NUTRITION GUIDELINES

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Table of content

CHAPTER 1

Food and Nutrition Assessments

Any response to malnutrition in a population requires a comprehensive analysis of its underlying causes. Thus, any assessment of a food and nutritional situation must:
– Understand the causes of malnutrition in a given area, taking into consideration the political, economic and social context.
– Identify causal factors relating to access to food, health services and social care systems.
– Define the stage of the food security problem (food insecurity, food crisis or famine).
– Identify appropriate and feasible interventions according to the stage of food insecurity and context.

This chapter focuses on malnutrition within populations and provides the basis of understanding assessment methodologies.

1.1 - Causes of malnutrition

1.1.1 - Immediate causes of malnutrition

Malnutrition is defined as an imbalance between the supply of nutrients and the body's demand for growth, maintenance, and specific functions (World Health Organisation, WHO). In other words, adequate nutrition is indispensable for physical development and maintenance, resistance to disease and capacity to work.

Insufficient intake of macronutrients (protein, carbohydrate, fat) causes wasting; while insufficient intake of micronutrients (vitamins and minerals) causes micronutrient deficiency.

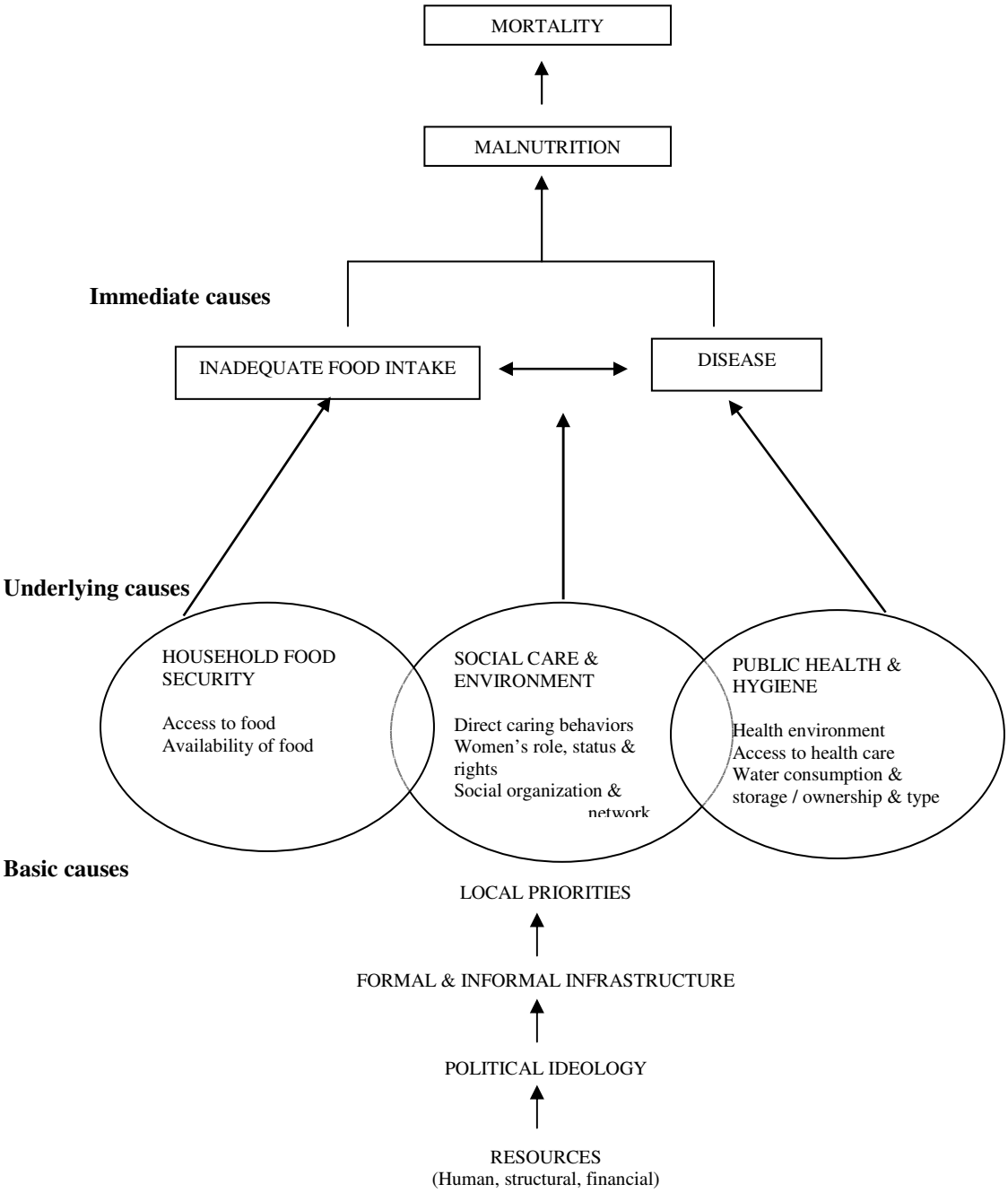
Malnutrition is the effect of an unbalanced diet and/or disease (e.g. tuberculosis, HIV). Inadequate food intake (in quality or quantity) leads to increased sensitivity for infections. Infections often cause nutrient mal-absorption (diarrhoea, thrush) and reduced food intake (poor appetite, nausea, etc) what can lead to malnutrition. In turn, malnutrition impairs the immune system and increases the incidence, severity and duration of infections, creating a vicious cycle perpetuating malnutrition ultimately leading to mortality.

Common forms of malnutrition include growth failure (stunting), marasmus (severe wasting), kwashiorkor (pitting oedema in lower legs and feet), marasmus and kwashiorkor together (See chapter 2 and 6) and micronutrient deficiencies (See chapter 9)

1.1.2 - Underlying causes of malnutrition

At the household and community level, the UNICEF *Framework of Underlying Causes of Malnutrition and Mortality* identifies three underlying factors that influence nutritional status: household food security, health and environment, and social and care environment.
These factors are interrelated and need to be assessed; interventions should address insufficient access to food, poor water/sanitation, inadequate health services and inadequate care for the vulnerable.

UNICEF Framework of Underlying Causes of Malnutrition and Mortality [1]



Food insecurity

Food security refers to the ability of the household to secure, either from its own production

[1] Adapted from UNICEF

or through purchases, adequate food for meeting the dietary needs of all members of the household[2]. Food insecurity is determined by three factors:

- Food availability: the quantity and quality of food available at household level.
- Food accessibility: the ways in which food is acquired. This can be through production (crops, livestock); labour (waged labour, profession); market transactions (trade); transfers (gifts, loans, charity, state subsides).
- Food utilisation: the use of available food will depend on availability of firewood, utensils, tools, mills, water quality, intra-household distribution, food processing etc.

Usually, economic crises and political insecurity (especially war) create and aggravate food insecurity. During these situations, populations try to cope with damaged infrastructure, looted crops and homes. In conflict situations, individuals or groups may aim to have control over food (of others) in order to manipulate civil populations, feed militia or armies. This results in a reduction of food availability and accessibility, and an increase of population movements. Natural disasters (drought, flooding, earthquakes, etc.) are rarely the only cause of food insecurity.

Health environment

Several factors contribute to the deterioration of the health environment resulting in an increased risk of infection. These factors include the lack of:

- Adequate quantities of safe water
- Hygiene of living environment (access to clean latrines, safe waste disposal, living space, etc.)
- Curative health services and preventative health care (immunisation, vitamin A, iron supplementation, etc.)

Social and care practices

Adequate care of children (feeding practices, health utilization, emotional support and cognitive stimulation etc.), women (support during pregnancy and lactation, etc.) and other vulnerable members (elderly, disabled, sick etc.) are essential to decrease the risk of malnutrition. Households generally care for their direct nuclear family members. Community network and extended family may also help households in the care of their members, as well as other socially vulnerable people.

The extent to which households provide care for members outside their family depends mainly on:

- Available resources (e.g. access to money, food)
- Available time of caregivers
- Number of people who need care
- Cultural practices (i.e. family bonds, hygiene and health behaviours, food taboos)
- Role and position of women (access to resources, decision-making power, etc.)

1.2 - Food insecurity, food crisis and famine

When food access/availability deteriorates, food insecurity can worsen to famine. The process often occurs in three stages, each of which is distinguished by specific coping mechanisms and risks of mortality. People try to cope with eroded food security and livelihoods by changing income and expenditure patterns. Reduction in food intake, sales of assets, reduction

[2] Food security is defined as 'access by all people at all times to the food needed for a healthy life" (FAO/WHO)

of expenditures on health care, reduction of support to family members, distress migration are examples of coping mechanisms. This may have further detrimental effects on the health environment and caring practices.

1.2.1- Food insecurity

Food insecurity is a situation in which a population does not have sustainable access to sufficient and safe food to meet dietary needs.
Political context, economic crisis, conflicts can trigger or aggravate food insecurity and affect both urban and rural populations.
The coping mechanisms developed by the population are reversible and relatively harmless to their future productive capacity. Food insecurity is usually temporary. Households are generally able to resume viable livelihoods once the food situation has improved. Levels of mortality and morbidity are somewhat affected by the lack of hygiene and health care combined with a marginal diet.

In many countries, populations experience seasonal food shortages (or hunger gaps). For farmers, this usually occurs before a harvest season when food stocks from previous harvests (e.g. grain stores) have been exhausted and market prices are high. For pastoral populations, this often occurs at the end of a dry season, when grazing areas are scarce and epidemics in livestock are prevalent.

Characteristics of food insecurity

Coping mechanisms	Consequences
Increase resources • Diversification of income sources (crops) • Long work hours • Cattle: overstocking and mobility (long distance travel to grazing areas) • Increased sales of livestock • Sale of non productive assets (utensils, jewellery, furniture, firewood and charcoal) • Loans • Prostitution, etc. *Decrease expenditures* • Food intake reduction (smaller quantities eaten and reduced frequency of meals) • Changes in consumption behaviour (consumption of cheaper foods, wild foods such as roots, berries etc.) • Reduction of expenditures on water use (towns), health care, firewood *Population movement* • Temporary or seasonal migration in search of urban employment • Larger distances for search of grazing areas	*Less time for care giving* • Quality and time for care reduced • Care restricted to family members • Lack of community support to vulnerable groups *Malnutrition* • Moderate degradation of nutritional status *Mortality and morbidity* • Level of mortality generally not influenced • Higher prevalence of infectious diseases

1.2.2 - Food crisis

Food crises are caused by unexpected severe food shortages. In conflict situations, populations may experience sudden reductions in food availability due to forced population movement, destruction or looting of crops and livestock, diversion of food aid, unsafe access to food sources (markets, farms, food aid) etc.
In non-conflict situations, food crises can be prompted by a gradual deterioration of food access caused by prolonged or repeated droughts, flooding, large livestock epidemics, economic crisis, etc.
Populations are forced to sell goods essential to their future livelihood (e.g. cattle). These coping mechanisms are irreversible and compromise their future productive capacity; a return to normal livelihood is difficult.

Characteristics of food crisis

Coping mechanisms	Consequences
Increase resources • Sale of productive assets (agricultural tools, seeds, livestock, farmland, house, essential household items, land rights etc.) • Renting out of farmland or house • Massive slaughtering of livestock *Decrease expenditures* • Serious savings on health care, water use, food and firewood *Population movement* • Long term migration in search of alternative means of survival (men), displacement of entire families	*Breakdown of social structures* • Long term migration: men do not return from seasonal migration (or in conflict situations, are enrolled in armies) • Community structures collapse, mutual help decreases, skilled and educated people (health staff) migrate, collapse of health system. • Reduction of support to non-productive members of households (children, elderly, disabled people) • Marginalisation of non-productive people (orphans, beggars etc.) *Malnutrition* • Degradation of nutritional status, especially among vulnerable groups (children, the elderly, poor, disabled, sick etc.) *Mortality and morbidity* • Levels of morbidity and mortality are generally increased, as people do not have access to, or are unable to afford, food, health care and drugs.

1.2.3 - Famine

Famine is an absolute lack of food affecting a large population for a long time period. The political context has almost always a role to play in a famine (war, conflicts, political manipulation etc). It can also be a sign of inadequate relief assistance during the food crisis stage. During a famine, households are destitute, and no longer have coping mechanisms to fall back on. Several people and households leave their homes in search of food: distress migration.

The combination of insufficient food and poor health care environment are the leading causes

of death for severely and moderately malnourished people. Adequate provision of food, access to curative health care, sanitation and shelter can prevent many deaths.

Characteristics of famine

Coping mechanisms	Consequences
Expenditures • Focus on food, and individual consumption *Population movement* • Distress migration: entire households and villages leave home in search of water and food.	*Social collapse* • Broken families • Traumatised people *Malnutrition* • High in all age groups • Related to overall lack of food *Mortality and morbidity* • Both extremely high

1.2.4 - Stages of food security

As food insecurity progresses to famine, there is an increased prevalence of malnutrition, resulting in increased mortality. The distinction between the three stages of food insecurity, food crisis and famine is not clear-cut. The progression is manifested by various coping mechanisms at each stage, which develop from reversible (food insecurity) through irreversible (food crisis) to not coping at all (famine). Emergency assistance aims at decreasing mortality, and malnutrition and preserving livelihoods. The speed at which food insecurity evolves into famine varies according to the nature (or the origin) of the crisis, its context, populations' coping strategies, and the availability of food aid. War and the absence of (or insufficient) food aid are the main aggravating factors.

1.3 - Food and nutritional assessment

1.3.1- Principles and objectives

Objectives

The objective is to enable decision making an appropriate nutritional strategy by:
- Assessing the food availability and accessibility
- Assessing the nutritional situation of a population
- Estimate the extent of the crisis
- Identifying vulnerable groups
- Estimating immediate food needs
- Collecting information necessary for programme implementation
- Defining operational constraints and opportunities

1.3.2 - How to proceed

Key information gathered during an initial assessment should include:
- Population figures, population movements and vulnerable groups
- Causes of the crisis and political context

- Mortality and morbidity patterns
- Nutritional status and food security
- Health system and operational constraints

Validity and reliability of data are crucial, since data are used for decision-making about programme implementation. Good quality data is more important than the quantity of data collected. Data collection should be rigorous, and surveys should follow standardised protocols. Information should be collected from various sources and crosschecked.

The type of data required must be determined prior to arrival in the field. Topics previously researched by other reliable sources can be used for analysis. Reasons for the exclusion of certain topics in the assessment must be justified in the report.
The different steps in conducting assessments are summarised in the table below.

Steps in conducting assessments

Where/When	Activities
Pre-departure and capital	– Compilation of reports – Interviews with informed persons (WFP, UNDP, MoH, NGOs, etc.)
Field level	– Direct observation – Key informant interviews – Data from health facilities and feeding centres – When necessary • Mapping • Focus group discussions • Rapid MUAC assessment • Anthropometric survey • Retrospective mortality survey • Household survey • GFD evaluation – Preliminary analysis, report, discussion of findings, recommendations
After assessment	– Final report

See Annex 1.1: Assessment topics and suggestions for analysis
See Annex 1.2: An example of a report
See Annex 1.3: Different methods of data collection
See Chapter 2: Nutritional survey methodology

In an emergency situation, an extensive nutritional assessment can be difficult to complete due to time constraints. Initial assessments (i.e. exploratory missions) should be just sufficient to determine the necessity for a nutritional intervention, and to define appropriate strategies for programme implementation. Later the nutritional assessment can be completed and refined with more accurate data such as anthropometric data, detailed information about food security, nutrient deficiencies, etc.

1.3.3 - Determining the stage in process to famine

The table below outlines some characteristics of the stages from food insecurity to famine. The indicators should not be analysed in isolation, however, analysed in combination the indicators give an indication of the food security stage of a particular situation. Intervention

strategies should be developed accordingly (see chapter 3).

Specific characteristics in times of food insecurity, food crisis and famine

	Food insecurity	**Food crisis**	**Famine**
Livelihood changes	Temporary	Threat to the future	Complete destitution
Selling of capital assets	None or very limited	Important	Exhausted or very limited
Income diversification	Normal or slightly increased	Highly increased	Exhausted or limited
Food availability	Normal or slightly reduced	Reduced	Rare or none
Food accessibility	Slightly reduced	Reduced	Severely reduced or none
Dependence on food aid	Low	Moderate to high	Full
Expenditures	Savings on food, water, firewood and health care	More savings on vital sectors	Expenditures on food only
Social breakdown	Less time available for care; care restricted to direct family members	Decreased support for socially vulnerable (Elderly, children headed households, disabled)	Social collapse: broken families, traumatised people
Population movement	Seasonal migration, mainly by men	Migration of families, population displacement	Distress migration
Affected by Malnutrition	Physically vulnerable (related to disease)	Socially vulnerable (related to poverty, access and care)	Everybody, all age groups (related to general lack of food)
Global malnutrition*	Low or moderate (0-10%)	Moderate (10-15%) to High (20-40%)	High (> 40-50%)
Severe malnutrition rate*	Low (<3%)	Moderate (3-4%)	High (>5%)
Severe malnutrition in adults	Low	Some	High
Mortality	Comparable with an average year (CMR<1/10,000/day)	Moderate (CMR > 1/10,000/day) to High (CMR >2/10,000/day)	Alarming (CMR > 5/10,000/day)

* Malnutrition rates should be considered according to % of the median and Z-scores (see Chapter 2).

Findings interpretation

– It is important to consider the time and season of year during which information is being collected. Results of an assessment can lead to different conclusions, depending if it is carried out at the beginning or end of a hunger gap.

– Access to food in non-displaced populations should be compared to an average year during which the population did not experience a food shortage[3]. A situation can appear 'bad' to an outsider, even if perceived as normal by a population, and vice versa.

– Mortality rates represent the ultimate indicator of the seriousness of a situation although these are also influenced by a variety of factors (health status, outbreaks, etc.)

1.4 - Nutritional Surveillance

1.4.1 - Objectives

Surveillance is the ongoing systematic collection, analysis and interpretation of data in order to detect trends with the aim of adapting nutritional strategies and interventions to the

[3] Baseline livelihood profiles gives detailed information on normal livelihoods of different population groups in a country.http://www.fews.net under "Livelihoods"

changed situation. Surveillance includes not only data collection. It must also lead to action and feedback.

Objectives

- Detect and predict changes in the food and nutritional situation (particularly a deterioration)
- Quantify changes in food security or in the nutritional environment
- Provide information for advocacy and lobbying messages
- Identify areas needing further investigation

1.4.2 - Data collection

Types of data collection

Data collection can be carried out in two ways:

– Systematic data collection (periodic: weekly or monthly): Data collection and analysis provide information about trends in a health and nutritional situation. Information collected include: weekly mortality rates, General Food Distribution (GFD), number of admissions and outcome indicators of feeding centres, market prices, etc. Systematic data are not necessarily representative of an entire population. Sentinel sites may be used for routine data collection (See Annex 1.3).

– Intermittent data collection: Intermittent investigations confirm the trends identified by systematic data, and measure the extent of the change. Repeated snapshot investigations include anthropometric surveys, measles vaccination coverage surveys, retrospective mortality surveys, etc.

Focus of surveillance

The focus and priority of nutritional surveillance systems change with the stage of food insecurity.

Food insecurity

– Focus: to detect changes to or deterioration in food availability and accessibility.

– Subjects:

- Future food availability: rainfall, market prices, epidemics (human or animal), slaughter rates, harvest calendar, coping mechanisms, migration, diversification of resource, etc.

This information is often collected at different levels and centralised through a multitude of early warning systems (Early Warning Systems, Vulnerability Mapping) existing in many countries. The surveillance systems in such situations are complex and are not addressed in this manual.

Food crisis

– Focus: timely detection of further deterioration

– Subjects:

- Food availability and access (General Food Distribution, sale of assets, market prices, security);
- Population movements (arrivals, departures);
- Health status of the population (mortality trends, epidemiological data, access to water);
- Nutritional status (trend in admissions in feeding centres, hospitals, the prevalence of

malnutrition,);
- Programme functioning

Famine
Focus: monitoring trends in survival
Subjects:
- Survival: Mortality rates,
- Food availability (GFD)
- Health (epidemics, admission and mortality trends in specific feeding programmes, water accessibility).
- Nutrition (number admitted in feeding programs, malnourished adults)
- Population movements

1.4.3 - Selection of indicators

The implementation of an effective surveillance is determined by the choice of appropriate indicators. Indicators should meet several criteria. They must be relevant, sensitive (changing with the evolution of the situation) and simple to collect (a balance between time, resources, and detail of information is required).

Quality of data
Case definitions, data collection methods and cut-off points should remain constant. Validity and reliability of data are crucial, since data are used for programme decision-making. Good quality data are more important than the quantity of data collected. Any change in case definitions (i.e. indicators), data collection method or cut-off points affects trend analysis and comparison. For example, if a MUAC cut-off of < 125 mm is changed to < 135 mm, comparisons can no longer be valid and the prevalence of acute malnutrition becomes difficult to interpret.

Indicators
The following table lists the main indicators of food crises and famines. Several indicators are always incorporated in a surveillance system (e.g. mortality and malnutrition rates, stage of food problem, outbreaks in the area, etc.). Others are optional, depending on the context of the situation and actors involved.

Indicators in surveillance system

Indicators	**Methods / Sources** (see Annex 1.3)
Population figures	
Total population New arrivals/departures	Weekly reports from home visitors, authorities and agencies Mapping[4] Survey/census
Health status	
Mortality Weekly crude mortality rate[5] (CMR) Weekly under five mortality rate[5] (U5MR)	Weekly mortality report (authorities, home visitors, grave counting) Retrospective mortality survey
Main communicable diseases Weekly incidence	Weekly morbidity report from health facilities and feeding programmes
Epidemics If present: weekly or daily incidence and	Epidemiological surveillance report

[4] A technique where population size and composition is assessed by means of maps and sampling
[5] Expressed in number of deaths/10,000/day

Weekly case fatality rate	Weekly epidemic report
Measles vaccination status Coverage of measles vaccination	Survey Extrapolation from number of vaccines delivered
Nutrient deficiencies If present: weekly number of cases Weekly case fatality ratio	 Morbidity report heath facilities + feeding centres Direct observation
Food security	
General food distribution monitoring Quality of food distribution Quantity of food distributed (Kcal/p/d) Coverage	See Chapter 4
Food availability Harvest (good/bad) Market (full/empty) Weekly price trend of few selected items (including exchange rate) Average number of meals per day	 Direct observation Interview with key informants Focus group discussions Weekly market visit Household survey
Sale of assets People selling non-productive assets People selling productive assets	 Direct observation Interview with key informants
Nutritional situation	
Nutritional status of children Prevalence of acute malnutrition Weekly number of MUAC below criteria and bilateral oedema during screening, in clinics or sentinel sites. Weekly number of admissions in TFP and in SFP.	 Nutritional survey (see Chapter 2) MUAC distribution in health facilities or sentinel sites Weekly report from feeding centres
Nutritional status of adolescents and adults Weekly number and proportion of adolescents and adults admitted in TFP and SFP	Weekly report from feeding centres
Context	
Security Change in access for aid teams Change in population access to food	 Security report Direct observation Interview with key informants, focus groups discussions
Other interventions	
Non-food item distribution (soap, firewood etc.) What has been distributed, to whom, when? Is it sufficient?	 Interview with key informants Direct observation

CHAPTER 2

Measuring Malnutrition

2.1 Anthropometric indicators

2.1.1 - Definitions and objectives
2.1.2 - Measurements
2.1.3 – Z-scores and % of Median
2.1.4 – Measuring malnutrition
2.1.5 – Function and target population

2.2 Anthropometric nutritional surveys

2.2.1 - Definition, objectives and principles
2.2.2 - Preparation
2.2.3 - Target population
2.2.4 - Sampling principles
2.2.5 – Sampling procedures
2.2.6 - Analysis and interpretation
2.2.7 - Writing the report

This chapter discusses methods for measuring malnutrition among individuals (anthropometry), and for determining the prevalence of malnutrition in a population (nutritional surveys).

2.1 - Anthropometric indicators

2.1.1 - Definitions and objectives

Diagnosis of malnutrition depends on anthropometric measurements such as: weight, height (or length), mid-upper arm circumference (MUAC) and bilateral oedema.
Age and sex should be recorded to allow interpretation of indices.

Measurements when taken alone do not give information about nutritional status, with the exception of MUAC and bilateral oedema. They should be related to age or to each other and compared to a reference population in order to define indices: weight-for-age, height-for-age, weight-for-height, body mass index; these are expressed as: percentage of the median, Z-score, percentile and body mass index.
The indices are compared with a cut off point below which an individual is considered to be malnourished. Compiled for a population it gives an indicator: the prevalence of malnutrition can be calculated.

Objectives of an anthropometric assessment are to:
– Measure degrees of acute and chronic malnutrition among individuals
– Identify individuals at risk of death
– Select individuals to be enrolled in a feeding programme.
– Follow-up individuals enrolled in a feeding programme.
– Monitor individuals' growth
– Assess the prevalence of malnutrition in a population.

2.1.2 - Measurements

With the help of anthropometric measurements, indicators are constructed to evaluate the nutritional status of individuals and populations. The measurements most commonly used are: weight, height, mid-upper arm circumference, age and sex. The technique of taking the measurements are explained in annexes 2.1, 2.2, 2.3 2.4. Only some issues are highlighted here.

Weight
Weight is the most sensitive indicator for changes in the nutritional status. Oedema, either localized or generalised, will influence weight, as does a state of dehydration. Weight should be recorded with 100 grams precision for children and adults, and 10 g precision for infants (see Annex 2.1 for details of taking weight).

Height (Length)
Children shorter than 85 cm must be measured in a lying position, while those 85 cm or taller are measured in a standing position as reference tables NCHS/CDC/WHO table switch at this length (see Annex 2.5, 2.6). Individuals measured while lying down are taller (0.5 cm on average) than when standing (see Annex 2.2 and Annex 2.3 for details of measuring height).
Height should be measured at 1 mm precision. Height boards should be solid and it should be checked for accuracy. Adults need a longer measuring board. These boards can be ordered or made on the spot

(see Annex 12.4). Problems can arise when measuring adults, if patients have difficulty standing, feel weak and/or have contractions. In some cultures, the practice of measuring a child while lying down may be associated with death (i.e. measuring for a coffin). Educational sessions are important to inform families about this procedure.

Bilateral oedema

Nutritional oedema is an independent indicator of severe malnutrition. Only individuals with bilateral lower limb oedema are classified as having nutritional oedema. Apply moderate thumb pressure bilaterally to lower extremities (just above the ankle or on the tops of the feet), and count to 3 seconds. If a pit remains after the thumbs are removed, the person has oedema. Other presentations of having a poor nutrition (e.g. discoloured hair) are not valid indications for having nutritional oedema.

Mid-upper arm circumference (MUAC)

MUAC is an independent indicator for malnutrition. The standard MUAC tape is designed for children; a larger MUAC tape for adults also exists.

Age

Weight and height are often related to age. Therefore:

– Record children's ages with a precision of a month. For adults precision can be within 1 year or even 5 years.

– If birth date is already recorded on a health/immunisation card, the date of birth is directly recorded to avoid mistakes in calculating age.

– If birth date is not recorded, use a local calendar of events to estimate age. The mother is asked whether the child was born before or after certain major events until a fairly accurate age is determined.

– If birth date is unknown, estimate age using the height:

Height (cm)	Age (months)
65	6
75	12
85	24
110	59
130	10 years

– The following age categories are used in this book:

Age group	Age
Infants	0-6 months
Children	6 months to 10 years
Adolescents	10 to 18 years
Adults	Over 18 years

2.1.3 - Z-scores and % of the median

References

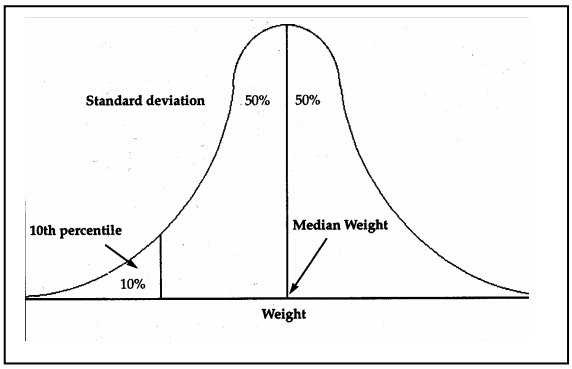
The measurements, often combined, are compared to values for a reference population to define indices:

– Weight-for-height: for the same height, the weight of a child is compared to the weight of the children of the reference population.

– Height-for-age: For the same age, the height of a child is compared to the height of the children of the reference population.

– Weight-for-age: For the same age, the weight of a child is compared to the weight of the children of the reference population.[1]
Reference tables have been drawn up by sex and age. However, for field use, sex combined tables have been drawn up for children up to 130 cm (see Annexes 2.5 and 2.6) and adults. For adolescents, there are separate female and male tables (see Annexes 2.7 and 2.8). Also appropriate computer software is available: these take into account the sex and age of the children.

Normal distribution curve



Median, Z-score and percentile are based on the normal distribution curve.
This bell shaped curve is called the Gaussian curve or normal distribution. The curve is symmetrical around the mean weight, the mean weight being the sum of all weights divided by the number of observations. For a given height, one can draw the distribution curve of the children according to their weight. In a normal distribution the mean weight is equal to the median weight[6], the median weight being the weight that splits the sample in two parts of equal size according to weight. This curve can be defined by its mean weight and its standard deviation.

The standard deviation (sd) is the square root of the sum of the squares of the differences between each observed weight and the mean weight, divided by the number of observations (n) minus one.

$$sd = \sqrt{\frac{\Sigma (\text{observed weight} - \text{mean weight})^2}{n - 1}}$$

For editor: sign above means square root

Percentage of the median (% W/H)
This expression requires knowledge of the median weight of children within a reference population of the same length/height. The value of the median weight can be found in reference tables for each height by 0.5 cm increments.

$$\text{W/H \% of the median} = 100 \times \frac{\text{Observed weight}}{\text{Median weight of reference population}}$$

Example: a child of 80.5 cm weighing 9.6 kg
The reference table gives a median weight of 10.9 kg for 80.5 cm
The W/H index expressed as % of the median is: 9.6/10.9 x 100 = 88.1%
Sex combined reference tables give a single median weight, and weights corresponding to 85%, 80%, 75%, 70% and 60% (for practical reasons), allowing the user to classify any child in a given range. Reading from the tables, this child is above 85% of the median. For reference tables see annex 2.5, 2.7 and 2.8.

[6] In reality, this is not exactly the case for a distribution according to weight for a given height. The distribution is slightly asymmetrical because weight variations are greater in the upper part of the distribution. In this case, the mean and the median are slightly different. Therefore, we use the median rather than the mean, since it is a better indication of the distribution of weight-for-height.

% W/A and % H/A can be calculated in a similar way.

Z-score (W/H sd)
Expression in Z-score uses the standard deviation of the reference distribution for a given height/length as a unit. The weight-for-height index expressed in Z-score represents the difference between the observed weight and the median weight of the reference population expressed in standard deviation (sd) units.

$$\text{W/H sd} = \frac{\text{(Observed weight – Median weight reference population)}}{\text{1 Standard deviation of reference population}}$$

Sex combined reference tables give a single median weight, and weights corresponding to – 2 Z-scores, – 3 Z-scores and – 4 Z-scores (for practical reasons), allowing the user to classify any child in a given range. For tables of Z-scores see Annex 2.6.
Z-scores are sometimes expressed as standard deviations: – 2 Z-scores = – 2 sd.
– 2 sd is approximately 80% W/H and –3 sd is approximately 70% W/H.
W/A sd and H/A sd can be calculated in a similar way.

Percentage of the median compared to Z-scores W/H
Indices expressed as % of the median yield different results from indices expressed in Z-score regarding W/H.
Z-scores take natural variations in weight into account, whereas % of the median is a simple calculation. Z scores have a true statistical meaning and allow for a more accurate description of the situation and comparison between populations.
Generally, when Z-scores are used, the number of children classified as malnourished is higher than when % of the median is used. Studies show that % of the median is at least as good for assessing risks of mortality. Results from nutritional surveys should be expressed in both Z-score and % of the median. The % of the median alone is used as a criterion for admission and discharge in feeding programmes.
Calculations to predict the target population should be based on % of the median, since admission criteria are based on it. For the same reason, the calculation of programme coverage should also be based on % of the median.

Percentiles
The 50th percentile is the weight that divides the distribution into two equal parts, whereby 50% lie below and 50% above. It coincides with the median weight.
In a similar way the 10th percentile is the weight under which 10% of the children of the reference population lie, whereas 90% are above (have a greater weight).
The various weights corresponding to the various percentiles are shown in the reference table.
The percentiles are mainly used to interpret the W/A in monitoring individual child growth.

2.1.4 - Measuring malnutrition

Classification of malnutrition
In emergency situations where acute forms of malnutrition are predominant, the weight-for-height index is the appropriate tool to quantify acute malnutrition in the population (along with the assessment of oedema and MUAC). Furthermore, these do not require the determination of age what is often difficult in these situations.

Acute and chronic malnutrition

	Acute malnutrition (wasting)	**Chronic malnutrition** (stunting in children)
Weight-for-height	✓	×
Height-for-age	×	✓
Weight-for-age	✓	✓
Mid-upper arm circumference	✓	×
Body mass index	✓	✓

Two systems of classification are used when defining acute malnutrition in individuals or in populations:
– Individual: moderate acute or severe acute.
– Population: severe acute and global acute. Global acute malnutrition refers to the total cases of moderate acute and severe acute malnutrition in a population.

The main anthropometric indices are used are for children and adolescents W/H, bilateral oedema and MUAC and for adults bilateral oedema, MUAC and BMI.
See Chapter 8 for diagnosis of malnutrition in infants younger than 6 months old.

Weight-for-height
W/H does not require any specification of age; it is therefore a useful tool in crisis situations, where age is often difficult to obtain. W/H can identify minor deterioration or improvement in nutritional status of individual children. (See Annex 2.5 and Annex 2.6)

W/H cut-off points for children and adolescents

Acute malnutrition	**% of the median**	**Z-scores**
Severe	< 70%	<-3 Z-scores
Moderate	≥ 70% - 80%	≥-3 Z-scores - -2 Z-scores
Global	< 80%	<-2 Z-scores

Indices for adolescent malnutrition are difficult to define, due to variations in maturational timing. Only the % of the Median is available for adolescents as the median weight-for-height is compiled from the NCHS standards for height-for-age and weight-for-age. See Annexes 2.7 and 2.8 for tables of W/H in % of the median for female and male adolescents.

Bilateral pitting oedema
It is always essential to evaluate the presence of oedema in the lower limbs. Bilateral oedema is a clinical sign of kwashiorkor. Children who present with this sign should be treated for severe malnutrition, irrespective of their W/H.

Degrees of bilateral oedema

Extent of oedema	**Grade**
Feet	+
Feet and legs	++
Feet and legs and other parts of the body	+++

Oedema in adults can be provoked by other pathologies (renal, cardiac, hepatic, etc.). In adults causes of oedema other then malnutrition must be excluded.

Grading of oedema for adults based on the Beattie classification

Extent of oedema	Grade
Absent	0
Minimal oedema on feet or ankles	1
Obvious oedema on feet or ankles	2
Oedema demonstrable up to knee (tibias)	3
Oedema demonstrable up to groin (inguinal area)	4
Total body oedema (anasarca)	5

Presence of oedema as 'grade 3', or above, is generally associated with negative outcomes.

Mid Upper Arm Circumference (MUAC)

MUAC is particularly sensitive to acute weight loss, as it reflects the peripheral wasting of muscle and subcutaneous adipose tissue. MUAC findings provide a rapid indication of the risk mortality.

Persons with MUAC below 110 mm are at risk of death (Only valid for older then 1 year). MUAC remains relatively stable between the ages 1 and 60 months, so that only one cut off point can be used. Agencies use different cut off values, the most commonly used cut off points are given below.

MUAC cut-off points for children 1-5 years

Acute malnutrition	MUAC
Severe	< 110 mm
Moderate	≥ 110 - 125 mm
Global	< 125 mm
At risk of malnutrition	≥ 125 - 135 mm

Research suggests that MUAC is as reliable as BMI to assess risks of mortality but there are no universal anthropometric standards for assessing acute malnutrition in adults. Patients' medical history and clinical examinations, in conjunction with MUAC, are essential to identify adult malnutrition. The most commonly used cut off points are given below.

MUAC cut-off points for adults, pregnant women and the elderly

Acute malnutrition	**Adults**	**Pregnant and lactating women**	**Elderly**
Severe	< 160 mm	< 170 mm	< 160 mm
Moderate	≥ 160 - 185 mm	≥ 170 - 185 mm	≥ 160 - 175 mm
Global	< 185 mm	< 185 mm	< 175 mm
At risk	No reference	≥ 185 - 210 mm	No reference

Body mass index (BMI)

BMI expresses the body weight of an individual in relation to his/her height. BMI is used for adolescents and adults, and varies according to genotype (ethnicity), gender and age.

Since there is a considerable inter- and intra-population variation, there is no universal standard reference for BMI. Therefore, it is necessary to verify whether proposed cut-off points correspond to the clinical state of adult populations, including history of acute malnutrition or chronic disease. BMI is not used in pregnant women, as their weight changes throughout pregnancy and therefore the BMI does not reflect the nutritional status of the woman.

Body Mass Index = $\frac{\text{Weight (in kg)}}{\text{Height}^2 \text{ (in m)}}$

Example: an adult of 1.60 m weighing 40 kg has a BMI of 40/(1.60 x 1.60) = 15.6 kg/m^2.

Commonly used BMI cut-off points

Acute malnutrition	Adults	Elderly
Severe	< 16	< 15
Moderate	≥ 16 to < 17	≥ 15 - < 16
Global	< 17	< 16
At risk	≥ 17 to < 18.5	No reference

Height-for-age

H/A is an index of chronic malnutrition. When nutrition is inadequate for a long period of time, children grow slowly. The height is reduced, compared to other children of the same age. This phenomenon is called "stunting". H/A reflects an individual's nutritional status over time. H/A should not be used as a criterion for the admission of children into feeding programmes.

Weight-for-age

W/A can be used to identify both chronic malnutrition (stunting) and acute malnutrition (wasting). W/A is used to monitor the individual growth of children; this is generally done using "The Road to Health Chart" in clinics.

Since W/A does not differentiate between acute and chronic malnutrition, it should not be used as a criterion for the admission of children into feeding programmes aiming at acutely malnourished children.

W/A cut-off points for children (0-59 months)

Malnutrition	% of the median	Z-score
Severe	< 60%	<-3 Z-scores
Moderate	≥ 60% to < 75%	≥-3 Z-scores - <-2 Z-scores
Global	< 75%	<-2 Z-scores

2.1.5 – Function and target population

The table on the next page outlines common functions in nutritional programming and the typical target populations used for each objective.

Function and target population

	Function	Target population
W/H	- Nutritional survey: acute malnutrition - Admission and monitoring in feeding program	< 5 years < 18 years
MUAC	- Screening for malnutrition - Rapid assessment - Monitor trends - Admission into TFP	1-5 years 1-5 years 1-5 years > 1 year

Oedema	- Nutritional survey: acute malnutrition - Admission into feeding program	< 5 years All ages
BMI	- Admission and monitoring in feeding program	Adults
W/A	- Individual growth monitoring	0-10 years
H/A	- Survey: chronic malnutrition - Individual growth monitoring	< 5 years 0-10 years

2.2 - Anthropometric nutritional surveys

2.2.1 - Definition, objectives and principles

Anthropometric surveys estimate the nutritional status of a population at a specific point in time, primarily in the age group between 6 and 59 months.
Anthropometric surveys are important for deciding on start, continuation and cessation of feeding programmes.
An anthropometric survey should be conducted as part of assessments and programme and situation surveillance. Surveillance systems using detect a change in a situation, which can be confirmed by a survey. Often the need for a survey is indicated by the results of a rapid MUAC assessment (for surveillance see Chapter 1).

