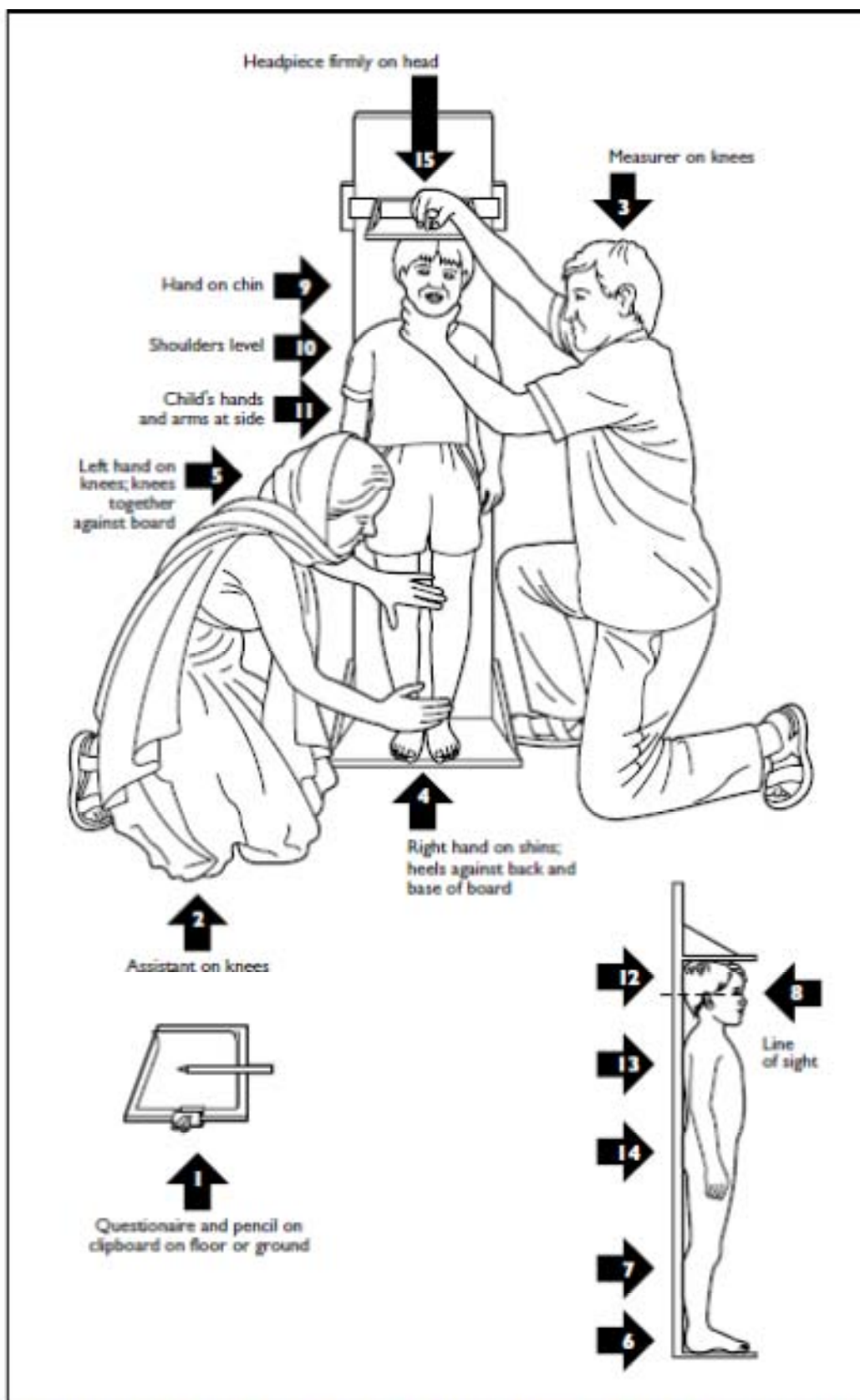
**Data analysis and reporting**

Data should be analysed by comparing individual child data with the standard growth cut-off points. Prevalence and type of malnutrition should be calculated and expressed as percentage of the total population of children covered. The result should be presented in simple graphical form to the community for decision-making. Generally, the 1997 World Health Organization (WHO)/National Center for Health Statistics (NCHS) standards are used in evaluating nutritional status of populations based on anthropometric indices. It is, however, worth mentioning that the new WHO Child Growth standards (2006) based on a more diverse sampling frame than the former are now available, and the current international consensus is that both standards be used until the new standard is finally and universally adopted. Standard analytic packages like Epi Info and SMART/ENA can analyse data and produce results using both standards.