Objectives
Objectives of an anthropometric nutritional survey are to:
– Measure prevalence of acute malnutrition in a given population, at a defined point in time.
– Determine the severity of the situation and assess the magnitude of an emergency.
– Guide the planning and design of nutritional programmes, and estimate the number of individuals who should benefit from such programmes.
– Establish a baseline from which to follow the evolution of the nutritional status of a population over time.
– Sometimes nutritional surveys allow for the identification of vulnerable groups (e.g. marginalized groups).

Frequency
As conducting a survey is expensive and time consuming implementation should be considered carefully. Preconditions are:
- Results are needed for decision-making
- Target population is accessible (e.g. insecurity or geographical constraints)
- Action will follow results

If the needs are obvious, a programme should be implemented immediately without waiting for a nutritional survey; that can be carried out later.

Frequency of surveys: surveys should be repeated every 3 months in the emergency phase (crude mortality rate > 1/10,000/day, epidemics, insufficient food supply, poor sanitation, health problems etc.). Once the situation has stabilised, surveys should be conducted on a 6 monthly or yearly basis. Surveys may be stopped once they are no longer needed for monitoring, decision making or lobbying.

2.2.2 - Preparation

Once a decision has been made to conduct a nutritional survey and objectives have been defined, several crucial steps should be taken to ensure the quality and reliability of results.

Organise questionnaire

Gather information

– Previous surveys: determine whether a nutritional survey has been conducted in the past. If so, identify relevant results and recommendations. Identify which methods were used (cluster sampling etc.) and any additional indicators that were collected (mortality etc.)
– Population figures: demographic information should be collected. Population figures per site, sector or village are essential to calculate the survey sample. If precise population figures are unavailable, population estimates should be obtained.
– Mapping: obtain or draw a map of the region or camps to be covered by the survey.

Data to be collected

Prevalence of acute malnutrition is best estimated by the W/H index in children from 65 to 110 cm or from 6 months to 59 months of age. The following data must always be collected: weight, height, age, sex, and presence/absence of bilateral oedema.

The inclusion of other data depends on specific survey objectives: MUAC, measles immunisation status, availability of cooking equipment/fuel at the household level, date of last general food distribution to the family, date of arrival at the site, local residents or refugees etc. In emergency situations, retrospective mortality and nutritional surveys are often combined (see Annex 2.9).

Additional questions should be limited, so as not to overwhelm the survey team and respondents. Only questions that provide quantifiable data should be asked. Questions should be precisely stated, e.g. “Have you received a food ration since the president visited the town?” Answer: YES or NO.
Data based on clinical assessment such as the presence of anaemia or Vitamin A or C deficiency, should not be included, since determination of symptoms can vary from one surveyor to another. Moreover, the sample size needed might differ from an anthropological survey. Only experienced staff using the appropriate methodologies should assess micronutrient deficiencies.

Design questionnaire

The questionnaire must be designed to succinctly collect all necessary information (see Annexes 2.10 and 2.11). Questionnaires should be accompanied by a “surveyor’s manual” summarising the questions as they should be asked and answering most of the questions that a data collector will come across during the course of the survey.

Training surveyors and the pre-test questionnaire

The training of surveyors is crucial to the success of a survey. All surveyors should undergo the same training whatever their prior experience to ensure standardisation of methodology. Surveyor training takes 1 or 2 days and should:
- Explain the objectives of the survey
- Explain the sampling method and its rationale, stressing the importance of a representative sample;
- Explain and test the questionnaire in order to verify that questions are clearly formulated
- Demonstrate weight and height measurements. Each measurer should practise 10-20 height and weight measurements and bilateral oedema assessments. Two different surveyors should

measure the same child twice. This allows for a comparison between measurers, and evaluates the precision of the measurements. Errors in technique can thus be detected prior to the survey;
- Include an on-site visit to ensure that all surveyors understand the sampling procedure, and are able to accurately select children, conduct measurements and question respondents. The questionnaire should also be assessed for ease of use and suitability and should be modified if necessary;
- Data collected during pre-survey testing should not be included in the actual survey results.

Plan of analysis
Once the objectives of the survey have been clearly defined, a plan of analysis must be made to ensure the validity of the questions and to design the data collection sheet.
The indices and cut off points (e.g. severe malnutrition equals Weight-for-Height as % of the median < 70% or having oedema) should be predetermined for each indicator. The format for presentation of results can also be pre-defined.
It is important that this step be carried out prior to any data collection.

Organisation
Manage time
The exact dates of the survey should be discussed with population leaders and local authorities in order to avoid the survey conflicting with local celebrations, food distribution days, or days when people are likely to be absent. It is important to take the agricultural calendar into consideration, as women and children may be in the fields from dawn to dusk during certain seasons.
The survey schedule should allocate time for preparation, training, pre-testing questionnaires, community mobilisation, measuring children, data entry, analysis and reporting.

Meet population and authorities
The population must understand the objectives of the survey and be included in planning. It is recommended to have the authorisation and collaboration of local authorities. Population members should be encouraged to participate in the survey.

Prepare equipment
Scales and height/length boards should be in perfect condition and regularly tested for accuracy (see Chapter 12).
Required equipment should be prepared, including means of transport, fuel, paper and pens etc.

Organize survey teams
Survey teams are usually composed of 3-5 persons (at a minimum, 2 measurers and one writer/supervisor). The supervisor is responsible for the quality and reliability of data collected. Anyone from the population can be selected and trained as long as s/he is able to read and write. Women have more experience in dealing with young children and thus are very useful members of a survey team. It may also be useful to include a respected community member to introduce the survey team to families.
Two to six teams may be needed according to the numbers of households to be visited, and the size and accessibility of the area to be covered.

2.2.3 - Target population

Anthropometric surveys are usually carried out among children aged from 6 to 59 months. If it is difficult to obtain reliable ages, all children from 65 to 110 cm should be selected. This age/height group is chosen for the following reasons:
– Children under five are particularly sensitive to changes in food availability; changes in their nutritional status are considered to reflect food stresses in an entire population.
– Anthropometric reference tables and cut-off values for severe acute and global acute malnutrition are universally defined. This allows for standardised interpretation and comparison of results.
– It is easier to find young children at home than adults.

Nutritional surveys may be conducted among adults or adolescents in some situations, but no standardized reference values currently exist to permit interpretation of such results. Specialised expertise is required for such surveys.

2.2.4 - Sampling principles

Quality
If all individuals in a given population are surveyed, an exact picture of the nutritional status of that population will be known. An exhaustive survey of this type, however, is long, costly and difficult to carry out (except in very small populations). Therefore, surveys are usually carried out on a sub-group of a population, called a sample, which is selected to represent the whole population. The sample should be chosen in such a way to meet some quality requirements.

Representative
In order for a sample to be representative of the population, two criteria should be met: each individual should have an equal chance of being selected for the sample, and the selection of one individual should be independent of the selection of any other individual.

Probability
Whenever a sample is drawn, there is a risk that the sample may not be truly representative of the population. In nutrition surveys, 5% risk of error (probability of 95%) is commonly accepted. This means that we accept that in 5% of surveys, results observed in the sample will not reflect the true nutritional status of the population. In other words, whenever 100 nutrition surveys are carried out, 5 of them will give results that do not reflect the true situation.

Precision, the confidence interval (CI)
Measurements based on a sample provide an accurate estimate of the population's status. However, if a second, different sample is taken from the same population, one can expect slightly different results. The true prevalence of malnourished children in an entire population lies in a range around the observed value. The upper and lower limits of this range determine the CI of the estimation. The CI measures the reliability or precision of the estimate and is dependant on the probability and the sample size[7]. With a probability of 95% the CI covers the possible true results, 5% of the possible true result will be outside this range. The larger the sample size, the narrower the CI.

[7] Example: proportion of malnourished children = 13% (CI 9% - 17%). This means that the CI ranges from 9% to 17%. Therefore, the observed prevalence in the sample is 13% but the real prevalence in the population is between 9% and 17%. The results can be expressed as 13% +/- 4%.

Sample size

The number of inhabitants living in the area covered by the survey does not affect the required sample size (except if the population size is less than 5000).

The sample size is related to several factors:

– Desired precision: the greater the precision desired, the more people are needed in the sample;

– Probability of error: the smaller the probability, the more people are required in the sample. If the whole population is surveyed, the probability of error is zero. In nutrition surveys, a probability or risk of error of 5% is accepted;

– Expected prevalence: the nearer the expected proportion of malnourished children is to 50%, the greater the sample required for the same absolute precision;

– Available means: the ideal objective in determining the sample size is to have the highest precision for the lowest risk error. The limiting factors are the available means and time. How many children can reasonably be surveyed in a day? How many surveyors are available? How long can the survey last in an emergency situation?

Sample size calculation

$$n = z^2 \times \frac{p \times q}{d^2}$$

Symbols used in the equation:

n = sample size
z = 1.96 for a risk of error of 5% (parameter related to the risk of error)
p = expected prevalence of malnutrition in the population, expressed as a fraction of 1
q = 1 - p, expected proportion of children not presenting malnutrition, expressed as a fraction of 1
d = absolute precision, expressed as a fraction of 1

"z" is constant at 1.96 in this type of survey. This corresponds to 1 standard deviation above and below the median (corresponding to 95% of the data around the median).

"p" and thus "q" (q = 1-p) are estimated from previous surveys. If this information is not available, an expected prevalence of 50 % (0.5) can be used to give the largest sample size for any given precision.

"d" is a parameter that can be modified. The factors considered in determining "d" are: the objectives of the survey, the expected prevalence and available means. If the main objective of the survey is to demonstrate a moderate difference in the nutritional status over a certain period of time, the precision will have to be high (and therefore, "d" very small e.g. precision of 2% or d=0.02).

Sample size according to prevalence and precision

	Precision needed			
Prevalence	**2%**	**3%**	**4%**	**5%**
5%	456	203	–	–
6%	542	241	135	–
7%	625	278	156	100
8%	707	314	177	113
9%	787	350	197	126
10%	864	384	216	138
15%	1225	544	306	196
20%	1537	683	384	246

Sample size for two stage cluster sampling: the sample sizes are applicable for random and systematic sampling methods. Because of the cluster design effect, the calculated sample size should be doubled for 2-stage cluster sample surveys.

Experience with nutritional surveys shows that the largest sample size necessary to provide sufficient precision, whatever the prevalence, is 450 for a systematic sample and 900 for a cluster sample. In practice this means that a maximum of 30 clusters containing 30 children each are used for two-stage cluster sampling, as this has proven to be a large enough sample size to obtain reliable (representative) results.

Note: A retrospective mortality survey can be coupled with the nutritional survey. Then

include households with no children under the age of 5 that would not normally be included in a nutritional survey; if this is not done, mortality may be underestimated.

2.2.5 – Sampling procedures

Sampling methods
Different methods exist to ensure that the sample represents the population correctly. The three main sampling methods are: random sampling, systematic sampling and cluster sampling.

Random sampling
Random sampling is the best method to ensure that information is representative, but is difficult to implement, as it requires lists of every individual, including children from 6 months to 5 years of age, in the population and their geographic location. The list must be kept up to date with regards to the ages and location of individuals and all arrivals and departures, including new births. For a nutritional survey, children should be randomly selected from the list using a random number table (See Annex 2.12). This exhaustive population list is seldom available or reliable.

Systematic sampling
Systematic sampling is a method based on the geographical organisation of an area. Every household should have the same chance of being surveyed. One household out of X is visited. This technique is often used in well-organised refugee camps where shelters are arranged in blocks and rows.
If households are numerated, it is possible to survey one household out of X number going across the camp from one extremity to the other.

Two stage cluster sampling
This method is used when the two previous ones are not possible: no detailed register is available, and the geographical organisation is not compatible with systematic sampling. The population is grouped in smaller units for which the population size can be estimated. The smallest unit or section for which the population size can be estimated will be chosen as the sampling base (village, city block, section of a camp, etc). The chance for each section to be selected is proportional to its population size. From within these sections, clusters or small groups are randomly chosen to be measured and represent the population. Thirty clusters are randomly drawn (the first stage of sampling). In each cluster, children will be selected and surveyed (the second stage of sampling). The first child in each cluster is selected randomly and the other children from the same cluster are selected by their proximity to the first child.
This sampling technique does not completely meet the requirements to be representative. The fact that several children are selected within a cluster by proximity means that the choice of one child is not independent from the choice of other children. Within each cluster, children will have a tendency to be similar as far as nutritional status is concerned. This phenomenon is called the "design effect". In nutritional surveys, the design effect is taken into account when calculating the sample size by multiplying it by 2[8] (see calculation of sample size below).

[8] The requirement of 30 clusters was determined by comparing surveys using several sampling methods. For anthropometric and immunisation coverage surveys, when at least 30 clusters are surveyed, the design effect is usually less than 2. Two is therefore the number used to multiply the size of the sample calculated for systematic or random samples. For other types of surveys, the design effect is different (e.g. for infectious disease surveys, the design effect is much larger).

Choosing an appropriate sampling method
When a reliable register is available: random sampling.
When the population is living in small, well defined geographical areas chose a systematic sampling. Otherwise chose a two stage cluster sampling.
Exhaustive surveys are used for small populations where the under-five population is 1000 or less. All children between 6 and 59 months must be included in the survey. This situation is rare. When an exhaustive survey is conducted, the results are expressed without CI, since the entire population is included.
For the determination and comparison of the nutritional status of two different population groups (e.g. camp population versus residents, or rural versus urban) two different surveys or a stratified sample are required.

Random sampling
Calculation of the sample size:
Prerequisite: a complete list of children aged 6 months to 5 years, and their place of residence.

Example:
In population 'X', a previous survey has indicated that 15% of the population suffer from acute malnutrition. It is decided that a precision of 3% is sufficient to meet the objectives of the survey.
Expected prevalence of malnutrition: p = 0.15 (15%); q = 1- 0.15 = 0.85
Risk of error: 5%, meaning z = 1.96
Precision desired, for example d = 0.03 (3%)

$$\text{The sample size } n = (1.96)^2 \times \frac{0.15 \times 0.85}{0.03^2} = 544$$

Procedure
1) Give a serial number to each child:
For example, in a population of 12 481 children, a serial number from 00001 to 12481 should be attributed to each child on the list.

2) Draw numbers from the list:
Use a random number table (as described in Annex 2.12) until the required number of children is selected. For example, the table may generate the following random numbers: 00002, 00006, 00016, 00022, .., 11 324 … Children corresponding to these numbers are included in the sample, and visited at home.
If a child is not present at the time of the visit, it is necessary to return to the household later to measure the child. If a child is absent because s/he is has been admitted to a feeding programme or to hospital, the team should go to the centre or the hospital and measure the child there.

Systematic sampling
Calculation of the sample size
Prerequisites
– An estimate of whole population's size.
– An estimate of the population aged 6-59 months within this population.
– A situation where houses are arranged in blocks and lines or enumerated.

– A village/area map illustrating the position of all households.

The same calculation as for random sampling is used: n = 544.

Procedure

1) Determine the number of inhabitants and the number of households.

For this example we will consider a camp of 50,000 inhabitants and 11,000 households.

Note: a household is defined as all individuals living in one house or shelter, etc. Communities e.g. convents, hospitals or orphanages are not considered households.

2) Calculate the population aged from 6 months to 5 years

Generally, children aged between 6 and 59 months make up 17 to 20% of the total population. In certain circumstances this percentage may be lower or higher.

In cases where the 6-59 months population appears to either exceed (high adult mortality is suspected or portions of the population is not present in the camp) or fail to meet 17 to 20% (high under-5 mortality is suspected), estimation can be determined through a rapid random survey. A survey of approximately 30 households is normally enough for this purpose.

It is important not to overestimate the proportion of children aged between 6 and 59 months. Overestimation results in an overly large sampling interval and the sample will not reach the desired size.

In our example we have an estimate of 10,000 children between the ages of 6 and 59 months (20% of 50,000).

3) Determine the required number of households

The household is the sampling unit, and not the child. The first step is to calculate the average number of children per household, in order to arrive at the required number of children for the sample. The required number of children for a sample is equal to the total number of children, divided by the number of households.

In this example, 10,000/11,000 = 0.9. Then 604 households (544/0.9) must be visited to complete the sample.

4) Determine the sampling interval

The sampling interval is calculated by dividing the total number of households by the number of households required for the sample. In this example, 11,000/604 = 18.2, i.e. one household in every eighteen needs to be visited and all children found in these households should be included in the sample.

5) Determine the first household to visit

The first household should be randomly selected in the first sampling interval (01 to 18) using a randomly selected number, using, for example, a random number table. It is assumed in this example that the randomly selected number is 05.

6) Select households

Once the first household has been selected, the sampling interval (in this example, 18) is added to the household (in this example, household number 05) to determine the next household selection. In this example, the second household to be sampled would be the 23rd (05 + 18), then the 41st (23 + 18) etc. Continue until the desired sample size is reached.

If two eligible children are found in a household, both should be included in the sample. If no children are found in a household, the next household on the list should be visited.
If a child is not present at the time of the visit, it is necessary to return to the household later to measure the child. If a child is absent because s/he has been admitted to a feeding programme or to hospital, the team should go to the centre or the hospital and measure the child there.

Cluster sampling

Cluster sampling is used in circumstances where one cannot obtain a detailed list of inhabitants of a community, or a detailed list of the number of households is absent.

Cluster sampling calculation

Prerequisites

– An estimation of population figures

– The population must be grouped into smaller units for which population sizes can be accurately estimated (villages, sections of a camp or neighbourhoods in towns).

Sample size:

$$n = z^2 \times \frac{p \times q}{d^2} \times g$$

n = sample size
z = 1.96 for an error risk of 5%
p = expected prevalence of malnutrition in the population, expressed as a fraction of 1
q = 1 - p, proportion of children not presenting malnutrition (as a fraction of 1)
d = absolute precision (as a fraction of 1)
g = cluster effect (g = 2 for nutritional surveys)

Example:

In population 'X', a previous survey has indicated that 20% of the population suffer acute malnutrition. It is decided that a precision of 4% will be sufficient to meet the objectives of the survey.

Expected prevalence of malnutrition	p = 0.20 (20%); q = 1- 0.20 = 0.80
Risk: 5%, meaning	z = 1.96
Precision desired, for example	d = 0.04 (4%)
Cluster effect	g = 2

$$n = (1.96)^2 \times \frac{0.20 \times 0.80}{0.04^2} \times 2 = 768$$

Appropriate sample sizes for cluster sampling are calculated using the same formula as for random and systematic sampling. The sample size is doubled to take into account the design effect. A minimum of 30 clusters is always required. Children selected for the sample should be divided equally into each cluster. For example, if the sample size is 768, then 768 is divided by 30 giving 26. Therefore, 26 children need to be included in each cluster.

Procedure

1) *Determine geographical sampling units and their population*

Cluster sampling requires grouping a population into smaller geographical sections: villages, sections of camps, or naturally defined (by rivers, roads etc.) geographical areas. The smallest available geographical section should always be chosen as long as an estimation of its population is possible.
Once sampling sections have been determined, estimate the population of children from 6 to 59 months.

2) *Calculate the cumulative population* (see table below)
The first column should list the section number.
The second column should list the total population of each section.
The third should list the population of children aged 6 to 59 months in each section.
The fourth column should list the cumulative population of children aged 6 to 59 months, calculated by adding the population of each section to the sum of the population of the preceding sections (see table below).
The fifth column should list the numbers attributed to that section.
The sixth column lists how many clusters will be surveyed in each section.

3) *Calculate the sampling interval*
Every member of a population should have an equal chance of being in a cluster. The sampling interval for cluster sampling is the total population divided by the number of clusters (30). The required 30 clusters are selected using this sampling interval.
In our example: the sampling interval is 10,000 population/30 clusters = 333.

4) *Determine the location of the first cluster*
The location of the first cluster should be randomly selected within the first sampling interval. A random number is therefore selected from 0001 to 333.
In this example, the randomly selected number is 0202. Therefore, the first cluster will be located in the section that includes this population. In this example, the place called "section n°1" includes 0202 (see table below).

5) *Allocate the subsequent clusters*
The sampling interval (in this example, 333) should be added to the first random number (in this example, 0202); accordingly the second cluster will be located in the place that includes the number found (0202 + 333 = 535), in this example section n° 2. From this point onwards, keep adding the sampling interval to the last number obtained until reaching 30 clusters (see table below). A large section may include several clusters (for example, two clusters in section n°4), while a small section may not be selected at all.

Population distribution and cluster allocation

Section	**Estimated section population**	**Estimated population 6-59 months**	**Cumulative population 6-59 months**	**Attributed numbers** (Start 202, added 333)	**Number of clusters per section**
1	2500	500	500	0202	1
2	1000	200	700	535	1
3	800	160	860		0
4	3250	650	1510	868,1201	2
Etc.					
Total	**50,000**		**10,000**		**30**

6) *Select children within the clusters*

Within each allocated cluster, children are identified by means of their household. Households should be selected in the following manner:

– the survey team should go to the centre of the section within which the cluster is located. A random direction should be chosen, by means of spinning a bottle or pen.

– a surveyor follows that direction from the centre to the border of the section, and counts the number of households s/he encounters. The first household to be visited is randomly selected from among these households by drawing a random number,

– the next household is selected by proximity, without necessarily following the initial direction (for example the next house immediately on the right or on the left; this must be determined in advance). The team proceeds from house to house, in this manner, until reaching the number of children required,

– if a second cluster has been selected in the same section, the team returns to the centre, spins the bottle/pen again and proceeds in another direction. This is repeated until the required number of clusters for the section has been surveyed,

– all eligible children belonging to a household should be included, regardless of whether several families share a common house. If a child is not present, s/he must be found. Otherwise, the team must return later, at least once. If a child is absent because s/he has been admitted to a feeding programme or to hospital, the team should go and measure him/her there.

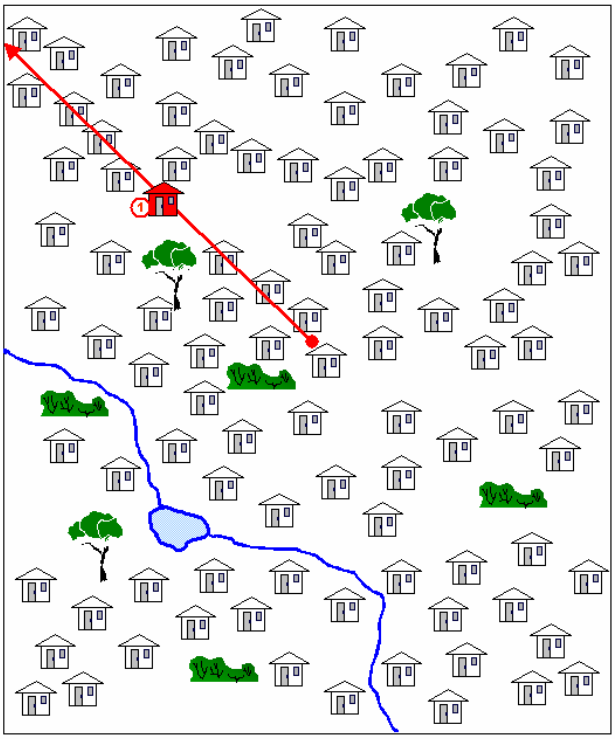
Selection of households within a cluster – Figure 1

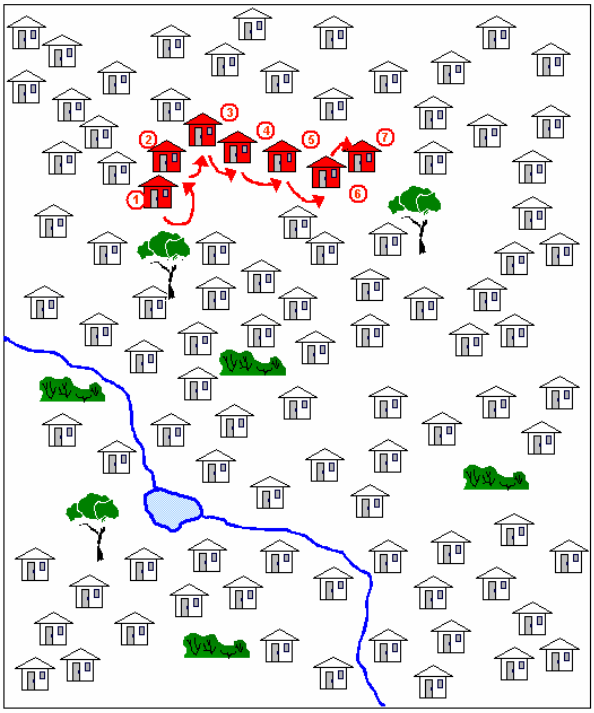
An imaginary line is drawn from the centre to the edge of the selected sector by spinning a pen or bottle. All houses along the line are numbered from 0 to n. A random digit from 0 to n is then chosen: the house corresponding to this digit becomes the first house to be visited in the cluster.

Selection of households within a cluster – Figure 2

Subsequent houses within the cluster are chosen according to a pre-defined proximity rule. In this case, the closest house to house number 1 becomes the second house to be visited in the cluster; the house closest to number 2 becomes the third house, and so on until the desired number of children is included in the cluster; if two houses are equally close, the team systematically chooses the one on the right).

Household grouping for cluster sampling





2.2.6 - Analysis and interpretation

The analysis is composed of two parts:
- a description of distributions according to the variables (e.g. age, sex, etc.,
- an analysis where relations are discovered: cross tabulations are used to make comparisons between groups and relations are discovered between variables.

The analysis uses the weight/height index values to estimate the proportion of children with W/H index falling below a cut off value[9].

Description of the sample

The first step in the analysis is to describe the sample in terms of distribution of characteristic variables, such as sex and age.

Distribution of age and sex

Age Months	Boys n	Boys %	Girls n	Girls %	Total n	Total %
6 – 17	65	53.3	57	46.7	122	23.9
18 – 29	59	45.4	71	54.6	130	25.5
30 – 41	53	46.5	60	53.5	114	22.4
42 – 53	54	56.1	43	43.9	98	19.2
54 – 59	23	50.0	23	50.0	46	9.0
Total	256	50.2	254	49.8	510	100.0

Sex distribution

Sex distribution verifies that the sample is not biased, and that the sample represents the whole population. There can be several reasons for the unequal representation of boys and girls in a sample[10]:

– Bias during survey selection (e.g. girls may be hidden or absent),
– Females or males are less present in the population (e.g. due to higher levels of mortality),
– It is a random effect (falling within the 5% risk of error).

Investigations should always be carried out to determine the reason for unbalanced sex ratios.

Age distribution

Under-representation of an age group, such as the 6-17 months group may be a random effect. Alternatively, it may indicate a higher mortality rate within a subgroup or the simple absence of children on the day the survey was taken. An age pyramid helps to demonstrate the under-representation of an age group in the sample. The age groups proposed here are 6-17 months, 18-29 months, 30- 41 months and 42-53 months old. Age groups are centred around whole years, because many ages are misreported, and age is often rounded off to full years (e.g. a child is said to be one year old, while he is only 10 months).

The group with children from 54 – 59 months is smaller since it covers only a 6 month period.

Prevalence of acute malnutrition

Calculations to assess the number of children suffering from global and severe acute malnutrition are done by hand (see Annex 2.13) or using computer software programmes (EPINUT, EPIINFO etc.).

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9 A second approach describes the whole distribution of children according to index values (= standard prevalence). These two approaches are complementary. In this chapter, we will only develop the first approach.

10 Example of sex distribution: take a sample size of 510 children, aged between 6 to 59 months. The sex ratio is found to be around 1 (256/254). The proportion of boys is 50.2% (256/510) and girls 49.8%; in other words, both sexes are equally represented. On the other hand, a sex distribution of 40% of girls and 60% of boys is unequal and an explanation must be given.

Prevalence expressed in Z-scores
Global acute malnutrition: proportion of children with W/H <- 2 Z-scores and/or oedema.
Severe acute malnutrition: proportion of children with W/H <- 3 Z-scores and/or oedema.

Prevalence expressed as % of the median
Global acute malnutrition: proportion of children with W/H < 80% and/or oedema.
Severe acute malnutrition: proportion of children with W/H < 70% and/or oedema.
Express results both in Z-scores and as % of the median (see below for further explanation).

Prevalence of malnutrition measured with MUAC
Generally, MUAC is taken for all children in the sample (from 6 to 59 months). However, since MUAC is only stable between 12 to 59 months, the results from children between 6 and 12 months are not analysed.

Expression of results with their confidence intervals (CI)
Results should always be presented with their CI (except for an exhaustive survey). When calculating the sample size (n), an expected prevalence (p) is estimated and a desired precision (d) is used.
Once the survey has been carried out, the approach is reversed: the sample size is known, and the prevalence has been measured; this allows calculation of the achieved precision. The precision of the prevalence found will be expressed as a range around the prevalence: the confidence interval.
If the observed prevalence is closer to 50% than the predicted one, the precision will be worse than expected. If the observed prevalence is less than expected, the precision will be better than expected. This highlights the importance of overestimating the expected prevalence when calculating the sample size, in order to be on the safe side when the survey is completed.

Confidence interval calculation
Usually a 95% CI is presented. This means that there is a 95% chance that the true prevalence of malnutrition in the whole population is within the range of values contained within the CI. 95% CI can be calculated with EPIINFO, EPINUT, EPITABLE or Excel. If the data are not computerised, calculations can be made using a specific formula (see Annex 2.14).

Prevalence of malnutrition according to other variables
– Distribution of malnourished children by sex. Check and indicate if there is a difference in the prevalence of malnutrition between girls and boys.
– Distribution of malnourished children by age group. Normally, the prevalence of malnutrition tends to be higher in the age group between 6 to 29 months than in older age groups. When the prevalence of malnutrition is similar or higher in the older age groups, this should be indicated and investigated. It can be a sign of a severe food crisis where all age groups are severely affected.
– Some variables that are equally spread over the sample can be cross-tabulated. For example, malnutrition prevalence by date of arrival in the camp, status (refugee or resident), or date of benefiting from a general food distribution.
– Interpretation of sub-group results should be done very cautiously as the sample size is not calculated to be large enough for this purpose. For significant comparison of two groups, stratified sampling methods should be used.

Interpretation of results

Contextual interpretation
A "standard recipe" does not exist for interpreting nutrition survey results. They must be analysed in combination with other information and data collected (see Chapter 1). Additional information collected during an assessment will allow the interpretation of the results within a particular context.

Figures obtained through a single cross-sectional nutrition survey only reflect the nutritional status of the under-five population at the moment of the survey in a certain region ("snapshot"). Taken alone, these figures do not give any indication about whether the nutritional status is improving or deteriorating.

Information about under 5 mortality may suggest that a number of malnourished children have died in the past few months. The significance of the survey figures will depend on several factors including the timing of the harvest, outbreaks of diseases such as malaria or measles or other causes of mortality.

Differences between % of the median and Z-score
A nutritional survey can exhibit differences (of up to 10%) between results expressed as % of the median and in Z-score. Typically, the prevalence of malnutrition is higher in Z-score than as % of the median. Differences are particularly important in areas with a low prevalence of kwashiorkor and in populations with long and thin physiques (Somali, Dinka, Turkana populations etc.). Results must always be presented both Z-score and as % of the median.

Trends: comparison between nutritional surveys
The prevalence of malnutrition observed can be compared to malnutrition prevalences observed in previous surveys among comparable populations, if similar indicators have been used. One can only conclude that there is a statistically significant difference between two surveys if confidence intervals do not overlap. Hence, in this example, a previous survey showed a prevalence of malnutrition of 15.4% (95% CI 11.4-19.4). The current situation is significantly better, since the present survey shows a prevalence of 7.6% (95% CI 4.3-10.9), the lower limit of the first survey (11.4%) being greater than the upper limit of the current one (10.9%). These comparisons can only be made if the surveys covered the same regions and population (no large movement of population). Survey results may be used to assess the evolution of the nutritional status of the under-five population (improvement or deterioration). Nevertheless, improvement or deterioration in nutritional status cannot be attributed merely to the nutritional programmes implemented. Many other factors can contribute to the evolution of nutritional status (improvement in sanitation and health care, epidemics, food availability/harvests, changes in security etc.).

Bias
Survey results can be biased for the following reasons:
– Incomplete coverage due to migration or absence of the most severely affected families (this tends to decrease the observed malnutrition prevalence).
– Inadequate population data or access to certain segments of the population may mean that certain groups are left out of the survey.
– Measurement error due to faulty weighing equipment, incorrect measuring or recording techniques. This is often as a result of inadequate training and supervision.
– High mortality rates among vulnerable groups might result in an underestimation of the extent of malnutrition ('gaps' in the sample's age/height groups may show an under-

representation of an age group or a sex group which may reflect high mortality in this group).
– When malnutrition is a problem among age groups above 5 years, survey results may underestimate the problem. For example, in some populations children may be given priority during hunger crises; consequently, in these circumstances adults and the elderly can suffer from malnutrition before children.
– Differences in survey timing and season make comparisons between results (of other studies) difficult to interpret.

Common mistakes
– Poor timing and inappropriate evaluation of need for a nutritional survey.
– Inaccurate reading or recording of weight and height.
– Incorrect diagnosis of malnutrition (children with artificially discoloured hair), or over-reporting of oedema (children with round faces, or oedema due to other causes).
– Improper recording of age or other data.
– Incorrect data entry, no systematic cleaning of data.
– No indication of confidence interval.
– Lack of feedback from the survey team to community representatives and local authorities.
– Underestimation of the political implications of the survey.

2.2.7 - Writing the report

A report should be written as soon as preliminary results are available. Reports should include (in the following order):

Summary
A summary (1 to 2 pages) should describe the area covered, date and the objectives of the survey, assessment methodology, key results, conclusions and recommendations (See Annex 2.15).

Introduction
The introduction should describe the context in which the survey was carried out (date, population, geographic area), food availability and accessibility in the region, health status of the population (mortality rates, outbreaks, water supply etc.), ongoing or previous nutritional programmes (general food distribution, selective feeding programmes etc.) and assessments (surveillance figures, MUAC screening, food security indicators).

Survey objectives
Survey objectives should be clearly stated; namely, what was measured, in which population (who) and why.

Methodology
A description of methodology is necessary to ensure validity of the survey and to have a clear reference for future comparison. It should explain:
– Target population: what were the selection criteria for inclusion into the survey? (Children from 65 cm to 110 cm or children from 6 to 59 months).
– Sampling method and sample size. The parameters used to calculate the sample size (expected prevalence, precision etc.) should be included in an annex.
– Variables measured and type(s) of instrument used (a 25 kg hanging scale graduated by 100 g).

– Scheduling and training of the surveyors. The questionnaire should be included in an annex.
– Software used for data entry and analysis.

Results
Results should include information about:
– The survey period and number of children included in the survey results.
– Distribution of the sample, according to age and sex.
– Mode of expression of indices and the definition of grades of malnutrition used.
– Prevalence of global and severe malnutrition, including confidence intervals.
Detailed results (calculated by hand or EPINUT or EPIINFO) can be placed in an annex.

Discussion
Interpretation of results is done in the discussion, the survey results are placed into the context. Comparisons can be made with previous surveys, or surveys from a similar situation. Such a discussion can include analysis and tentative conclusions about the relationship between survey outcomes and other information such as food security assessments, surveillance data and programme coverage, etc.

Proposals and recommendations
A report should always include recommendations. A nutrition survey is meant to promote rational decision-making; objective and valid information is drawn from the survey to justify these decisions. For recommendations about nutritional interventions, see Chapter 3.

CHAPTER 3

Nutritional Interventions and Strategies

There is no universal, standard approach to nutritional problems. Response strategies vary according to the context of a food crisis, its development, and practical constraints.
Each situation requires a coherent strategy, combining several types of nutritional interventions and various designs. These different nutritional interventions can be implemented simultaneously or consecutively but are not interchangeable. Responses must be regularly adapted to changing circumstances in food crises.

This chapter outlines the main nutritional interventions for food crises and famines and provides a platform for decision-making.

3.1 - Types of nutritional interventions

The most frequent interventions are:

- General Food Distribution (for details see chapter 4)
- Blanket Feeding Programme (for details see chapter 5)
- Therapeutic Feeding Programme (for details see chapter 6)
- Supplementary Feeding Programme (for details see chapter 7)
- Supportive feeding programmes (for details see chapter 10)

3.1.1 - General Food Distribution (GFD)

Adequate GFD is the key intervention for ensuring the health and survival of a population experiencing food crises and famines.

Objectives

- Cover the immediate basic food needs of an entire population group and avoid famine.
- Prevent deterioration of nutritional status and death.
- Restore and maintain regular livelihood.

Key considerations

– The decision to start is based on food security and mortality indicators of the population.
– Type of ration: full or partial rations; dry (or exceptionally cooked) rations.
– Food distribution: through local government, traditional leaders, community elders and given to households and/or, individuals etc.
– Frequency: weekly, every two weeks or monthly.
– Period depends on development of food security (e.g. crisis is over or a hunger gap is approaching).

Advantages

– General GFD (complete coverage of large populations) or targeted GFD (e.g. regions, groups, displaced) adapted to situation.
– Complete rations (totally covering food needs) or partial rations are given depending on the situation.
– Rations are adapted to family size.

Constraints

– Difficult and slow to organize.
– Requires significant resources (large amounts of food, heavy logistics, numerous staff etc.).
– Can be subject to abuse.

– Increases risk concerning security.
– Interferes with local markets.

3.1.2 - Blanket Feeding Programme (BFP)

BFP is a short-term intervention implemented in response to current or anticipated food crises in large populations. A standard definition of blanket feeding does not exist. A BFP is defined in this manual as being food distribution that aims to increase rapidly the food availability of families, and reaches them usually through children under the age of 5.

Objective
- Prevent the nutritional status from deteriorating.
- Providing a partial ration to vulnerable families (usually with young children) when food accessibility is insufficient or GFD is incomplete.
- To increase food availability/accessibility rapidly for a limited period.

Key considerations
– The start is based on food security in the population
– It is an emergency intervention to address an inadequate general food distribution, therefore implementation of BFD is dependent on GFD. As soon as GFD is adequate the BFD should stop.
– Rations are intended to support the entire family, and are distributed to designated family representatives.
– Children under 5 years old (or under 110 cm in height) are most often chosen since they are easy to identify.
– All children under 5 years old in a population receive fixed rations regardless their family size and nutritional status.
– There is no registration, weighing and measuring, nor individual follow-up of the beneficiaries.
– Also a specific group can be targeted (e.g. all beneficiaries of a feeding program, all children with a MUAC below 12.5 cm or all children below 3 years old).
– Information concerning GFD insufficiencies must be transmitted to the concerned organizations. In the absence of rapid improvement, lobbying should be initiated.
– Rations depend on food rapidly available; usually 500 kcal/person for a family of 5-6 persons. Often a food is included suitable for small children (fortified blended food) depending the problem to address.

Advantages
- Rations are given directly to families.
- Covers large population.
- Easier and faster to implement than GFD.
- Less subject to abuse than GFD.
- Allows detection and referral of sick individuals, nutritional screening (MUAC and bilateral oedema), administration of vitamin A and measles vaccine etc.

Constraints
- Does not provide full rations.
- Does not allow for individual follow-up.
- Does not cover families without children under 5 years.

- Is not adapted to family size.
- Is heavy on logistics.
- Interferes with local markets.

3.1.3 - Therapeutic Feeding Programme (TFP)

Objective
- To reduce mortality and morbidity amongst severely malnourished patients.
- To treat severely malnourished individuals.

Key considerations
– It provides medical and nutritional treatment and close follow up of the individual patients.
– Treatment is organised in at least 2 phases; the first phase is designed to stabilise the weakest fragile patients, the second phase is focussing on nutritional rehabilitation.
– Once complications are under control in the first phase, patients are referred to the second phase.
– Severely malnourished patients without severe complications can be admitted directly in the second phase.
– The second phase of the treatment requires less intensive care and can therefore be completed on inpatient or outpatient basis.

Design
A Therapeutic Feeding Program comprises all therapeutic feeding centres and it can consist of three main types of centres:
– ***Inpatient Therapeutic Feeding Centre (ITFC)*** mainly for the first phase of treatment. A TFP always needs an inpatient treatment unit where intensive medical and nutritional care is provided (phase 1). In addition to that some critically ill patients of phase 2 but who still need close follow-up for medical reasons can be admitted in the ITPC.
This unit requires being operational 24 h or seven days a week. An ITFC can be combined with inpatient, day-care and/or ambulatory (outpatient) facilities.
– ***Ambulatory Therapeutic Feeding Centre (ATFC)*** specifically for the second phase: is an outpatient facility where severely malnourished patients without life threatening conditions are managed (second phase of the treatment). Patients are being seen and followed on a weekly basis. The treatment is decentralised by implementing several ATFC's, but the ATFC's are always combined with an ITFC.
– ***Therapeutic Feeding Centre (TFC)*** structure where all severely malnourished patients (phase 1 and 2) are managed at 24-hour basis. The first phase is similar to the ITFC, the second phase in the same structure can be organised on either a 24 h or day-care basis.

A TFP can be designed with different combinations of the three types of centres defined above depending on the factors affecting the intervention. For example, an ITFC can be combined with day-care and/or ambulatory (outpatient) facilities (ATFC). Also TFC (phase 1 and 2 inpatient) can be combined with several ATFC's in the periphery in order to increase coverage.

ITFC combined with ATFC's: After the initial treatment in the ITFC, patients are referred to an ATFC where the second phase of the treatment is completed at home. Uncomplicated cases are directly admitted in ATFC's and complete the full course of the treatment as outpatients in ATFC. These patients are monitored and receiving their food rations weekly. Often there are

several ATFC's and only one ITFC. ATFC's are sometimes combined with health centres and supplementary feeding centres. A good outreach system (e.g. community workers) is essential in active case finding, absentee tracing and check up on some individual cases. This strategy is increasingly applied in emergency contexts, as the outcomes are generally good.

The design adopted should always be chosen considering best possible equilibrium between coverage and quality of care. Especially during famines, quickly achieving a good coverage to prevent mortality is a priority.

Advantages and disadvantages TFC and ATFC:

	ITFC combined with ATFC's	**TFC 24 h care**
Advantages	– The weekly follow-up and a decentralised set-up of the second phase improves coverage. – Reduction of the period of inpatient care. – Increased accessibility and acceptability. – Does not undermine local health. infrastructure and family structure. – Reduced risk of cross infection between patients. – Frees up capacity for care in ITFC.	– Immediate management of the life threatening complications and continuous individual monitoring during the entire treatment (e.g. when most severe malnourished are severely ill as well (e.g. high malaria prevalence). – Provides a safe shelter for caretaker (and if allowed also other children).. – Provides health care to the caretaker. – Serves as referral centre
Disadvantages	– Prompt medical and nutritional care and close monitoring are more difficult. – Good interaction with beneficiaries and home visits is crucial to avoid defaulters, relapses, and treatment failures. – Requires a smooth patient flow to manage a large number of beneficiaries. – Close monitoring of patients must prevent unnoticed long stays or undetected deterioration. – Requires a good outreach system from the beginning. – Does not provide security and health care to the caretaker (mother). – Does not prevent sharing and sale of therapeutic food. – When food security is a problem a family ration should be provided to prevent sharing of the RUTF. – Distance and security might hamper the weekly travelling to the feeding centre. – Walking with food rations can be a security risk for the patients (looting).	– Starting a TFC (buildings, staff) takes time what hampers a reduction of mortality in emergencies. – Coverage is usually low as the programme is centralised and therefore reaches a limited number of patients; this reduces programme effectiveness. – Treatment requires numerous (night shifts) and highly competent staff, which may be unavailable or will have a negative impact on local health structures. – Can be difficult to implement due to insecurity, breakdown in the health system, lack of infrastructure or staff etc. – The carer, usually the mother, is away from her family and other children over a long period (up to one month). This may have detrimental effect on maternal care of siblings and is a common reason for defaulting. – The concentration of sick, immune compromised patients increases the risk of nosocomial cross infections and results in an unnecessarily long stay because of illnesses acquired in the TFC.

Capacity

The recommended number of patients varies according to the type of therapeutic feeding centre. It is sometimes unavoidable to increase the number of patients above this level. This will result in a loss in the quality of care. It is preferable to open several centres if the number of patients is high.

– An ITFC and TFC organized on a 24-hour basis can treat up to 100 patients.

– A day-care TFC can treat up to 200 patients.
– An ATFC can treat up to 1000 patients; in order to increase coverage and accessibility it is recommended to open several ATFC's instead of 1 centre to decentralise the services.

When a feeding centre cannot function through the night, the best option is to organise the first phase on day-care basis (12 h) in an ITFC or TFC. As soon as possible, the first phase of treatment should be organized over 24 hrs. The entire second phase might be organised on day care or ambulatory basis in order to free up capacity.

3.1.4 - Supplementary Feeding Programme (SFP)

Objective
- Reduce morbidity among moderately malnourished patients.
- Treat moderate malnutrition.
- Prevent severe malnutrition.

Key considerations
– SFP provides individual nutritional and medical treatment of moderately malnourished children (younger then five years old).
– Moderately malnourished pregnant and lactating women can be included.
– Admission and follow-up is based on anthropometrical indicators of the individual patient (e.g. weight and height for children and Mid Upper Arm Circumference (MUAC) for women).
– Regular medical checkups and treatment are an essential part of a SFP.
– A SFP provides fortified food supplements. It can take two forms:
  - Dry rations: uncooked food items (or partially pre-cooked) distributed for home preparation and consumption, once weekly or every two weeks.
  - Wet rations: cooked meals delivered "on-site", once or twice daily.

A dry SFP should always be considered first above wet SFP, because it is less demanding on providers and patients. When the food security is difficult, the efficacy of SFP's are low and alternative programs (BFP) must be considered. Comparison between dry and wet design does not show significant differences in efficacy.

Advantages and disadvantages of dry rations versus wet rations

	Dry take-home ration	**Wet on-site ration**
Advantages	- Easy access for populations living in remote areas. - Lower population concentration. - Easier to implement and to organize. - Fewer resources needed. - Less time consuming for carers. - Less defaulting and better coverage. - Family remains responsible for feeding.	- Less risk of food looting in insecure situations. - Allows for closer individual medical follow-up. - Lessens burden on family for firewood and water.

Disadvantages	- Risk of food looting after distribution in insecure situations. - Higher quantity of food necessary per patient. - Risk of incorrect preparation of food given. - Family may share the ration when general food is limited.	- Only reaches people who live near the feeding centre. - Higher risk of cross-infection. - Heavy on logistics, staff and time. - Risk of skipping meals at home. - Risk of defaulting, low attendance and low coverage (time consuming for carers).

Capacity
In order to function efficiently (meal preparation, feeding, medical treatment, follow-up), a supplementary feeding centre should not be overloaded.
A dry supplementary feeding centre can serve 150 to 250 patients/day. A centre that is open 6 days/week can reach 250 x 6 = 1500 patients.
A wet supplementary feeding centre can cover a maximum of 500 patients/day.

3.1.5 - Supportive Feeding Programmes

Objective
• To support vulnerable groups with specific nutritional needs (pregnant and lactating women, the elderly, inpatients and patients with specific diseases such as tuberculosis, visceral leishmaniasis, AIDS, malaria etc.) to prevent deterioration of their condition

Key considerations
– Type of ration: full or partial general food distribution rations and/or specifically adapted to their condition (pregnant, disease)
– The decision to initiate supportive feeding programmes does not depend on the food security situation; it depends on the particular nutritional, medical, social and economical needs of the specific group(s)
– Except that in a food crisis all pregnant and lactating women are supported

3.1.6 Summary

The general objective of any nutritional program is to reduce mortality and morbidity and to prevent deterioration of nutritional status and death. Specific objectives differ according to the interventions:

Summary interventions objectives and target groups

Intervention	**GFD**	**BFD**	**TFP**	**SFP**	**Supportive**
Objective (Specific)	To cover the immediate basic food needs of a population	To increase food availability/accessibility rapidly for a limited period	To treat severe malnutrition	To treat moderately malnutrition	To support vulnerable groups with specific nutritional needs

Target group	–General: Entire population –Targeted to subgroup: new refugees, poor,	–General: all families with under fives –Targeted to subgroup: patients in feeding program, children with MUAC <12..5 cm	Severely malnourished individuals	Moderately malnourished children (below 5 years old); pregnant and lactating women	Pregnant and lactating women, elderly, inpatients, specific diseases
Ration	Full ration of basic food items for all individuals	–Partial ration for 5 family members –Includes blended food	Specialised therapeutic foods	Fortified blended foods suitable for children	Supplement or full ration fortified food (e.g. local foods, food aid or blended foods)

3.2 - Choosing a nutritional strategy

Design a nutritional strategy

A nutritional strategy, the combination of the programs and the specific target groups are determined by:

- Stage of food insecurity, based on results of food security assessment (see Chapter 1)
- Results of the assessment of the nutritional and medical situation (see Chapter 2)
- Socio-political environment (war, population displacement, camps, open situation, natural disasters, activities of other organizations, health environment, etc.)
- Size of the population in need (scale of the crisis)
- Population's access to the programme
- Anticipated evolution of the crisis (trend)
- Feasibility of implementation (capacity, human resources, logistics, etc.)
- Potential side effects of different interventions ("do no harm"; e.g. not disrupting local coping strategies)

A preliminary nutritional strategy is based on a nutritional assessment, mortality rates, the staging of the food security situation and the resulting specific objectives for the nutritional interventions as presented in the table below.

This preliminary strategy will be adapted according to the context variables (e.g. security and access issues, and other agencies activities) and the other factors (e.g. human resources and logistical constraints) resulting in the definitive nutritional strategy and design of the programs.

Before opening a feeding program reconsider the assessment, objectives, and assumptions to:
– Prevent opening of unnecessary feeding programmes that will have a negative impact, creating dependency and disruptions in local market mechanisms.
– React adequate on wrong assumptions (e.g. other agency will do food aid)
– Take into account a deteriorating or improving situation and not only the current

All feeding programmes should run parallel to basic public health interventions, from and to where referral systems must be organised. Most programs in the intervention model below can be implemented in parallel making together the nutritional intervention strategy.

Priorities

When implementing feeding programs the program with the largest impact and highest coverage but requiring limited resources has to be implemented first

–In a famine and severe food crises priority must be given to GFD

–Starting BFD depends on adequacy of GFD

– During a BFD the start of a SFP is delayed as during a BFD moderately malnourished are included as well.

– Inpatient facilities (ITFC and TFP) require much more intensive training, management and supervision. In general, ATFC, and BFP are easier and more rapid to implement and cover a larger population than inpatient facilities, therefore in emergencies these are started before an ITFC, 24 hour (h) care units and SFP.

– Inclusion of **moderately malnourished** pregnant and lactating women in a SFP has a lower priority then inclusion of children; it will only be done if there is capacity in the SFP.

– In a (serious) food crisis **all** pregnant and lactating women should be supported (supportive feeding), however, this has a lower priority compared to feeding programs for children and thus it may only implemented when there is a capacity.

Theoretical interventions according to food security stage

	Key indicators	Specific objectives	GFD	BFD	SFP	TFP	Supportive
Famine	- Global acute malnutrition rate > 40% - Severe malnutrition rate > 5% - CMR > 5 /10,000/day - Malnutrition among adults - Food availability and accessibility severely reduced - Distress migration	- Decrease mortality - Increase access to food - High coverage with food and treatment - Decentralized programs	- First priority - General GFD	- When GFD inadequate: general BFD - When GFD adequate but population need to recover: general BFD	- When no BFD - When BFD and GFD ration are consumed rapidly - SFP has lower priority then BFD	- Prioritise ATFP - Followed by Day-care for TFC, later 24 h ITFC	- Ensure their access to food -Epidemic: patient ration -All pregnant and lactating
Serious food crisis	- Global acute malnutrition rate > 20%. - Severe acute malnutrition > 5 % - CMR > 2/10,000/day. - General reduction on food availability and accessibility.	- Increase access to food. - Treat large numbers of malnourished.	- First priority - Targeted GFD - Situation deteriorates: general GFD.	- GFD /food availability inadequate: general BFD. - GFD adequate: targeted BFD.	- When targeted BFD or no BFD: SFP. - When general BFD, SFP has lower priority.	- ATFP and (I)TFC (24 h care, day care).	- To all pregnant and lactating women.
Food crisis	- Global acute malnutrition rate > 10-15 % - Severe acute malnutrition >3-4% - CMR > 1/10,000/day - Food accessibility reduced for vulnerable households	- Consolidate access to food. - Treat severe malnourished. - Treat moderate malnourished. - Support to vulnerable groups.	- Targeted GFD - Situation deteriorates: general GFD - Including food security activities.	- Situation improves: no BFD - Situation deteriorates: targeted BFD	- When targeted BFD or no BFD: SFP.	- (I)TFC 24 h care, day care and/or ATFP.	- All pregnant and lactating women. - Sick people.
Food insecure	- Global acute malnutrition rate < 10 % - Severe acute malnutrition <3 % - CMR < 1/10,000/day - Food availability and accessibility slightly reduced	- Support the vulnerable groups (the sick). - Treat severe malnutrition.	- No GFD. - Food security activities: veterinary services, seeds and tools distributions etc	- None.	- None. - Situation deteriorates: SFP.	- (I)TFC in hospitals and ATFC integrated in health care structures.	- Support to sick people.

3.3 - Initiating nutritional interventions

Planning nutritional interventions requires consideration of practical constraints including: limited access to the population, lack of skilled personnel, insufficient financial resources, insecurity, poor living conditions etc. The logistical capacity of a given programme determines, to some extent, the size and type of nutritional intervention that is most feasible.

– The implementation of nutritional programmes is always complex. It is thus recommended to start from less sophisticated and progress implementation to more sophisticated interventions.
– Prior to the beginning and throughout a nutritional programme, a dialogue should be sought with local authorities, health personnel, women's groups and other relevant representatives of the population as well as families of malnourished patients. Programme objectives, functioning and services should be explained, as well as staff hiring procedures, contact persons etc. The population representatives might help in designing a system and identification of staff and volunteers for active case finding, defaulter tracing, mortality surveillance and adaptations of the programs. Regular informal meetings between population representatives and national or expatriate staff should continue throughout programme implementation in order to maintain a good level of awareness and active involvement in promotion of the services. Problems may occur if the population:

- Is not aware of the existence of the programmes.
- Does not understand the benefits of the programmes.
- Disagrees with the operations in the programmes
- Feels excluded from the programmes.
- Has no confidence in the personnel of the centres.

3.3.1 - General Food Distribution

GFD should be initiated when:

- The basic food needs of a population are not fulfilled.
- Coping mechanisms are, or will be, insufficient.
- The nutritional situation is not improving.

Malnutrition rates are important to consider as high malnutrition rates might indicate an acute need for GFD, and low malnutrition rates should be prevented to rise by a GFD. A well-timed GFD should prevent, or at least reduce, the need to implement other nutritional interventions.

3.3.2 - Blanket Feeding Programme

A BFP should be initiated when:

- Population's food availability and accessibility has seriously decreased and deterioration is expected.
- GFD is inequitable within a population or geographic area.
- GFD is inadequate or ineffective, resulting in a deficit of more than 500 kcal/person/day.
- Food rations are inappropriate (lack specific micronutrients, protein, etc.).

– The decision to initiate a BFP is not necessarily linked to malnutrition rates.
– BFP can be targeted to vulnerable groups.
– Pregnant and lactating women might be included when the food availability is lower then 1600 kcal and when feasible. (See chapter Supportive Programs).

3.3.3 - Therapeutic Feeding Programme

The decision to start TFP relies on:
- The prevalence of severe acute malnutrition.
- Number of severely malnourished patients.
- Accessibility of the TFP and alternative structures (e.g. hospital)

When the number of patients is limited the treatment of severe malnutrition can be integrated in the health structures (e.g. first phase in the paediatric ward of a hospital and second phase in the health centres on ambulatory basis). When the absolute number of patients is over 30, it is justified to open an independent therapeutic feeding program (TFP) depending on the capacity of the health care system and referral capacity.

All severely malnourished individuals must be treated regardless of age. All patients can be treated in the same location; but a special programme should be initiated for adolescents and adults if numbers exceed 20. Protocols should be adapted to the special needs of adults.

3.3.4 - Supplementary Feeding Programme

The decision to start SFP depends on:
- The prevalence of global acute malnutrition.
- The presence of a blanket food distribution (BFD). If a BFD is implemented the priority of a SFP is reduced as moderately malnourished receive a ration through the BFD; however the medical care in a BFD is limited therefore access to health services should be ensured.
- Accessibility of the SFP and absolute numbers to be expected.

3.3.5 - Supportive Feeding Programme

Supportive feeding program has two categories:

- Pregnant and lactating women: the implementation depends on the food security stage.
- Sick people: the supplementation depends on food security and program specific issues.

3.4 - Phasing out nutritional interventions

Phasing out nutritional interventions is as complex as initiating them. Choosing the appropriate time and method of phasing out depends on the nutritional and medical situation, the social and political environment and the foreseen evolution. Phasing out criteria should not be used as a strict set of rules. It should be verified that a low number of patients doesn't mean necessarily a low prevalence but can indicate a low coverage. Nutritional interventions can be phased out in a progressive fashion (E.g. BFP followed by SFP and lastly TFP). Close monitoring of health and nutritional situation and food security is part of the closing process.

3.4.1 - Blanket Feeding Programme

BFP closure depends on the following factors:
- Improvement of food accessibility and availability (Proper GFD in terms of quantity, quality and equity).
- Decreased global acute malnutrition < 10%.
- Decreased mortality rates.
- No recent influx of population.
- No nutritional deterioration is anticipated (if seasonal deterioration is expected, closure should be delayed).

3.4.2 - Therapeutic Feeding Programme

TFP closure depends on the following factors:
- Decrease in TFP admissions over 2 consecutive months, and less than 30 inpatients in TFP.
- Prevalence of global acute malnutrition < 10%.
- Prevalence of severe acute malnutrition < 3% and referral facility for therapeutic feeding available (e.g. hospital paediatric ward and health centres for ambulatory phase).
- Crude Mortality Rate < 1/10,000/day and under-five mortality rate < 2/10,000/day.
- No evidence of epidemics (especially measles, shigellosis, etc.).
- No nutritional deterioration anticipated (if seasonal deterioration is expected, closure should be delayed).
- Referral possibilities to a health institute with therapeutic feeding capacity.

3.4.3 - Supplementary Feeding Programme

SFP closure depends on the following factors:

- Decrease in SFP admissions over 2 consecutive months.
- Prevalence of global acute malnutrition < 10%.
- Crude Mortality Rate < 1/10,000/day and under-five mortality rate < 2/10,000/day.
- No evidence of epidemics (especially measles, shigellosis, etc.).
- Food security ensured.
- No nutritional deterioration anticipated (if seasonal deterioration is expected, closure should be delayed).
- No recent influx of population.

CHAPTER 4

General Food Distribution

4.1 Definition, objectives and principles

4.2 Operational decisions

- 4.2.1 - Initiating a GFD
- 4.2.2 - Key activities
- 4.2.3 - Risks

4.3 Implementation

- 4.3.1 - Choosing a target population
- 4.3.2 - Choosing a food distribution system
- 4.3.3 - Food distribution intervals and frequency
- 4.3.4 - The ration

4.4 Monitoring

- 4.4.1 - Monitoring implementation
- 4.4.2 - Objectives of a GFD monitoring
- 4.4.3 - Methods of monitoring food distribution

This chapter is designed to assist humanitarian agencies that are not directly involved in food aid to observe and analyse General Food Distributions (GFD). This chapter does not delve deeply into implementation strategies. A thorough analysis of needs assessment, sociology, logistics, registration and distribution methods is beyond the scope of this guide. Interventions related to a sustainable increase in food availability, such as distribution of agricultural inputs, resettlement rations or veterinary services, are not addressed.

4.1 - Definitions, objectives and principles

The aim of a GFD is to meet the basic food needs of a population experiencing serious food shortage. A well-timed GFD should prevent, or at least reduce, the need to implement other nutritional interventions. Therefore it has the highest priority in emergencies.

Objectives of a A GFD are to:
- Cover the immediate basic food needs of a population, and avoid famine
- Prevent deterioration of nutritional status and death
- Maintain and restore livelihood

Principles:
A General Food Distribution is a free food distribution to all members of the population according to their basic food needs.

Therefore a GFD must be:
- Appropriate: only when absolutely necessary, targeted tot those who need the food most, and discontinued as soon as possible.
- Efficient: deliveries of adequate food rations (in terms of quantity and quality) must be timely and regular
- Impartial and based on a thorough assessment of needs
- Equitable and fair: populations should have equal access to adequate rations. Rations must reach the entire population; each household or village should receive a ration proportionate to population size (e.g. family rations should be proportionate to family size)
- Transparent: all parties (including beneficiaries) should receive information about rations, distribution methods, distribution dates, delays and problems. Distribution should be conducted in public places and organized in an orderly manner
- Accountable: a GFD must be organized in such a way that it can be monitored, verified and evaluated by implementing agencies, beneficiaries and donors

A GFD must not be:
- A tool for manipulation (i.e. for controlling people, feeding militaries, deliberately neglecting certain groups, etc). The political and economic positions of people, agencies and special interest groups involved should be taken into account
- Based on political preference (government, donors or agencies)
- Subject to diversion

• Endanger staff or beneficiaries during distribution, storage and transportation

4.2 - Operational decisions

4.2.1 - Initiating a GFD

A GFD is necessary when there is an unusual and severe decline in food availability or affordability. The decision to implement a GFD should not only depend on the nutritional status of a population but on the food security situation and expectations; it should be organized before a nutritional situation deteriorates. (See chapter 1 for Stages of food security (food insecurity, food crises, famine)
– *Food insecurity:* a GFD can be implemented to sustain regular livelihoods, and to prevent irreversible damage to productive assets. Food aid is generally targeted to the poorest or marginalized segments of society. Rations are intended to complement the resources and thus it will only partially meet food needs
– *Food crises:* often only a particular vulnerable group in a population is targeted, but a full ration might be necessary
– *Famine:* the entire population should receive food rations, covering everyone's needs

4.2.2 - Key activities

General Food distribution is a specialized activity and therefore it is not extensively dealt with in this manual. However, agencies that are not distributing food should be aware of key aspects as they are involved in signalizing the need for a GFD, and monitor the implementation of the GFD.

Key activities are:
• Scanning, early warning systems and initial needs assessment
• Comprehensive assessment of population food needs
• Communication and lobbying
• Risk analysis
• Selection of target groups
• Identification of a suitable food delivery system and frequencies of distribution
• Appropriate quantities of food rations
• Monitoring of the GFD

Early warning and initial needs assessment
Warnings about impending or evolving food crises come from Early Warning Systems (EWS), media sources, and local government appeals, NGOs etc. Early warnings should be investigated. An initial assessment should gather information independently and impartially about population demographics, food

security and the nutritional and health situation. Frequently an initial needs assessment is difficult because of limited access, misleading information from authorities, different population estimates.

Comprehensive assessment

Detailed information is needed to determine the magnitude of the food gap and how distribution should be targeted and organized:

- Estimation of food gap (local food availability and needs)
- Identification of beneficiary groups and number of beneficiaries
- Appropriate ways to register and distribute
- Logistical opportunities and constraints (e.g. import regulations and taxations, warehouse capacity, transportation (capacity, organization and financing)
- Staff opportunities and constraints
- Local politics as this can promote or hamper effective a GFD
- Risks

Food appeals and funding

Funding proposals should be submitted to donors primarily based on results from a needs assessment. Donors (governments, EC, etc.) might fund UN institutions (WFP, UNHCR) or NGOs. Decisions made by donors could be based not only on a population's needs, but also on the political agenda of, and donors trust in, the beneficiary country's government. Funding might be earmarked for certain regions or for certain food items. Funding for transportation of food is often limited.

Inter-agency cooperation and co-ordination

– Major organizations have their own operational mechanisms. UN agencies (UNHCR/WFP) have signed a Memorandum of Understanding which declares they have shared responsibility for mobilizing food distribution to refugee and repatriated populations. Under this agreement, UN agencies are responsible for the transportation of food to distribution points, program supervision, and report writing. Other partners may implement the distribution itself.
– Co-ordination is essential to ensure an efficient and effective GFD. It is mandatory in food distribution programs, when different actors are responsible for various aspects of program implementation.
– When population displacement is involved, UNHCR is often the main recipient of donor funding, and should take up a coordinating role.
– A GFD can also be coordinated by OCHA, ICRC, WFP, NGOs, bilateral organizations, or by the host government.
– Co-operation with the host government is imperative, although the host government might have interests different to the target group.
– When the implementation partner is a local NGO, it has the advantage of knowing the population, speaking the language etc; however, obstacles may arise when there is pressure from local dominant groups.
– Discuss the program with beneficiary population(s), local distribution managers, and food aid organizations, to learn their ideas about a proper and efficient food distribution.

4.2.3 - Risk assessment

It is important to be aware of the risks involved in implementing GFD programs, in order to provide assistance efficiently and successfully. Any decision to implement a GFD should be determined by weighing the prospective benefits of a GFD against risks (i.e. it's abuse and manipulation).

During food aid interventions, and particularly in conflict situations, individuals or groups may use aid resources to gain or maintain positions of power. This can occur on a national, regional or local level. Food aid may prolong conflict by supporting one faction and strengthening its position.
Some might aim to have access to, and control over, food aid in order to manipulate a civil population, feed militias or armies, or transform food into an economic resource. Dominant groups can also manipulate food aid by refusing humanitarian access to certain groups within the population. This can be done in a covert manner, by declaring that specific areas/regions are dangerous and politically insecure, thereby opening other (politically preferred) areas for food assistance.

In addition the negative impact a food distribution might have on local economies and coping mechanisms must be minimized. E.g. a high quantity of food aid in a community might result in low food prices resulting in low income for local, which has an impact on their future investment in production. Also a long-term food aid program might become a part of the regular income for several households, reducing the incentive to become self-sufficient.

Risk on theft, attacks and landmines and weather, road airstrip condition, planning, procurement are also important considerationS to ensure timely delivery of food aid.

4.3 - Implementation

4.3.1 - Target population

A GFD can be given to the entire population (a general GFD) or it can be targeted to a sub- group within the population.
The purpose of targeting is to focus on the areas and populations most in need, while maximizing limited resources, reducing the risk of dependency, and limiting adverse effects on the local economy and coping capacity. Targeting requires a comprehensive assessment of a population's socio-economic and political situation.
– *Geographical targeting* (areas, towns, villages, etc.) is often applied, guided by nutritional assessments and food insecurity indicators.
– *Specific population groups* who have less access to food, or who face a collapse in livelihood means should be targeted (e.g. refugees and the displaced).
–*Vulnerable households* within a population can targeted, but that can be problematic, since definitions of vulnerability vary between people, countries and even organizations. This may lead to inefficient targeting, misuse or abuse. Individual vulnerable households can be targeted in a stable, non-conflict area where most of the population have access to food and there are obvious inequalities in food distribution between local households. Involvement of the community in the targeting process is essential for success.

– Often, a decline in resources (e.g. a decline of donor interest, increased logistical constraints) will result in limited food aid (i.e. increased targeting) even when it is not justified by an improvement in nutritional status or food security in a population.
– Registration of beneficiaries is necessary for both planning and monitoring purposes. Registration involves head counts, name-lists, or card-distribution. It requires continuous verification, monitoring and evaluation to avoid exclusion of certain groups, community leaders taking control over the distribution, and over distribution (by double registration)

4.3.2 - Food distribution systems

A GFD involves several steps: fundraising, procurement, transportation and finally distribution. This section focuses on distribution.
Distribution must be organized in such a way that ensures the delivery of adequate food rations to the targeted population, while at the same time limiting its abuse. There are several systems of food distribution:

Local government
Food is distributed according to existing infrastructure, such as social services. In stable food insecure or food crisis situations with existing and functioning government structures food could be distributed by the government. This system is not appropriate in situations of conflict (internal or external) or oppression by the government.

Traditional leaders
Food is managed and distributed by local traditional leaders. Food rations for a population are calculated by reference to a list of local households. Distribution can only be equitable if a community is socially responsible for its minority groups (e.g. ethnic groups, widows, disabled, the elderly).
This system can be effective in situations of food insecurity. This method is quick during the beginning of a crisis, when people are not registered or when access to a population is limited (by security, or scattered); however, it risks being abused. This system is not appropriate in situations of conflict and famine.

Local (food security) committee
Food is distributed via food committees set up by external agencies in villages or refugee camps (i.e. UNHCR, ICRC, and international NGOs). The food committee is responsible for distributing and managing food rations. An information campaign about entitlements per family must be established. All sub-groups within a population must be represented in the food committee (including marginalized groups), in order to reach the entire population. This system is the most effective way when food aid should be targeted to the most needy and when the government is not capable or willing to distribute food in a proper way.

Families
Each family receives a ration card, indicating the names of all household members. The card entitles each family to a ration, which is proportionate to family size. This system requires intense involvement from the distributing agency. This system is considered the most equitable; however, omission or exclusion

by the distributing agency can occur. This system is commonly used in refugee camps and in situations of displacement when the social structure has collapsed.
Especially in polygamous societies, it is more appropriate to give women control over food rations, since they may be caretakers for separate households. Distribution to women can reduce the risk of diversion, since their traditional priorities lie in food provision for the household.

Individuals
Distribution of cooked food on an individual basis (soup kitchens) requires significant human resources, and cannot effectively cover an entire population. It is only a temporary option; it is appropriate during initial stages of an emergency when people have no means to take care of the meals themselves, or during extreme food aid abuse when desperately insecure conditions prevail.

Advantages and disadvantages of distribution systems
The advantages and disadvantages of a food distribution system must be carefully balanced for each specific situation. A food distribution system might be effective in one situation, but subject to abuse in another. Special attention should be given to interference with political groups involved in the conflict.

Advantages and disadvantages of each food distribution system

	Advantages	**Disadvantages**
Local government	Quick and efficient Builds up local capacity	Government capacity may be limited High cost if local infrastructure needs to be reinforced Governments may have political or financial motives for controlling food distribution.
Traditional leaders	Social and cultural values are respected Easy in dispersed populations Low cost Quick No registration or ration cards needed	Knowledge of social structures and power relations essential **Risk of abuse if social structures are broken down** Difficult to monitor Potential political and material reinforcement of leaders
Local committees	Undermines abusive power relations Lower risk of abuse Low cost, due to low number of distribution staff	Ration cards may be needed Need for information campaign Proper representation of entire community difficult to ensure
Families	Efficient for large, unstructured populations **Initial control over beneficiary numbers** Undermines abusive power relations Less risk of unequal distribution Easier to monitor	High cost Large numbers of staff Little community participation Registration necessary * Ration cards necessary
Individuals	No scope for manipulation, discrimination	Extremely high cost

(Cooked food distributions)	No registration needed * No ration cards needed Overcomes problems of limited fuel, utensils, water Self-targeting	Time consuming Large requirement for staff and equipment Only possible for small groups No possibility for exchanging rations, so all needs have to be met.

* It is recognized, however, that registration provides major advantages for all interventions in refugee/displaced situations.

4.3.3 - Food distribution intervals and frequency

Food should be distributed at regular intervals. This enables beneficiaries to plan. Distribution intervals are determined by several factors: the quantity recipients can carry, the distance people have to travel, available food stocks, and logistic capacity.
Typically, food should be distributed once every two weeks, or monthly. Too often, the frequency of distribution is solely determined by logistical factors. As a consequence, beneficiaries run out of food before the next distribution; this in turn causes increased manipulation (cheating), and justifications of social misbehavior (e.g. of stealing, oppression, etc.). Through this kind of a domino effect, irregular food distribution can actually increase the risks of malnutrition and death.

4.3.4 – The ration

Full or partial ration
Prior to implementation, it must be determined whether a full or partial ration GFD is required. Rations for general food distributions are designed to bridge the gap between the affected populations requirements and the food they are able to provide for themselves. The content of a ration (full or partial) needs to be determined after an assessment of a population's self-sufficiency.

Characteristics of an adequate ration
– Minimal nutritional requirements:
- Initially total energy available 2 100 kcal/person/day
- Protein: at least 10-12% of the total energy of the ration should be provided by proteins
- Fat: at least 17% of the total energy of the ration should be provided by fat
- Nutrients: at least the Recommended Daily Intake (RDI) of the main nutrients (see table on the next page)

– The ration should be:
- Diversified: includes a cereal, oil, legumes, and an easily digestible food for children
- Safety: absence of infectious risk and fit for human consumption
- Acceptable and familiar to the community

• Economic in terms of fuel requirements, time and processing (e.g. milling)

(See Annex 4.1 for food composition table and how to calculate energy, proteins and fat content.)

The size of the ration

In an emergency situation, the energy content of a full ration should be determined in two stages. First, a ration of 2 100 kcal/person/day should be provided. Later the initial value of 2 100 kcal/person/day may be adjusted according to demographic and contextual factors.

Factors for adjustment

– Poor health and nutritional status of the population: widespread illness, epidemics, high malnutrition or crude mortality rates indicate a need for an increased ration.

– Activity level: a ration of 2 100 kcal is based on a light level of activity. If a population engages in more intense activity (e.g. agricultural labour, long distance water and firewood collection, and other heavy physical work), the energy component of the ration should be increased.

– Extreme temperatures: cold external temperatures, lack of shelter, blankets and clothing should be taken into account when calculating ration levels. Rations are calculated for an average daily temperature of 20°C. For each 5°C drop in temperature, an additional 100 kcal/person/day should be added to the ration.

– Non-food item accessibility: a population that is exclusively dependent on food rations requires a means of exchange to meet other subsistence needs (shelter, fuel or firewood, water, blankets, transport costs, etc.) If a distribution of non-food items is impossible or postponed, the food ration might be increased to serve as an economic resource enabling exchange.

– Processing: distribution of whole grains requires a milling process, resulting in an average 10%-20% loss. Local milling should be available and rations should be increased to compensate for losses.

– Age and sex composition of the population: an excess of male adults calls for higher rations per capita, while a population mainly composed of women and children requires lower rations. In practice, this is rarely taken into consideration.

Composition of the ration

The ration distributed should be composed of a balanced diet providing all essential nutrients. The standard ration is composed of[11]:

– A cereal: rice, maize, wheat, sorghum, etc.

– Legumes or protein rich food: peas, beans, groundnuts; corn-beef, fish, etc.

– Oil: vegetable oil, palm oil, etc.

– A fortified blended food: Corn Soya Blend (CSB), Unimix, Wheat Soya Blend (WSB), etc.

– Complementary food items: iodized salt.

– Optional: sugar and tea are important items to include in the ration, since they increase acceptability or palatability.

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[11] *Non-available items:* when certain items are unavailable, they can be temporarily replaced by other items, based on the following rates: Blended food : beans: 1 to 1; Sugar : oil: 2 to 1; Cereal : beans: 2 to 1; Cereal : oil: 3 to 1 (not oil for cereal)

Example of a WFP/UNHCR standard ration

Food	**Ration (g/person/day)**
Cereal	400
Beans/lentils	60
Oil	25
Fortified blended food	50
Sugar	15
Salt	5
Energy content (Kcal)	2 113
Protein (in g and in % of Kcal)	58 g; 11%
Fat (in g and in % of Kcal)	43 g; 18%

NB: Milk: the distribution of milk powder in a general food ration is not acceptable because of the risk of being used as a breast-milk substitute. The promotion of artificial milk above breast-milk, the use of improper milk, lack of hygiene and wrong preparations are detrimental for the child's health. For further explanations see Chapter 8 on infant feeding.

Nutrient content: populations that are exclusively dependent on a GFD are at risk of developing micronutrient deficiencies. Fortified blended food should be included in a GFD in order to increase the nutrient content of a ration; this is necessary until access to sufficient amounts of nutrient rich foods is guaranteed.

Recommended daily intake (safe level of intake) per capita

Nutrient	***Quantity***
Protein	10-12 % of energy provided by ration (52-63 g)
Fat	> 17% of the energy provided by the ration (40 g)
Vitamin A (Retinol equivalents)	500 ug Retinol equivalents (1666 IU)
Vitamin D	3.2-3.8 ug
Thiamine (vitamin B_1)	0.9 mg (or 0.4 mg / 1000 kcal)
Riboflavine (vitamin B_2)	1.4 mg (or 0.6 mg / 1000 kcal)
Niacin equivalents	12.0 mg (or 6.6 mg / 1000 kcal)
Folic acid	160 ug

Vitamin B12	0.9 ug
Vitamin C	28 - 30 mg
Iodine	150 ug
Iron	22 mg[1](from a diet that provides iron of low bioavailability)

Prolonged dependency on incomplete and/or monotonous general rations increases risks of specific nutrient deficiencies:
- Polished rice: beriberi (vitamin B1)
- Maize or sorghum: pellagra (vitamin B3)
- Refined cereal and a high proportion of carbohydrates: ariboflavinosis, nutritional neuropathy (vitamin B2, B5)
- Area with limited access to fresh fruits, vegetables (especially semi-arid area): scurvy (vitamin C)
- Lack of colored vegetables or meat: xerophthalmia, impaired immunity (vitamin A)
- Limited in animal products: anemia (iron)
- Low iodine soil content, lack of iodized salt: goiter, cretinism (iodine)
- Lack of animal products and limited sunlight: rickets, osteomalacia (vitamin D)

(See for details on nutrient deficiencies and interventions chapter 10)

4.4 – Monitoring

4.4.1 - Objectives of A GFD monitoring

All aspects of food aid (food supply and rations, system of distribution, etc.) should be transparent for all actors involved. UN agencies often employ local staff to monitor the distribution process (i.e. ensure that distribution is equitable, orderly, etc). The danger is that they can be subject to a variety of pressures, particularly in conflict situations**.** Thus, independent agencies should monitor the GFD and crosschecking of information (see annex 4.2). Food distribution can fail at many critical points due to local and international politics, socio-economic dynamics, ration abuses and misuses, etc.

Objectives:
- Identifying weaknesses in the GFD (from theoretically pledged rations, planned rations to rations actually received by beneficiaries)
- Measuring the average amount of food distributed per person
- Verifying the quality and acceptability of the food distributed
- Detecting inequities in the distribution system.
- Reporting to relevant agencies and beneficiary representatives, and lobbying when

necessary.

4.4.2 - Monitoring implementation

Monitoring a GFD is essential to ensure that beneficiaries are receiving the food that they need. If an intervention is not efficient, the prevalence of malnutrition, and mortality, will increase. It is therefore vital to ensure that adequate food rations are distributed and to monitor the average energy content per person per day, the equity of the distribution, and any systematic under-serving of population groups (the methodology is described in annex 4.2). The coverage of the food distribution program (inclusion and exclusion of population groups) can be measured during a nutritional survey (see chapter 2: survey).

The organization that monitors the food aid should:
- Be independent from the food aid program
- Be actively involved with the target groups themselves
- Be credible
- Have extensive contacts with other aid agencies

Monitoring must be well planned and resources should be made available. Information should be collected about all aspects of food distribution. Also, the actual consumption and utilization of food aid should be monitored. If food items from the GFD are being sold at local markets, one should not assume that rations are excessive. The selling of GFD rations can be a sign that households are obliged to find alternative ways to fulfil other essential needs.
In situations where a GFD is the only source of income, families might exchange or sell part of their ration for other essential non-food items (water, wood, cooking utensils etc.) or complementary foods (spices, fresh vegetables, meats etc.).

Findings from monitoring should be communicated to all agencies involved. Co-operation with food distributing agencies are very important. However, sometimes political aspects of food distributions (e.g. corruption) become evident and distributors do not want to alter practices. In these circumstances, specific actions may be necessary, such as lobbying or temporary blanket feeding for vulnerable groups.

As the ultimate goal of a GFD is to maintain and restore healthy nutritional status and that, therefore, process indicators (e.g. average ration distributed) are not sufficient to measure impact. Impact indicators such as mortality, morbidity and malnutrition rates, are indispensable.

4.4.3 – Indicators of a GFD

The table below gives suggestions for indicators to be used according to the aspect to be monitored. In addition, the impact of a food distribution can only be evaluated by the overall nutrition and health situation. This must also take into account the changing context and other interventions.