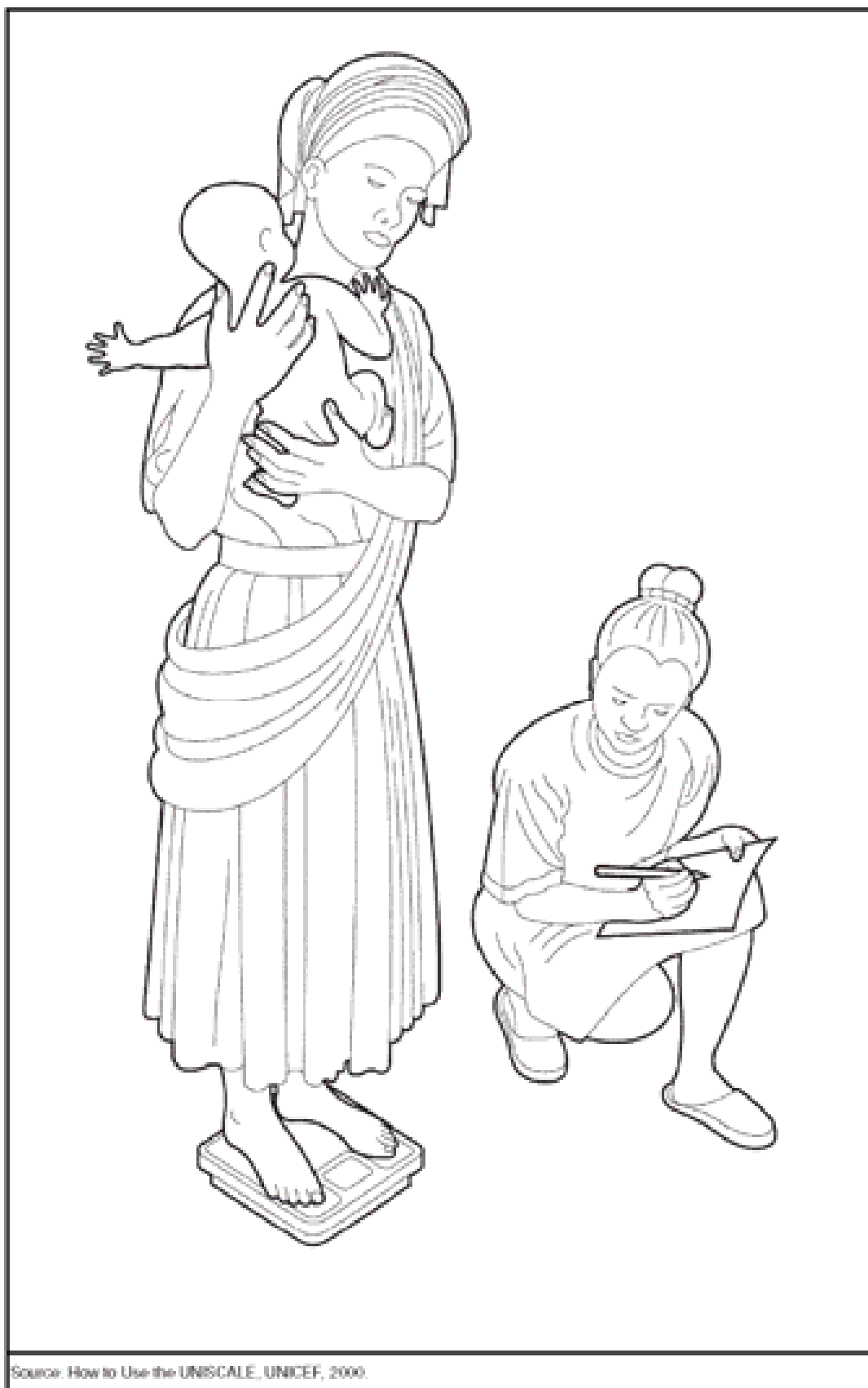
Source: How to Weigh and Measure Children: Assessing the Nutritional Status of Young Children, United Nations, 1986.

From: Anthropometric indicators measurement guide (Food and Nutrition Technical Assistance Project, 2003).



Source: How to Weigh and Measure Children: Assessing the Nutritional Status of Young Children, United Nations, 1986.





Source: How to Use the UNISCALE, UNICEF, 2000.

## **Annex C. Preparation of complementary foods**

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### **Enrichment powder**

#### **Ingredients**

- 1 mudu soya beans
- 4 milk-cups groundnuts
- 2 milk-cups crayfish

#### **Preparation**

##### **Soya beans**

1. Pick out stones and dirt.
2. Wash with water.
3. Put in a bucket and soak overnight. (Do not cover the bucket).
4. Strain the water.
5. Wash to remove the skin.
6. Spread out to dry.
7. Fry or roast in oven until golden brown.

##### **Groundnuts**

1. Pick out stones and dirt.
2. Roast or fry for 5 minutes (for easy removal of husks).
3. Remove the husks.

##### **Crayfish**

1. Pick out stones and dirt.
2. Roast or fry for 3–5 minutes.
3. Separate crayfish from sand.

#### **Method**

Mix the crayfish, groundnuts, and soya beans and grind. Spread ground mixture on a tray to cool before packing. The ground mixture is the enrichment powder. Pack in tin with cover or polythene (nylon) bags and seal. Store in a cool dry place.

### **Egg in pap**

#### **Ingredients**

- 4 heaped tablespoons of pap paste
- 1 egg
- 1 medium size banana
- Sugar to taste

#### **Method**

1. Dissolve pap into paste.
2. Put water in a saucepan to boil.
3. Wash and break egg into a cup with cover.

4. Whisk the egg with fork and cover the cup containing the whisked egg.
5. Mix the whisked egg into the pap paste.
6. Pour the mixture into the boiling water.
7. Mix briskly to prevent lumps as the mixture is being poured into the saucepan.
8. Add sugar to taste.
9. Serve with cup and spoon.

## **Bean porridge**

### **Ingredients**

- 1 milk-cup of beans
- 2 tablespoons palm oil
- 1 small size onion
- 1 tablespoon (heap) of crayfish, titus fish, minced meat, liver, bone marrow
- 3 medium size tomatoes
- Salt to taste
- Pepper (optional)

### **Method**

1. Pick out stones and dirt from beans.
2. Wash and remove the bean skins as it is done when making moimoi.
3. Parboil fish, minced meat, or liver with salt and onion.
4. Grind crayfish.
5. Grind tomatoes and onion.
6. If fish is to be used, remove bone and mash very well.
7. Put water in saucepan to boil.
8. Add skinned beans to boil for 20 minutes.
9. Add ground tomatoes and onions.
10. Add salt to taste.
11. Add palm oil.
12. Stir constantly to avoid bursting.
13. Add crayfish and/or mashed fish last.
14. Mash very well until it becomes semi-solid.
15. Serve with plate and spoon.

## **Yam porridge**

### **Ingredients**

- 1-inch piece of yam or 1 small sliced yam piece
- Palm oil
- 1 small size onion
- 1 tablespoon (heap) of crayfish, titus fish, minced meat, liver, bone marrow
- 2 medium size tomatoes
- Salt to taste
- 1 small slice of pepper (optional)

**Method**

1. Put water in a saucepan to boil.
2. Peel yam, then wash and cut into small cubes for easy cooking and mashing. Boil yam in saucepan.
3. Add 2–3 tablespoons palm oil.
4. Allow to boil for 10–15 minutes.
5. Add ground onions and tomatoes.
6. Allow to boil for 5 minutes.
7. Add mashed fish and/or minced meat.
8. Mash very well.
9. Serve with plate and spoon.

**Rice pudding****Ingredient**

- 1 small size coconut or half-milk cup of fresh groundnut
- 1 milk-cup of cooked rice
- Sugar
- 1 medium size banana

**Method**

1. Break and grate the coconut, then add 2 milk-cups of water to extract the coconut milk.  
OR, if groundnut is to be used, roast for 2 minutes and remove the skin, then add 1 milk-cup of water and blend to extract the milk.
2. Add coconut or groundnut milk to very soft cooked rice.
3. Add banana and sugar to taste.
4. Mash very well and serve with spoon and cup.

**Unripe plantain porridge****Ingredient**

- 1 medium size unripe plantain
- 3 medium size tomatoes
- 1 medium size onion
- 2–3 tablespoons palm oil
- Liver, crayfish, titus fish, bone marrow
- Salt

**Method**

1. Wash and peel plantain.
2. Cut plantain into cubes inside a bowl of water. The water prevents plantain from turning black.
3. Parboil liver or titus fish with salt in sauce pan. If fish is being used, mash and remove bone.
4. Grind crayfish.
5. Grind onions and tomatoes.

6. Put water in a saucepan to boil.
7. Add diced plantain, and boil for 10–15 minutes.
8. Add 2–3 tablespoons palm oil.
9. Add salt to taste.
10. Add ground onions and tomatoes.
11. Boil for 5 minutes.
12. Add ground crayfish and parboiled fish or meat.
13. Stir and mash very well.
14. Serve with plate and spoon.

## **Soya beans milk**

### **Ingredients**

- 1 mudu soya beans
- Water
- Salt
- Sugar
- Onion (for method 2)

### **Method 1**

1. Remove grit and dirt from soya beans.
2. Soak in a bucket of water overnight. Do not cover the bucket to let out gas escaping during fermentation.
3. Wash thoroughly by rubbing to remove skin.
4. Dry the soya beans.
5. Roast until golden brown, then allow to cool.
6. Grind the roasted soya beans into powder.
7. Mix the powder in a saucepan with water to form paste.
8. Boil some water and add the paste to the boiling water.
9. Allow to boil for 10 minutes
10. Filter the mixture and add sugar plus a pinch of salt to taste.

### **Method 2**

1. Remove grit and dirt from soya beans.
1. Soak soya beans in a bucket to let out gas escaping during fermentation.
2. Wash thoroughly by rubbing to remove skin.
3. Grind into paste.
4. Add water to the paste and filter to extract milk. (For each mudu of soya beans, use 2 mudus of water to extract the milk.)
5. Bring the extracted milk to a boil.
6. Allow boiling for 10 minutes; add two wraps of onions to remove the soya beans smell.
7. Remove from fire and add sugar plus a pinch of salt to taste

NOTE: Do not cover while boiling to let out steam. The chaff can be used to make soup for the family. Store the remaining in the fridge.

## **Moi-moi (steamed bean pudding)**

### **Ingredients**

- 1 milk-cup of beans
- 1 small onion
- 1 small tomato
- 2–3 tablespoons (heap) of crayfish
- Titus fish, liver, bone marrow
- 2 tablespoons palm oil
- Salt to taste
- Moi-moi leaves or 4 small tins (milk-cups)

### **Method**

1. Pick out stones and dirt from beans.
2. Wash and remove the bean skins.
3. Grind beans until smooth.
4. Grind onion and tomato.
5. Wash leaves or tins (if tins are being used, oil them for easy removal of moi-moi after cooking).
6. Parboil titus fish. Remove bones and mash the fish.
7. Mix ground beans with ground onions and tomatoes
8. Add 2–3 tablespoons of palm oil or vegetable oil, ground crayfish and/or titus fish.
9. Put inside small-milk cup (up to half of the cup) or wrap in moi-moi leaves.
10. Steam in pot for between 30 to 45 minutes.
11. Serve mashed to make it softer for the child to eat.