Monitoring indicators for A GFD programs

Objectives	**Indicator** (examples)	**Information source**
Adequate ration	Malnutrition rates Mortality rates Migration Food market prices Prevalence of nutrient deficiencies	Surveys Surveillance Market surveillance Clinic reports
Planned quantity received	Average kcal/p/d	A GFD monitoring
Adequate nutrient content	RDI met Prevalence of nutrient deficiencies	A GFD monitoring Clinic reports
Equity, fair	Inter-family variations, Groups not receiving food, etc.	A GFD monitoring
Quality	Visual and check on taste Quantity of contaminated food	Observation
Acceptability, appropriateness	Food aid sold or consumed Milling and cooking facilities	Interviews Focus group discussions Food committee Market surveillance
Coverage	Excluded groups/areas Proportion of people not receiving food aid Malnutrition rates	Household Survey
Accountability	Information shared with all parties Co-operation with monitoring agency Presence of (independent) food monitors of distributing agency	Observation Reports Food committee
Transparency	Information on rations and dates shared with beneficiaries Distribution in public place	Observation
Efficient distribution	Queues, fights, waiting time, Interference with daily activities (e.g. cooking, fetching water, etc.) 1 distribution site /10.000-20.000 people, or maximum distance to travel 10-20 km.	Observation
Regularity	Days between distributions Quantity of food that is, or will be, available for distribution (pipeline)	Reports Observation
Absence of abuse or manipulation	All beneficiaries registered, without paying Free and easy access to distribution sites	Observation Interviews

Objectives	**Indicator** (examples)	**Information source**
	No diversion in the process (journey home) No taxation No enrichment of the powerful	Focus group discussion
Safety (not dangerous)	No threats Orderly distribution Beneficiaries are informed	Observation Interviews Focus groups discussion Food committee

4.4.3 - Methods of monitoring food distribution

Several monitoring techniques can be used (either separately or simultaneously) to arrive at reliable conclusions. It is not necessary to use all the methods mentioned below. Appropriate methods for monitoring food distribution depend on the type of data required, and feasibility of obtaining that data. Information should be provided by existing reports or field evaluations. Some frequently used monitoring methods include:

Observation
Information on many of the indicators mentioned above can be obtained by observation E.G.: quality of the food items, acceptability of the food, availability of milling and cooking facilities, the actual food distribution (queues, access, safety).

Interviews
Focus group discussions and key informant interviews, informal discussions with beneficiaries, informal house visits and discussions with local staff give valuable information about acceptability, adequacy of the rations, excluded groups or abuse (e.g. payment during registration or distribution), and utilization of the food rations (e.g. interfamily distribution, sale).

Food basket monitoring
A survey measures the quantity of the ration (including micronutrients) received by beneficiaries at the exit of a distribution site.
It provides useful information about whether beneficiaries are receiving their intended rations (i.e. as specified on their ration card). It does not however, give information about the general coverage of food distribution, or of inequalities within a family. Distribution agencies should be informed prior to implementation of food distribution surveys. The survey requires inputs and resources; therefore, the need must be evident before planning such a method (See Annex 4.2 for a detailed description of the method).

Existing reports
Essential information about ration levels, food security, supply line (pipeline), numbers of beneficiaries, coverage, etc., can be found in existing reports. (See Annex 4.3 for example of reports.)

Household surveys
Household surveys provide information about the coverage of food distribution, and about whether aid is reaching individual households (loss by looting, sale, and repayment of debts). These surveys should always be carried out using an appropriate sampling methodology. Small surveys can be done as a part of post distribution monitoring: quantity received, quantity needed for the family per day, number of days covered by the distribution.
Also nutrition and mortality surveys provide an opportunity to include questions about the GFD coverage. It is important to record whether people have received food aid, how much and when. In addition, it is necessary to learn whether households have access to fuel, cooking pots, milling facilities, income, etc.

Market surveillance (for relief food and otherwise)
General information about food availability can be obtained through interviews with buyers and sellers about the prices of basic items and their market uses of food aid. Detailed surveys (i.e. interviews) reveal whether a certain sub-group of a population needs additional economic support. It might be difficult to identify food aid on the market, because produce may be a mix of stolen and previously bought food. Market prices should always be monitored. Price changes may give information about the evolution of a situation; absolute prices or prices collected only once may be difficult to interpret.

Food committee
Food committees can contribute by collecting information about the distribution, and record the responses (perceptions) of beneficiaries. The community should elect a committee, with representatives from every socio-economic group, including women. A food committee must always be initiated by the distributing or monitoring agency.

Data from health services
Data that is collected routinely from health and nutritional services must always be analyzed for information about inadequacy of a food distribution. Increased numbers of re-admissions (after successful discharge) in feeding programs and the presence of malnourished adults are signs that either food aid is not sufficient, or that food aid is not reaching the people in need (e.g. certain groups are excluded). Some questions about GFD's should be included in feeding programs' admission books (See Annex 4.3 for key questions, required data, methods and sources).

CHAPTER 5

Blanket Feeding Program

5.1 Definition, objectives and principles

5.2 Opening and closing

5.2.1 - Initiating a BFP

5.2.2 - Closing a BFP

5.3 Implementation

5.3.1 - Target population

5.3.2 - Food rations

5.3.3 - Medical screening and treatment

5.3.4 - Lobbying

5.3.5 - Practical aspects

5.4 Monitoring

Large populations become deprived of adequate food during food crises and famines. Food programs aimed at counterbalancing these insufficiencies must be implemented rapidly and efficiently. Blanket Feeding Programs (BFP's) fulfil this role.

5.1 - Definition, objectives and principles

A BFP is defined in this guide as a system of food distribution that focuses on families, and reaches them usually through their children under the age of 5.
A BFP provides a complement in case of lack of food due to either insufficient food accessibility or an incomplete food distribution. A BFP is a short-term intervention aimed at preventing deterioration of nutritional status. It is implemented in response to a current or anticipated (serious) food crisis in large populations.

A BFP must be simple to allow rapid implementation in large populations:
- Only partial rations are given.
- Rations are standardized according to *average* family size.
- Food is distributed to an easily identified member of a family.
- No individual follow-up is organized.

In order to improve food availability and accessibility (e.g. proper GFD), a BFP must include lobbying.

5.2 - Opening and closing

5.2.1 - Initiating a BFP

The decision to initiate a BFP is not necessarily linked to malnutrition rates. A BFP should be initiated when:
- A population's food availability and accessibility has seriously decreased and deterioration is expected (famines, early stages of an emergency, situations of insufficient food aid, massive influxes of people, etc.)
- GFD is inequitable or unfair within a population or does not reach certain geographic areas
- GFD is inadequate or ineffective, resulting in a deficit of more than 500 kcal/person/day
- Food rations are inappropriate for a given population (lack specific micronutrients, protein, etc.)

BFP is only a temporary solution to food access problems. BFP should be implemented for a duration of maximum 3 to 6 months (depending on context) and should never replace a GFD.
BFD has priority over SFP: the BFD is first started and then the SFP. If there is a SFP already the SFP can be continued or temporary stopped depending the capacity of the teams. The reason is that all children, including the malnourished ones, are getting food in a BFD.

5.2.2 - Closing a BFP

BFP closure depends on the following factors:

- Improvement of food accessibility and availability (quantity, quality and equity); (See chapter 1 for assessment and surveillance of food security).
- Decreased global malnutrition (< 10-15%).
- Decreased mortality rates.
- No recent influx of population.
- No nutritional deterioration is anticipated (if seasonal deterioration is expected, closure should be delayed).

Comments

If certain groups are not properly reached by a GFD, a BFP could be targeted specifically for them.(E.g. family rations for beneficiaries of feeding programs). In this case the BFD uses different distribution channels than a GFD. If the problem of a GFD is that the rations are too small, then distribution channels already in place should be used. Establishing a separate BFP distribution channel is not necessary.

5.3- Implementation

5.3.1 - Target population

BFP provides food for entire families. The size of a family ration is determined by the average family size in the population targeted (the ration is not increased nor decreased to match each exact family size). Average family size in this population can be estimated through a small demographic survey.

Children under the age of 5 (< 110 cm in height) are often chosen for food distribution, since they are easy to identify. Every child receives a fixed ration, regardless of his/her family's size and nutritional status. This means, for example, that families with 2 children under the age of 5 receive 2 rations.

In some situations, different people can be chosen to represent a family. In a severe crisis, children under 10 years old (< 130 cm in height) or women only can be chosen, for example.

The ration of the BFD can be meant for the entire population (general BFD) or it can be targeted to a sub group (e.g. displaced, children under 3 years old only, children with MUAC < 12.5 or patients in feeding centres and their family). When only children are meant to consume the food, this is also called "blanket supplementary feeding".

5.3.2 - Food rations

The amount of food rations distributed by a BFP depends on what people already have. That is, it depends on the size and composition of previous GFD rations, and on what people still require to sustain a basic level of health. In addition, the delivery (i.e. logistical) capacity of the distributing organization should be taken into account.

The minimum complement should be 500 kcal/person/day, thus covering about ¼ of individual nutritional needs. An average family of 6 persons should receive 3000 kcal/day. This means that each child under 5 should receive a food ration of approximately 10.5 kg every 2 weeks to meet the needs of the entire family.

Food items should be:

- Easy to prepare and acceptable by the families (high energy biscuits such as BP5; oil, blended food for children such as Unimix or CSB).
- Easy to manage. Different food items could be used depending on the specific needs and ease of procurement. Limit the number of different items distributed, as this is logistically complicated. Often food should be re-packed in smaller bags to make the distribution and the transport of the ration by the beneficiaries feasible.
- Fortified with micronutrients (blended food, BP5); protein-rich blended foods must be provided with fat to ensure proper caloric intake.
- Include a food item suitable for young children

Example of rations

Assumptions:

- Average family size of 6
- Population 20 000
- 20% under fives

	First example		**Second example**	
Kcal/family member/day	500		700	
Kcal/family/day	3000		4200	
Unimix or CSB (g/family/day)	700		980	
Vegetable oil (g/family/day)	40		55	
Quantity/family for 2 weeks	Unimix/CSB Oil	9.8 kg 0,56 kg	Unimix/CSB Oil	13.7 kg 0.77 kg
Rounded quantity/family for 2 weeks	Unimix/CSB Oil	10 kg 0.6 litre*	Unimix/CSB Oil	14 kg 0.8 litre*
Total quantity/population 20 000 person per month	Unimix/CSB Oil litres	80 MT 4800	Unimix/CSB Oil	112 MT 6400 litres

* 10% should be added to compensate for loss

Oil: 920 g = 1 litre

5.3.3 - Medical screening and treatments

Even though beneficiaries are not individually followed, food distribution is a good opportunity to:

- Quickly detect and refer sick individuals.
- Conduct nutritional screenings (MUAC, bilateral oedema) for surveillance and referral to nutritional treatment programs.
- Check immunization cards or conduct vaccination campaigns for measles.
- Administer vitamin A.
- Initiate de-worming campaigns.

Sometimes large numbers of attendees and limited competent staff allow only for quick visual detections of malnourished and sick people. It is mandatory to refer these people to health structures for proper diagnosis and treatment.

5.3.4 - Lobbying

When BFP's are initiated as a consequence of an inadequate GFD, information concerning GFD deficiencies must be transmitted to the concerned organizations (e.g. WFP). In the absence of rapid improvement, lobbying should be initiated.
Lobby recommendations should be clear and feasible to implement. Quantitative data are necessary to justify lobby recommendations (e.g. quantity distributed in GFD, coverage of GFD).
Lobby should show results in a set period. Action is required when no satisfactory success is achieved.

5.3.5 - Practical aspects[12]

Community
Leaders and members of a population should be informed about target groups, program functioning and rules of distribution.
Leaders should be involved in the implementation of the distribution program. Local authorities may participate in security and crowd control to ensure the safety of beneficiaries and staff.

Process
– Registration: since there is no individual targeting, the use of registration books and cards is not necessary. These are often a waste of time and resources.
– Beneficiaries come to the distribution point. Children should always be accompanied by a relative (> 15 years old).
– The beneficiaries are gathered in a confined area, or in waiting lines.

[12] For details on distribution process, please consult detailed guidelines

– The distribution can start when the entry gate in the waiting area is closed. In this way the possibility of people receiving several rations is controlled.
– Beneficiaries who visit the distribution centre should be noted on a tally sheet at the entrance to keep a record of the number of beneficiaries over time.
– It is of ultimate importance that the process is fast, as this is the best way to control the crowds.

Plan
– If a population is large, several distribution sites are necessary. Distributions should be organized simultaneously in order to avoid double handouts (with a maximum 10 000 children per distribution site). If the number of attendees is too high, boys and girls can also be served on different days. In addition groups can be formed according to height and each served on a different day (e.g. < 90 cm tall on Monday and > 90 cm tall on Tuesday).
– Frequency: distribution should be organized according to necessity (every 10 days, every two weeks, etc.). If the period covered is too long , the quantity of food to carry could be too heavy. Take into account the walking time from home to distribution point.

Other activities
– Combine the distribution with nutritional screening (measure MUAC of all children) as a rapid assessment of the nutritional status of the population and in order to be able to refer malnourished children to the TFC.
–A measles vaccination and/or medical screening can be combined with the distribution
– Additional activities must not hamper the beneficiary flow to the food distribution

Layout
– Total surface for waiting areas and storage space: 19 000 m2 for distribution to 10 000 persons/day, from which 1200 m² is covered and 480 m² in a closed hall (e.g. rubber hall) (food stock).
– Waiting area: the waiting area is divided into two parts: a first large open space to “collect” the people and then shelters for the waiting lines when the distribution starts (see Annex 12.15).
– Entry and exit gates: one main gate for entrance and 2 for exit will help to regulate the beneficiaries’ flow.
– 2 defecation areas or 5 latrines outside the compound but in the vicinity of the waiting zone.

Water requirements
- Minimal quantity: 0.3 litres per day per beneficiary.
- Optimal quantity: 0.5 litres per day per beneficiary.

5.3.5 - Human resources

Staff requirements for one distribution site of 3000 beneficiaries:

Supervisor (logistician)	1
Watchmen	4
Crowd-control	5 – 8
Food distributors	4 – 8
Food carrier (warehouse-site)	4 – 8
Cleaners	2
MUAC measurers	2
Tally sheet registrars	2
Total	**24 – 35**

5.4 - Monitoring

Information about the proper functioning, accessibility, acceptability, quality and coverage of BFP should be based on observation, as well as on the following figures and trends: (see annex 11.4, and paragraph on monitoring of general food distribution in chapter 4).

Coverage
Proportion of the number of tallied beneficiaries versus the number of expected beneficiaries should be calculated.

Functioning
- Quantity and quality of food received (types of food items, caloric and micronutrient values; food safety).
- Organization during distribution (chaos/well organized).
- Number of staff and quantity of food distributed, compared to the number of beneficiaries.

Surveillance indicators (exhaustive data collection or by sampling)
– Rapid assessment of the nutritional status of the population by MUAC screening of the beneficiaries attending the distribution.
– Catchment area covered (kilometres covered).
– Number of children referred to medical or nutritional structures.
– Status of food security and reasons why beneficiaries (do not) attend (assessed by means of village visits).

All this information should be analysed within the context of the operation. Monitoring should always lead to appropriate action. A BFP is intended to prevent nutritional deterioration. This does not imply that improvement can be expected.

CHAPTER 6

Therapeutic Feeding Programmes

6.6.1 - Individual surveillance

6.6.2 - Inappropriate practices

6.6.3 - Outreach

6.7 Procedures and time schedule

6.7.1 – Admission procedures

6.7.2 – Care

6.7.3 – Time schedule

This chapter outlines the treatment protocols for the management of severe acute malnutrition and its complications among children over 6 months of age, adolescents, adults and the elderly. For the treatment of severe malnutrition in children under 6 months of age, see Chapter 8.

6.1 - Objective and principles

6.1.1 - Objective

Objective of a TFP:
To reduce mortality among severely malnourished patients by providing intensive care until their nutritional and clinical recovery.

Severe malnutrition and associated illnesses can rapidly lead to death if left untreated. Therefore the treatment in a TFP combines dietary treatment, medical treatment and individual patient follow-up. Treatments are implemented according to standardised protocols. The treatment is divided in two distinct phases. Adaptations or simplifications of these protocols may be necessary in specific circumstances, such as in emergencies, or when there are a small number of children, in a unit within a paediatric ward of a hospital.

6.1.2 - Clinical description of severe malnutrition

Marasmus and kwashiorkor are the two main clinical forms of severe acute malnutrition. The mixed form – marasmic kwashiorkor – is frequent.

The most evident clinical feature in **marasmus** is severe wasting with loss of muscle and fat mass. Patients are extremely emaciated with thin, flaccid skin and prominent scapulae, spine and ribs. Loss of facial fat results in the characteristic elderly appearance of affected children. Other signs include anorexia and behavioural changes (apathy and irritability).

Clinical features in **kwashiorkor** include:
– Bilateral pitting oedema of the lower legs and feet; generalized oedema in advanced cases (face, hands, arms, trunk). To detect bilateral oedema, apply moderate thumb pressure bilaterally to the lower extremities (just above the ankle or on the top of the feet), and count for 3 seconds. If a pit remains after the thumbs are removed, the patient has oedema.
– Loss of muscle and fat mass (that can be masked by oedema).
– Skin lesions: atrophy, patches of erythema, hypo- or hyper-pigmentation, desquamation, exudative lesions that resemble burns, fragile skin prone to ulceration and infection.
– Changes in hair colour (lightening or becoming reddish) and texture (dry, thin, brittle, sparse hair, that can be pulled out easily and without pain).
– Behaviour: apathy or lethargy when left alone; irritability when handled.

In addition, the metabolism is seriously disturbed, and the immune system seriously impaired. Therefore, hypoglycaemia, hypothermia, electrolyte imbalance, micronutrient deficiencies and severe infections are commonly associated with severe malnutrition, without obvious clinical manifestations.

Despite a distinction between two clinical forms of severe malnutrition, the therapeutic approach is the same.

6.1.2 - Treatment phases

Treatment in a therapeutic feeding program is divided in at least 2 phases. During the first phase, patients are treated in an inpatient structure for 24-hour care. The second phase may be organised based on inpatients, day-care, or outpatients.
These two phases may be linked by a *transition phase*. The treatment phases apply to all age groups: children, adolescents, adults and the elderly.

Phase 1
The initial phase or phase 1 is intended to:
- Stabilise and improve the medical condition of patients with severe complicated malnutrition.
- Restore metabolic function.
- Prevent and/or treat associated conditions and complications such as hypothermia, hypoglycaemia, infections, micronutrient deficiencies, heart failure etc.
- Intensively monitor patients since the high mortality in severely malnourished patients usually occurs during this phase.

Treatment in phase 1 is in patients organized over 24 hours. Patients remain in this phase for a maximum of 7 days, depending on the clinical evolution. Patients should show signs of improvement within a few days.

Criteria for transition phase
When patients have passed the critical phase in phase 1, they are transferred into transition phase followed by phase 2. **Transfer** takes place when the patient:
- Regains appetite and
- is alert and reactive ***and***
- has recovered from severe medical complications ***and***
- exhibits significantly reduced oedema or no oedema.

Transition phase (optional)
The transition phase is intended to:
- Ensure that a patient is clinically stable and can tolerate an increased energy and protein intake to avoid heart failure.
- Be a monitoring period for persistent oedema, signs of overfeeding etc.
- Ensure the patient tolerates specific food items used in phase 2 (e.g. F100 milk, RUTF).

The implementation of a separate transition phase should be considered when:

- A considerable proportion of patients have particularly poor clinical status (e.g. poor appetite, kwashiorkor, still having oedema, high disease burden)
- A therapeutic feeding has sufficient staff and is well organised

Patients should stay in the transition phase for 1 day (and a maximum 3 days). The transition phase can be organized as part of phase 1, or as a separate phase.

Phase 2

The rehabilitation phase or phase 2 is intended to:

- Promote rapid weight gain until the patient has recovered.
- Complete any medical treatment.
- Allow a frequent patient review.
- Stimulate emotional and physical development.
- Prepare the patient for normal feeding practices at home.

Criteria for transfer back to phase 1

Patients in transition phase or phase II must be transferred back to phase I when the patient develops one of the following signs:

- A serious medical complication,
- Weight gain of more than 10g/kg/day (sign of fluid accumulation)
- Increasing oedema or the development of re-feeding oedema
- Increase in liver size or development of tender/painful liver
- Any sign of overload, heart failure or respiratory distress
- Development of tense abdominal distension
- Development of re-feeding diarrhoea with weight-loss

When patients reach the recovery criteria, they are discharged from the therapeutic feeding program and referred to the supplementary feeding program, to consolidate their recovery. Otherwise, relapse and readmission to a TFP is likely.

Treatment phases in a TFP

Objectives	Treatment	Duration
Phase 1 - 24-hour care (inpatient)		

– Restore metabolic functions. – Prevent and/or treat intercurrent diseases and complications. – Constant monitoring.	Low protein, sodium and energy diet 8 meals over 24 h. Therapeutic milk (F75) only. Routine medical treatment *plus* Specific medical treatment if required.	Maximum 7 days
Transition phase - 24-hour care (inpatient)- Optional		
– Observe increased food intake. – Stabilize clinical condition. – Constant monitoring. – Test RUTF for outpatient phase.	8 meals over 24 h Therapeutic milk (F100) and/or RUTF only. Routine medical treatment *plus* specific medical treatment if required.	Maximum 1-3 days

Phase 2 – Ambulatory/ Day care/ /inpatient		
– Promote weight gain. – Complete medical treatments. – Monitoring. – Reintegrate into social environment.	High-energy and diversified diet (RUTF or F100); some local foods. 6 meals/day. Routine medical treatment *plus* specific medical treatment if required. Emotional and physical stimulation.	± 14 days (day-care) ± 30 days (ambulatory)

6.2. - Admission and discharge criteria

6.2.1 - Admission and discharge in TFP

Patients with *one or more* of the following signs of severe malnutrition must be admitted to a therapeutic feeding program immediately. Patients can only be discharged once *all* exit criteria have been met.

	Admission	**Discharge**

Children from 6 months to 10 years (or from 65 to 130 cm)	W/H < 70% of the median[13] **or** presence of bilateral pitting oedema **or** MUAC < 110 mm (only for children from 12 to 59 months or from 75 to 110 cm)[14].	*If SFP exists*: W/H > 80% of the median[1] on 2 consecutive measurements, 1 week apart *If no SFP exists:* W/H > 85% of the median on 2 consecutive measurements, 1 week apart **and** Absence of oedema for at least 1 week **and** absence of acute medical problems.
Adolescents from 10 to 18 years (> 130 cm)	W/H < 70% of the median [11] **or** Presence of bilateral pitting oedema	W/H > 80% of the median [11] on 2 consecutive measurements, 1 week apart **and** Absence of oedema for at least 1 week **and** Good clinical condition
Adults [15] (except pregnant and lactating women)	MUAC < 160 mm [11,16,] irrespective of clinical signs **or** presence of bilateral pitting oedema (Grade 3 or worse) [15] **or** MUAC < 185 mm and poor clinical condition (inability to stand, apparent dehydration, etc.).	Weight gain on 2 consecutive measurements, 1 week apart[12] **and** total weight gain > 10 to 15% **and** oedema less than grade 2 [17] **and** good clinical condition.
Pregnant and lactating women	MUAC < 170 mm **or** presence of bilateral pitting oedema (Grade 3 and above) [14.]	Weight gain on 2 measurements, 1 week apart[12] **and** oedema less than grade 2 [15]**and** good clinical condition.
Elderly (≥ 50-60 years)	MUAC < 160 mm and poor clinical condition (inability to stand, apparent dehydration, etc.) **or** Presence of bilateral pitting oedema (Grade 3 or worse) [15.]	Weight gain on 2 consecutive measurements, 1 week apart[12] **and** oedema less than grade 3 [15] **and** good clinical condition.

[13] In certain countries, W/H is expressed in Z-score. A W/H of 70% of the median is approximately equivalent to – 3 Z-score; a W/H of 80% of the median is approximately equivalent to – 2 Z-score.

[14] MUAC is used for admission to therapeutic feeding programmes but cannot be used as a criterion for discharge as changes in MUAC are too small and precision too low to detect such changes.

[15] The criteria for adults should be adapted to local circumstances, context, profile of the patients and presence of programs that can be used for referral (e.g. TB, HIV).

[16] In programs for chronic diseases often BMI is used for an anthropometric assessment of adults, see chapter 10

[17] See Chapter 2, page 12, for classification of famine oedema in adults based on the Beattie classification

When a patient is discharged, a referral paper has to be filled in including diagnosis, treatment received (vitamin A, measles vaccine etc.) and treatments to be continued (iron supplementation etc.).

Adults:
Currently there is no consensus on anthropometric criteria for identifying severe malnutrition in adolescents, adults, pregnant women and the elderly. Clinical status should always be taken into account. The following must be considered when applying admission and discharge criteria:

– *Admission:*
- Assessment of BMI is time-consuming and often difficult, especially in patients unable to stand. Furthermore, BMI is affected by oedema and is not relevant in pregnant women. MUAC in combination with clinical signs should be used for acute malnutrition[18].
- Bilateral pitting oedema in adults may be caused by a cardiac, vascular, renal or hepatic disease. When a physician has excluded these possible causes, bilateral pitting oedema can be considered as *nutritional oedema*.

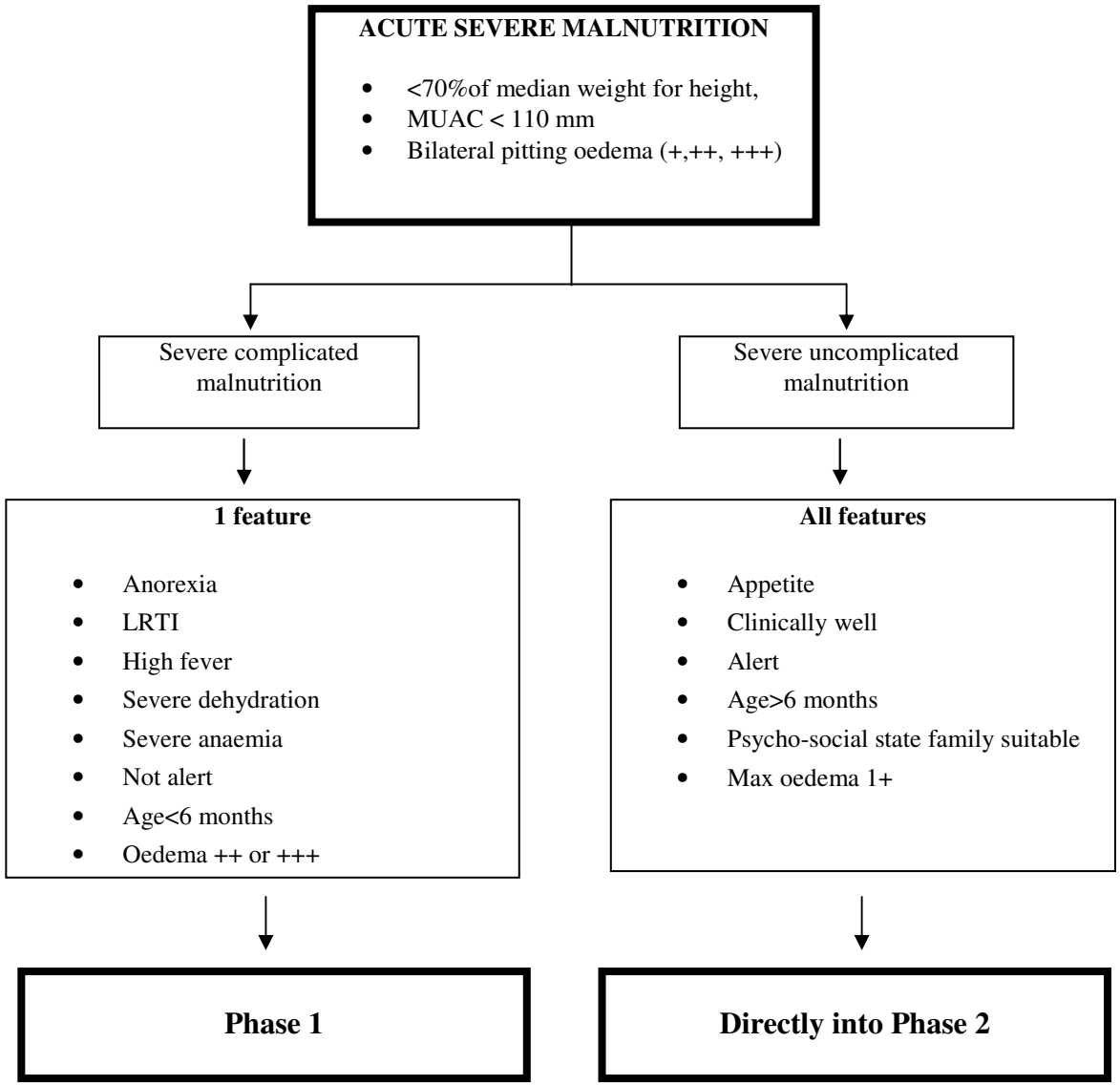
– *Discharge:*
- Bilateral oedema in adults can take time to disappear completely. The persistence of bilateral oedema does not preclude discharge as long as other discharge criteria are met and the patient is referred to a SFP.

6.2.2 - Admission in phase 1 or phase 2

Patients with uncomplicated severe malnutrition bypass phase 1 and transition phase and they can be admitted directly to phase 2 treatment (in- or outpatient facility). Also seriously ill moderate malnourished can be admitted in phase 2.

Flow chart for direct admission in phase 2:
– Patients with all the features of uncomplicated severe acute malnutrition can go directly to phase 2 treatment.
– Patients with at least 1 feature of complicated severe acute malnutrition should go through phases 1(and transition) as inpatients.
– Any patient presenting severe malnutrition and < 6months old should go through an inpatient facility (see chapter 8 for treatment details).
- Moderately malnourished patients who are severely ill (e.g. at least 1 feature of complicated malnutrition) could be admitted in phase 2 on medical indication.

[18] For chronic disease BMI is used, e.g. HIV/AIDS programs (see chapter 10).


ACUTE SEVERE MALNUTRITION
<70%of median weight for height,
MUAC < 110 mm
Bilateral pitting oedema (+,++, +++)
Severe complicated malnutrition
Severe uncomplicated malnutrition
1 feature
Anorexia
LRTI
High fever
Severe dehydration
Severe anaemia
Not alert
Age<6 months
Oedema ++ or +++
All features
Appetite
Clinically well
Alert
Age>6 months
Psycho-social state family suitable
Max oedema 1+
Phase 1
Directly into Phase 2

6.2.3 - Design of a TFP

A Therapeutic Feeding Program (TFP) should offer the two phases of treatment. These can be implemented in different facilities:
• Inpatient Therapeutic Feeding Centre (ITFC): a 24 hour care inpatient facility, mainly for phase 1; patients stay day and night until referred to day care or outpatient facilities.
• Ambulatory Therapeutic Feeding Centres (ATFC): outpatient facilities for phase 2 only where patients return on a weekly basis for medical follow up and nutritional treatment. ATFC's can be organised in various sites (hospitals, health units, mobile clinics, SFCs, TFCs etc).
• Therapeutic Feeding Centre (TFC): patients both in phase 1 and phase 2 get full medical and nutritional treatment in a 24-hour facility (can be partly in day care facility).

Several combinations of the component are possible, depending on context, security and underlying causes of malnutrition(see chapter 3):
– ITFC (24h care) combined with several ATFC's (decentralised set up to increase coverage). All complicated cases go to ITFC and the uncomplicated cases enter directly in an ATFC. However in situations when most malnourished are seriously sick (e.g. malaria epidemic) 5 days in ITFC might be compulsory before referral to ATFC.
– All cases in ATFC: this is a temporary solution only appropriate in the beginning of an emergency; an ITFC should be organised as soon as possible.
– All cases in a 24 h TFC, including phase 2 (similar to the classic TFC). This could be chosen because of security, food security, acceptability and condition of severely malnourished (diseases). A day care component can facilitate patients who are sick but don't require the intensive care for 24 h, and patients who live in the neighbourhood. When the second phase is organised as day-care, it should be considered to provide a shelter and food for patient and caretaker for patients living at a distance.
– A combination of ITFC, ATFC's and day-care TFC to offer alternatives for caretakers who are not able to attend in an outpatient or in an in-patient treatment schedule

Regardless of the designs chosen for the TFP, the principles of nutritional and medical treatment are similar though details might differ.

6.3 - Standard dietary treatment

– In the different phases different specialised therapeutic foods are used. In phase 1 the food covers completely the patients' needs; other foods should not be given. In phase 2 therapeutic food may be complemented with a local meal. In each phase a certain quantity related to the weight of the patient is given. Frequent feeding is necessary to allow for fast recovery
– Breast-feeding should always continue regardless if a child is in phase 1, transition phase or phase 2. Mothers should be encouraged to breast-feed prior to meals.
– Caretakers and staff must be encouraged as feeding patients takes time and patience

6.3.1 - Initial phase or phase 1

Principles
Severe malnutrition leads often to profound metabolic and physiological changes and reduces the functional capacity of the heart, liver, kidneys and gastrointestinal tract. Therefore close care and follow-up is provided in the initial phase.

The initial phase of treatment is intended to allow the normalisation of metabolic function before larger quantities of proteins; sodium and fats can be consumed in phase 2. The quantity offered in phase one is on Dietary treatment in phase 1 is not intended to make the patient gain weight.

– In the initial phase, it is better to encourage *frequent, small amounts* of milk/fluid rather than forcing a patient to drink a large amount of milk/fluid at one time. Children reluctant to eat should *not be force-fed*. Buccal lesions, vomiting and aspiration may occur when the mother or the caregiver attempts to force the child's mouth open by pinching the cheeks, the nose, or by forcing a spoon between the lips and teeth.

– The use of a *nasogastric tube* should be considered only when absolutely necessary (e.g. when a child is unable to eat, very weak or suffering from severe painful stomatitis etc.), and only for short periods of time (3 to 4 days maximum).
Experienced medical staff able to properly place and fix a feeding tube, and to monitor the feeding process should carry out the procedure. Patients with a nasogastric tube must be placed in an area that allows constant monitoring.
Care should be taken to explain the need for a nasogastric tube to the mother so it is accepted and not pulled out.

– During the management of severe acute *complications* such as shock, heart failure, severe decompensated anaemia, altered state of consciousness, medical treatment takes precedence over feeding including feeding by a nasogastric tube.

Overfeeding and over-hydration in the initial phase of re-nutrition aggravates the metabolic imbalance and can lead to congestive heart failure and death. This severe complication may occur within a few days after admission or later. The most frequent causes are:
– Excess volume of food (and/or liquid) during one meal (e.g. early transfer to phase 2, adult patient eating more then prescribed).
– Excessive sodium intake (excessive use of oral re-hydration solution; food offered by family members).
– A high protein intake (> 16% of kcal from protein) .

All patients must be carefully monitored for signs of overfeeding/hydration during the initial phase. If signs are present, all oral intakes should be reduced (nutrition, fluid and oral rehydration solution). (See chapter 6.5).

Food provision in phase 1
– Patients should only receive therapeutic milk recommended for phase 1 and no other foods.
– The initial dietary treatment is based on a low protein, sodium and energy diet fortified with vitamins and minerals. The daily kcal intake is restricted to:

Children:	100 kcal/kg/day
Adolescents:	55 kcal/kg/day
Adults and the elderly:	40 kcal/kg/day

– Do not exceed these quantities. Quantities greater than those recommended may result in severe metabolic disorders.
– The daily amount of therapeutic milk is given in small, frequent meals in order to avoid overloading of the small intestine, kidneys and liver and to prevent hypoglycaemia and hypothermia. 8 meals at 3-hour intervals are given throughout a 24-hour period (If 24 care is not possible, a compromise is made by 6 milk meals/day plus a RUTF night snack).
– Quantities of milk to give per Kg weight for children and adults is given in annex 6.2 (the quantities to prepare and to order are give in annex 12.10 and 12.11).

Therapeutic milk used in phase 1

Therapeutic milk is adapted for the severely malnourished in terms of energy, proteins, carbohydrates, fats, vitamins, minerals and osmolarity. In order of priority the following milks can be used: F-75, STDM. (See Annex 6.1).
– F-75 is the standard. It is adapted for oedematous children and severely malnourished adults.
– SDTM (specially diluted therapeutic milk based on F-100) can be used as a temporal alternative to F-75[19].

6.3.2 - Transition phase

Food used in the transition phase

Children:	150 kcal/kg/day
Adolescents:	80 kcal/kg/day
Adults and the elderly:	60 kcal/kg/day

– The daily kcal intake should be increased to:

– As in phase 1, patients should receive therapeutic milk only. The daily amount of therapeutic milk is given in 8 meals throughout a 24-hour period at 3-hourly intervals.
– The amounts are given in annex 6.2; an easy approach is to give daily the same amount as given in phase 1 but with milk suitable for transition phase, that gives approximately the required kcal.

Types of foods used in the transition phase

– F-100 therapeutic milk depending on design of phase 2.
– RUTF depending on design of phase 2. (See Annex 6.1)

6.3.3 – Rehabilitation phase or phase 2

[19] In annex 6.1 is also an alternative given for F-100 that should be used only as an emergency solution

Food provision in phase 2

– Patients should receive an energy and protein-dense diet fortified with vitamins and minerals. The daily kcal intake should be at least:

Children:	200 kcal/kg/day
Adolescents:	100 kcal/kg/day
Adults and the elderly:	80 kcal/kg/day

– The maximum quantity to absorb for adolescents and adults is about 3000 kcal/day

– The daily amount of food is given in 6 meals:

• Day-care TFC: 5 meals on site (consumed at least 2 hours apart, for example 8hr-10hr-12hr-15hr-17hr) and a snack for home consumption are offered. This snack is not counted in the total daily kcal intake, since it is likely to be shared with family members.

• (I)TFC 24 hours care: patients receive 6 meals given at 3-hour intervals (for example 6hr-9hr-12hr-15hr-18hr-21hr).

• ATFC he/she will receive a weekly ration of RUTF (according to body weight categories).

– Patients should consume as much as they like. Food provisions should never be limited, and second servings must be made available.

Types of foods used in phase 2

– In 24h TFC and day-care TFC: F-100 therapeutic milk. Do not use F-75 therapeutic milk.

–ATFC: RUTF (Ready to Use Therapeutic Food) is used (e.g. Plumpy-nut© or BP100©). Solid ready-to-use therapeutic food (RUTF) with energy and protein content similar to that provide by milk F-100 (for practical reasons, the snack is given as RUTF). Whenever Plumpy-nut© is used a small stock of BP100© should always be available for those who do not like peanut-butter or who are allergic to peanuts.

The diets based on F-100 or RUTF are diversified with porridge (made from fortified blended food) , a local meal and a night snack. Locally available cereals should be accompanied by a pulse, oil and fortified if possible (CMV™, Topnutri™, Qbmix™).

– Traditional meals with maize, rice, sweet potatoes, beans, sardines etc., including oil is offered once daily. Ensure that they have adequate energy and protein content. Adolescents and adults prefer traditional-like meals, this contributes to the acceptability of the programme.

The quantity of food indicated in the tables in annex 6.2 and 6.3 is based on the therapeutic foods only; the local meal is an extra. Porridge is taken into account in the calculation of needs in an in-patient facility but not in the ATFP as the porridge will be shared with other siblings.

The quantities of RUTF in annex 6.3 are calculated on 150-200 kcal/kg as the patient will consume also some local meal or porridge.
See Annexes 6.2 and 6.3 for food quantities per meal according to the weight and the phase and Annex 12.5a to 12.5b for quantities to prepare according to the number of patients.

6.4 - Systematic medical treatment

Management of severely malnourished patients requires frequent, careful clinical assessment and anticipation of common medical problems so that they can be prevented or recognised and treated at an early stage.

Standardised treatment protocols can substantially reduce the high case fatality rates in severely malnourished patients by implementing

6.4.1 - History and physical examination

Each patient admitted in a TFP must be examined and followed by a medial person. A medical assistant or a nurse can do a large of this; the more complicated cases should be referred to a physician.

Initial assessment on admission:
History:
• Chronic/acute weight loss, measles vaccination status of all the children, vitamin A supplementation, history of night blindness, diarrhoea (duration, frequency, type of diarrhoea), vomiting, cough, other current or recent illness, history of contact with people having tuberculosis (household), chronic weight loss.
• Breast-feeding, psychosocial situation (Does the patient have a caregiver? Is the patient able to care for him or herself?).

Physical examination:
• Signs of marasmus and kwashiorkor (in combination with anthropometric measurements: MUAC, weight, height, weight-for-height, and target weight to reach the anthropometric criterion of discharge).
• Acute conditions: signs of dehydration or shock, very severe anaemia, heart failure, hypoglycaemia, hypothermia or fever, localized signs of infection (including ear and throat infection, skin infection and pneumonia), oral thrush and clinical vitamin A deficiency (examine the eyes very gently in photophobic children).

Laboratory testing:
• For all patients in endemic areas: routine malaria testing (see paragraph 6.4.2).
• For patients with emergency signs: according to the signs, investigation of haemoglobin (see paragraph 6.4.2), etc.. (See the clinical guideline for details).

All medical staff involved in the initial assessment and care of patients should be trained to give initial emergency treatment if needed. All findings should be noted on the individual patient's card. The initial assessment will determine whether the patient should in phase 1 or directly in phase 2.

Daily monitoring:
See *individual patient follow up*, paragraph 6.6. and annex 6.7 for patient card

6.4.2 - Systematic medical treatment

All patients systematically receive medical treatment upon admission to prevent/treat acute problems including bacterial infections, measles, malaria (in endemic areas), intestinal parasites. Vitamin A, iron and folic acid deficiencies should be routinely checked, even when patients do not present with clinical signs.

Systematic medical treatment

Disease	**Treatment**	**Day**								
		1	**2**	**3**	**4**	**5**	**7**	**15**	**16, 17, 18, etc.**	**Discharge**
Bacterial infections	Amoxicillin	X	X	X	X	X				
Measles	Measles vaccine	X								X according to age and nat. protocol
Malaria	Test and/or treatment	X X	X	X						
Intestinal parasites	Albendazole						X			X (In endemic area)
Vitamin A deficiency	Retinol	X								
Folic acid deficiency	Folic acid	X								
Hypothermia	Blanket									
Hypoglycaemia	Feed immediately Or give glucose									
Iron deficiency	Iron	Do not administer during the first 14 days						X	X,X,X,,X, etc Not when RUTF is used	X

Bacterial infections

Patients often suffer from bacterial infections. However, usual symptoms such as fever are often absent, since immune system and inflammatory responses are impaired. Systematic treatment of bacterial infections prevents the development of septicaemia (and septic shock), improves the response to nutritional treatment, and decreases mortality.

Assume that *all children* have a bacterial infection on admission. Give systematically a broad-spectrum antibiotic from Day 1 to Day 5, unless indicated differently[20].
amoxicillin PO: 70 to100 mg/kg/day in 2 divided doses for 5 days (when resistance to amoxillin is suspected, seek technical advice for an alternative).
Dosage: PO: 70 to100 mg/kg/day in 2 divided doses for 5 days

Dosage Amoxicillin

Weight	Amoxicillin tablet 250 mg	Amoxicillin oral suspension 125 mg/5 ml
4 to 5 kg	¾ tablet x 2	7 ml x 2 or 1 1/2 measure x 2
5.1 to 7 kg	1 tablet x 2	10 ml x 2 or 2 measures x 2
7.1 to 8.5 kg	1 1/4 tablet x 2	–
8.6 to 10 kg	1 ½ tablet x 2	–
10.1 to 14 kg	2 tablets x 2	–
14.1 to 18 kg	2 ½ tablets x 2	–
Over 18 kg	3 tablets x 2	–

To ease the administration of precise doses in small children (<1 year), prefer oral suspensions to tablets. As dosing instrument, use the measuring spoon provided with the suspension or a syringe.

Systematic antibiotic therapy is usually not given to *adolescents, adults* and *the elderly* because they suffer from a different spectrum of infections than children. Physicians must prescribe antibiotics according to the pathology. However, if the number of severely malnourished adults is large, and their clinical state is poor, systematic antibiotic therapy can be considered to decrease mortality.

Measles

Measles is an extremely serious disease in severely malnourished children. Measles impairs the immune system for several months after infection. It worsens vitamin A deficiency and is a precipitating cause of xerophthalmia. In addition, measles often results in a rapid and significant weight loss. Severe complications such as pneumonia are common in malnourished patients and the case fatality rate can be as high as 30%.

Administer measles vaccine systematically as a single dose on admission to all children aged from 6 months to 12-15 years, unless mothers show proof of previous vaccination (a vaccination card).

[20] If on admission examination shows signs of a specific infection, give the appropriate antibiotic treatment (see MSF handbook, *Clinical Guidelines*).

Children immunized between 6 and 9 months should be re-vaccinated after they reach 9 months of age. For children over 9 months of age, the WHO recommends a second dose before discharge. Follow the national recommendation.

Malaria

In endemic areas, early effective malaria treatment is preferred over regular malaria prophylaxis.
Check systematically for malaria on admission (thick/thin blood films or rapid test):

- If the initial test is negative, routine treatment or prophylaxis is not required.
- If the initial test is positive treat for malaria (see page 101).

The treatment uses a combination therapy including an artemisinine derivative + another effective antimalarial drug. See page 101.

All severely malnourished patients in endemic areas should be provided with an impregnated mosquito net to limit transmission.

Worm infections

Worm infections are often present. Intestinal worms consume a portion of the food intake and contribute to malnutrition.
During the rehabilitation phase, give **albendazol** PO systematically to all patients (avoid in pregnant women during the first trimester of pregnancy):

Albendazol tablet, 400 mg

Weight	**Day 8**
< 8 kg (1-2 years)	½ tablet, single dose
>= 8 kg (>2 years)	1 tablet, single dose

A good alternative is **mebendazole** PO:
Children over 1 year and adults: 500 mg as a single dose on Day 8

In areas where there is a high prevalence, repeat the treatment at discharge.

Vitamin A

Many severely malnourished patients suffer from vitamin A deficiency but it is not easily detectable in the sub-clinical stage.

Vitamin A plays an important role in the body's defences against infections and visual capacity, supplementation is crucial in severely malnourished patients to reduce morbidity and mortality.

Systematically give **Retinol** (vitamin A) PO on admission to asymptomatic patients[21], except to women. Pregnant women should not receive large doses of vitamin A (teratogenic risk). As it is often difficult to determine pregnancy during the first trimester, do not administer vitamin A to women of childbearing age.

Dosage vitamin A, capsule 200 000 IU, single dose

Age	**Retinol (vitamin A)**
Children from 6 to 12 months	100 000 IU (3-4 drops)
Children over 1 year and adults	200 000 IU (1 capsule)
Pregnant women and women in childbearing age	Do not administer

Anaemia

Anaemia is often multi-factorial. The main causes are a lack of nutrients (i.e. iron, folic acid, vitamin C), impaired metabolism and repeated infections (malaria, hookworm infection etc.).

All severely malnourished patients suffer from some degree of anaemia. However, iron must never be given during the initial first phase of treatment:

- Iron has a toxic effect on malnourished patients, since it cannot be properly metabolised. Free iron increases oxidative stress, contributes to electrolyte imbalance and interferes with the metabolic pathways. This process has been associated with kwashiorkor.
- Excess of iron can make (intestinal) infections worse.

Therefore, the nutritional treatment focuses initially on the restoration of metabolic functions. The nutrients given with the food will make body stores of iron available and enhances the production of haemoglobin.

Iron

Iron supplementation is only given when therapeutic milk (F75 or F100) is used as these products are low in iron. It is only started after 14 days of nutritional treatment.

When RUTF is used (ATFC) the iron not given systematically as the products contain enough iron; only when anaemia is diagnosed iron is given as a treatment.

The dosage for treatment and supplementation are similar. The dosage is expressed in **elemental iron**[22]: Children and adults: 3 mg elemental iron/kg/day in 2 divided doses from Day 15.

[21] In the presence of signs of xerophthalmia, the routine treatment is not sufficient. See Chapter 9 for diagnosis and treatment of xerophthalmia.

[22] A 200 mg ferrous sulphate tablet contains 65 mg of elemental iron.

Dosage Iron treatment

Weight	Ferrous sulphate 200 mg tablet
5 - 8 kg	Use ferrous sulphate syrup or drops
8 -15 kg	¼ tablet x 2
15 - 35 kg	½ tablet x 2
More than 35 kg	1 tablet x 2

Folic acid
Folic acid is given once only on admission as a single dose[23]:
Folic acid PO dosage for children and adults: 5 mg

It is not necessary to give an additional dose of folic acid if using therapeutic foods such as F-100 and F-75 therapeutic milks or RUTF, since these already contain enough folic acid.

Hypoglycaemia
Hypoglycaemia is one of the main causes of death during the first days of treatment. It is frequently associated with hypothermia.

In order to prevent hypoglycaemia:
– Give sugar water upon arrival
– Start feeding promptly upon admission.
– Provide frequent and regular feeds (including during the night in initial phase).
– Treat infections..

Hypothermia
Severely malnourished patients cannot regulate their body temperatures, and thus "cool" very quickly. Hypothermia is a frequent cause of death during the first days of treatment, especially during the early morning hours. In order to prevent hypothermia:
– Ensure that patients are covered (clothes, hats and blankets, especially at night)
– Place children on mother's bare chest, skin-to-skin (see *Kangaroo technique*, page …..(Chapter 8). For older children, encourage mothers to sleep next to their children.

[23] Folic acid can antagonize the action of sulfadoxine + pyrimethamine (SP) used in the treatment of malaria. Supplementation with folic acid must be postponed to the 7th day when SP is given on admission. However, because of the short half-life of folic acid, the single dose of folic acid given on the first day does not interfere when SP is given on the 3rd day or later.

– Keep the ward closed during the night and avoid wind blowing inside.
– Avoid exposure to cold: washing should be kept to a minimum, after which the child should be dried immediately.
– Provide frequent and regular small feedings (including during the night in initial phase).
– Treat infections.
– Measure body temperature twice daily in phase 1, once daily in phase 2.

6.5 - Treatment of complications

Despite systematic treatment to prevent serious and life-threatening complications can occur.
Main causes of mortality during treatment are:
- Diarrhoea, dehydration and electrolyte disturbances.
- Over-treatment with fluids.
- Severe infections (including septic shock).
- Hypoglycaemia.
- Hypothermia.
- Heart failure.
- Malaria.
- Very severe anaemia.
- Persistent oedema.

In principle every person with a major disease / complication should be referred (back) to phase 1 until they regain their appetite.

Diarrhoea

Soft stools or mild diarrhoea is commonly seen on admission and throughout treatment. This is normal and doesn't require action. Diarrhoea, frequent liquid stools must be verified by the nursing staff. The main complications of diarrhoea (and the treatment of) are dehydration, hypovolaemic shock and congestive heart failure due to over-hydration as a result of the treatment. Severely malnourished children are very sensitive to overloading the system with fluids and electrolytes. Therefore no ReSoMal (ReSolution for MALnourished) or ORS is given to prevent dehydration; ReSoMal is only given when dehydration is diagnosed.

Watery diarrhoea

Watery diarrhoea may be a symptom of gastrointestinal infection. Antimicrobial therapy should not be given routinely to patients with watery acute diarrhoea as this is most often caused by viruses.
Diseases, such as pneumonia, meningitis, otitis media, urinary tract infection, malaria etc. may also be accompanied by watery diarrhoea. If signs of these specific infections are present, treat accordingly (see *Clinical Guidelines*).

Watery diarrhoea may also be caused by the diet when the osmotic value of the food is too high (salt in the food, F100), (re-feeding diarrhoea). Re-feeding diarrhoea typically occurs at the beginning of phase 2 when a child is transferred from F-75 or SDTM to F-100 diet.

Management
The determining element in the management of watery diarrhoea is the presence or the absence of dehydration (see page 93 for diagnosis of dehydration).

– If the diarrhoea is associated with dehydration (see diagnosis at page 93), follow the rehydration protocol (see page 94).
– If the diarrhoea is not associated with dehydration:
• Do not administer ReSoMal or ORS but give plain water after each stool (or give plain water regularly to the child). If the patient doesn't take water or food, give 50 ml sugar water 10% after each loose stool.
• Reassess the patient for dehydration (weight loss) at minimum every 4 hours.
• Give food with low osmolarity (e.g. F75 milk or SDTM) and observe: a rapid recovery confirms re-feeding diarrhoea.

Persistent diarrhoea
Many severely malnourished patients suffer from continuing diarrhoea caused by atrophied epithelial layer of the intestines. This should be resolved in a few days after the initialisation of the nutritional treatment. However some patients continue to suffer from persistent diarrhoea. The causes are infection or mal-absorption due to intolerance to high osmolar value, sugars (e.g. lactose) or lipids.

Management
Suspected intestinal infection:
• Give a low dose **metronidazole** (15 mg/kg/d divided in 2 doses for 5 days) both to treat a possible giardia and to reduce any possible intestinal bacteria overgrowth impairing digestion. Give a higher **metrodinazole** (30mg/kg/d divided in 3 doses for 7 days) for suspected amebiasis. Alternatively give **tinidazole** 50mg/kg single dose (1 day for giardia 3 days for amebiasis)

If the cause is unknown try one of the following:
• Reduce F100 quantities (high osmolarity) and give RUTF with lots of water.
• Shift from F100 to F75, as F75 is low in lactose and has lower osmolarity.
• Dilute the F100 with 25 to 30% extra water to reduce osmolar load on the intestine;

• Consider the possibility of an opportunistic infection complicating HIV infection (such pathogens have specific treatments - see any paediatric HIV guidelines).

Cholera

Cholera is a major cause of bacterial diarrhoea. Case definition for use at the health facility, according to the WHO:

• In an area where the disease is not known to be present, severe dehydration or death from acute watery diarrhoea in a patient aged 5 years or more,

or

• In an area where there is a cholera epidemic, acute watery diarrhoea, with or without vomiting in a patient aged 5 years or more.

An outbreak of cholera should be suspected when there is a sudden increase in the daily number of patients with acute watery diarrhoea.

Management

– According to the degree of dehydration:

• Oral rehydration (patients without shock): use standard WHO-ORS instead of ReSoMal, since ReSoMal does not contain enough sodium to compensate the losses resulting from cholera.

• IV rehydration (patients with shock): use **Ringer Lactate**.

• The rate of rehydration should be slower for severely malnourished patients than for other patients. (Rate of oral and IV rehydration remains the same as those described for severe malnourished patients in this chapter).

– Oral antibiotic treatment based on the susceptibility of *V. cholerae* can be useful.

– If an outbreak is suspected in a feeding centre, the following measures should be taken immediately:

- All suspect cases should be placed in an isolation area;
- The entire centre must be completely disinfected and infection control measures for a cholera centre must be adopted;
- Water must be chlorinated and available in abundance.

For more information see the MSF handbook *Cholera Guidelines*.

Bloody diarrhoea (dysentery)

Shigella is the most important cause of acute bloody diarrhoea. Malnourished patients are at increased risk of serious morbidity or death. Only Shigella dysenteriae type 1 (Sd1) may cause epidemics. This must be confirmed as soon as possible with laboratory tests.

Occasionally Entamoeba histolytica (amoebiasis) cause dysentery among young adults (seldom in children). The clinical signs of amoebiasis are similar to that of shigellosis, but it does not cause epidemics.

Management

– Bloody diarrhoea should be verified through visual examination of the stools.

– Bloody diarrhoea cases must be placed in isolation.

– Dysentery is not usually associated with marked loss of fluid and electrolytes; however, patients should be monitored for dehydration.
– If there is no laboratory to confirm the diagnosis: give an effective antibiotic for shigellosis: **Ciprofloxacin** PO 30mg/kg/d divided in 2 doses for 3 days. (see the MSF handbook, *Clinical Guidelines*).
– Treatment of intestinal amoebiasis should be considered only when:
- Parasitologic examination of faeces to diagnose amoebiasis,

or (if there is no laboratory to confirm the diagnosis):
- A correct shigellosis treatment has been ineffective.

Dehydration

The combination of fluid losses (through vomiting and/or diarrhoea) and insufficient fluid intake to replace these losses results in dehydration.

Assessment of hydration status in severely malnourished patients is difficult. Many classic signs of dehydration are unreliable. For example, a child with marasmus has loose, lax skin so that skin turgor appears poor, even when he is not dehydrated. On the other hand, skin turgor may appear normal in a child with kwashiorkor, even when he is hypovoleamic. In both types of malnutrition the child's irritability or apathy make assessment of the mental state difficult.

Improper management of dehydration causes iatrogenic morbidity or mortality. Rehydration must be clearly indicated and closely monitored by the medical staff. Malnutrition seriously disturbs the fluid and electrolyte balance. Excessive and indiscriminate use of rehydration fluid may rapidly result in over hydration and fatal heart failure; in particular kwashiorkor cases are at high risk. ReSoMal and ORS should not be made freely available in the ward.

Diagnosis

Signs that remain useful for detecting dehydration and of are listed in the table below. The degree dehydration is classified as "some" or "severe".

Clinical signs of some and severe dehydration

Signs	Moderate	Severe
Recent frequent watery diarrhoea	Yes, > 3 times a day	Yes, profuse
Recent sunken eyes	Yes	Yes
Recent rapid weight loss	1-5 %	5-10%
Thirst	Drinks eagerly	Drinks poorly
Absence of tears	No	Yes
Weak/absent radial pulse	No	Yes
Cold hands or feet	No	Yes

Mental state	Restless and irritable	Lethargic/coma
Urinary output	Decreased	Absent

• Monitoring body weight is a good tool to confirm dehydration, as dehydration is always associated with weight loss. The weight of the patient is compared to the weight prior to the start of the diarrhoea. If there is no weight loss, there is no dehydration.
• Eyes may be sunken because of loss of subcutaneous fat in the orbit. When the child presents with sunken eyes, it is important to ask the mother if this is very recent and if it coincided with the onset of diarrhoea.
• Patients with kwashiorkor may be hypovolaemic but these patients are not dehydrated as the total body fluids are in a positive balance. Therefore correction of hypovolaemia should be very careful and it should be stopped immediately when the patient improves
• Patients with moderate or severe dehydration without signs of shock should be re-hydrated by oral treatment using ReSoMal. (For treatment of shock see page 98)
• IV fluids should be used only for severe dehydration with signs of shock. (See diagnosis and treatment of shock see page 98)

Oral Treatment
The high sodium content of the WHO-ORS may lead to electrolyte disturbances in patients with severe malnutrition, especially in those with oedema. In addition, its potassium concentration is too low to replace losses caused by diarrhoea. ReSoMal (ReSolution of Malnourished) is a specific rehydration solution for severely malnourished patients during all the phases of the treatment, except in cases of cholera (see page 92). Because severe malnutrition is associated with high total body sodium content and low total body potassium content, ReSoMal contains less sodium and more potassium than ORS (WHO formulation).
ReSoMal also contains magnesium, copper and zinc, as patients are usually also deficient in these minerals, and additional sugar to prevent hypoglycaemia.

Vomiting is not a contra-indication to oral rehydration; ReSoMal should be given slowly but steadily to minimize vomiting. Cases with kwashiorkor will correct hypo-volaemia during the initial phase of feeding as the extra vascular fluids will be mobilised. Therefore any treatment with Resomal must be avoided or administrated very carefully to avoid over-hydration.
The rate of rehydration must be slower for severely malnourished patients than other patients. Do not exceed the recommended doses.

ReSoMal PO (or nasogastric tube only if the patient is *conscious* but too weak to drink):
Child and adult: start with 10 ml/kg/hour for 2 hours mounting to a total of 20 ml/kg. This is followed by 5 ml/kg/hour for up 10 hours mounting to a total of 50 ml/kg (if needed 10 ml/kg/hour). A total dose of 70 ml/kg (up to 100 ml/kg if needed) over 12 hours is usually enough to restore hydration. (For dosage see Annex 6.4)

Notes:
• When ReSoMal is not available, a replacement can be made based on standard ORS. (For more information on Resomal and alternatives see Annex 6.4)

• Therapeutic milk and breast-feeding must not be interrupted during oral rehydration.

Monitoring of oral rehydration
A dehydrated patient recovers quickly when ReSoMal is administered, but when not stopped in time, this can turn also quickly into over-hydration leading to heart-failure (e.g. kwashiorkor cases). Therefore patient condition during re-hydration should be carefully monitored.

The patient's condition must be assessed every 30 minutes during the first 2 hours, then every hour for the next 6-12 hours. If the patient does not show signs of improvement within the first 2 hours the diagnosis should be reviewed. (See for individual patient card annex 6.7)

The re-hydration is completed the patient is clinically improved: a respiratory and pulse rate decreased to normal values and urinary output every 3-4 hours. In addition weight changes can be used to monitor progress of the re-hydration as short term weight changes are due to a changes in fluid balance.

Weight changes
A target weight to mark the completion of the re-hydration should be determined prior to the start of re-hydration. The target is the weight before the start of diarrhoea (indicated on the patient chart). If this is not available the target weight can be based on the estimated percentage of fluid loss, which will depend on the severity of the de-hydration. This is about 3% (weight loss of 5% causes incipient shock; weight loss of 10% causes a profound shock). 3% fluid loss means a the target weight of: 1.03 * current weight (kg) (e.g. 5kg * 1.03= 5.15 kg)

Over-hydration
Stop re-hydration immediately when signs of over-hydration develop (for detailed signs of heart failure, see paragraph 6.5.4):
• Weight increase without clinical improvement.
• Weight above target weight.
• The visible veins become full (neck, superficial veins).
• Development or increase of oedema.
• Development of tenderness over the liver.
• Increased respiration rate.
• Increased pulse rate.

During oral re-hydration with ReSoMal, continuous watery diarrhoea may occur. If the diarrhoea persists, dilute the ReSoMal to half strength and monitor the diarrhoea and the state of dehydration closely.

Bacterial infections
The current standard treatment protocol are based on updated WHO guidelines (2005) but is Ceftriaxon added. Alternative treatment protocols that are more adapted to specific diagnosis (implemented in several MSF missions (2005) are given in annex 6.8.

The protocol to be used in specific contexts depends on the availability of drugs, the resistance patterns and agreements of the local authorities.

Management of fever
Use tepid sponging to keep the temperature below 39°C (rectal). Do not use cold water as this could easily lead to hypothermia. **Paracetamol** (15 mg/kg every 4 hours) may also be given orally as an antipyretic.

Treatment of bacterial infections and sepsis
Below two options are given: the current standard treatment protocol that are based on updated WHO guidelines (2005) but added Ceftriaxon and alternative treatment protocols are more adapted to specific diagnosis (implemented in several MSF missions (2005).
The protocol to be used in specific contexts depends on the availability of drugs, the resistance patterns and agreements of the local authorities.

Standard protocol for infections and sepsis
1. Systematically all admissions are given:
Amoxicillin PO 50 to 100 mg/kg/day for 5 days[24]

2. Moderately infections
Ceftriaxone IM or IV[25] :
Children: 50- 100 mg/kg once daily for 5 to 7 days (divided in two IM sites if the volume is over 2.5 ml)
Adults: 1 to 2 g once daily for 5 to 7 days (1 g in each buttock if the daily dose is 2 g)

3. Children with complications (septic shock, hypoglycaemia, hypothermia, skin infections, respiratory or urinary tract infections, or who appear lethargic or sickly) should be given:
Ampicillin IM or IV: 200 mg/kg/day in 4 divided doses. Once there is no more signs of serious illness, change to oral treatment with **amoxicillin** PO: 100[26] mg/kg/day in 2 - 3 divided doses to complete 7 days of treatment and
add
Gentamicin IM or IV: 6[27] mg/kg once daily for 7 days

[24] WHO: Cotrimioxazol PO 25 mg of sulfamethoxazole + 5 mg of trimethoprim/kg) for 5 days
[25] Ceftriaxone may also be given by slow IV injection (over 3 minutes) or by infusion in 5% glucose (over 30 to 60 minutes) if clearly needed. The diluents of ceftriaxone for IM injection contains lidocaine. Once reconstituted with this diluent, the solution can only be used by IM route, never by IV route. If water for injection is used as diluent, ceftriaxone may be administered either by IM or IV route.

[26] Adapted by MSF, original WHO protocol: 60mg/kg/day
[27] Adapted by MSF, WHO protocol: original 7.5 mg/kg/day

3. If the child fails to improve within 48 hours
add
Chloramphenicol IM or IV: 100 mg/kg/day in 4 divided doses. If the patient's condition improves, change to oral treatment with chloramphenicol PO at the same dosage to complete 7 days of treatment

Specific infections
-Treat severe **diarrhoea** with systemic signs, with or without blood or confirmed dysentery with **Ciprofloxacin** PO 30mg/kg/d divided in 2 doses. (See also page 92 and 93)

-Treat **pneumonia** as *severe* pneumonia (second line treatment, or sepsis with respiratory focus), even if there are no obvious signs of severity. In children not responding after 2 consecutive correctly administered treatment, consider tuberculosis (see Annex 6.5). If severe hypoxia is present suggestive of *Pneumocystis jiroveci,* high-dose is also needed of **Cotrimoxazole** PO 50-100 mg/kg/day once a day for 21 days.

-The appearance of the eardrum in **otitis media** in severely malnourished children is the same as in other children. Nevertheless, the redness may not necessarily be present, as tissue damage does not always result in inflammation in severely malnourished children. As first-line treatment, give **Amoxicillin** for 7 days (dosage similar to systematic treatment on admission) (if otitis media is diagnosed on admission, the routine 5-day antibiotic treatment is prolonged for 2 extra days).

-For **bacterial skin infections**, apply a topical antiseptic on the lesions and give antibiotic treatment (**Cloxacillin** 50 mg/kg/d PO divided in 2 for 10- days, or sepsis with respiratory focus). In the presence of a bacterial skin infection, look also for a possible underlying parasitic, viral or fungal infection of the skin and treat accordingly.

-The clinical diagnosis of **lower urinary tract infection** is rarely made, as the infection is usually asymptomatic. The routine 5-day antibiotic treatment given on admission is sufficient to treat uncomplicated urinary tract infections.

Shock

Diagnosis
Differential diagnosis between shock from severe dehydration and septic shock can be difficult because both present with signs of hypovolaemia. The table below helps differentiate these two conditions in severely malnourished children.

Differential diagnosis of severe dehydration and septic shock

Clinical signs	Severe dehydration	Septic shock
Watery diarrhoea	Yes	Yes/no
Recent sunken eyes	Yes	No

Recent weight loss	Yes	No
Thirst	Drinks poorly	Drinks poorly
Hypothermia	No	Yes/no
Weak/absent radial pulse	Yes	Yes
Cool hands and feet	Yes	Yes
Mental state	Lethargy/coma	Lethargy
Urine flow	Poor/absent	Poor/absent

Other clinical signs of shock include: rapid respiratory rate and low blood pressure.
A history of a *recent* change in eye appearance (e.g. recent sunken eye) linked to the onset of watery diarrhoea tends to indicate dehydration rather than septic shock.
A patient with shock from severe dehydration normally improves after one hour of IV treatment. Those with septic shock and no dehydration will not respond. If there is no improvement within an hour of rehydration, assume that the patient has a septic shock and treat accordingly (low rate or no rehydration plus antibiotic; see previous paragraph on septicaemia, and next page for septic shock).

Management
Intravenous route
– IV infusion is mandatory to correct hypovolaemia.
– IV fluids must be stopped as soon as circulation is restored. If IV Anti-biotic therapy is still needed, a catheter with obturator can be used.
– Patients should always be placed under close medical supervision.
– It is essential to monitor the vital signs every 15 minutes:
- Reduced respiratory rate, reduced and stronger radial pulse and increased blood pressure indicate that there is an improvement,
- Increased respiratory rate (by 5 breaths/min), increased pulse rate (by 25 beats/min) and puffy eyelids are early signs of over hydration. (See page 99 for signs of overload and congestive heart failure.)

– Urine output occurs usually later; it resumes within 6 to 8 hours after starting rehydration.

Alternatives to the intravenous route
– Intra-osseous infusion is a temporary measure indicated in life-threatening situations when an intravenous line cannot quickly be inserted. This route is the only suitable alternative in patients with hypovolaemic shock who are younger than 2-3 years old. A physician must perform intra-osseous infusion only. For technique, see Annex 6.6
– Nasogastric tube must not be used in hypovolaemic shock or unconscious patients.

Recommended rehydration solutions are in order of preference:
Half strength Darrow's solution or **Ringer Lactate** solution: 15 ml/kg over one hour. (See for dosage annex 6.4)

– If there is an improvement:
Continue IV infusion at the rate of 15 ml/kg over one hour, then stop the infusion, and change to oral treatment with **ReSoMal**: 10 ml/kg/hour until dehydration is corrected (for up to 10 hours if needed). At the same time that ReSoMal treatment begins, re-start feeding.

– If there is no improvement and/or signs of septic shock:
Reduce the rate of infusion to 4 ml/kg/hour and begin antibiotic therapy for septic shock (see the MSF handbook *Clinical Guidelines*).

Congestive heart failure

Congestive heart failure is usually due to fluid overload (especially with infusion, transfusion, but also with oral rehydration) and/or high sodium intake. Severe anaemia can exacerbate, but also occasionally cause, heart failure. Congestive heart failure may result in death, even after the patient has begun to eat well and gain weight.

Diagnosis
Since the first symptoms of heart failure are respiratory symptoms, heart failure may initially be misdiagnosed – and improperly treated – as pneumonia. The table below helps to differentiate these two conditions in severely malnourished patients.

Differential diagnosis heart failure and pneumonia

Signs	Heart failure	Pneumonia
Respiration	Fast breathing Respiratory distress No chest indrawing	Fast breathing Chest wall indrawing, nasal flaring (severe) Grunting, head nodding (very severe)
Pulmonary auscultation	Basal fine crackles (bilateral)	Coarse crackles or silence (unilateral or bilateral)
Cardiac auscultation	Increased pulse rate Gallop rhythm Heart murmur Apex beat displaced	Increased pulse rate (if fever)
Jugular vein	Engorged jugular veins	Normal
Liver	Enlarged tender liver Hepatomegaly and hepato-jugulo reflux (when compressing the liver) are early and specific signs of heart failure, especially in small children.	Normal

Extremities	Cold extremities, cyanosis in fingertips and beneath the tongue	Cyanosed (severe) and cold if high fever
Oedema	Oedema (i.e. puffy eyelids), increased oedema	No oedema, no increased oedema in children with kwashiorkor
Weight	Weight gain	No weight gain
History	Severe anaemia Onset of symptoms during rehydration, transfusion, when increasing food quantities.	Cough Fever

Notes:

Rapid respiratory rate (Tachipnoea):

Babies < 2 months	60 breaths/minute
Children 2 to 12 months	50 breaths/minute
Children 1 to 5 years	40 breaths/minute
Children > 5 years and adults	30 breaths/minute

– For respiratory rate: make a count during one minute when the child is calm.

However severely malnourished children may produce about 5 breaths per minute less than well-nourished children because they do not have the strength to increase their respiratory rate. Also lower body temperature in infected malnourished children may contribute to a lower respiratory rate.

– Fever is not an efficient criterion. It does not discriminate between heart failure and pneumonia as it may be absent in patients with pneumonia, and present in patients with heart failure and concomitant infections.

– A child with respiratory symptoms should be weighed. A sudden increase in weight compared to the previous day tends to confirm the diagnosis of congestive heart failure. If there is no weight gain or weight has been lost, pneumonia should be suspected rather than heart failure.

Management

If heart failure is caused by fluid overload:

- Stop all oral intake (including foods and fluids) and IV fluids. No fluid should be given until the cardiac function improves, even if it takes time.
- Administer **furosemide** IV: 1 mg/kg (maximum 20 mg/24 hrs).
- Place the patient in a semi-sitting position with legs lowered.
- Give high-flow oxygen.

Notes:

– This is the only case where a diuretic should be used. Diuretics must never be given to reduce nutritional oedema in severely malnourished patients.

– Digoxin and other cardiotonics should not be used.

Malaria

In endemic areas, falciparum malaria is frequently a cause of morbidity and mortality, especially in children and pregnant women. On admission and in case on clinical suspicion, check systematically for malaria (thick/thin blood films or rapid test).

Treatment
Use a combination therapy including an artemisinine derivative + another effective antimalarial drug. The choice of the second antimalarial depends on the known resistance level in the area concerned.

Four alternative treatment schedules are commonly used[28]:
– **Artesunate (AS):** 4 mg/kg once daily for 3 days combined with **Amodiaquine (AQ):**10 mg base/kg once daily for 3 days.
– **Artesunate (AS**): 4 mg/kg once daily for 3 days combined with **Mefloquine (MQ**): 10 -15 mg base/kg once daily for 2 days; give on day 3 AS only
– **Artemether (AM):** 4 mg/kg twice daily for 3 days combined with **Lumefantrine** 24mg/kg twice daily (combination called Coartemether):
– **Artesunate** (**AS**): 4 mg/kg once daily for 3 days combined with **Sulfadoxine**-**pyrimethamine** (**SP**): 25 mg of sulfdoxine + 1.25 mg of pyrimethamine/kg as a single dose at day 1 (1 tablet per 20 kg)

An example of the first line oral treatments is the combination of Artesunate (AS) and Amodiaquine (AQ) for three days. A simplified treatment schedule is :

Dosage AS + AQ for three days once daily

Weight	**AS 50mg**	**AQ 153mg base**
5 to 8 kg	½ tab	+ ½ tab
9 to 15 kg	1 tab	+ 1 tab

See for details of dosage Annex 6.8

Young Children
For children below 4 kg, 7 days of treatment with AS alone may be used 4 mg/kg/day for 3 days and 2mg per kg/day for 4 days
For diagnosis and treatment severe malaria, see the MSF handbook *Clinical Guidelines*

Severe anaemia
Without decompensation:

[28] These four treatments may be used in the event of simple malaria. If the patient shows signs of severe falciparum malaria, see the MSF handbook *Clinical guidelines*.

– Iron supplementation is not given routinely during the first 14 days in a TFC. As this is a slow process, monitor patients for signs of decompensation. Try to limit physical stress and keep the patient warm. For acute severe anaemia oral supplementation is not very helpful as the increase in haemoglobin level is slow (1 point per month)
– After 14 days of nutritional treatment, treatment for anaemia iron is given at 3 mg/kg/day. (Systematic supplementation for patients on therapeutic milk; on prescription for patients on RUTF (for dosage see page 89)
– When patients are discharged from the TFP, oral treatment should continue in the SFP and/or a health facility. The total duration of treatment is 2 to 3 months.

Decompensation requiring blood transfusion
Blood transfusions are administered only in extreme cases (decompensation) and under strict conditions.
The decision of whether or not to transfuse is one of the most difficult issues in the management of severely malnourished patients. Blood transfusion in malnourished patients is dangerous as an increase in blood volume can precipitate or aggravate heart failure.
Blood transfusion is not justified when haemoglobin is above 6 g/dl as long as the patient tolerates anaemia.

Clinical signs of acute decompensation
- Rapid breathing, chest indrawing, flaring nostrils.
- Respiratory distress with hypoxia.
- Diminished peripheral pulses.
- Poor peripheral perfusion (capillary refill greater than 2 seconds).
- Hepatomegaly.
- Altered level of consciousness

Note:
In anaemic patients cyanosis is an unreliable indicator of hypoxia: there is no cyanosis in hypoxic patients if their haemoglobin levels are < 8 g/dl.

Indication blood transfusion
- Haemoglobin less than 4 g/dl (or haematocrit less than 12%)

or
- Haemoglobin between 4 and 6 g/dl with decompensation

or
- Haemoglobin between 4 and 6 g/dl with severe *falciparum* malaria associated with impaired consciousness or high parasitaemia (>10% of red cells parasitized).

Caution: Respiratory stress related to hypovoleamia (over hydration) will result in falsely low haematocrit and haemoglobin concentration (dilutional anaemia). Transfusing may be fatal.

Only blood transfusions administered within 24 hours of admission are effective. If administered later than this, blood transfusion does not increase the chances of survival; on the contrary, it would appear that it might be responsible for an increase in mortality due to cardiac decompensation.

An exception to the above is when a patient develops severe *falciparum* malaria with massive haemolysis during hospitalisation. The decision whether to transfuse is delicate as there is a risk of fluid overload (and possibly heart failure) when transfusion is given; whereas if transfusion is not given there is a risk of hypoxia due to lack of red cells.
In order to avoid this dilemma, systematically test for and/or treat malaria in endemic areas (see malaria in *Routine medical treatment* page 12).

Management
Administer transfusion as follows:

- Test donor's blood according to a standard protocol: ABO and Rh compatibility; HIV, hepatitis B and C, syphilis, and malaria in endemic areas.
- Administer slowly whole blood at a rate of 10 ml/kg over 3 hours.

Monitoring:

- Observe patient for adverse reactions. The vital signs (respiratory rate and pulse rate) should be recorded before and 15 minutes after starting transfusion.
- If respiratory rate increases by 5 breaths/min or pulse increases by 25 beats/min, transfuse more slowly. However, a transfusion should be completed in less than 4 hours because of the risk of bacterial proliferation and red blood cell haemolysis at ambient temperature.
- Monitor for fluid overload (e.g. lung crackles). If there is any evidence of fluid overload, stop the transfusion and treat as indicated in page 99 Congestive heart failure.

Give oxygen, if available, to correct hypoxia (even if not detectable)
Keep severely anaemic patients warm.

Severe hypoglycaemia
Hypoglycaemia is the main cause of death during the first days of treatment. It may be caused by a systemic infection and lack of regular, frequent feeding. Hypoglycaemia may also be induced by IV quinine.
Systematically check for hypothermia whenever hypoglycaemia is found.

Diagnosis

- Drowsiness, limpness, impaired consciousness, seizures.
- Low body temperature (hypoglycaemia is often associated with hypothermia).
- Eyelid retraction (half open when asleep).

• Blood glucose concentration <60 mg/dl or 3.5 mmol/litre is indicative of hypoglycaemia (test with Dextrostick).

Note: Sweating and pallor do not usually occur in severely malnourished patients.

Management

– If the patient is conscious and able to drink, give:
  • 50 ml Therapeutic milk or
  • 50 ml sugar water (10% glucose =50 ml of drinking water + 1 teaspoon (5 g) of sugar= 40 ml of drinking water + 10 ml of 50% glucose)

– If the patient cannot drink (impaired consciousness, seizures), give:
  • IV: 1 ml/kg of 50% glucose (dextrose) (or 5 ml/kg of 10% glucose (dextrose)),
  • followed by 50 ml of 10% glucose (dextrose) PO as soon as the patient is able to drink

– Monitor the patient until he is alert. Give nothing by mouth until the patient is considered sufficiently conscious to both cough and swallow (i.e. fully conscious). Repeat if necessary.
– Then, give frequent meals to avoid recurrence.
– Treat for hypothermia if needed.
– Give antibiotic therapy as hypoglycaemia is associated with severe infection or sepsis (**ceftriaxone** IM, see page 95).

Note: severe hypoglycaemia is common in patients with severe *falciparum* malaria.

Severe hypothermia

Severely malnourished patients cannot regulate their body temperature and "cool" very quickly. Hypothermia is a frequent cause of death, especially during the early morning hours. Hypothermia is almost always associated with severe infection and hypoglycaemia. Systematically check – and treat – for hypoglycaemia whenever hypothermia is found.

Diagnosis

• Rectal temperature below 35.5°C or axillary temperature below 35°C (or temperature to low to be registered).
• Mental status: slurred speech, unresponsive to pain or verbal stimulus, unconsciousness.
• Slow breathing, slow pulse rate.

Management

– Warm the patient:
For a child: place him on mother's bare chest, skin-to-skin (see Kangaroo technique, Chapter 8 page 137) and cover both of them with woollen blankets.