## **Ewedu/ogbono/okro soup**

### **Ingredients**

- 1 small onion
- Ewedu or half milk-cup of ogbono or okro
- 2 tablespoons of ground crayfish
- Titus fish, liver, or meat
- Small dadawa (Hausa), iru (Yoruba), ogiri (Igbo), or okpehae (Idoma)
- 2–3 tablespoons palm oil

### **Method**

1. Wash okro or ewedu (Yoruba) and cut into small pieces.
2. Pick out dirt and grind the ogbono.
3. Grind the dadawa.
4. Parboil liver or titus fish with onions and salt.
5. Remove bone if fish is being used.
6. Mash the fish very well.
7. Put 2 cups of water into saucepan.
8. Add a tablespoon of palm oil; allow to boil for 5 minutes.
9. Add ogbono or okro or ewedu and dadawa; allow to boil for 5 minutes.
10. Add crayfish, mashed fish, liver, bone marrow; allow to boil for 2 minutes.

11. Serve with eba or fufu or semovita or tuwo.
12. Can also be served with eko (Yoruba) or agidi (Igbo).

NOTE: Titus fish (fresh from the market, not canned sardines) is the fish of choice in these recipes because it has fewer small bones than many other fishes. Rather it has mainly a large central bone that can easily be removed and so does not constitute a choking hazard to the children.

## **Pineapple juice**

### **Ingredients/tools**

- Medium size pineapple
- Sugar (optional)
- Water
- Sieve
- Plastic bowl with cover
- Blender or wooden spoon

### **Method**

1. Wash and peel pineapple.
2. Mash pineapple with a wooden spoon over a clean sieve or blend with blender.
3. Add half milk-cup of water to extract the juice.
4. Strain and keep cool.
5. Add sugar to taste.
6. Serve with cup.

## **Orange juice**

### **Ingredients/tools**

- 2 medium size oranges
- Sugar (optional)
- Water
- Sieve
- Plastic bowl with cover
- Blender or wooden spoon

### **Method**

1. Wash and peel oranges.
2. Cut and remove the pulp without the seed.
3. Mash over a clean sieve or blend with blender.
4. Add half a milk-cup of water.
5. Add sugar to taste (optional).

## **Cassava root fritters**

### **Ingredients**

- 2 cups cassava roots, grated (450 g)
- 1 small onions, grated (30 g)
- 2 medium eggs, whisked (90 g)
- 1 teaspoon salt (5 g)
- 3 cups vegetable oil (750 ml) for frying

### **Method**

1. Mix grated cassava root, onions, and eggs thoroughly.
2. Add salt to taste.
3. Scoop into hot oil, using spoon or clean hand.
4. Deep fry until golden brown.

## **Cassava croquettes**

### **Ingredients**

- 5 cups cassava roots, finely grated (1,125 g)
- 2½ cups coconut, finely grated (150 g)
- 2½ teaspoons salt (12.5 g)
- 1 cup meat filling (250 g)
- 3 cups vegetable oil (750ml) for frying

### **Method**

1. Mix grated cassava and coconut.
2. Add salt to taste.
3. Take a tablespoon of the cassava-coconut mixture, flatten on palm, and put a teaspoon of meat filling in the centre.
4. Cover with the cassava-coconut mixture so that the meat filling does not come out during frying.
5. Roll into ball.
6. Deep fry in hot oil until golden.

## **Cassava meat balls**

### **Ingredients**

- 2 cups cassava roots, grated, dewatered (450 g)
- 1 level cup minced meat, cooked (85 g)
- 1 large pepper, chopped (10 g)
- 1 medium onion, sliced (20 g)
- 1 teaspoon curry powder (2.5 g)
- 1 teaspoon salt (5 g)
- 1 teaspoon white pepper (1.5 g)
- 3 cups vegetable oil (750 ml) for frying



### **Method**

1. Sauté onion and pepper until soft.
2. Mix grated cassava, minced meat, salt, white pepper, and curry powder thoroughly.
3. Add the sautéed onion and pepper.
4. Mix to form smooth dough.
5. Cut into desired size and mold.
6. Deep fry until brown; serve warm.

### **Steamed cassava with fish and groundnut**

#### **Ingredients**

- 1 medium cassava root, fresh (250 g)
- 1 teaspoon curry powder (2.5 g)
- 1 medium fresh fish, cooked or smoked (200 g)
- ½ cup groundnuts, roasted (47.5 g)
- 1 teaspoon salt (5 g)

#### **Method**

1. Peel, wash, and slice cassava root. Remove the stringy middle portion.
2. Chop cassava into small cubes.
3. Debone fish (cooked or smoked).
4. Pound roasted groundnuts and make a paste.
5. Mix all ingredients together.
6. Scoop and wrap tightly in banana leaves of desired sizes.
7. Steam for about 20 minutes.
8. Serve warm as main dish.

### **Cassava chin chin**

#### **Ingredients**

- 4 cups cassava flour (400 g)
- ½ cup sugar (100 g)
- 2 tablespoons margarine (40 g)
- 2 tablespoons baking powder (10 g)
- 2 medium eggs (90 g)
- 1 cup nutmeg (3 g)
- 1 cup water (250 ml)
- 3 cups vegetable oil (750ml) for frying

#### **Method**

1. Mix 3 cups of the cassava flour with sugar, margarine, baking powder, and nutmeg.
2. Boil 1 cup of water, add 1 cup of flour to the boiling water, remove from heat, and stir three times immediately.
3. Add the cooked cassava flour to the other mixture, and work it with finger tips until the texture resembles breadcrumbs.
4. Whisk eggs until light, and add to the mixture. Mix with finger tips into smooth dough that leaves the sides of the bowl clean, but do not knead!

5. Roll dough evenly on a floured board to desired thickness and cut into desired shapes and size.
6. Deep-fry in oil until golden brown.
7. Drain excess oil.

## **Cassoy fritters**

### **Ingredients**

- 3 cups cassava flour, sifted (300 g)
- ½ cup soybean flour, sifted (53 g)
- 1 teaspoon baking powder (5 g)
- 4 teaspoons sugar (20 g)
- 1 teaspoon salt (5 g)
- 1 medium egg (45 g)
- ¼ cup water (62 ml)
- 3 cups vegetable oil (750 ml) for frying

### **Method**

1. Mix cassava flour and soybean flour together.
2. Add sugar, baking powder, and salt; mix.
3. Beat egg, add to mixture, and mix with finger tips.
4. Add water and mix to form dough.
5. Mix thoroughly until smooth.
6. Roll out on a floured board and cut into circular shapes of desired size.
7. Deep-fry in hot oil until golden brown.

## **Cassoy fingers**

### **Ingredients**

- 1 cup cassava flour (100 g)
- 1 cup soybean flour (106 g)
- 1 small onion, chopped (38 g)
- 1 small tomato, skinned (20 g)
- 1 teaspoon garlic, crushed (2.8 g)
- 1 teaspoon curry powder (2.5 g)
- 1 medium egg, beaten (45 g)
- 1 teaspoon salt (5 g)
- 1 teaspoon pepper (1.5 g)
- 3 cups vegetable oil (750 ml) for frying

### **Method**

1. Mix together cassava flour and soybean flour.
2. Add all the other ingredients and mix thoroughly until smooth.
3. Shape into finger-like pieces.
4. Deep-fry until golden brown.

## Annex D. Inventory of nutrient-rich local foods

### High-quality protein foods

Food	Portion	Protein (g)
Poultry, white breast meat without skin	3 oz (84 g)	25
Steak, sirloin	3 oz (84 g)	25
Pork roast, trimmed	3 oz (84 g)	24
Poultry, dark meat	3 oz (84 g)	22
Beans, kidney, canned	½ cup (88.5 g)	8
Milk, skim	1 cup	8
Milk, whole	1 cup	8
Peanut butter, smooth or chunky	2 tbsp (32.3g)	8
Yogurt, plain, whole milk	1 cup (245g)	8
Egg	1	6
Peanuts	1 oz (28 g)	5

Source: Adapted from Woods NM 1999

### Recommended local snacks (energy and protein per 100 g edible portion)

Food item	Energy (kcal)	Protein (g)
Bean cake ( <i>akara</i> )	606	26.3
Steamed bean pudding ( <i>moi moi</i> )	612	24
<i>Fura-da-nono</i> , fresh	418	10.7
<i>Fura-da-nono</i> , cooked	405	12.3
<i>Ekuru</i>	600	22.6
Roasted maize ( <i>guguru</i> )	420	8.1
Maize roasted paste ( <i>kokoro</i> )	506	8.8
Walnut ( <i>awusa, ukpa</i> ), seed, dried	419	28.7
Cashew nut, roasted	550	18.6
Groundnut, cooked	235	16.8
Groundnut, dried roasted	595	23.2
Melon seed, roasted, fried ( <i>robo</i> )	554	40.4

Source: Oguntola EB and IO Akinyele 1995

## Commonly eaten vegetables in Nigeria

Common name	Scientific name	Local name	Part eaten
Amaranth	<i>Amaranthus cruentus</i>	Tete (Yoruba) Inine (Igbo) Aleho (Hausa)	Leaves
Fluted pumpkin	<i>Telfairia occidentalis</i>	Ugu (Igbo)	Leaves and seeds
Jews mallow	<i>Corchorus olitorius L.</i>	Ewedu (Yoruba) Kerenkeren (Igbo)	Leaves
	<i>Celosia argentea</i>	Soko (Yoruba) Eliemionu (Igbo)	Leaves
Waterleaf	<i>Talinum fruticosum</i>	Gbure (Yoruba) Gbologi (Igbo)	Leaves
Bitter leaf	<i>Veronica amygdalina</i>	Ewuro (Yoruba) Onugbu (Igbo)	Leaves
Cassava leaf	<i>Manihot utilissima</i>	Ewe Ege (Yoruba) Akwukwo akpu (Igbo)	Leaves
Eru	<i>Gnetum africanum</i>	Okazi (Igbo)	Leaves
Common okra	<i>Abelmoschus esculentus</i>	Ila (Yoruba) Okwulu (Igbo)	Fruit and leaves
Green peppers	<i>Capsicum (C.) annuum</i> and <i>C. frutescens</i>	Ata (Yoruba) Ose (Igbo)	Fruit and leaves
Clarifier tree Horseradish tree	<i>Moringa oleifera</i>	Zogale (Hausa) Okwu-olu (Igbo)	Leaves and flower
Camwood	<i>Baphia Nitida</i>	Oha (Igbo)	Leaves and flower
Sorrel	<i>Rumex acetosa</i>	Ishapa (Yoruba)	Leaves
	<i>Solanecio biafrae</i>	Worowo (Yoruba)	Leaves
Basella Indian spinach	<i>Basella spp.</i>	Amunututu (Yoruba)	Leaves
Myrianthus leaves	<i>Myrianthus arboreus</i>	Ujuju (Igbo)	Leaves
Baobab leaves			Leaves

## Roles of some vitamins and minerals in the body and their food sources

Nutrient	Role	Sources
Vitamin A	<ul style="list-style-type: none"> <li>Required for maintenance of epithelial cells, mucous membranes, and skin.</li> <li>Needed for immune system function and resistance to infections.</li> <li>Ensures good vision.</li> <li>Needed for bone growth.</li> </ul>	Full-cream milk (when fortified), cheese, butter, red palm oil, fish oil, eggs, liver, carrots, mangoes, papaya, pumpkin, green leafy vegetables, and yellow or orange fleshed sweet potatoes.
Vitamin B <sub>1</sub> (thiamine)	<ul style="list-style-type: none"> <li>Used in energy metabolism.</li> <li>Supports appetite and central nervous system functions.</li> </ul>	Whole-grain cereals, meat, poultry, fish, liver, milk, eggs, oil, seeds, and legumes.