For an adolescent or an adult: cover the entire body including the head and neck.
– Handle the patient very gently. Keep the patient in a horizontal position as much as possible.
– Monitor rectal temperature twice hourly for the first hour, then once hourly until it rises to 36.5°C.
– Treat for hypoglycaemia. Give nothing by mouth until the patient is considered sufficiently conscious to both cough and swallow (i.e. fully conscious).
– Do not bathe a hypothermic patient; do not use a hot water bottle.
– Give antibiotic therapy when hypothermia persists, as hypothermia is often a sign of severe systemic infection (see page 95).

Persistent (or recurrent) oedema

Sometimes oedema is persisting a long time (weeks) after an initial decrease. Severely malnourished can show a recurrent increase of oedema during the treatment, also when they were marasmic on admission. Causes are electrolyte disturbances (e.g. surplus of sodium), other aetiology, and improper diet or medication (IV or Resomal), and indigenous medications

Other causes

– Investigate whether the mother is not feeding the child other foods (applicable for all phases) that fill the child's stomach (and might contain salt) and reduce the child's consumption of the therapeutic food.
– Investigate that there were no other therapies (e.g. indigenous) applied.
– Investigate whether there is not another aetiology of the oedema (especially nephrotic syndrome or glomerulonephritis, but also cardiac valvular disease or myopathy or portal hypertension from liver disease, pre-eclampsia during the second half of pregnancy, beri-beri, heart failure, etc.).

Management of nutrition related oedema

• Make sure only therapeutic foods are eaten, and no other therapies are applied.
• Salt restriction.
• If the oedema is important: refer to Phase I using F75 only, review dehydration treatment (Resomal, IV).
• If the oedema is not important follow treatment as normally (e.g. phase 2, ATFC), insist on use of therapeutic food only; the oedema will eventually disappear by itself.

Measles

For diagnosis and treatment, see the MSF handbook *Clinical Guidelines*.
Even if only one case of measles occurs in the therapeutic feeding centre, the following measures should be taken immediately:
• Organise an isolation ward to treat suspected measles cases.
• Check that all inpatients are vaccinated.
• Implement a vaccination campaign if necessary.

Xerophthalmia

Presence of active xerophthalmia indicates a profound vitamin A deficiency. Xerophthalmia is a medical emergency, immediate treatment is required. For diagnosis and treatment, see Chapter 9 page 142.

Oral candidiasis

Oral candidiasis (thrush) is very common in severely malnourished patients. Although not usually serious, it is possible for the infection to spread to the throat and oesophagus. Lesions are painful and may impair feeding. Examine systematically the mucosa of the mouth on admission and regularly during hospitalisation and treat accordingly. For diagnosis and treatment, see the MSF handbook *Clinical Guidelines.*

Treatment of skin lesions from kwashiorkor

Dry lesions: apply zinc oxide ointment twice daily.
Erosions: disinfect with **Chlorhexidine + Cetrimide** twice daily.
Superinfected lesions: see Impetigo in the MSF handbook *Clinical Guidelines.*
Exudative lesions: apply **Gentian violet** once or twice daily in order to dry the lesions. Avoid using gentian violet on the face (may cause staining of the skin).

Exudative lesions over a large surface may be observed in children with kwashiorkor. These extensive lesions are painful, and the pain is aggravated by the need to apply local treatment to prevent infection and aid healing.
These children should be placed naked (to avoid friction) under a mosquito net to protect the lesions from flies. Intensity of pain due to local treatment and continuous background pain should be evaluated and treated separately. The child receives analgesics for continuous pain and additional analgesics are given before local treatment.

6.6 - Individual patient care and follow up

6.6.1 - Individual patient follow up

Regular surveillance of compliance with dietary and medical treatments is critical. The individual's patient card gives a clear overview of the changes in nutrition status, health status, as well as the treatment phase and food rations. Be sure that all information, including prescriptions, is routinely recorded on this card. The card is kept in the centre.
See Annex 6.7 for an example of patient card for ITFC and ATFC.

In order for monitoring to be effective, the staff needs to know the correct administration and the possible adverse effects of the treatment, the expected progress of the patient, the complications that may arise and how these can be identified, and the possible alternative diagnoses in a patient not responding to treatment.

A failure to respond to treatment requires a complete reassessment to identify the cause and to correct the problem. The most frequent causes of treatment failure are individual medical problems and inappropriate practices in the feeding centre or at home.

Schedule for monitoring f patients

	Phase 1 (SC)	**Phase 2 (Day care TFC)**	**Phase 2 ATFC**
Medical visit Nurse's visit	Daily Twice daily	Every 2 days Once daily	Weekly Weekly
Weight Temperature Diarrhoea Vomiting Dehydration Oedema Behaviour Alertness Height	Daily Twice daily Daily Daily Daily Daily Daily Daily On admission	Every 2 days Daily Daily Daily Check during rounds Every 2 day Daily Daily Monthly or exit	Weekly Weekly 2 times a week 2 times a week 2 times a week 2 times a week 2 times a week 2 times a week Monthly
Meal intake (quantity, appetite)	Inquire every meal	Inquire daily	2 times a week
Drugs intake	Under direct observation	Under direct observation	At home
Home visit	None	None	1-2 times a week

Weight

– Weight measurements should be plotted on the patient's card, enabling analysis of growth curve.

• In phase 1: treatment is not intended to make the patient gain weight. A weight loss is expected in patients with oedema, as they should loose their oedema.

• In phase 2: constant weight gain is an important sign of recovery. After the disappearance of oedema and the control of intercurrent infections, the weight gain should be about 10 g/kg/day.

Criteria for failure to respond to treatment are: failure to gain at least 5 g/kg/day by Day 10 (or 14 for ATFC) after admission.

Insufficient weight gain may be due to the management of the program whether the patient is not receiving inadequate quantities of food:

• Incorrect food prescription (card).

• Incorrect preparation of the recipe (kitchen).

- Incorrect food distribution (ATFC, SFP).
- Quantity of food prescribed is not consumed (dislike, sharing meals with others, lack of drinking water).
- Lack of appetite (not in the right feeding phase, lack of drinking water causes lack of appetite as well, especially in hot climates).

After checking the food and nutrition component investigate underlying infections (UTI, ARI, otitis, candidiasis, Tuberculosis, AIDS, etc.).

In any phase, weight assessment is a good tool to diagnose dehydration or overhydration.

Temperature
If the patient is hypothermic: see paragraph 6.5.4, if the patient has fever (> 39°C): see paragraph 6.5.3.

Diarrhoea
Record stool frequency and consistency. A physician should immediately examine a patient with diarrhoea, with or without fever.
In phase 1, a soft coloured stool is frequent. This is due to incomplete digestion and no special action is required. With continuation of nutritional treatment, the stools will return to normal consistency and colour.
When watery or bloody diarrhoea is present: see page 91.

Vomiting
An isolated vomiting episode is not a cause for concern. Patients with recurrent vomiting need medical attention, especially if there is also diarrhoea, abdominal pain, fever, or headache. Be alert for dehydration and prevent or treat if necessary.

Dehydration
Record fluids given and condition of patient every 2 or 4 hours. A child in ATFC that develops dehydration should be immediately admitted in an ITFC.

Oedema
Loss of oedema is an important sign of recovery. Children should start to lose oedema within the first days following admission. Failure to *start* to lose oedema on Day 4 and oedema *still present* on Day 10 (inpatient and day-care) or day 15 (outpatient) should be investigated (see page 104).
Bilateral oedema in adults can take a long time to disappear completely; this is not a criterion for failure to respond to treatment.

Behaviour
Improvement in behaviour is an important sign of recovery.

Alertness

Lethargy or unconsciousness indicates central nervous system involvement. All lethargic patients should be *immediately* examined by a physician for hypoglycaemia, hypothermia, and severe infection including cerebral malaria; and treated without delay.

Meal intake
The return of appetite indicates that the patient's condition has improved. Patients should start to regain appetite within the first days following admission. Failure to regain appetite on Day 4 should be investigated and reacted upon.
Daily surveillance in a Stabilisation Centre and a day-care TFC is critical to assess the appetite and to ensure that the patient gets the food. Record the type of food, the amount of food taken and left over and details of any feeding problems: vomiting, refusal to eat etc.

On admission in an ATFC the appetite should be checked on the spot by observed consumption of RUTF of at least one hour. During admission in the ATFC empty packages should be returned before a new ration is handed out. Appetite must be discussed.

All patients must be carefully monitored for signs of overfeeding during the initial phase and when food intake is increased (during transition phase or at the beginning of rehabilitation phase if there is no transition phase) in order to avoid heart failure. Monitor for early signs of heart failure (rapid pulse and fast breathing). If the respiratory rate increases and there is weight loss assume pneumonia. If the respiratory rate increases and there is weight gain, provisionally assume over-feeding (over-hydration).
If both pulse and breathing rates increase (breathing by 5 breaths/min and pulse by 25 beats/min), and the increase is sustained for two successive 4-hourly readings, assume over-feeding (over-hydration).
If over-feeding is indicated stop all liquids and foods for 4-8 hours. Restart feeding slowly with a volume of the feeding to 100 ml/kg/day for 24 hours then, slowly increase, for example: 115 ml/kg/day for next 24 hours, 130 ml/kg/day for following 48 hours etc.

6.6.2 - Inappropriate practices

High mortality and failure to respond to treatment, or a relapse in condition (oedema) are often due to poor organization of the therapeutic feeding program. The most frequent inappropriate practices include:

– Providing food during phase 1 that is high in osmotic value, energy, sodium and protein.
– Leaving a patient too long in phase 1 (more than 7 days).
– No distinction made between phase 1 and phase 2.
– Failure to monitor food intake (low food intake or over-feeding).
– Lack of feeding at night or long intervals between meals.
– Overuse of nasogastric tube for feeding or rehydration.
– Intravenous fluids given for conditions other than circulatory collapse.
– Failure to control the rate of intravenous infusions.

– Inappropriate use of oral rehydration solution.
– Diuretics given to treat nutritional oedema.
– Vitamin A and broad-spectrum antibiotic not given.
– Iron given before the 15th day.
– Failure to monitor clinical status, to diagnose associated or complicating conditions, to establish a differential diagnosis (superficial or infrequent examinations).
– Lack of provision of blankets to prevent hypothermia.
– No specific activities for sensory stimulation.
– Failure to support mothers at home
– Indigenous medicine

Causes of inappropriate practices may include: lack of staff, poorly trained staff, or poorly motivated (no salary, insecurity) staff; lack of resources to purchase necessary food items, drugs and equipment; poor hygiene (personal and environment), lack of specific approach for severely malnourished children when malnutrition is treated in a paediatric ward; poor understanding of the situation of maternal or psycho-social family issues.

6.6.3 - Outreach defaulter tracing and home visits

Outreach teams have to trace absentees before they have defaulted; Outreach teams should get on daily basis the names addresses of the patient not having attended the other day (the other week in ATFP). Outreach workers should carry out home visits in order to understand the reasons for absence and to try to convince the patient/carer to complete the treatment. Common reasons for defaulting include:

- Family matters: a family changes its location, work in the fields, other children or sick family member at home requiring attention, etc.
- Problems related to the treatment or the feeding centre: lack of confidence to comply with treatment, treatment not properly understood, inadequate accommodation or food provision for carers, distance from centre, lack of personal contact
- Other: child or mother died at home, insecurity, etc.

– Active case finding: the identifications and admission of severe malnourished case should be early as possible, to avoid complications. In addition, all severely malnourished should be treated; a very high coverage is essential. (e.g. systematic MUAC screening by outreach workers)
– Mortality surveillance: Outreach team should trace the number of deceased, and the causes, in order to monitor the death rates and outbreaks of diseases.
– Promote the services of the TFP. A liaison with community is necessary for a good acceptance of the TFP.
– Specifically of the ATFP, some individual patients need a home visit, to check the health of the child, to explain some health related issues and to discuss with the mother any problems she might face related to the feeding program. The home visitor checks the health condition of the child, and whether the child has appetite. Also when the mother has been unable to attend the centre the home visitor will try to see the child.

See for detailed task description see Chapter 12 and annex 12.18 and 12.19.

6.7 - Procedures and time schedule

6.7.1 - Admission procedures

Reception and triage

Reception

While carers and patient are waiting to be seen, basic health messages can be given e.g. about hygiene and the nutritional services.

Often a severely malnourished child has not been fed for several hours before arriving at a health facility for assessment, and time passes before the admission procedures are done and the first feed is offered.

Consider to provide on admission systematically 50 ml of 10% glucose or 50ml drinking water + 1 teaspoon of sugar.

Screening:

When several patients arrive at the same time, it is important to select rapidly the weakest patients (e.g. lethargy) from the queue waiting for admission procedures in order to treat them without delay.

Outside the gate all children have their MUAC and general condition checked.

Initial procedures

– The treatment is explained in detail; Obtain from the patient, or carer (for children) an (oral) agreement on the treatment principles.

– Each patient is registered and an individual card is filled-in:

- Identity: registration (identification) number, full name, parent's names, complete address, age, sex; nationality and date of arrival for displaced population.
- Anthropometric measurements: MUAC, weight, height, weight-for-height, and target weight to reach the anthropometric criterion of discharge, oedema.
- Measles vaccination status: date of vaccination if attested by a vaccination card.
- Medical: see *history and clinical examination* page 10. Admission in first of 2nd phase is decided.
- Of the patients for ATFC, appetite test is conducted (observed intake of RUTF for at least one hour).
- Diet: quantity of milk per meal or RUTF according to the weight (see Annexes 6.2 and 6.3).

This information is also recorded on the individual milk card (see Annex 12.14) (inpatient and day-care).

– Each patient should receive an identification bracelet (with the patient's name and ID number and the centre name if there are several centres).

– Inpatients should receive a mat and a blanket for the duration of hospitalisation; a cup and a spoon (depending on the organization). Consider giving outpatients a blanket as a therapeutic item. All patients should receive a bar of soap (thereafter once a week).

– The first milk / RUTF should be given rapidly on admission and consumption is observed.
– Routine medical treatment as well as specific treatment (if needed) should be start without delay.

Explanation
A caretaker of a patient that is admitted in the TFP should be explained the following:
• The importance of treatment adherence.
Admission and discharge criteria:
• Nutritional treatment is part of the medical treatment.
• Special food is given only to the sick child and not shared.
• In phase 1 no other food should be given.
• In phase 2 other foods (porridge, some local meal) may be given after the milk or RUTF is consumed.
• Daily (or weekly) the child will be seen by the health staff and weight will be monitored.
• Notify staff if child is getting problems (e.g. diarrhoea, vomiting, fever, increase in oedema), or when the child looses appetite.
• Home visits can be expected when not showing up, or child is not doing well.
• Breastfed children must continue breastfeeding, and only after breastfeeding take the milk / RUTF.
• General rules of hygiene and a healthy diet. Use soap for child's hands and face before feeding. Keep food clean and covered. Sick children get cold quickly. Always keep the child covered and warm.

Patients in ATFP's need some extra information:
• Frequency of the RUTF meals during the day (6 to 7 times per day in phase I and 5-6 times per day in phase II). Small frequent amounts are necessary as sick children lose their appetite.
• Empty bags (or wrappings) of RUTF should be returned to the centre before a new ration is collected
• To give plenty of water to drink as RUTF doesn't contain water.
• The patient should come back every week until discharged
• When the child is not doing well (danger signs) (e.g. diarrhoea, vomiting, fever, increase in oedema), or when the child looses appetite, then the child should immediately come back or go to a health centre.
• With diarrhoea never stop feeding. Give extra food and extra water (clean).

6.7.2 - Care

Nutritional care

Feeding a severely malnourished child requires patients and motivation. In an inpatient facility, nutrition assistants should motivate the caretakers to feed the children, and help in technical issues (e.g. not feeding when the child is lying down but position the child upright), identify and discuss problems (feeding, medical, personal) and giving basic messages. Make sure drinking water is offered. Especially in hot climates make sure that patients drink water besides of the therapeutic foods; water can be added on the sport to the milk in the bucket or cup.

Emotional and physical stimulation

Behaviour changes are common in severely malnourished children. They are less active and explore their environment less than other children. The behaviour rapidly improves with proper feeding. However, dietary treatment alone is insufficient. In addition to increased food intake, sensory and physical stimulation as well as emotional support are crucial. The presence of the mother or carer is essential for feeding, comforting, holding. Severely malnourished children present with delays in mental and behavioural development. If left untreated, this may be the most serious long-term consequence of malnutrition. Psychomotor stimulation activities such as movement, talk, play etc. should be organised in the TFC's.

Consider organising:
– Playgrounds for children, play objects.
– Social workers to involve caretakers in group discussion and distractions (e.g. songs, dance).
– Psychosocial workers to identify caretakers who are psychologically affected and need counselling.
– Assistance in the activity of feeding: hand-washing, bringing spoon to mouth, giving water, discussing the situation in the feeding programme.
– Investigation of referral options for VCT, family planning, psychological treatment, food distributions, church and social care groups.

Care of adolescents, adults and the elderly:

– Staff caregivers must be provided for those who are alone and unable to stand and move.
– Respect for privacy is very important (same-sex latrines, same-sex wards etc.).
– Physical stimulation or therapy may be necessary for adults who have contractures resulting from immobility.

Carer's activities:

– Meals: the number (one, two or three), schedule and composition of meals for carers depend on whether the carers spend 24 hrs or 12 hrs/day on site, local habits, availability of food in the centre and at home, organizational capacity etc. Meals for carers accompanying inpatients should provide around 2300 kcal per day. Pay particular attention to this point, insufficient or inadequate food provision for carers is a common reason for defaulting.
– Carers should be involved in daily activities, such as cleaning the wards, washing dishes etc. They should be responsible for items handed out by the centre.
– Carers should also receive a mat and a blanket for the duration of hospitalisation; a bar of soap (thereafter once a week); a cup and a spoon (depending on the organization).

6.7.3 – Time schedule

24-hour inpatient centre (SC) (see also Chapter 3 and 12)

A clear schedule of activities should be established. An example is presented below, with 8 meals/day in phase 1 and 5 meals/day + one snack in phase 2. This schedule should be adapted to each situation.

Schedule of daily activities in a therapeutic feeding centre (example)

Hour	**Phase 1**	**Phase 2**
6	Milk distribution	
7	Temperature Drug distribution	
8	Weight Assessment of oedema Identification of absent patients	Arrival of patients RTUF or porridge Drug distribution
9	Milk distribution Carer's meal (porridge)	Temperature Weight Assessment of oedema Identification of absent patients
10	Medical round Identification of patients to be transferred into phase 2 Dressing care	Milk distribution
11		Medical round Identification of patients to be discharged
12	Milk distribution Drug distribution	RTUF or porridge
13	Carer's meal (local meal)	Carer's meal
14		
15	Milk distribution	Milk distribution
16	Temperature Dressing care Quick medical round	Drug distribution Dressing care
17		Milk distribution
18	Milk distribution Drug distribution	Departure home with a snack
19	Carer's meal (local meal)	

21	Milk distribution	
24	Milk distribution	
3	Milk distribution	

Day care stabilisation centre

Meal service must start early and end as late in the day as possible. The daily kcal intake remains as in the standard protocol and is divided evenly over the number of meals given on site during the day. Snacks for home consumption are considered as an extra ration, not included in the daily kcal count since they are likely to be shared with family members. Food distribution is simplified:

– Phase 1: the number of meals taken on site should be reduced to 5-6 rations of therapeutic milk per day, given every 2 hours + snacks (RUTF) for home consumption.

Explain to the mother or carer that RUTF should be divided into frequent, small meals during the evening and night.

– Phase 2: the number of meals taken on site should be reduced to 4-5 rations F-100/porridge/RUTF per day + snack(s) for home consumption.

In extreme situations, it may not be possible to give more than 3 or 4 meals on site during the day.

An example of organization with 5 meals/day in phase 1 and 4 meals/day in phase 2 is given in the table below.

Schedule daily activities in a day care feeding centre

Hour	**Phase 1**	**Phase 2**
7	Arrival of patient	Arrival of patient
7.30	Milk distribution + drugs	Milk distribution + drugs
8	Weight, oedema, temperature	Weight, oedema
8. 30	Medical visit	Nurse's visit
9.30	Milk distribution	RUTF or porridge or milk distribution
10.30	Dressing care	Medical visit
11	Carer's meal	Carer's meal
12	Milk distribution + drugs	Milk distribution + drugs
14.30	Milk distribution	Dressing care
15	Quick medical round	
16		RUTF or porridge or milk distribution + drugs
16.30	Milk distribution + drugs	
17-18	Departure home with snack(s)	Departure home with a snack

CHAPTER 7

Supplementary Feeding Programmes

This chapter outlines the treatment protocols for the management of moderate acute malnutrition among children over 6 months of age, adolescents, adults and the elderly.

7.1 - Definition and objectives

Moderate malnutrition can rapidly lead to severe malnutrition and to increased vulnerability for diseases if left untreated. The objectives of a Supplementary Feeding Programme (SFP) are to reduce morbidity among moderately malnourished patients and to prevent severe malnutrition.
SFP may also be set up as a follow up programme for patients discharged from a TFP.

Treatment in a SFP includes dietary treatment, medical treatment and individual patient follow-up. However, as moderate malnutrition is not an acute life-threatening condition, daily supervision is not necessary.

7.2 - Admission and discharge criteria

Patients with one or more of the following signs of moderate malnutrition should be admitted to a supplementary feeding centre. Patients can be discharged once all exit criteria have been met.

	Admission	**Discharge**
Children < 5 years or 110 cm or < 10 years or 130 cm	W/H between 70% and 80% of the median without bilateral pitting oedema **or** Discharged from a TFP **or**, if no TFP exists: W/H < 80% of the median or bilateral pitting oedema.	W/H > 85% of the median for 2 consecutive weeks **and** absence of bilateral pitting oedema. Children discharged from a TFP must stay in a SFP for at least 4 weeks regardless of when they reach exit criteria.
Adolescents from 10 to 18 years (> 130 cm)	W/H < 80% of the median **and** poor clinical condition.	W/H > 85% of the median for 2 consecutive weeks **and** absence of bilateral pitting oedema **and** good clinical condition.
Adults (except pregnant and lactating women)	MUAC < 185 mm and can stand and walk	Weight gain for 2 consecutive weeks **and** absence of bilateral pitting oedema **and** good clinical condition.

[29] See Chapter 2 for classification of nutritional oedema in adults (Beattie classification)

	or presence of bilateral pitting oedema (Grade 1and 2) [29] **or** discharged from a TFP.	
Pregnant and lactating **women**	MUAC < 210 mm **or** discharged from a TFP.	Discharge 6 months after delivery.
Elderly (from 50-60 years)	MUAC < 175 mm and can stand and walk. **or** presence of bilateral pitting oedema (Grade 1and 2) [1] **or** discharged from a TFP	Increased weight **and** good clinical condition.

– These anthropometric cut-off points are generally accepted for children. For other groups, criteria are subject to discussion and changes. Clinical status should always be taken into account.
– Moderately malnourished children under 5 years are the main targets for an SFP. If age is unknown, children below 110 cm in height are eligible.
– The order of priority of inclusion in the program of moderately malnourished people: children, pregnant and lactating women, adolescents, adults and elderly.
– The admission of moderately malnourished pregnant should be coordinated with antenatal services. The supplementation of all pregnant and lactating women is discussed in Chapter 10.
– For moderately malnourished breast-fed children under 6 months, the mothers should be included (see Chapter 8).
– In food crises or famines, moderately malnourished children from 5 to 10 years of age (or from 110 to 130 cm in height) and older age groups should also be considered, especially when there is no Blanket Feeding Programme (BFP), (see Chapter 5)
– Moderately malnourished individuals older then five years are not routinely included, because they are less vulnerable to deterioration of nutritional status than young children. Individual cases must, however, be considered for admission.

7.3 - Standard dietary treatment

7.3.1 - Design of SFP:

Dry or wet rations

• Dry ration: a dry, uncooked mixture of food items (premix) for home preparation and consumption is distributed once weekly or every 2 weeks.
• Wet ration: a cooked meal (usually a porridge) is distributed "on-site", once or preferably twice daily.
– A mixed system with one cooked meal taken on site + one dry ration to take home may be implemented.

Dry rations are preferred in most situations because of the following factors:
– Easier to organize when material and human resources are limited.
– Rapid broad coverage.
– Increased access for a dispersed population.
– Preferred by families, more regular attendance.
– Lower risk of transmission of communicable diseases.

However, in poor security conditions, wet rations may be more appropriate (meals eaten on site prevent people from being robbed along the way home).
See also *Advantages and disadvantages of dry rations versus wet rations*, Chapter 3.

Frequency
In most situations a SFP with take home rations can be open once in 2 weeks. As this reduces the time the mothers have to spend in a SFP, the quantity taken home (for 2 weeks) is more worth the effort. As a result the coverage and defaulte rate is usually higher with a bi-weekly distribution. The mother has to ascertain that when the child is sick she should come to the clinic and that she should not wait for the next round of SFP.
There can be good reasons for a weekly SFP; for instance when there is a disease outbreak (e.g. malaria) and the children are medically weak.
The SFP must be decentralised as possible (e.g. several distribution sites, mobile distribution sites).

When the caseload is high the children can be divided in groups by sex and height (each coming at different days) and this is combined with a bi-weekly distribution.

7.3.2 - Food and rations

The ration provided in an SFP is designed as a supplement to the deficient family diet, and to allow for catch-up growth. For both types of SFP, supplementary meals should be well timed so that they do not coincide with family meals.

Ration contents
– Patients should receive an energy and protein-dense diet fortified with vitamins and minerals. 35% to 45% of kcal intake should be provided by fat and 10 to 15% of kcal intake should be provided by protein.
– Dry rations should provide at least 1200 kcal/day and 35-45 g of protein/day (see Annex 7.2). Dry rations are usually larger (double) than wet rations because they are likely to be shared with family members. If significant sharing is taking place, the ration could be increased or an additional family ration

can be provided.
– Wet rations should provide at least 700 kcal/day and 15 to 25 g of protein/day (*see Annex 7.3*). If it is suspected that wet rations are replacing meals instead of supplementing them, rations should be increased.
– Porridge should contain approximately 150 kcal/100 ml. To accommodate the stomach capacity of children, meals should be given twice daily.

Types of meals (*see also Annex 7.1*)
– Rations are usually consumed in the form of porridge in both dry and wet SFP's. The porridge is usually made from micronutrient rich blended foods (e.g. UNIMIX, CSB), sugar and oil.
– Therapeutic milk F100, High Energy Milk enriched with micronutrients (CMV) may also be used, but only in wet SFP's.
– High-energy protein biscuits such as BP5® can be useful when initiating an SFP in the early phase of an emergency when resources (ingredients for porridge, cooking and serving equipment, personnel) are not available. However, they are not recommended for long-term use; change to porridge as soon as possible.

7.4 - Standard medical treatment

7.4.1 - History and physical examination

Screening/triage:
When several patients arrive at the same time, carry out a rapid screening outside the gate before weighing and administrative procedures. Severely malnourished (MUAC measurement) and clinically weak children are selected and to be seen immediately by medical staff.

Initial assessment*:*
• Clinical examination should look for presence of bilateral pitting oedema and acute conditions (dehydration, infection, etc.).
• Anthropometric measurements include: weight, height, weight-for-height, and target weight to reach the anthropometric criterion of discharge for children; MUAC for adults.
• Check measles vaccination status of all the children.

All findings should be noted on the individual patient card. (See annex 7.4)

(Bi-) Weekly monitoring:
For *patient follow up* see paragraph 7.5. page 121. Nurses should be responsible for routine nutritional and medical care, monitoring for signs of deterioration and referrals to medical doctors.

7.4.2 - Routine medical treatment

Acute problems such as measles, malaria in endemic areas; vitamin A, iron and folic acid deficiencies and intestinal parasites should be routinely prevented/treated.

Routine medical treatment

Treatment	**Day**																						
	1	2	3					8						15							22	etc	Discharge
Measles vaccine	**x**																						
Malaria test	**x**																						
Vitamin A	**x**																						
Albendazole	**x**																						**(x)**
Iron + folic acid	**x**							**x**						**x**							**x**		

Measles

Measles is a serious disease in malnourished children. Measles impairs the immune system for several months after infection and aggravates vitamin A deficiency. In addition, measles often results in rapid and significant weight loss. Besides, it is highly contagious.

Systematically administer measles vaccine as a single dose on admission to all children aged from 6 months to 12-15 years, unless mothers show proof of previous vaccination (a vaccination card). Check the TFP card of children discharged form a TFP.
NB: All children immunized between 6 and 9 months should be re-vaccinated after they reach 9 months of age.

Malaria

Early effective malaria treatment is preferred over regular malaria prophylaxis.
Check systematically for malaria on admission (thick/thin blood films or rapid test):

- If the initial test is negative, routine treatment or prophylaxis is not required.
- If the initial test is positive treat on admission.[30] See chapter 6 page 87 and annex 6.8.

[30] If the patient shows signs of severe falciparum malaria, see the MSF handbook *Clinical guidelines*.

Vitamin A deficiency

Malnourished patients have often a low vitamin A status and they may suffer from vitamin A deficiency, what is not detectable in the sub-clinical stage. Furthermore, as vitamin A plays an important role in the body's defences against infection, supplementation is intended to reduce morbidity.

A dose of vitamin A is given on admission. Make sure there is an interval of at least 4 months since the last high dose. Therefore excepted are:

- Pregnant women (teratogenic risk) and women of childbearing age (risk of unknown pregnancy).
- Patients discharged from a TFP (they should have already received vitamin A).
- Patients re-admitted within a period of four months (they have already received vitamin A).

Dosage vitamin A, capsule 200 000 IU, single dose

Age	**Retinol (vitamin A)**
Children from 6 to 12 months	100 000 IU (3-4 drops)
Children over 1 year and adults	200 000 IU (1 capsule)

Iron and folate deficiencies

Supplementation of **Iron + Folic acid** should be given on admission, and then administered once weekly in dry SFP (daily in a wet SFP), provided health care is available and specifically malaria is treated effectively.

Dosage Iron treatment; 200 mg tab (= 65 mg of elemental iron + 0.25 mg folic acid)

Age	**Tablets**
6-24 months	¼ tablet once weekly
2-5 years	½ tablet once weekly
> 6 years	1 tablet once weekly
Adolescents and adults	1 tablet once weekly
Pregnant women	1 to 2 tablets once weekly

Worm infections

Worm infections are often present. Intestinal worms consume a portion of the food intake and contribute to malnutrition.
Anthelminthic treatment should be given on admission except to women during the first trimester of pregnancy and to patients discharged from a TFP as they have already received an anthelminthic treatment:

Albendazole PO
Children from 1 to 2 years: 200 mg as a single dose.
Children over 2 years and adults: 400 mg as a single dose
or, if not available, **Mebendazole** PO
Children over 1 year and adults: 500 mg as a single dose.

– In areas where there is a high prevalence, repeat the treatment at discharge.

7.4.3 - Specific medical problems

A physician should examine patients with a specific medical problem. For diagnosis and treatment of specific medical problems, see the MSF handbook *Clinical Guidelines*.
Pregnant women should be referred to antenatal care (for a tetanus immunisation etc.).

Diarrhoea

Patients with acute or chronic diarrhoea should receive a supplement of **Zinc** daily for ten days, except for HIV positive patients. Dehydration should be prevented and treated with **ORS** normally (see MSF Handbook *Clinical Guidelines*),

Dosage Zinc tablets containing 20 mg zinc daily for 10 days

Age	**Tablets**
Children < 6 months	½ tablet
> 6 months	1 tablet

Anaemia

When a patient is diagnosed with anaemia, treat normally with **Iron Sulphate** with a daily dosage (see MSF Handbook *Clinical guidelines*).

7.5 - Individual patient follow-up

– Regular surveillance of compliance to dietary and medical treatments is essential. Be sure that all information, including prescriptions, is routinely recorded on the individual patient card, including the patient's target weight.
– Transfer to therapeutic feeding centre or to hospital should be organized when necessary.
– Close collaboration between an SFP and antenatal care is essential to ensure quality care for pregnant women.

Weight

The patient must be weighed at each visit to a dry SFP, and once a week in a wet SFP. If a patient is not gaining weight, reasons must be investigated (illness, insufficient food etc.) and appropriate measures must be taken.
Target weight for discharge (85% W/H in children) should be indicated on the patient's card. Target weight must be recalculated each month when height measurement is updated.

Height
The patient should be measured once monthly.

Bilateral oedema
Oedema must be assessed at each visit. As bilateral pitting oedema is a sign of severe malnutrition, refer to a TFP if present.

Appetite
Ask mothers about appetite and food intake.

Medical examination
Organise a systematic check on medical conditions (including oedema, cough, fever, appetite, dehydration, anaemia, ear and throat infection, skin infection), by asking for health issues and a rapid medical check-up. A more detailed examination must be provided when indicated by the systematic check up.

7.6 - Practical organization of a supplementary feeding centre

7.6.1 - Organization of dry SFP's

– Patients should come to get their rations once weekly (or every two weeks).
– Often SFP food distributions are organized in a health facility.
– Rapid and fluent patient flow is crucial to an efficient and organized distribution, with minimal waiting times.
– Distribution should be organized efficiently in such a way that patients do not stay more than 2 hours.
– Regularly during the distribution, have a look in the waiting areas to quickly identify ill or weak patients requiring immediate care (triage). Implement a screening system outside before the gate.
– Check whether patients have access to food distributions. The list of patients admitted to the SFP must be crosschecked with the food aid agency involved in GFD. If there is no GFD, an additional weekly supportive family ration can be distributed, especially if several children from the same family are admitted in SFP.

Admission procedures:

New patients should be examined (clinical examination and anthropometric measurements) and followed by a decision for admission. If admitted:
– Explain to the patient or the carer the treatment in detail, as it is essential that s/he understand the importance of treatment adherence until it is completed. Obtain patient, or for children, carer agreement.
– The patient is registered and an individual card (see Annex 7.4) is filled-out (card stays in the centre).
–The patient should receive:
• An identification bracelet with name and ID number (identical to the one in the register); name of feeding centre or a symbol, or colour representing the centre in which the patient is registered. For dry feeding centres, the initial of the day assigned to the patient (for example "M", meaning that the patient should come every Monday).
• Routine medical treatment (unless indicated differently) and food.

During distribution
Entrance gate: a guard checks the identification bracelet (i.e. for correct feeding centre and correct day of attendance) and directs the patient inside to the waiting room.
***Registration*:** the person in charge of registration calls the patient, records attendance number in the registration book and hands him/her the individual SFP card.
Weight-for-height: weight is measured at each distribution and recorded on the individual SFP card. Height is measured once a month. Target weight must be recalculated each month when height measurement is updated.
Medical follow-up: medical staff perform a clinical examination, including looking for bilateral pitting oedema and give the weekly dose of iron + folic acid. Depending on the situation, the medical consultation is a complete check-up or it is done with the help of a standard checklist and, mostly, by history. Children with complaints are referred to the doctor or nurse.
***Food distribution*:** patient receives the ration, and then leaves the centre. The individual card should be returned to the person in charge of registration.

After each distribution:
Identify absentees/defaulters and organize outreach visits.

7.6.2 - Organization of wet SFP's

The main difference in the organisation between wet and dry SFP's is that patients usually remain for several hours daily as they consume meals on site. Also meals and drugs are taken under direct observation and carers should also be fed too.
Example of organization a wet SFP with 2 meals/day.

Hour	Activities

8.30	Arrival of patients Weight control, nurse round and medical care
10.00	Porridge and drugs distribution.
11.00	Departure home.
15.00	Arrival of patients.
15.30	Porridge (or milk).
16.30	Departure home.

CHAPTER 8

Infant Feeding

This chapter reviews the importance of breast-feeding and its alternatives when breast-feeding is impossible. Specific issues related to infant feeding and HIV infection, and severe malnutrition in infants are also discussed.

8.1 – Breast-feeding and alternatives

Breast milk is crucial for infant health as it provides essential nutrients for physiological development. Breast milk protects infants against infections and allergies. It is easily digestible, pre-warmed, clean and safe, free of cost, and immediately ready on demand.
The optimal feeding for infants is *exclusive* breast-feeding for the first 6 months of life. No other liquids or foods are required. Introduction of semi-solid and solid food to complement – not replace – breast milk begins at 6 months of age, until the child is gradually able to eat family food.

However, culture, beliefs and practical considerations influence infant feeding practices and replacement feeding or mixed feeding (both options in parallel) is often practiced.

8.1.1 – Support for breast-feeding

It is essential to actively support breast-feeding; especially in emergencies where hygiene conditions are poor and alternatives to breast-feeding are unavailable or unsafe.

Breast-feeding should be promoted at all levels of health care. Therefore encourage:
- The initiation of breast-feeding immediately after birth (colostrum).
- Frequent, on-demand feeding (including night feeds).
- Mothers to breast-feed and assist them with the restoration of breast-milk supply in the event of insufficient breast-milk production.
- Women who are not infected with HIV to breast-feed for 2 years.

Women under stress may experience difficulty breast-feeding. It is important to determine if insufficient milk production is real or perceived:
– Psychological stress usually does not affect women's ability to produce milk. However, it may prevent mothers from putting children to the breast often enough and then, insufficient suckling affects milk production.
– Moderate malnutrition has little or no effect on milk production although the micronutrient content may be lower.
With support, nearly all women under stress and moderately malnourished women can successfully breastfeed.
– Severe malnutrition can affect milk production.

Main causes for inadequate breast-feeding
– Breast-feeding factors: poor attachment leading to ineffective suckling, short feeds, absence of night feeds, infrequent feeds due to separation of the infant from the mother (mother absent for part of the day etc.); use of complementary foods, bottles and pacifiers that decrease suckling and milk production.

– Mother-related factors: psychological problems (trauma, worry, high stress, rejection of the baby, lack of confidence due to loss of family support); lack of privacy, extreme tiredness, severe malnutrition, mammary complications (mastitis, abscess).
– Infant-related factors: ineffective suckling (prematurity, illness[31]) etc.

Signs that indicate the infant is not getting enough milk:
- Poor weight gain.
- Small amounts of concentrated, yellow, strong-smelling urine.
- Infant is unsatisfied after feeds, refuses to breast-feed, or takes long breast-feeds.
- The breast does not have milk (check the breast and milk flow through hand pressure).

Practical support for breast-feeding
– Facilitate support by other breast-feeding women, experienced women, birth attendants and midwifes.
– Increase suckling frequency and duration (the more the baby suckles, the more milk is produced).
– Support good attachment and the position of the infant.
– If the infant has diarrhoea, vomiting etc., breast-feeding should be increased in frequency.
– For infants too weak to suckle, express breast-milk and give milk using a cup.
– Ensure the privacy and security of women; establish a special area where they can receive support and breast-feed their infants.
– Advise mothers on the importance of drinking at least 2 litres of water/day.
– Programs to support all lactating women could be implemented during food crises or famines (see Chapter 10).

Re-lactation
– Any woman who has been pregnant at any time in the past can usually re-lactate:
– Establishing milk supply depends primarily on the infant suckling. Suckling 8 to 10 times per day produces sufficient stimulus for milk production.
– It may take several days (even 2 weeks or more) for the milk to start coming in and possibly 2 to 6 weeks before exclusive breast-feeding is achieved.
– Infants can be initially fed with a breast-milk substitute using the supplemental suckling technique (see paragraph 8.3.2 page 133).

8.1.2 - Alternatives to breast-feeding

In certain situations breast-feeding by the biological mother may not be possible: orphaned or unaccompanied infants, very sick mothers unable to breast-feed, infants of known HIV infected mothers who choose not to breast-feed.

[31] An inability or difficulty to suckle between 3 and 21 days after birth can be an early sign of neonatal tetanus. Obtain a detailed history of the mother's vaccination status and newborn care for differential diagnosis. Refer to an appropriate facility.

Alternatives to breast-feeding may also be necessary when responding to emergencies in countries where a high proportion of women use bottle-feeding or when orphaned babies are found.

Alternatives to breast-feeding include:
– Breast-feeding by another woman (wet-nursing).
– Expressed milk (milk bank).
– Use of a breast-milk substitute.
– Home-prepared recipes based on cow milk, camel milk etc.

Breast-feeding by another woman (wet-nursing)
Wet-nursing may be appropriate if it is culturally acceptable, and if the wet-nurse is motivated:
– A lactating woman is capable of breast-feeding another child in addition to her own.
– Any woman who has been pregnant at any time in the past can usually relactate (See *Relactation*, above).
The practice of wet nursing may be inappropriate in situations of high HIV prevalence where testing, support and counselling are not available.

Expressed breast milk (milk bank)
If the system has been previously implemented in the area, a milk bank can be re-established. This option is rare.

Breast-milk substitutes (infant formula)

Risks of breast-milk substitutes
The use of breast-milk substitutes, particularly in emergency situations, contributes to increased risk of diarrhoeal disease, malnutrition and death because of:
– Difficulties in ensuring the proper sterilisation of feeding equipment (scarcity of fuel and cooking utensils etc.)
– Use of contaminated water when diluting infant formula.
– Mistakes in dilution: under-dilution (resulting in diarrhoea) and over-dilution (resulting in malnutrition).
– Cost: families can't afford to buy sufficient breast-milk substitutes; consequently, over-dilution or/and substitution with other unsuitable foods is common.
– Supply and availability: especially in emergencies, supplies of infant formula can be unreliable.

Procurement and storage issues of infant formula
• Composition of the product must fulfil the Codex Alimentarius for infant formula.
• Labels on boxes should be clear, in the local language and have drawings or pictograms to explain preparation.
• Labels must indicate that breast milk is the best food for infants.
• Infant formula should be generically labelled (i.e. should not have a brand) to avoid hidden publicity for the brand of infant formula.

• Expiry dates must be indicated on each tin (for stock management reasons do not purchase or send infant formula that has a shelf life under six months).
• Tins should contain measures for milk powder and water.
• Proper storage conditions must be ensured at all steps of procurement and distribution.
• Violations of the International Code of Marketing of Breast-milk Substitutes[32] should be reported (e.g. to the WHO or International Baby Food Action Network).

Conditions for the distribution of infant formula
– The use of infant formula must already be common in the population.
– They should be distributed through a supervised infant formula distribution programme that offers counselling, advice and education about preparation techniques and health risks (see Annex 8.1).
–. Feeding should preferably be performed with a cup and a spoon, even if this requires time and motivation of both mother and staff. Feeding bottles and teats should be avoided, but when the mothers use it, it is better to give clear instructions on hygiene and preparation then to ignore the use of bottles.
– Suitable cooking pots, cups, safe water (e.g. water filter) and cooking fuel must be available or provided.
– Infant formula and feeding equipment should be available for each child for a minimum of 6 months.
– Proper training for milk preparation and feeding must be provided.
– In circumstances where safe preparation and use of breast-milk substitutes cannot be assured (not enough clean water and fuel, and/or containers), on-site feeding should be considered.
– Breast-milk substitutes should never be distributed as part of a General Food Distribution.

Donations of breast-milk substitutes
Donations are not accepted when:
– They are not requested
– They are not compatible with the International Code of Marketing of Breast-milk Substitutes.
– Quality is not guaranteed.
– More is offered than needed, as this encourages distribution by health workers.

Home-prepared infant formula

[32] The WHO International Code of Marketing of Breast-milk Substitutes and other relevant resolutions aim to protect and promote breast-feeding, by ensuring that commercial manufacturers use appropriate marketing techniques and supply adequate information about their products. This includes:
– No promotion of breast-milk substitutes, bottles and teats to the public or in health care facilities.
– No words or pictures idealizing artificial feeding, including baby pictures on the labels.
– No free samples to mothers or health workers.
– No promotion of baby foods or drinks for babies less than 6 months old.

As a very last resort, when it is impossible to carry out the options proposed above, home-prepared formulas made from fresh animal milk can be used for a short period of time until an alternative is available.
Unmodified animal milks are less suitable for infants. They must be diluted with boiled water to reduce concentration and mixed with sugar and micronutrients.

8.2 - Infant feeding and HIV infection

Mother-to-child transmission of HIV in developing countries.
In the absence of any intervention to reduce the risk of transmission, an estimated 25 to 40 % of infants born to HIV-infected mothers may acquire HIV: two thirds (17 to 27%) during pregnancy and delivery, and one third (8 to 13%) in the postnatal period through breast-feeding.

Interventions to reduce the risk of transmission during pregnancy and delivery are not discussed in this manual; only measures to reduce the risk of transmission through breast-feeding are considered.

Risk factors for HIV transmission through breast-milk include:
- Recently acquired maternal infection: the risk of transmission is higher when the mother becomes infected while breast-feeding.
- High maternal viral load, low CD4 cell count, advanced clinical stage (AIDS); ARV treatment of the mother will reduce the viral load dramatically.
- Mixed feeding: introduction of any foods or liquids apart from maternal milk may cause micro-lesions and inflammation of the intestinal mucosa that facilitate HIV transmission.
- Prolonged breast-feeding: the risk of HIV transmission persists as long as breast-feeding continues.
- Oral lesions in infant (ulcer, candidiasis) or lesions on mother breast (fissures, mastitis, abscess).

Infant feeding options
There are 2 options recommended to reduce the risk of HIV transmission[33]:
- ***Exclusive breast-feeding***: no infant formula, no other liquid (no water, tea, animal milk etc.) and no solid food are given to the child, for the total duration of breast-feeding (e.g. for 6 months)

or

- ***Exclusive artificial feeding***: no breast-milk is given to the child.

Mothers known to be HIV positive:

[33] Also heated expressed breast-milk is a safe option for HIV positive lactating women as heating neutralizes HIV in the breast-milk. However this is rarely done

– Because breast-feeding plays a critical role in protecting child's health, the risk of HIV transmission through breast-feeding must always be weighed against the risk of morbidity and mortality from illnesses caused by improper use of breast-milk substitutes. The balance is mainly determined by the hygienic circumstances, accessibility to clean water, access to health care (indicator: infant mortality in general).
– In situations where breast-milk substitutes are acceptable, feasible, affordable, sustainable and safe, avoidance of breast-feeding and use of breast-milk substitutes is the best option.
– When there is no safe and reliable alternative, deaths from diarrhoeal and other infectious diseases could outnumber those from HIV (e.g. emergencies). Exclusive breast-feeding until the age of 4-6 months followed by rapid weaning is the best option.
– Cultural patterns should be taken into account. Where breast-feeding is the norm, use of infant formulas risks a public revelation of HIV status. In that situation mothers often feed their children with infant formula at home, and breastfeed in public. Short exclusive breast-feeding for some months may be less stigmatising than no breast-feeding at all, and it is less dangerous than mixed feeding.
– Regardless the policy chosen, individual HIV-positive mothers should be informed of the risks of both transmission through breast-feeding, and morbidity and mortality associated with artificial feeding so she can decide the best way to feed her child in her particular situation. Also the consequences of the mothers HIV status (AIDS, ARV's) is important for her decision.
– A breast-feeding mother should clearly understand the importance of the exclusiveness of the feeding option as mixed feeding carries a higher rate of transmission.

Mother HIV negative or maternal HIV status is unknown exclusive breast-feeding for at least 6 months is the best option.

Additional measures to reduce the risk on transmission:
– Accessible health care: breast-feeding women should seek prompt treatment in the event of nipple lesions or infant thrush etc.
– A mother should go to a health centre when her baby is sick, e.g. diarrhoea, vomiting
– Hygienic support when a breast-milk substitute is used (e.g. pots, cooking facility, clean water)
– Avoidance of re-infection during breastfeeding

Weaning
Sudden weaning:
At the age of 6 months the child should stop breast-feeding abruptly (in some days) and take suitable weaning foods. The drug **cabergoline** (2 x 0.5 mg tablets stat dose) is a very useful adjunct to achieve exclusive replacement feeding, or the rapid weaning of breast-feeding. It stops lactation within 24 hours, and thus is effective in preventing the often painful and complication prone development of breast engorgement, and effectively prevents the harmful practice of mixed feeding.

Weaning foods

Weaning porridges must be enriched with micronutrients, be soft and have reasonable energy and protein densities. The best is to complement weaning porridges with milk. However, good results are reached with a supplement of RUTF (plumpynut). Avoid the use of sugar waters and tea as this fills the stomach of the baby and only gives empty calories. See other (WHO) manuals on infant feeding.

8.3 - Treatment of severely malnourished infants in TFPs

The protocol below is for infants under 6 months of age. Infants over 6 months of age are treated following the protocol described in chapter 6. The protocol for young infants differs as their physiology is not as mature , the requirements of rapid growth and because of the promotion of breastfeeding.

Severe malnutrition can rapidly lead to death if left untreated. The objectives of treatment in TFP's are to:
- Reduce mortality and morbidity among severely malnourished infants by providing intensive care until their recovery
- Discharge the infant on exclusive breast-feeding; re-establishing, maintaining or improving production of maternal milk is essential to achieve this objective.

Alternative protocols are used for infants with no possibility of being breast-fed.

Principles of treatment:
– Treatment must be organized in an in-patient facility (24 hour care).
– Supplementation with therapeutic milk administered through the supplemental suckling method may be necessary as a temporary measure until adequate breast-feeding can be re-established.
– Feeding bottles and teats should not be used.
– Mothers and infants receive routine medical treatment (as well as specific treatment if required).

8.3.1- Admission and discharge criteria

Clear anthropometric cut-off points to define severe malnutrition in infants (below 6 months of age[34]) do not exist. The decision to admit and discharge infants always includes clinical criteria.

Admission	Discharge
Nutritional status	***Nutritional status***
• Weight loss or growth stagnation (for 1 to 2 weeks)	• Satisfactory clinical status and absence of infection

[34] For 6 months of age a length of 65cm can be used, although this will include many children older then 6 months (pre-term, small for date, stunted)

or • W/H index < 70%	**and** • minimum weight gain 10 g/kg/day during 5 consecutive days
Plus feeding problems	***Plus sustainable feeding follow up***
• Poor clinical status (too weak to suckle), • Sickness or absence of the mother, • Insufficient breast-milk, • Inappropriate alternative infant feeding, etc.	**For breast-fed infants:** • Exclusive breast-feeding for 5 days with active suckling and well established breast-milk production **For non breast-fed infants:** • Sustainable supply of breast-milk substitutes and items for safe preparation • Caregiver knows about safe preparation of breast-milk substitutes

Infants younger then 6 months are generally below 65 cm in height, but not all infants under 65cm are younger then six months (e.g. small for dates, low birth weight babies etc.).
Also a low W/H index may result from low birth weight (< 2500 g). It may therefore be difficult to differentiate between an infant with low birth weight but healthy and a severely malnourished infant. A detailed history must be obtained for each child to judge the nutritional situation.

History and clinical assessment:
• Any additions to breast milk: Take the history of food intake of 24 hours: animal milk, sugar water? Frequency and duration of breastfeeding in the last 24hours?
• Presence (absence) and attitude of mother.
• State of infant (hungry, satisfied).
• Infant's medical conditions and illness.
• Flow of mother's milk (hand expression).
• Attachment of the child on the breast. The baby should be able to have a mouthful of breast (not always due to weakness but general poor attachment sometimes).
Check the strength of suckling by putting the small (clean) finger in the baby's mouth. There should be a strong pressure on the finger.
Check the duration of suckling. Is the baby able to suckle for a few minutes at a time?

8.3.2 - Nutritional treatment

General principles

– Also for infants the treatment is organised in two phases, with a transition phase.
– Different protocols are used for breast-fed and non-breast-fed infants
– Treatment is always organized over 24 hrs, whatever the phase of treatment. Infants over 1.5 kg should receive 8 meals per day at 3-hour intervals and infants under 1.5 kg should receive 12 meals per day at 2-hour intervals.
– Provide nutritional support and medical care for the mothers.

Type of preparation used

- In phase1 SDTM is preferred, possibly be replaced by F75 (commercial formula) [35].
- In the transition phase for non-breast-fed infants use SDTM
- For both phase 1 and the transition phase for non breast fed infants infant formula can be used directly provided that the child has no oedema, and this can be continued in phase 2.
- Full-strength F-100 should not be used for any infant younger then 6 months because it is too concentrated and its osmolarity is too high.

Infants with possibility of being breast-fed

Principles of treatment

– The aim is to stimulate maternal (or wet nurse) breast milk production and to supplement the infant with SDTM until breast-milk production is sufficient.
– Breast-milk production is stimulated by the supplemental suckling technique. It is essential to put the infant on the breast as often as possible.
– A 3-phase approach for gradual decrease of the supplement and increase of breast-milk (see treatment phases, page 134).

Stimulate breast-feeding and breast milk production

- Mothers should be fed. Her diet should provide at least 2500 kcal/day and 2 litres of water/day.
- Encourage the mother to breast-feed her infant every 3 hours (every 2 hours for a child under 1.5 kg) for at least 20 minutes, or more frequently if the infant cries or seems to want more. Allow the infant to empty one breast before suckling the other one. The therapeutic milk is given using the supplemental suckling technique.
- Verify that the suckling practice and attachment is correct.
- Encourage mothers and infants to have skin-to-skin contact (this stimulates the release of the hormone prolactin). See page XX for a description of the kangaroo method.
- Provide psychological support and encouragement to mothers.
- Give mothers and infants privacy and time to rest.

[35] Specially Diluted Therapeutic Milk (SDTM) is suitable for the first phase for infants (< 6 months old) with severe acute malnutrition. SDTM is a milk prepared with one sachet of F-100 + 2.8 litres of water instead of the 2 litres of water required for a normal dilution (normal dilution = full-strength 100). See annex 6.1.

Supplemental suckling technique

– This method aims to re-establish or induce lactation by providing therapeutic milk while the infant is suckling at the breast. The infant's efforts are rewarded by a flow of therapeutic milk, which stimulates suckling. In turn, the infant's suckling stimulates the production of breast-milk.

Supplemental suckling technique

– This method is useful if the infant is not interested or is too weak to suckle from a breast that does not yet produce enough milk.

– Remind the mother to let the infant suckle at any time he/she is willing – not only when the mother is using the supplementer.

– It may take one to two days for the mother and infant to adapt to this technique. At the beginning, the mother will need intensive support.

– As it is relatively unknown by staff and mothers it is useful to ask a mother who is successfully using this technique to demonstrate it to mothers starting to use the technique.

Instructions

1) The tip of a nasogastric tube (N°8 or an equivalent size tube) is attached to the breast at the nipple with the other end of the tube in the cup filled with therapeutic milk. The cup should be held at least 20 cm below the level of the infant's mouth so that the milk does not flow too quickly, causing distress to the infant.

2) The breast with tube is offered to the infant. Ensure that the tip of the tube is in the mouth. When the infant suckles at the breast, the milk is sucked up the tube and ingested. If the presence of the tube is discouraging the infant from attaching, slip the tube into the mouth once the infant is suckling.

3) Help the mother to regulate the flow of milk from the tube, so that the infant does not feed too fast and hence stimulate the breast too little. The flow is regulated by partially closing the tube with a paper clip, a loose knot or a finger pinch, or by lifting or lowering the cup.

4) To avoid contamination the tube must be changed after each feed.

Treatment phases including re-lactation

Phase 1:

- From day 1 to day 10 (maximum Day 15).
- Start by giving the infant minimum nutritional requirements in addition to each breast-feeding.
- The caloric intake should be 100 –120 kcal/kg/day = 135 – 160 ml of SDTM/kg/day, decreasing by age.
- In case of high fever, vomiting or diarrhoea, caloric intake should be increased by 5 to 10 kcal/kg/day (6 to 13 ml/kg/day extra).
- It is assumed that the extra energy required for growth will be provided by breast-milk.
- For the quantity of SDTM to provide in phase 1, per day and per meal, according to the child's weight, see Annex 8.2.

Transition phase:

- Start on day 10 (to max on day 15).
- When breast-milk output increases (usually after 10-15 days), the infant does not finish supplemental feeds and weight gain is regular, SDTM can be reduced to half of the quantity.
- The caloric intake of SDTM should be 50 kcal/kg/day = 67 ml /kg/day.
- If a regular weight gain of at least 5 g/kg/day is maintained over a few days, stop supplementation with SDTM completely.
- For the quantity of SDTM to provide in the transition phase, per day and per meal, according to the child's weight, see Annex 8.2.

Phase 2:

The infant should be exclusively breast-fed for at least 5 days before discharge.

Summary of nutritional treatment including re-lactation

Phase	**Breast-feeding**	**SDTM supplementation**
Phase 1	Breast milk every 3 hours	+ 135 –160 ml/kg/day in 8meals given during breast-feeding (100-120 kcal/kg/day)
Transition	Breast milk every 3 hours	+ 67 ml/kg/day in 8 meals given after breast-feeding (50 kcal/kg/day)
Phase 3	Only breast milk	

SDTM can be replaced by F75 but breast fed infants don't need an initial phase (only if they have oedema), and F75 is only meant for maintenance and doesn't allow for growth.

Monitoring (see also chapter 6)
– Infants are at very high risk of hypothermia and hypoglycaemia. They must be cared for in a separate warm room and should be grouped together to enable close monitoring and reduce the risk on cross-contamination. It is recommended to have one nutritional assistant for every 5 infants.

– Monitor weight gain on a daily basis:
- Initially, weight should remain stable. Once the infant stabilises (normally after 2 days), (s)he should gain between 5 and 10 g/kg/day.
- If an infant's weight stagnates or decreases for 3 consecutive days, investigate the reasons for this. Alternative reasons may be:
  - The amount of food offered (breast-milk + SDTM) is not sufficient and must be increased,
  - Underlying medical and/or social problems exist and must be addressed.
  - Attachment and breast-feeding technique is poor.
- The classical Salter scale is not precise enough to detect small weight gains in infants. Use a mechanical baby scale (graduations every 10 g, up to 15 kg).

Infants under 6 months with no possibility of being breast-fed

Principles of treatment
When it is totally impossible for an infant to be breast-fed (absence of both mother and wet nurse), (s)he should be treated according to the protocol described below. This protocol should not be implemented if the infant can be breast-fed (try to look for a wet nurse when the mother is dead).

Treatment phases including replacement feeding

Phase 1:
- From day 1 to maximum day 7.
- The caloric intake should be 100 – 120 kcal/kg/day = 135 – 160 ml of SDTM /kg/day.
- For the quantity of SDTM to provide in phase 1 and transition phase, and infant formula in phase 2, per day and per meal, according to the child's weight, see Annex 8.3.
- Infants with kwashiorkor should get F75, otherwise SDTM can be replaced by F75.
- Also SDTM can be replaced by infant formula from the start with phase 1.

Transition phase:
- 3 days maximum.
- The caloric intake should be 150 kcal/kg/day = 200 ml of SDTM /kg/day.
- After 1 day the SDTM is replaced by infant formula by the same quantity (200 ml/kg/day). The baby is monitored closely for tolerance of the infant formula. The transition phase is compulsory.
- For the quantity of SDTM to provide in transition phase, per day and per meal, according to the child's weight, see Annex 8.3.

Phase 2:

- 14 days as average.
- The caloric intake of infant formula should be 200 kcal/kg/day = 270 ml /kg/day. The normal needs of infant are 100-120 kcal/kg/day. Therefore don't push the infant to hard to reach the maximum of 200kcal/kg/day; 150 kcal/kg/day is a minimum.
- For the quantity of infant formula to provide in phase 2, per day and per meal, according to the child's weight, see Annex 8.3.
- When discharge criteria are reached the infant should go back to normal quantities of infant formula.
- Infant formula can be replaced by SDTM. SDTM should be used for a maximum of 3-4 weeks and then must be replaced by breast-milk substitute (up to the age of 6 months). A carer must be found and trained in the safe use of breast-milk substitutes. Infant formula and feeding equipment should be guaranteed for up to 6 months.

Summary of nutritional treatment including replacement feeding

Phase	**Quantity**	**Foods**
Phase 1	100 kcal/kg/day = 135 ml/kg/day in 8-12 meals	SDTM
Transition	150 kcal/kg/day = 200 ml/kg/day in 8-12 meals	SDTM and infant formula
Phase 2	200 kcal/kg/day = 300 ml/kg/day in 8-12 meals	Infant formula

For criteria of transfer from one phase to the other, see page XX, Chapter 6.

8.3.3 - Medical treatment

In addition to regular clinical examinations and specific medical treatments when needed, infants and mothers also require routine medical treatment.

Routine medical treatment in infants

Some acute problems (bacterial infections, malaria in endemic areas, vitamin A and folic acid deficiencies) should be *routinely* prevented/treated, even if the infants do not present clinical signs.

Bacterial infections
Assume that *all infants* have a bacterial infection on admission. Systematically administer a broad-spectrum antibiotic, unless indicated differently[36].
Amoxicillin PO: 70 to100 mg/kg/day in 2 divided doses for 5 days.
Use syrup or oral suspension. As a dosing instrument, use the measuring spoon provided with the suspension or a syringe.

Dosage amoxicillin for infants (suspension 125 mg/5 ml)

Weight	Amoxicillin
1.3 – 1.7 kg	2.5 ml x 2
1.8 – 2 kg	3 ml x 2
2.1 – 2.7 kg	4 ml x 2
2.8 – 3.5 kg	5 ml x 2
3.6 – 3.9 kg	6 ml x 2
4 – 5 kg	7 ml x 2

Malaria
Early effective malaria treatment is preferred over regular malaria prophylaxis.
– Check systematically for malaria on admission (thick/thin blood films or rapid test):
- If the initial test is negative, treatment or prophylaxis is not required,
- If the initial test is positive, treat on admission.

– Treatment of uncomplicated malaria[37] see Annex 6.8.
– All severely malnourished infants and their mothers in endemic areas should sleep under impregnated mosquito nets to limit transmission.

Vitamin deficiencies
– To prevent vitamin A deficiency, systematically administer **Retinol** (vitamin A) PO on admission: 50 000 IU as a single dose (one 200 000 IU-capsule of retinol contains about 8 drops; 50 000 IU = 2 drops).
– To prevent folic acid deficiency, systematically administer **Folic acid** PO on admission: 5 mg as a single dose.

Specific treatment for infants

Kangaroo method

[36] If on admission examination shows signs of a specific infection, give the appropriate antibiotic treatment (See the MSF handbook, *Clinical Guidelines*).
[37] If the infant shows signs of severe falciparum malaria, see the MSF handbook *Clinical guidelines.*

– ***Hypothermia*** is one of the main causes of mortality. It is therefore important to keep infants warm by promoting skin-to-skin contact using the kangaroo method. The mother should hold the child vertically against her chest, maintaining skin-to-skin contact. Ensure that the child's head is covered to prevent heat loss and by giving mothers hot beverages, blankets and hats.

– ***Dehydration***: use the Rehydration Solution for Malnourished children (**ReSoMal**), see Chapter 6.

– ***Anaemia***: give **Iron sulphate** PO to children over one month of age, start after 14 days of nutritional treatment. Do not administer iron before the 15^{h} day (increased risk of mortality), even in case of severe anaemia. Dosage is expressed in **elemental iron**: 3 mg elemental iron/kg/day in 2 divided doses from Day 15. Use syrup, drops or dispersible tablet if available. Treatment should be continued after discharge. Total duration of treatment is 2 to 3 months.

– ***Oral candidiasis*** is very common in infants. For diagnosis and treatment, see *Stomatitis* in the MSF handbook, *Clinical Guidelines*.

Routine medical treatment in mothers

– Check systematically for malaria on admission (thick/thin blood films or rapid test) and treat accordingly. For treatment, (See Clinical Guidelines and Annex 6.8).

– Systematic administration of **retinol** (**vitamin A**) PO: 200 000 IU as a single dose unless she is pregnant. Make sure the last dose of vitamin A was more then 4 months ago.

– Treat other diseases of the mothers.

CHAPTER 9

Micronutrient Deficiencies

9.12 Zinc deficiency and supplementation

This chapter outlines diagnostic, preventative and curative measures for the management of nutrient deficiencies in individuals and populations.

9.1 - Definition and classification

Micronutrients include all vitamins and minerals. They are necessary in small quantities to ensure proper metabolic functioning. Lack of vitamins and minerals cause micronutrient deficiency diseases and growth stagnation. Deficiencies are often interrelated.

Almost all vitamin and mineral deficiencies, also in sub-clinical stages, affect metabolic processes resulting amongst others a reduced immunity, growth failure, wasting and general malaise (lack of appetite).
Some vitamin and mineral deficiencies exhibit specific signs and symptoms: Vitamin A, Vitamin B1, Vitamin B2, Vitamin B6, Vitamin B12, Vitamin C, Vitamin D, Vitamin E, iron, folic acid, calcium, copper, manganese, iodine and selenium. Micronutrients with an anti-oxidative effect (e.g. Vitamin C, selenium, Vitamin E) are important in prevention of oedema and recovery from infections. Other deficiencies such as sulphur, potassium, sodium, magnesium, zinc, phosphorus, essential amino acids and nitrogen do not exhibit specific clinical signs (mostly only failure to thrive and malaise) unless the deficiency is very advanced.
In this chapter only micronutrient deficiencies are discussed which can be detected by clinical diagnosis and that can be prevented and treated by field based programs.

9.2 - Measures to prevent micronutrient deficiencies

A monotonous diet combined with diseases is the major cause of the deficiencies, sometimes the micronutrient is deficient in the soil used for agriculture (iodine, selenium). Providing a diversified diet is the best option; however, it is difficult to implement.

Micronutrient deficiency diseases are also common among populations depending on food aid, since rations are rarely diversified (i.e. lack of vitamins A, B1, B3, C and iron and folic acid). Deficiencies in iron, zinc, Vitamin A and iodine are prevalent worldwide. Diseases such as measles, diarrhoea, visceral leishmaniasis, AIDS, etc. are also associated with nutrient deficiencies through increased utilisation, mal-absorption and by lack of appetite.

Food fortification
Adding vitamins or minerals to general food rations (salt fortified with iodine; blended food, maize or wheat flour fortified with several nutrients) can be used as a mid term strategy.

The inclusion of blended food[38] (minimum 60 g/person/day) in a general food ration limits the risk of several micronutrient deficiencies. It is essential to verify that the mineral and vitamin content of the fortified food is adequate since significant variations can occur, due to poor micronutrient formulation, poor mixing, transport and storage techniques. Manufacturers and wholesalers should adhere to international standards.

Food can also be fortified at the household level with the help of fortified condiments (e.g. Qbmix®) or fortified powders (e.g. Topnutri®).
Fortification of bulk food just before the point of food distribution is a useful strategy for micronutrients fortification during the emergency phase to prevent micronutrients deficiencies or outbreaks (in particular Vitamin C, Vitamin B1 and Vitamin B3 deficiencies).

Mass supplementation
Distributing micronutrients to specific vulnerable groups or to a whole population is complicated, and compliance is often poor especially when daily intake is required (e.g. water-soluble Vitamins B and C). However, when necessary (e.g. in the event of an outbreak), a single dose of fat-soluble vitamins can be distributed every 3 months (Vitamin D) or every 6 months (Vitamin A).

9.3 - Outbreak detection and management

Micronutrient deficiencies can occur in the absence of an increased prevalence of malnutrition.
Many deficiencies are predictable. They can be managed with a good surveillance system and adequate response focusing on:
- Assessing specific nutrient deficiencies.
- Investigating outbreaks.
- Managing outbreaks.

General assessment and monitoring
When people are dependent on food aid, monitor the composition, quality and quantity of their general food rations. At page 62 in the Chapter General Food Distribution, risk factors for major nutrient deficiencies are listed and methods to monitor (e.g. Food Basket Monitoring) are discussed.
In addition, clinical reports of individual cases of nutrition deficiencies must be monitored for micronutrient deficiencies. When several patients present with similar complaints that are unknown to the doctors, investigate the possibility of a micronutrient deficiency.

Outbreak investigation
A nutrient deficiency outbreak is defined as an excessive number of cases of a specific nutrient deficiency. Where deficiencies are expected, a surveillance system should ensure early detection (clear case definition) and good routine reporting of the cases should be set-up.

– Define the case definition and confirm cases.

[38] Blended food is a precooked fortified meal suitable for small children (e.g. CSB®, UNIMIX®)

– Assess the number of cases (clinical examination and laboratory test if necessary).
– Estimate the amount of the deficient nutrient in the diet for the last 3 months.
– Introduce a separate weekly reporting form including the number of new cases and number of deaths.
– Set-up a rapid system of information transfer; centralise and report the data collected.
– Data should be analysed by taking into consideration:
  • Time: evolution of the weekly number of cases; follow-up of the epidemiological curve allows to follow the development of the outbreak;
  • Place: to determine the areas the most affected and to follow the spread of the outbreak
  • Persons: weekly number of persons affected by age group and sex etc and weekly number of deaths give valuable information about the extent and severity of an outbreak.

Outbreak management
– In addition to treating specific cases, emergency measures should be taken to prevent more cases (through fortified food distribution and mass micronutrient supplementation as described above).
– Distributing agencies should be lobbied to improve the micronutrient content of the general food ration.

9.4 - Vitamin A deficiency and xerophthalmia

Features of vitamin A
– Vitamin A is a fat-soluble vitamin derived from 2 sources: retinol (from animal products) and carotenes (from many vegetables).
– Vitamin A is required for the functioning of the visual system, growth and development, maintenance of epithelial cellular integrity, immune function, and reproduction.
– Vitamin A deficiency is associated with an increased susceptibility to infections, ocular defects that may progress to blindness and other problems such as retardation of growth and development.
– Vitamin A has chemical several forms: the general unit of vitamin A are International Units (IU). 1 IU vitamin A = 0.3 µg of Vitamin A alcohol (retinol) = 0.55 µg Vitamin A palmitate; = 0.6 µg of beta carotene = 0.344 µg vitamin A acetate.

Populations at risk
– Populations dependent on food aid (unless food rations are fortified).
– Vulnerable groups: children, adolescents and women of childbearing age.
– Children suffering from malnutrition, measles, diarrhoea, respiratory infections and severe infections rapidly deplete their body stores of vitamin A.

Prevention

General preventive measures:

• Promotion of breast-feeding (breast milk is a natural source of vitamin A).
• Inclusion of fortified foods (CSB, WSB, Unimix, etc.) or red palm oil into the general food ration.
• Distribution of vitamin A to children from 6 months to 15 years of age (usually carried out in conjunction with a measles vaccination campaign or a nutritional screening).
• Vaccination against measles.

Supplementation
Vitamin A supplementation should be routinely given to:
• Children during vaccination campaigns (measles, poliomyelitis, etc.)
• Moderately and severely malnourished patients.
• Measles cases.
• Women after delivery (include Vitamin A supplementation in post natal care protocols).

Mass distribution
should be considered every 6 months when:
• Vitamin A deficiency is known in the area.
• Availability and access to food rich in vitamin A are limited.
• Vitamin A content of a general ration is low.
• Cases of xerophthalmia are reported.

Preventative dose of* retinol *, stat dose

Age	**Dosage**
Children less than 6 months	50 000 IU
Children 6 to 12 months	100 000 IU
Children over one year and adults	200 000 IU
Women of reproductive age (risk of unknown pregnancy)	Avoid if pregnancy is suspected
Pregnant women	Do not administer
Women after delivery	200 000 IU

Clinical signs of xerophthalmia (vitamin A deficiency)
– The initial symptom is night blindness (hemeralopia): at night a child exhibits decreased mobility or bumps into household objects. In endemic areas, local terminology may already exist to describe this condition.

– Other signs gradually appear: conjunctival xerosis (conjunctival dryness), Bitot's spot (foamy white exudate on the conjunctiva) and corneal xerosis (corneal dryness).
– The end-stage is keratomalacia: softening of the cornea, followed by perforation of the eyeball and permanent blindness.

Treatment of xerophthalmia

Treatment with* Retinol *in IU, PO

Age group	**Dosage**
Children less than 6 months	50 000 IU once daily on Day 1, 2 and 8
Children 6 to 12 months	100 000 IU once daily on Day 1, 2 and 8
Children over 1 year and adults	200 000 IU once daily on Day 1, 2 and 8
Women of reproductive age (risk of unknown pregnancy)	10 000 IU once daily for 4 weeks or 25 000 IU once weekly for 4 weeks
Pregnant women: - Hemeralopia/Bitot's spot - Corneal lesions/keratomalacia	 10 000 IU maximum once daily for at least 4 weeks 200 000 IU once daily on Day 1, 2 and 8

Note: the third dose can be given on Day 8 or on Day 15.

– Corneal lesions are a medical emergency. In addition to the immediate administration of retinol, apply **1% tetracycline eye ointment** 2 times/day into both eyes for 7 days to treat or prevent a secondary bacterial infection. Protect the eye with an eye shield to prevent trauma.

Toxicity
– Administration of excessive amounts of Vitamin A leads to toxicity. Signs of acute intoxication (vomiting, headaches, intra-cranial hypertension resulting in bulging fontanel in infants) and chronic intoxication are generally reversible.
– To avoid excessive dosages, record all doses administered on the health/immunisation card and never exceed indicated doses. Preventative supplementation should be at least 4 months apart.
– In pregnant women, high doses should be avoided because of potential teratogenic effects, mainly during the first trimester. However, in the event of severe xerophthalmia (corneal lesions/keratomalacia), the risk of blindness takes precedence over teratogenic risk.

9.5 - Iron/folate deficiencies and anaemia

Features of iron
– Iron is a mineral necessary for the synthesis of haemoglobin. It is essential to several metabolic processes.

– Iron absorption is enhanced by Vitamin C, and inhibited by tea, coffee and other substances.
– Iron deficiency results in anaemia.

Features of folate
– Folate (folic acid) is a water-soluble vitamin of the B-complex group. It is necessary for the production of red blood cells, as well as tissue growth and cell function.
– Folate deficiency results in anaemia.

Populations at risk
- Populations dependent on food aid (unless food rations are fortified).
- Populations with limited access to meat.
- Vulnerable groups: infants, children (especially at the time of weaning), women of childbearing age, pregnant and lactating women.
- Malaria and some intestinal parasites aggravate anaemia.

Prevention

General preventive measures:
- Provision of fortified foods.
- Malaria control.
- Intestinal parasite control such as de-worming campaigns.
- Provision of food supplements to vulnerable groups.
- Increase iron rich food intake.

Supplementation
Once daily or once week **Iron** (1 to 2 mg of elemental iron/kg) **+ Folic acid** PO should be given to:
- Pregnant women during pregnancy and for 3 months after delivery.
- Moderately malnourished individuals.

Iron and folic acid preventative supplementation daily or weekly

Age groups	**Daily or weekly dosage expressed in elemental iron**	**200 mg ferrous sulphate + 0.25 folic acid tablets containing ferrous sulphate (= 65 mg elemental iron + 0.25 mg folic acid)**
Children over 2 months *if low weight at birth*	5-10 mg	Use oral drops

Children 6-24 months	12.5 mg	Use oral drops
Children 2-5 years	20-30 mg	½ tablet once daily or weekly
Children 6-11 years	30-60 mg	½ to 1 tablet once daily or weekly
Adolescents and adults	60 mg	1 tablet once daily or weekly
Pregnant women	60-120 mg	1 to 2 tablets once daily or weekly

Routine treatment can be given either daily or weekly (same doses). Weekly supplementation is likely to be less effective than daily administration but compliance may be better with fewer adverse-effects.

Clinical signs of iron-deficiency anaemia

Clinical onset of nutritional anaemia is insidious, often occurring over weeks or months.

– Signs of anaemia:

- Paleness in skin, palms, conjunctivae, gums and lips.
- Tiredness, breathlessness, dizziness (especially when standing), headaches.

– Others signs of iron deficiency: inflammation of the tongue, cracks at the sides of the mouth, deformity of fingernails, and pica (a craving for earth, ice or other non-foods).

Treatment of iron-deficiency anaemia

elemental iron PO

Children and adults: 3 to 6 mg/kg/day in 2 divided doses for at least 2 to 3 months

+

folic acid PO

Children: 5 to 15 mg once daily for at least 15 to 30 days

Adults: 15 to 20 mg once daily for at least 15 to 30 days

– Don’t give during the initial phase of treatment for severe malnutrition (see Chapter 6).

– Underlying causes of anaemia must be treated (malaria, hookworm, etc.) before iron and folate deficiencies can be corrected efficiently.

– Don’t give iron when malaria cann’t be adequately treated

Toxicity

Doses of 30 mg/kg of elemental iron (100 mg/kg ferrous sulphate) are toxic. Excess iron causes vomiting, diarrhoea and damage to the intestine. Severe poisoning may lead to hepatic necrosis, coagulation disorders and coma.

9.6 - Iodine deficiency

Features of iodine

– Iodine is a mineral necessary for the production of thyroid hormones and for normal thyroid function. In the foetus, iodine is necessary for the development of the nervous system during the first trimester of pregnancy.
– Iodine is stored in the thyroid gland; excess is released in the urine.
– Cassava and cabbage inhibit iodine absorption (goitrogens).
– Iodine deficiency results in goitre and cretinism.

Populations at risk

- Populations dependent on food aid (unless food rations are fortified).
- Populations living in areas where the soil is poor in iodine and seafood is not accessible.
- Vulnerable groups: women of childbearing age, pregnant women and children aged 5 to 12 years.

Prevention

General preventative measures: salt fortification

Iodised salt should be included in a general food distribution. The iodine concentration of the salt should be 20-40 mg iodine (or 34-66 mg of potassium iodate) per kg. This method is the most efficient, the least expensive and the safest method for the prevention and control of iodine deficiency.

Supplementation

A preventative dose of iodine should be provided when:

- Prevalence of goitre is > 5% among schoolchildren.
- Cases of cretinism are reported.
- Area is known for iodine deficiency.
- Diet is composed primarily of food containing goitrogens (cassava, cabbage, etc.)

The preventive dose of oral iodine or injectable iodised oil is similar to the dosage of the curative treatment (see below).

Clinical signs of iodine deficiency

– Goitre (enlargement of the thyroid gland) is classified by 3 grades of thyroid size:
    - Grade 0: thyroid not palpable or visible
    - Grade 1: thyroid palpable but not visible when the neck is in normal position

- Grade 2: thyroid palpable and visible when the neck is in normal position

– Hypothyroidism, loss of energy
– In pregnant women: miscarriages, stillbirths
– In children: neurological cretinism (mental deficiency, deaf mutism, spasticity, ataxia) or myxoedematous cretinism (dwarfism, hypothyroidism)

Treatment of iodine deficiency

Goitre is treated with oral or intra-muscular iodised oil. Oral treatment is recommended even for pregnant women.
Oral doses are given once a year (effect lasts 12 months). IM treatment is indicated when it is difficult to reach a target group, since injections are only required every 2 years (effect lasts > 1 year to 3 years).

Therapeutic and preventative dosage of iodised oil

Age groups	**Oral capsule containing 200 mg of iodine**	**IM 1 ml ampoule containing 480 mg of iodine**
Infants from birth to 1 year	1 capsule	½ ampoule
Children 1 to 5 years	2 capsules	1 ampoule
Children 6 to 15 years	3 to 4 capsules	1 ampoule
Pregnant women	2 capsules	1 ampoule
Women of child bearing age	3 to 4 capsules	1 ampoule
Males 16 to 45 years	3 to 4 capsules	1 ampoule

Thyroid function usually normalises after 2 weeks. In children, goitre can take a few months to disappear. In adults, goitre can take several months to disappear or might always remain. Individuals who have lived with goitre for many years may not be able to properly synthesise iodine. Therefore, treatment can induce hyperthyroidism. Caution should be exercised when considering treatment for patients of over 40 years old.

Iodine supplementation given after the third month of pregnancy has little effect on reversing neurological defects (Cretinism).

Toxicity

Iodine excess (5 mg daily on a regular basis) can cause goitre and hyperthyroidism. This occurs most typically in adults with thyroid nodules.

9.7 - Vitamin B_1 deficiency and beriberi

Features of vitamin B1

– Vitamin B1 (thiamine) is a water-soluble vitamin necessary for the metabolism of carbohydrates, fat and alcohol. It is also necessary for the proper function of the central and peripheral nervous system and the cardiac muscles.
– There is no body stock of Vitamin B1. All excess is lost in urine.
– Thiamine deficiency results in beriberi and usually occurs simultaneously with other Vitamins B deficiencies.