Nutrient	Role	Sources
Vitamin B <sub>3</sub> (niacin)	<ul style="list-style-type: none"> <li>Essential for energy metabolism.</li> <li>Supports health and integrity of skin and nervous and digestive systems.</li> </ul>	Milk, eggs, meat, poultry, fish, peanuts, whole-grain cereals, and unpolished rice.
Vitamin B <sub>6</sub> (pyridoxine)	<ul style="list-style-type: none"> <li>Facilitates metabolism and absorption of fats and proteins.</li> <li>Converts tryptophan to niacin.</li> <li>Helps make red blood cells.</li> </ul>	<p>Legumes (white beans), potatoes, meats, fish, poultry, shellfish, watermelon, oilseeds, maize, avocado, broccoli, and green leafy vegetables.</p> <p>Alcohol destroys vitamin B<sub>6</sub>.</p> <p>Some tuberculosis drugs cause B<sub>6</sub> deficiency.</p>
Folate (folic acid)	<ul style="list-style-type: none"> <li>Required for synthesis of new cells, especially red blood cells and gastrointestinal cells.</li> </ul>	Liver, green leafy vegetables, fish, legumes, groundnuts, and oil seeds.
Vitamin B <sub>12</sub>	<ul style="list-style-type: none"> <li>Required for synthesis of new cells; helps to maintain nerve cells.</li> <li>Works together with folate.</li> </ul>	Meat, fish, poultry, shellfish, cheese, eggs, and milk.
Vitamin C	<ul style="list-style-type: none"> <li>Helps the body to use calcium and other nutrients to build bones and blood vessel walls.</li> <li>Increases resistance to infection and acts as an antioxidant.</li> <li>Important for protein metabolism.</li> </ul>	<p>Citrus fruits such as oranges, grapes, tangerine, and guava; almonds; green leafy vegetables; tomatoes; potatoes; banana.</p> <p>Vitamin C is lost when food is cut up, heated, or left standing after cooking.</p>
Vitamin D	<ul style="list-style-type: none"> <li>Required for the mineralization of bones and teeth.</li> </ul>	<p>Produced by skin on exposure to sunshine.</p> <p>Milk, butter, cheese, fatty fish, eggs, and liver.</p>
Vitamin E	<ul style="list-style-type: none"> <li>Acts as an antioxidant.</li> <li>Protects cell membranes and metabolism, especially red blood and white blood cells.</li> <li>Protects vitamin A and other fats from oxidation.</li> <li>Facilitates against disease, particularly in lungs.</li> </ul>	Green leafy vegetables, vegetable oils, wheat germ, whole-grain products, butter, liver, egg yolk, peanuts, milk, fat, nuts, and seeds.
Calcium	<ul style="list-style-type: none"> <li>Required for building strong bones and teeth.</li> <li>Important for normal heart and muscle functions, blood clotting, blood pressure, and immune defences.</li> </ul>	Milk, yogurt, cheese, green leafy vegetables, broccoli, dried fish with fish bones, legumes, and peas.
Iron	<ul style="list-style-type: none"> <li>Formation of blood.</li> <li>Required for mental alertness.</li> </ul>	Egg, meats, fish, liver, milk, pumpkin leaves, banana, and dark green leafy vegetables.
Zinc	<ul style="list-style-type: none"> <li>Important for the function of many enzymes.</li> </ul>	Meats, cereals, fish, poultry, shellfish, whole grain, cereals, legumes,

Nutrient	Role	Sources
	<ul style="list-style-type: none"> <li>▪ Acts as an antioxidant.</li> <li>▪ Involved with making genetic material and proteins, immune reactions, transport of vitamin A, taste perception, wound healing, and sperm production.</li> </ul>	peanuts, milk, cheese, yogurt, and vegetables.
Selenium	<ul style="list-style-type: none"> <li>▪ Acts as an antioxidant together with vitamin E.</li> <li>▪ Prevents the impairing of heart muscle.</li> </ul>	Meats, eggs, seafood, whole grains, and plants grown in selenium-rich soils.
Magnesium	<ul style="list-style-type: none"> <li>▪ Important for building strong bones and teeth, protein synthesis, muscle contraction, and transmission of nerve impulses.</li> </ul>	Nuts, legumes, whole grains, dark green leafy vegetables, and seafoods.
Iodine	<ul style="list-style-type: none"> <li>▪ Ensures the development and proper functioning of the brain and the nervous system, important for growth, development, and metabolism.</li> </ul>	Seafood, iodized salt, and plants grown in iodine-rich soils.

## **Annex E. Supplementary information on CMAM**

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Community-Based Management of Acute Malnutrition (CMAM) is a highly effective intervention for rehabilitating children with severe acute malnutrition. Unfortunately, it is very intensive and expensive compared to programmes that prevent malnutrition, and it also cannot reverse the long-term effects of malnutrition if the intervention occurs after 2 years of age. The ideal situation is to have wide and equitable coverage with programmes that prevent malnutrition, with CMAM capacity integrated into the health system for those few children who do not reach the system until they become severely acutely malnourished.

### **Key principles of CMAM**

The community-based approach involves timely detection of severe acute malnutrition (SAM) in the community and, for those without medical complications, provision of home treatment with ready-to-use therapeutic foods (RUTFs) or other nutrient-dense foods. If properly combined with a facility-based approach for those malnourished children with medical complications, and implemented at large scale, community-based management of SAM could prevent the deaths of hundreds of thousands of children.

#### **Principle 1: Maximum access and coverage**

CMAM treats the majority of SAM cases at home and aims to restrict inpatient care to only those suffering from acute malnutrition with medical complications or infants less than 6 months old. With CMAM, decentralized networks of outpatient treatment sites provide a take-home ration of RUTF along with routine medicines. By providing easy access and reducing the opportunity costs associated with enrolment in a therapeutic feeding programme, CMAM increases the coverage and impact. Data from community-based therapeutic care programmes (where field experience on community-based management of SAM exists to date) demonstrate that CMAM can achieve very high coverage and excellent recovery rates.

#### **Principle 2: Timeliness**

SAM in children can be identified in the community before the onset of complications. This is achievable through effective community outreach, mobilisation, and simplified screening by measuring MUAC and recognising oedema.

#### **Principle 3: Appropriate medical and nutritional care**

Medical conditions are assessed by conducting appetite tests. Community health workers and volunteers determine whether the child can be treated as an outpatient with regular visits to a health facility or must be referred to inpatient care.

#### **Principle 4: Care for as long is needed**

Through decentralising distributions, engaging with communities, working with local health care providers and outreach, CMAM improves access to services, case finding, and follow-up.

### **Principle 5: Building local and existing capacities**

CMAM programmes aim to treat the majority of severely acutely malnourished people in their homes, not in therapeutic feeding centres or nutritional rehabilitation units (NRUs). The aim is to utilise and build on existing capacities, using only a few highly professional staff to facilitate the process, rather than using large external teams and creating parallel structures. In doing so, CMAM helps to equip communities to deal more effectively with future periods of vulnerability.

### **Principle 6: Flexibility and adaptability**

An important principle in CMAM is that programmes must be adapted to the context in which they operate. Consequently, CMAM takes many different forms, depending on opportunities and constraints. CMAM combines the traditional elements of nutritional rehabilitation with new interventions, such as outpatient therapeutic programme, specialized coverage surveys, and the local production of RUTF.

## **Recent innovations and evidence making CMAM possible**

### **Availability of RUTF**

Children with SAM need safe, palatable foods with high energy content and adequate amounts of vitamins and minerals. RUTFs are soft or crushable foods that can be consumed easily by children from the age of 6 months without adding water.

RUTFs have a similar nutrient composition to F100, which is the milk-based therapeutic diet used in hospital settings. However, RUTFs have distinct advantages over traditional milk-based therapeutic diets, including less susceptibility to contamination, greater resistance to bacterial growth, and the fact that RUTFs contain iron.

RUTF can be produced locally using simple equipment. However, thorough inspections and quality control are needed for large-scale local production to ensure that there is no risk of contamination of the ingredients and that the product has the right composition and quality. The cost for local production can vary based on availability of ingredients and the capacity of local manufacturers.

### **Classification of acute malnutrition for CMAM**

An updated classification has been proposed for use in CMAM, dividing the category for children with SAM into: 1) SAM with medical complications and 2) SAM without medical complications. The new classification recommends that children with SAM and medical complications be treated in inpatient care until their condition is stabilised. This ensures that children with increased mortality risk are treated appropriately. It also recommends that those with SAM with appetite and without medical complications be treated in outpatient care.

### **Screening and admission using mid-upper arm circumference measure**

Community health workers or volunteers can easily identify the children affected by SAM using simple coloured plastic strips that are designed to measure MUAC. This strip makes it easy to understand how children are classified and whether they will qualify for treatment.



MUAC is simple to use. A MUAC tape can be used by one person and is easily transportable. It can fit into a pocket. It also does not require literacy, numeracy, or additional equipment. This makes it easy to use at the community level, increasing the likelihood of early identification and presentation. However, simple training is needed to ensure correct use of the MUAC tape.

MUAC is used for identification of SAM during screening at the community level and admission for treatment at the health facility. Using MUAC alone for admission means that all children who are referred by community health workers and who come to outpatient care would be admitted and therefore would not be rejected if they do not meet the weight-for-height (WFH) criteria for admission. Using MUAC alone as independent criteria for SAM was endorsed by the World Health Organization. Please refer to Annex B for guidance on using a MUAC tape.

### **Community outreach component**

Community outreach is an essential component of CMAM, together with inpatient care for children with SAM with medical complications, outpatient care for children with SAM without medical complications and, in some contexts, services to address moderate acute malnutrition (MAM).

Community outreach helps to ensure that children with SAM are detected early—before the onset of medical complications—and referred for treatment, leading to better clinical outcomes and decreased strain on inpatient services.

Community outreach is vital to CMAM in any context, whether it is implemented by nongovernmental organizations or the Federal Ministry of Health and whether the context is a nutrition emergency or a stable development setting.

In addition to detection and referral of children with SAM, community outreach promotes understanding of SAM and SAM treatment and identifies and addresses common barriers to access to CMAM services (e.g., distance, cost of transport, mistrust of health care, ingrained cultural practices, etc.).

Community outreach activities are organized around: 1) community assessment, 2) formulation of community outreach strategy, 3) development of messages and materials, and 4) community mobilization and training.

### **Outpatient care for the management of SAM without medical complications**

Direct outpatient care means admitting children with severe malnutrition without complications into the outpatient programme with no period of inpatient stabilization treatment. It is essential to admit these uncomplicated cases directly into outpatient care in order to enable CMAM programmes to achieve coverage. Indirect admissions into outpatient care are people who presented suffering from malnutrition with complications and who received initial inpatient stabilization care in a stabilization centre before being transferred into outpatient care.

### **Admission criteria into outpatient care**

- Children 6 to 59 months of age who have SAM, an appetite (ability to eat RUTF, passing the appetite test), and no medical complications (i.e., MUAC <110 cm or weight-for-height <3 Z-score).
- Children whose mother/caregiver refuses inpatient care despite advice; the child will require follow-up home visits and close monitoring while in outpatient care.
- Children who a health care provider has determined should be admitted even though they do not meet admission criteria, such as children over 5 years old with bilateral pitting oedema or who are visibly severely wasted.
- Children referred from inpatient care to complete the treatment according to the protocol.
- Children who return after defaulting (absent for three consecutive sessions) and who need to continue the treatment.

### **Who is not admitted to outpatient care?**

- Children with SAM and medical complications, including no appetite, should be referred to inpatient care.
- Children under 6 months who have bilateral pitting oedema or visible wasting should be referred to inpatient care for SAM with medical complications for specialised treatment of SAM in infants. Support for continued breastfeeding is essential. If the mother has ceased breastfeeding, relactation should be encouraged and supported. If child is separated from mother, the guidance presented in Sections 4.3, 5.4, and 5.6 of this document may be followed.
- Moderately malnourished children should be referred to supplementary feeding or other treatment services for MAM, as available.
- Children who are sick but do not have SAM should be referred to other appropriate health services.

### **Inpatient care for the management of SAM with medical complications in the context of CMAM**

Cases of SAM with complications are treated in CMAM inpatient care. Children with SAM with medical complications face a high risk of mortality. They require 24-hour inpatient care until their condition stabilises, over a period usually spanning four to seven days. Inpatient care is the component of CMAM services that provides medical treatment and nutrition rehabilitation for children with SAM with medical complications or no appetite and infants under 6 months old with bilateral pitting oedema or visible wasting (or insufficient breastmilk in a vulnerable environment). Once stabilised, the children continue treatment in outpatient care until they recover. The aim here is to identify and address life-threatening problems, begin to treat infections, start correcting electrolytic imbalances and specific micronutrient deficiencies, and begin feeding.

Centre-based care for SAM is provided in hospitals, health facilities, or specialised centres (e.g., therapeutic feeding centre, NRU, etc.) with 24-hour care. Children with SAM receive inpatient care for the stabilisation of the medical condition and for nutrition rehabilitation until weight recovery. Inpatient care for children with SAM often already exists in the paediatric units of hospitals and sometimes at clinics or NRUs. Hospitals should have health care providers on duty

who have been trained in the WHO treatment protocols, including the management of SAM with medical complications.

The inpatient care component of CMAM is relatively small because most children with SAM are treated as outpatients. Generally, fewer than 20 percent of children with SAM have medical complications that require inpatient care. This will vary according to location and context.

Decisions about adapting medical treatment and nutrition rehabilitation protocols to account for outpatient care and about the location of sites must be made jointly with the FMOH and should take into account existing capacity (e.g., staff, space, beds, supplies, storage, etc.). The WHO guidelines for the inpatient treatment of severely malnourished children (2003) provide detailed information on a 10-step treatment of children with SAM.

Treatment supplies required for inpatient care are based on the WHO guidelines. The main required supplies are F75 and F100 therapeutic milks, essential medicines and medical equipment, ReSoMal, treatment protocols, and a reliable clean water source. RUTF is also important, as it is used to help transition children to an RUTF diet before his/her referral to outpatient care and for children with SAM who are admitted to inpatient care and have appetite. F100 is used for the nutrition rehabilitation of infants under 6 months (F100 diluted) or for children over 6 months who remain in inpatient care and are unable to eat the RUTF for specific medical reasons (e.g., mouth rash, disability, etc.). In addition, if appropriate and possible, inpatient care should make food available for the child's mother/caregiver, as well as provide soap. Other requirements include equipment for food preparation and distribution and insecticide treated nets in malaria-endemic areas.

## Annex F. Additional resources

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1. Food and Nutrition Technical Assistance (FANTA) 2. *Anthropometry bookmark*. Washington, DC: FANTA-2; 2011. Accessed online at:  
[http://www.fantaproject.org/downloads/pdfs/Bookmark\\_Anthro\\_Feb2011\\_English.pdf](http://www.fantaproject.org/downloads/pdfs/Bookmark_Anthro_Feb2011_English.pdf).
2. World Health Organization (WHO). *Indicators for assessing infant and young child feeding practices. Part I: Definition*. Washington, DC: WHO; 2007. Accessed online at:  
[http://whqlibdoc.who.int/publications/2008/9789241596664\\_eng.pdf](http://whqlibdoc.who.int/publications/2008/9789241596664_eng.pdf).