Populations at risk

- Any population that has a diet based solely on polished refined rice or cassava is at risk.
- Deficiencies develop particularly rapidly among individuals with high energy requirements (pregnant and lactating women, active young men), infants breast-fed by mothers who are deficient in vitamin B_1 (infantile beriberi) and alcoholics.

Prevention

General preventative measures

- Include fortified food in the ration (minimum 60 g/person/day fortified blended foods).
- Use parboiled rice or unpolished rice.

Supplementation

A preventative dose of vitamin B1 should be given when:

- Thiamine content of a general ration is low.
- Cases of beriberi are reported.

Mass weekly supplementation with **Vitamin B complex** containing at least 1 to 2 mg of thiamine/tablet should target pregnant and lactating women and adults doing physical work (7 tablets/person are given once a week and tablets should be taken once a day).

Clinical signs of beriberi

There are 3 forms of beriberi: wet, dry and infantile beriberi. Differential diagnosis includes malaria, pneumonia, typhoid, septicaemia or malnutrition (wasting).

	Early signs	**Late signs**
Wet beriberi		- Oedema in legs, face, trunk - Restlessness and breathlessness- Rapid pulse rate, palpitations - Heart enlargement - Jugular venous pressure increased - Heart failure leading to death

Dry beriberi		- Polyneuropathy: diminished touch sensation, loss of feeling in the feet, reduced reflexes of the limbs, ankles and knees, burning sensation in feet - Progressive ascending paralysis of the toes, fingers, limbs (wasted muscles, difficulty walking) - Diaphragmatic paralysis leading to death
Infantile beriberi (often between 1 to 6 months)	- Colic like symptoms with screaming, loss of appetite, anorexia, vomiting - Oedema - Restlessness - Pallor	- Sudden breathlessness and cyanosis - Weak rapid pulse - Abdominal pain, convulsions, coma - Hepatomegaly - Heart failure leading to death

Treatment of beriberi

Thiamine PO or slow IV/IM according to severity:

- Moderate cases Children and adults
  10 mg thiamine **PO** once daily for one week, followed by 3 - 5 mg once daily for 4 - 6 weeks
- Severe cases Children and adults
  50 to100 mg thiamine by slow **IV** injection, followed by 3 - 5 mg once daily for 4 - 6 weeks
- Severe heart failure, convulsions or coma in infantile beriberi
  25 to 50 mg thiamine by slow **IV** injection, followed by 10 mg by **IM** injection once daily for one week, then 3 - 5 mg PO once daily for 4 - 6 weeks

– Treatment of lactating women is essential to prevent the development of infantile beriberi in their breast-fed children.

Toxicity

– Chronic intakes of 50 mg/kg thiamine or short term intake over 3 g per day are toxic to adults.
– Risk of hypersensitivity reactions after parenteral administration.

9.8 - Vitamin B_3 (or PP) deficiency and pellagra

Features of B_3

– Vitamin B_3 (Vitamin PP, niacin, nicotinamide) is a water-soluble vitamin necessary for the formation of coenzymes.

– Niacin can be obtained from the conversion of the amino acid tryptophan in the body. 60 mg of dietary tryptophan is equivalent to 1 mg of niacin.
– Severe niacin deficiency results in pellagra.

Populations at risk
• Populations dependent on food aid (unless food rations are fortified)
• Populations that subsist on maize and sorghum and with little other food (niacin rich foods or protein rich foods such as groundnuts, meat or fish).

Prevention

General preventative measures:
• Include niacin fortified foods in the ration (fortified maize flour, fortified blended food[39]), or foods rich in niacin (groundnuts, dried fish or meat).

Supplementation
A preventative dose of niacin should be given when:
• Niacin content of the diet is < 15 mg/person/day.
• Cases of pellagra are reported.
• Previous outbreak of pellagra have occurred.
In the event of confirmed outbreaks, conduct weekly mass supplementation with **vitamin B complex** (containing at least 15 mg of niacin/tablet) for the entire population as a short term measure (7 tablets/person are distributed once a week, and tablets should be taken once a day).

Clinical signs of pellagra
Pellagra outbreaks generally affect an entire population, but signs typically appear first in adults, particularly women.
– Dry dermatitis: erythematous symmetrical skin lesions (resembling sunburn), affecting the skin exposed to sunlight, accompanied by burning and itching. Skin lesions may become brown and scaly.
– Gastrointestinal disturbances:
    • Diarrhoea, abdominal pain, nausea, loss of appetite.
    • Glossitis, stomatitis (tongue having a beefy red color, swollen and painful), excessive salivation.
– Progressive dementia: anxiety, depression, and weakness. In a later stage, irritability, headache, mental disturbances (confusion, disorientation, hallucinations, amnesia).

Treatment of pellagra
Nicotinamide (vitamin PP) PO

[39] Caution, the inclusion of 60 g/person/day of standard CSB in a general food ration provides only 30% to 40% of the recommended dietary allowance of niacin.

Children and adults: 300 to 500 mg/day in 2 divided doses for 3 to 4 weeks.
It is recommended to provide a diet rich in protein to increase tryptophan intake.

Toxicity
Low toxicity. Adverse effects (gastrointestinal disturbances, impairment of liver function) may occur in case of intake of more than 1000 mg/day.

9.9 - B2, B5 and B6 deficiencies

B-complex deficiencies incidence is under-estimated, since symptoms are non-specific and may be masked by other deficiencies. These deficiencies are often found in association with other B deficiencies. A population may develop signs when the diet is composed of refined food (white bread, polished rice).

Populations at risk
- Populations dependent on food aid (unless food rations are fortified).
- Populations with low intake of dairy products and animal proteins.
- Vulnerable groups: children aged 5 and 12 years, and pregnant and lactating women.

Prevention
Preventive measures include distribution of cereal as whole grain products (wholemeal bread, parboiled rice, etc.), or fortified flour or blended food, or micronutrient fortified condiment or powder.

Clinical signs
Clinical signs are not specific: angular stomatitis, cheilosis, glossitis, seborrheic dermatitis, peripheral neuropathies, burning feet syndrome, etc.

Treatment
If one type vitamin B deficiency is identified in a population, it can be assumed that it is often associated with other vitamin B deficiencies. Therefore, treatment and prevention always include Vitamin B complex rather than a specific Vitamin B alone. Patients usually respond well to an oral administration of Vitamin B complex, but the content of the B complex varies and should be verified.

9.10 - Vitamin C deficiency and scurvy

Features of vitamin C
– Vitamin C (ascorbic acid) is a water-soluble vitamin with minimal body tissue reserve (excess amounts are excreted in the urine).
– Vitamin C is essential for collagen formation (to maintain the integrity of cells), wound healing and growth. It is an important anti-oxidant and helps the absorption of iron.

– Vitamin C deficiency results in scurvy. Clinical cases are usually observed when the daily intake of vitamin C is below 10 mg/day. Scurvy can be fatal if untreated.
– Vitamin C is destroyed during cooking.

Populations at risk

• Populations with limited access to fresh fruit, vegetables or fresh milk for a prolonged period (3 to 4 months); population living in arid areas that experience major droughts.
• Populations dependent on food aid unless fortified foods or fresh foods are included.
• Vulnerable groups are the elderly, pregnant women and women of reproductive age.

Prevention

General preventive measures:

• Fresh dietary sources of vitamin C are best. Where possible, populations should receive fresh fruit, vegetables or milk, and be encouraged to cultivate home gardens.
• Fortified foods should be included in a general food ration, especially for populations dependent on food aid.

Supplementation

A preventative dose of vitamin C should be provided when:
• Vitamin C content of a general ration is low
• Cases of scurvy are reported
• Previous scurvy outbreaks have occurred

In the event of confirmed outbreaks, weekly mass Vitamin C supplementation for the entire population should be undertaken as a short-term measure:

ascorbic acid PO
Children and adults: 50 to 100 mg once daily.

Clinical signs of scurvy

Adults:

– Pain in the muscles or joints, oedema of the lower limbs and of the knees (leading to inability to walk).
– Gum swelling and bleeding, bleeding under the fingernails, perifollicular petechiae and ecchymoses in the skin of the lower limbs (black spots).

Infants and children:

– Tenderness of the legs, excruciating pain resulting in pseudoparalysis. Infants assume the frog leg posture (keeping hips and knees slightly flexed and externally rotated) for comfort.
– In older children, bleeding under the skin, around teeth.

Treatment of scurvy
ascorbic acid PO
Children: 100 to 200 mg/day in 2 divided doses for 1 to 2 weeks.
Adults: 500 to 1000 mg/day in 2 divided doses for 1 to 2 weeks.
Followed by preventive treatment:
Children and adults: 50 to 100 mg once daily.

Toxicity
Very low as excess amounts are excreted in the urine.

9.11 - Vitamin D deficiency and rickets/osteomalacia

Features of vitamin D
– Vitamin D_3 (cholecalciferol) is a fat soluble vitamin formed in the skin by exposure to sunlight and found in fish liver oils and egg yolks. Synthesis in the skin is normally the main source of Vitamin D (after sunlight exposure, even of short periods: 10 to 15 min/day). Only 10 % are obtained from the dietary sources.
– Vitamin D is essential for the absorption of calcium and bone mineralisation. It can be stored in the body. Inadequate exposure to sunlight and low dietary intake lead to Vitamin D deficiency.
– Vitamin D deficiency results in diseases of abnormal bone calcification: rickets in children and osteomalacia in adults.
– Vitamin D in International Units (IU) : 1 I.U. = 0.025 ug of vitamin D3 (cholecalciferol).

Populations at risk
- Persons deprived of sunlight due to climatic conditions, and/or low exposure to sunlight (cultural habits, populations forced to remain inside due to fighting, etc.)
- Populations deprived of sunlight and eating a diet low in Vitamin D.
- Children during the first 2 years of life and women of childbearing age, particularly during their first pregnancy.

Prevention

General preventative measures:

• Education regarding the importance of minimum sunlight exposure.

Supplementation:
Mass supplementation should be considered when:
• A population is deprived of sunlight (veiled women, children kept indoors, etc.)
• Cases of rickets/osteomalacia are reported.

Target groups:
• All pregnant women:
ergocalciferol PO 100 000 IU[40] as a singe dose around the sixth month of pregnancy.
• Children aged 1 week to 24 or 59 months:
ergocalciferol PO 100 000 IU[36] as a singe dose every 3 months. For dark-skinned children, the dose may be doubled.

Clinical signs of vitamin D deficiency (rickets/osteomalacia)

Rickets
–Skeletal deformities:
- Infants from 0 to 6 months: softening of cranial bones (craniotabes), prominence of the suture lines, parietal flattening, frontal bossing; delayed closure of fontanelle
- Infants from 6 to 12 months: enlargement of the costal cartilages (rachitic rosary), thoracic deformities (pigeon chest), abnormal curve in the spine
- Children over 12 months: enlargement of the wrists, ankles, knees. Deformities of long bones, especially of the lower limbs (bowed legs, knock-knees).

– Delayed dental eruption, enamel defects.
– Stunting of growth, height below the normal range, decreased muscle tone.
– Muscle spasms (tetany) caused by a low calcium level may be the first sign of rickets in infants.

Osteomalacia
– The usual symptoms are bone tenderness, skeletal deformities (bowing of the long bones, vertical shortening of the vertebrae, and flattening of the pelvic bones), and muscular weakness.
– In severe cases, spontaneous fractures (especially in pregnant women), tetany.

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[40] Ergocalciferol (vitamin D_2) and cholecalciferol (vitamin D_3) are analogs, used for the same indications at the same doses.
Equivalence between mg and IU: 1.25 mg tablet = 50 000IU; 0.25 mg/ml oral suspension = 10 000 IU/ml. Use oral suspension for daily administration.

Treatment of rickets/osteomalacia
Ergocalciferol PO[3]
Children: 100 000 IU repeated after 1 week (or 4000 to 8000 IU/day for 3 weeks).
Then continue with 100 000 IU every 3 months, during periods of limited sunlight (for dark-skinned children, dose may be doubled).
Adults: 300 000 IU every 3 weeks. Then continue with 300 000 IU every 6 months.
+
Calcium PO
Children and adults: 500 mg once daily during the first 15 days of treatment.

Toxicity
– Excess Vitamin D taken a over prolonged period is toxic and can result in potentially fatal hypercalcaemia. Children are more at risk of developing hypervitaminosis D.
– Signs of toxicity include anorexia, fatigue, nausea, vomiting, diarrhoea, polyuria, sweating, headache, thirst, vertigo. Vitamin D should be withdrawn if toxicity occurs.
– Toxic doses: > 50 micrograms or > 2 000 IU/day (1 microgram = 40 UI) or 15 mg taken every 3 months.
–Vitamin D and fish liver oil should be avoided for one month after treatment.

9.12 Zinc deficiency and supplementation

Features
– Zinc status affect multiple physiological and metabolic functions such as physical growth, immuno-competence, reproductive function, and neurobehavioral development.
– Zinc plays a central role in the immune system (cellular and humoral immunity).
– Zinc is important cell replication and for wound healing.
– Clinical features of severe zinc deficiency include: growth retardation, hair loss, diarrhoea, delayed, eye and skin lesion, loss of appetite, impaired taste sensation, increased susceptibility to infections mediated, and behaviour changes.

Population at risk
- Population dependent on food aid (unless food rations are fortified).
- Population with a diet high in phytates and poor in animal proteins (decreased absorption, e.g. a vegetarian diet).
- People affected by chronic diarrhoea.
- Population with high amounts of iron supplements (>25mg/day) (decreased absorption).

Prevention

General preventative measures

– Micronutrient supplementations.
– Introduction of fortified food (CSB, Unimix) or fortification of the family food (Topnutri, QB-mix).
– Prevention of diarrhoea.
– All patients with diarrhoea should receive a zinc supplement.

Supplementation

Zinc supplementation supports the treatment of diarrhoea. Zinc supplementation reduces the incidence, severity and duration of diarrhoea in children below 5 years old.

For children under five years give after each episode of diarrhoea in give **Zinc** PO for 10-14 days (e.g. OPD's). Zinc supplementation is recommended even if the child is consuming zinc-fortified foods. Zinc tablets can be given and diluted with ORS/ReSoMal.

Dosage zinc supplementation during diarrhoea; PO Zinc dispersible tablets 20 mg

Target group:	***Dosage***	***Number of tablets(20 mg)***
Children < 6 months	10 mg /day	½ tablet daily 10 days
> 6 months	20 mg / day	1 tablet daily 10 days
> 15 years: Caution with HIV positive patients	20 mg / day	1 tablet daily 10 days

– Children in TFP are not eligible for supplementation because the food contains enough zinc.
– Zinc supplementation should be given in between meals to avoid the possible interaction with other micronutrients (phytates) present in the foods. When the child is having a treatment with iron, zinc supplements should be given separately.

Toxicity

– Excessive intake of zinc (150-450mg per day) have been associated with low copper status, altered ion function, reduced immune function and reduced level of high-density lipoproteins.
– Toxic signs have been observed after ingestion of 4-8 g of zinc.
– Signs of excess intake include: anaemia, muscle pain, abdominal pain, nausea and vomiting.
– High daily intake by HIV positive patients can influence the progression of HIV.

CHAPTER 10

Supportive Feeding Programmes

Pregnant women, lactating women, and the sick (especially those suffering from specific chronic or acute diseases) are particularly vulnerable to malnutrition. During food insecurity or crises, these people are often unable to meet their increased nutritional requirements.

10.1 - Objectives

Objectives:
- Meet specific physiological needs and prevent deterioration of nutritional status of vulnerable persons.
- Promote recovery of patients.
- Support patient's families in their food requirements.
- Provide nutritional education to patients and their families.

Key considerations:
- Supportive feeding programs (e.g. food distribution) are part of a prevention or treatment programme (hospital, tuberculosis, AIDS, etc.)
- Food supplements must be adapted to meet the specific needs of individuals.
- Admission or discharge criteria are not necessarily based on anthropometry.

10.2 - Pregnant and lactating women

Due to their increased food requirements (both in quantity and quality), pregnant and lactating women are particularly vulnerable to malnutrition. Malnutrition increases the risk of maternal complications during pregnancy and delivery and poor foetal outcomes (small-for-dates, low birth weight, neonatal deaths) . Maternal supplementation during pregnancy prevents both maternal malnutrition and neonatal deaths. A lack of micronutrients in a woman's diet is reflected in poor quality breast-milk (see Chapter 8 for infant feeding.)

Principles
– During serious food crises or famines (when food availability is below 1600 kcal/day) all pregnant and lactating women are eligible for nutritional support.
– Nutritional support is given as soon as women are known to be pregnant, and stops at six months after delivery. Often referral is organised through an antenatal care system.
– Women should receive antenatal care in conjunction with nutritional support.
– Feeding programs for children have priority over feeding programs for pregnant and lactating women.
– Malnourished pregnant and lactating women should be referred to appropriate programmes (TFP or SFP).
– Distribution is often organized in the same infrastructure as SFP or BFP settings for practical reasons.

Ration contents
- Dry rations should provide a minimum of 1200 kcal/day (see SFP, Chapter 7 and Annex 7.2).
- 10-15% kcal intake should be provided by proteins.
- 10-20% kcal intake should be provided by fat.
- Rations should be fortified in minerals and vitamins (e.g. biscuits, CSB).

Medical screening
Even though women are not individually followed, food distribution is a good opportunity to:
- Detect and refer sick or malnourished women (MUAC, bilateral oedema[41], see Chapter 2).
- Check immunization cards for tetanus immunization.
- Referral to antenatal clinics.

10.3 - Inpatients

Generally inpatient facilities rarely have sufficient resources to adequately feed inpatients and caregivers. Therefore make sure that:
- All inpatients are receiving a complete food ration or a food supplement in addition to the food ration provided by the family or institute.
- Rations are given to caregivers when necessary.

Complete ration
The complete food ration should:
- Provide a minimum of 2100 kcal/day (see Annex 12.14).
- Contain at least the Recommended Daily Intake of key nutrients (see Chapter 9).
- Be diversified, acceptable (including cereals, legumes, oil, etc.) and easily digestible for patients.

Food supplement
- In addition to the hospital meals or meals provided by the caretakers.
- It should be a minimum of 1200kcal/day.
- It should be fortified by minerals and vitamins.

10.4 – Specific diseases

[41] Oedema in pregnant women may be a symptom of pre-eclampsia (see the MSF handbook *Clinical Guidelines*).

Many infections, particularly measles, shigellosis, tuberculosis, trypanosomiasis, visceral leishmaniasis and AIDS have serious adverse nutritional consequences as they increase metabolic processes, reduce appetite and sometimes reduce nutrient absorption. Those patients require a micronutrient rich supplement. The combination of malnutrition and disease increases the risk of mortality. For these diseases food supplementation is necessary.

Other diseases such as malaria and diarrhoea increase the risk on malnutrition as especially children with a marginal diet and low body reserves cannot completely recover nutritionally from the disease (episode of reduced intake and mal-absorption). The child enters a vicious circle as his/her immunity becomes reduced and a following episode of sickness will increase the malnutrition. The resulting malnutrition should be treated in SFP's and TFP's. As preventative measure is food supplements for specific disease and nutritional state can be given in the clinic (e.g. children with malaria and MUAC < 125 mm receive RUTF for 2 weeks).

10.4.1- Measles

The measles virus causes inflammatory change to the mucous membranes of the digestive tract. This results in impaired absorption of nutrients, diarrhoea and, as a consequence, dehydration and malnutrition. Other complications include Vitamin A deficiency (leading to corneal ulceration and blindness) and immune suppression (which persists for several months after measles infection and increases children's susceptibility to other diseases such as respiratory tract infection, diarrhoea, etc.). Complications of measles are more common and more severe in poorly nourished individuals.

Implementation
– Patients suffering from measles should receive food supplements for at least 3 months.
– If there is an existing SFP, all patients could be referred.
– In the event of a measles epidemic, it may be necessary to organise a SFP to follow affected children.
– For individual cases, when there is no existing programme, food supplements should be given at the health centre.
– Give systematically oral Vitamin A at curative doses (see Chapter 9 for dosage and the MSF handbook *Clinical Guidelines* for the medical treatment of measles).

Ration contents
• A dry ration (should provide a minimum of 1200 kcal/day (e.g. similar to the ration in the SFP see SFP, Chapter 7 and Annex 7.2)
• or RTUF (2 /day for 2 weeks).

10.4.2 - Shigellosis

Patients suffering from shigellosis due to *Shigella dysenteriae* (Sd1) are particularly at risk of weight loss and malnutrition. Weight loss often occurs one or two weeks after the onset of the disease.

Implementation
– Patients should receive food supplements for at least one month after the onset of disease.
– Supplementation may be necessary for a second month if patients remain weak at the end of the first month.

Ration contents
• Inpatients: a well balance diet of at least 2500 kcal/day during hospitalisation or a food supplement to the food ration provided by the family (in order to reach 2500kcal). This will then be followed by a food supplement in a SFP.
• Outpatients: a dry ration should provide a minimum of 1200 kcal/day (e.g. similar to the ration in the SFP see SFP, Chapter 7 and Annex 7.2) or 2 RUTF / day for 2-4 weeks.

10.4.3 - Tuberculosis

Tuberculosis causes weight loss and deterioration of nutritional status.

Implementation
Food is given daily during the intensive phase (first 2 months) of the TB treatment. Supplementation is not a priority for patients in the continuation phase, but can be considered when:
• The patient's nutritional status is poor.
• The patient is socially isolated and has few economic possibilities,
• An incentive is needed to encourage regular attendance for treatment adherence.
Food is often given directly after supervised drug intake.

Ration contents
• Inpatients: a well balanced diet of at least 2100 kcal/day should be provided (see Annex 12.14,) or a supplement to the ration provided by the family.
• Outpatients: a dry ration should provide a minimum of 1200 kcal/day (see SFP, Chapter 7 and Annex 7.2) or 2 RUTF/day.
• The micronutrients should meet the recommended daily allowances (RDA) either by the food given or multi-micronutrient supplements.

10.4.4 - Visceral leishmaniasis and advanced African trypanosomiasis

Patients affected by Kala-azar and trypanosomiasis may become anorexic and/or anaemic.

Implementation
– Inpatients: patients should receive a complete food rations or supplement to the ration that is provided by the family.
– Outpatients: patient should receive food supplements to the family diet.

Ration contents:

- Inpatients: balanced diet of at least 2100 kcal/day should be provided (see Annex 12.14).
- Outpatients: dry ration should provide a minimum of 1200 kcal/day (see SFP, Chapter 7 and Annex 7.2)
- Food rations should be fortified in micronutrients.

10.4.5 - HIV infection and AIDS

Nutritional consequences of symptomatic HIV infection include low food intake (due to anorexia, nausea, dysphagia), poor nutrient absorption (due to enteric pathogens) and altered metabolism (abnormal lipid/protein metabolism, etc.). Weight loss is usual in HIV infection and may become severe in advanced disease (AIDS-related wasting syndrome). Food intake should therefore be increased to prevent or alleviate this problem. The nutritional treatment of PLWHA entails several activities: treatment of malnutrition, individual food supplementation, family ration, micronutrient supplementation and nutritional education. Only an overview is given here, for details, the latest guidelines (from various organisations e.g. FANTA) can be consulted. In addition, social, economic and food security programs for PLWHA (income generating, social or food for work program) enables the patients to take up a normal economic life, to receive mutual support and possibly to reduce stigma.

Principles:

– PLWHA and their communities should be self-supporting as much has possible.
– The aim of supplementation is to prevent and treat weight loss.
– Severely malnourished patients (BMI<16) need therapeutic feeding regardless of the stage of the HIV disease.
– Moderately malnourished patients (BMI<18.5[42]) are illegible for a food supplement. This coincides often with an advanced stage (stage 3 or 4)of HIV infection.
– Families of a sick HIV positive patient may need economic support or food aid as this family faces serious economic, nutritional and social consequences. As the patient's ability to work declines and the cost of treatment increases, other family members become burdened with the care for the patient and the family's food security is jeopardised.
– PLWHA should eat at least the recommended daily intakes for micronutrients that is valid for all people (see Annex 9.2)

Supplementation and education

The food and nutritional support should be adapted to the stages of the HIV infection and the physiological state of the patients.

- BMI > 18.5 (often stage 1&2) don't require a food supplementation. Nutrition counselling and education should focus on staying healthy and maintaining

[42] Ethiopia; Admission BMI< 17 discharge BMI>17.5 for 1 month

weight: how to avoid food-borne infections (see Annex 10.1), the importance of vitamins and minerals, and frequent consumption of foods rich in proteins and vitamins. Supplementation with micronutrients is often necessary when the usual diet is poor.

- BMI < 18.5 (often stage 3&4) (children W/H < 80%) should receive a nutritional supplement and micronutrients. Discharge BMI>18.5 for 1 month, or BMI>18 and stable weight for 3 months. When the food security of the family is affected a family ration is needed. The nutrition education focus should be on food and diets that alleviate the effects of opportunistic infections (see Annex 10.2).
- Patients starting on ARV should receive a food supplement for 3 months to increase the effectivity of the drugs, give support during adverse affects associated with the initial phase of he treatment, promote adherence and to increase their body weight.
- Patients needing palliative care need a family ration. In addition individual nutritional support helps the patient in food intake, taking into account their preferences and illnesses. See annex 10.2.
- HIV positive pregnant women and lactating mothers (up to 6 months after delivery), and non-lactating new mothers (3 months after delivery) need a food supplement and micronutrient support in addition to counselling on infant feeding options (see Chapter 8).

Ration contents

A minimum supplementary ration for the patient is:

- Addition of 400 kcal/day to reach a minimum of 2 500 kcal/day.
- Addition of 25 to 30 g of proteins/day, to reach a minimum of 75 to 85 g/day.
- Multi micronutrient supplements in the form of pills, powders, condiments or fortified foods ensuring the consumption of at least 1 Recommended Daily Allowance (RDA). See annex 9.2.

Consumption of amounts larger then the RDA of vitamin A, zinc and iron can have a detrimental effect on the progression of the disease. Therefore an iron supplement should only be given when the patient is anaemic, zinc deficient or Vitamin A deficient.

Therapeutic feeding

PLWHA who are severely wasted (BMI<16) should receive therapeutic nutritional care. As the weight of PLWHA often stagnates 5-10% below the usual weight, the discharge criteria is also 5-10% lower then usual: e.g. BMI 17.5. The usual therapeutic feeding protocols apply also to HIV patients (see Chapter 6), although the acceptability and tolerability (diarrhoea and abdominal discomfort) of milk is usually low. This is due to a combination of factors: sensitivity to the osmolarity of F100, not being able to digest the fat content, lactose intolerance (permanent or temporary), and a general dislike for milk (increased or induced by the physical reaction to milk).

Therefore the therapeutic protocols should be adapted and tried out locally; possibilities are a diet based on F75 (low in fat and low in lactose) to dilute the milk, to replace milk feeds with plumpynut and BP 100, to add a favourite foods like sesame seed paste or to use local plates fortified that are fortified (TOPNUTRI, QB-Mix).

CHAPTER 11

Monitoring Feeding Programs

11.4.3 - Daily reporting sheets for Blanket Feeding Centres

11.4.4 - Individual patient cards

11.4.5 - Morbidity tally sheet and mortality registration book

11.4.6- Tracing booklet

11.5 - Monitoring impact

A monitoring system of selective feeding programmes aims to assess the internal functioning of the programs (quality, efficacy, accessibility, coverage and acceptability) and to follow trends in the nutritional situation. A monitoring system is part of the project cycle (assessment, analysis, action) that should be conducted continuously throughout the existence of any (feeding) programme. It is an essential tool to trigger improvement of nutritional programmes and adaptation to changing situations.

11.1 - Monitoring feeding programs

11.1.1 - Objectives

Objectives

- To follow trends in the nutritional situation.
- To evaluate the functioning, the coverage (acceptability) and efficacy of the programme and allow prompt adaptation.
- To provide data for advocacy, lobbying, stakeholder information (local government, WFP, UNICEF, and others).

A good monitoring system should be simple, flexible, pertinent, using a limited number of indicators, easy to analyse and action oriented. Feed back to the feeding programme staff is essential.

Two approaches are used:

1. Systematic data collection through the feeding centre.
2. Observation and supervision of the functioning of the feeding centre.

The data collated from all feeding centres allows a comprehensive analysis and conclusions on the functioning of the program and the changing nutritional situation.

11.1.2 - Reporting

Routinely collected data allows the calculation of different indicators for analysis of the performance of the programme. These indicators should be compared to reference values that have been developed for children under five years. Therefore, for correct interpretation, indicators should be calculated for each age group separately. When there are high numbers of adolescents and adults in the program, separate reporting forms can be used.
Reference values for under five's are summarized at the end of this section. There are no agreed upon reference values concerning the other age groups.
The frequency of the calculation of the indicators varies according to the type of indicator, the stage of the development of the programme (start, established) and the context (e.g. emergency).

– Each centre in a feeding program has a reporting form. Different reporting forms are used for SFP, TFC/ITFC and ATFC's (see Annex 11.1 for examples

of SFC and TFC/ ITFC and ATFC data collection sheets).
– The reports are collated per feeding program (e.g. all reports of the several SFC sites are summarised in a SFP report).
– TFP's with ambulatory components are normally composed of one inpatient TFC (ITFC) and several ambulatory TFC's (ATFC). Each of the centres report its activities in a separate monitoring form, and all forms are then summarized in one, reflecting the activity for the whole program. (see annex 11.2)
– Statistics in the centres (i.e. admissions and exits) may be collected daily in order to ease the compilation at the end of the week.
– Data should be compiled in the field on a weekly basis, and compiled and reported to the capital office (and headquarters) on a weekly/monthly basis (see annex 11.1 for reporting forms for SFP/TFP).
– Standard indicators as indicated in the table below are reported monthly on the entire program (weekly in an emergency). Exit indicators are also calculated for the individual centres; for TFP's with ambulatory components internal movements should be taken into account. (see paragraph 11.2.3 *Internal movements*)

1.1.3 - Indicators

Reference values of main indicators and interpretation *(Children aged 6 to 59 months)*

Main indicators	**Main interpretations**	**TFP**	**SFP**
<u>Admission and exits</u> • Total number of patients registered • Admissions and exits • Re-admissions	• Nutritional situation evolution • Trend in food security • Workload and size of programme,	< 5%	< 5%
<u>Outcome indicators</u> = % of the total number of exits • Recovered % • Defaulter % • Death % • Transfer %	• Quality • Accessibility, acceptability • Quality of care • Quality of care	> 80% <10% <5% …	>75% <15% < 2% ….
<u>Mean length of stay</u> • ITFC • ATFC (and ITFC+ATFC)	• Quality of care (medical and diet)	< 30 days < 45 days	< 60 days
<u>Average weight gain</u> • In-patient (24h, day-care) • Outpatient (ITFC +ATFC)	• Quality of care (medical and diet)	≥10 g/kg/d ≥ 5 g/kg/d	≥ 3 g/kg/d
<u>Attendance rate</u>	• Accessibility, acceptability	>85%	>75%
<u>Coverage</u>			

• Camp setting • Urban area • Rural area TFC inpatient • Rural area ATFC	• Accessibility and acceptability • Reaching target population	>90% >70% >50% >70%	>75% >70% >70%
Measles immunisation coverage	• Quality	100%	100%

Reference values of main indicators

The table above summarizes reference values for the main indicators regularly monitored in selective feeding programs.
– The outcome indicators are calculated for the patients aged 6- 59 months as the reference values apply for this age group.
– When reference values are not met, an explanation must be sought and reported.
– Outcome indicators should always be interpreted in relation to each other and other information/observations.
– The trends of outcome indicators should be followed and compared from month to month.

11.2 - Indicators based admission and exit

11.2.1 - Admission

Trends in the number of admissions provide information on the food and nutritional situation as well as on development of the programme. They can also indicate an increased awareness by the population (especially for a new program), improved security (people are free to move) or an increased confidence in the programs. Admission numbers are used for planning (e.g. number of centres, food quantity, human resources, workload, etc.) and lobbying.

Categories of admissions

• ***New admission:*** an admitted patient who has never been in the programme before or who was discharged from it more than 2 months ago.
• ***Re-admission:*** a defaulter who has come back to the program within 2 months.
• ***Relapse:*** a patient who has been discharged as cured from the programme within the last 2 months but is again eligible for TFP. A large number of relapses is often a sign of food insecurity.

Admission figures are categorised in different age groups: children under five years, adolescents and adults. A high number of adults indicates a problematic situation.

From the collated data of all centres the ratio between admission in ITFC and ATFC should be calculated. This gives an idea about the health condition on admission (e.g. late presentation), workload of the stabilisation centre and timeliness of referral to TFP.

Depending the cause of malnutrition the proportion admitted in the ITFC is between 15% and 30% (high disease load).

Referral site
This describes by who or by what structure the patients are referred to the feeding program (entry point). This can be collected on a TFP monitoring sheet (see Annex 11.1). This can be through self initiative (spontaneous), Health centre, Outreach, Hospital, SFP.
The origin of the patients should be analysed in order to adapt the program (sites).

11.2.2 - Exit indicators

Exit indicators provide information about the proportion of patients completing the treatment successfully or not successfully (cured, defaulter, death). They are calculated as a percentage of the total number of exits during the reporting month. They are obtained from the attendance register books of TFCs and SFCs and systematic reported for children 6 months to 5 years..
These indicators are interdependent (add up to 100%). In TFC's and SFC's outcome indicators are difficult to interpret during the first month as there are no recovered patients yet and therefore the percentage of deaths and defaulters are usually high.

Calculation of exit indicator: example defaulter rate

$$\text{Percentage of defaulters} = \frac{\text{Number of defaulters}}{\text{Number of exits}} \times 100\ \%$$

Exits from the feeding centre can occur in five different ways: recovered, defaulter, death, transfer and non-respondent. Definition of these five categories are provided below:

Recovered (or cured)
Number of beneficiaries that have reached discharge criteria within the reporting period divided by the total exits.
Reference values for TFP and SFP are > 80% and >75%.

Defaulter or abandon
Number of beneficiaries that defaulted during the reporting period divided by the total exits.
A person is considered as a defaulter when he/she has not attended the:
- ITFC for 3 consecutive days.
- ATFC for 2 consecutive weeks.
- Dry SFC for 3 consecutive weeks.

• Wet SFC for 1 week.

It can be very useful to assess why patients leave the centre and why they return (e.g. a lack of confidence in programme).
In ATFC's, TFC's and ITFC's absentees must be traced before they becomes defaulter.

Reference values for TFP, SFP are < 10% and < 15%.
The proportion of defaulters is usually higher in wet SFP's and in rural areas as accessibility is limited. In a rural context, a defaulter rate of a SFP below 20% can be considered as acceptable. Also the defaulter rates in ATFC's can be higher because of access problems and shorter contact time of the program with the caretaker.

Death

A beneficiary is considered as a death within the program when she/he died in the:

- (I)TFC or at home in the centre within a period of 3 days.
- ATFC or at home within a period of 2 weeks of non-attendance.
- SFC or at home within a period of 3 weeks of non-attendance.
- Hospital within 1 day after his/her transfer.

Reference values TFP and SFP are < 5% and < 2%.
The proportion of death tends to be under-estimated as death occurs amongst defaulters, especially in rural areas where defaulter tracing is difficult (e.g. decentralised ATFC's).

Transfer

The beneficiary is categorised as a transfer when she/he is transferred to a health structure outside the feeding programme (hospital, health centre, or from SFP to TFP, etc.) regardless of the level of the health facility s/he is referred to. Patients going from a TFP to a SFP are considered as cured (discharged) from the TFP and admitted as new admission in the SFP; these exits are not a transfer.

In TFP's with ambulatory components a transfer is only considered as such when the beneficiary is referred *outside* the TFP (to a different TFP, or to any other health facility outside the programme). Internal movements within the programme (i.e. from ITFC to ATFC or vice versa) are therefore not considered as transfers.

Patients transferred to a health facility falling outside a feeding programme should be followed-up and be provided with adequate nutritional support whenever possible.

Non-respondent

This exit category includes those beneficiaries who fail to respond to the treatment e.g. the patient remains for a long period of time under the target weight

(see Section 11.3.4., Prolonged Stay). If after investigation there are no specific reasons for failure or actions that can be taken to improve the treatment, the patient should be discharged from the programme. When the number of cases in this category is high it may indicate underlying problems related to the patients (e.g. chronic disease) or to the programme, that need to be addressed.

11.2.3 - Internal movements

Beneficiary movements between different centres of the same program (ITFC ↔ATFC, ATFC ↔ATFC) are reported as internal movements. Internal movements are reported as:

- To other TFC site: beneficiaries being referred from the reporting site to an other TFC site.
- From other TFC site: beneficiaries referred from an other TFC site to the reporting site.

For the evaluation of the quality of the individual centre all admission and discharges are taken into account for calculation of the indicators. When collating data of all centres for the summary of the program, the internal movements are disregarded; the admission and exits for the individual programs are counted, but not the internal movements (admissions and exits from and to other therapeutic feeding centres from the same program). (See annex 11.1)

For the whole *programme*, the number of beneficiaries referred to other sites should equal the number of beneficiaries coming from other sites. If this is not the case some beneficiaries are "lost" while being transferred, and an improvement in the tracking system is necessary. Patients that are lost during the referral are considered to be defaulter from the first program.

11.3 - Other indicators

The admission and exit indicators described above are the minimum data a feeding program should collect. However, there are several indicators that are necessary for the evaluation of the functioning of a feeding program and to enable to adapt program direction. A more elaborated data collection form and explanation is given in annex 11.2.

11.3.1 - Attendance rate

The attendance rate is the percentage of registered beneficiaries that actually attend the centre. It gives an indication of the accessibility and acceptability of the programme and it helps to interpret the outcome indicators. Registration books provide information about the total number of persons expected on a particular day. This number should be counterchecked by head counting the number of patients that actually come to the centre.

Calculation of the daily attendance rate for a specific day:

$$\text{Daily attendance rate} = \frac{\text{number of patients present}}{\text{number of patients expected}} \times 100\ \%$$

Attendance can be assessed by:
- Daily marking in a register
- Counting presence during meals using a tally sheet.
- Checking all patient cards for attendance.

Example of calculation of the monthly attendance rate:

Day 1: 90 registered; 76 are present
Day 2: 95 registered; 83 are present
Day 3: 97 registered; 89 are present
Day 4: 95 registered; 78 are present
….
Day 31: 92 registered; 81 are present

$$\text{Average attendance rate:} \frac{(76 + 83 + 89 + 78 + \ldots + 81)}{(90 + 95 + 97 + 95 + \ldots + 92)} \times 100\ \%$$

Reference values
Reference value of the attendance rate are > 85% in TFP's and > 75 % in SFP's.
The attendance rate can be influenced by several factors such as:
- Distance from home.
- Confidence between the personnel of the centre and beneficiaries.
- Time constraints of beneficiaries or caregivers.
- Lack of understanding regarding the importance of regular attendance.

11.3.2 - Average weight gain

The average weight gain per day (in grams per kilogram of body weight) in TFP's is one of the best indicators of the quality of the programme. After completion of their treatment in phase 2, weight gain should be calculated for each beneficiary discharged as cured. In emergencies a random sample of at least 30 beneficiaries can be taken to estimate average weight gain.

For the collated data in TFP's with ambulatory components, average weight gain is calculated as the average of weight gains from all patients discharged in the different centres (ATFC's and ITFC).

The average weight gain in a SFP's is only calculated for specific purposes such as investigation of problems or comprehensive evaluation.

Calculation of individual and average weight gain

Individual weight gain is calculated as the difference in weight in the period between entry in phase 2 and discharge from the programme (in children aged 6 to 59 months).

Individual weight gain calculation

$$\text{Individual weight gain} = \frac{W2 - W1}{\text{g/kg/day}} \Big/ T = \ldots .$$

Key:

W = weight in kg the day of entry in phase 2
W1 = weight in grams the day of entry in phase 2
W2 = weight in grams the day of discharge from the programme
T = number of days elapsed between W1 and W2

Average weight gain is calculated as the sum of individual weight gains divided by the total number of children whose individual weight gain is considered. The data can be obtained from the patient cards of the discharged patients.

Average weight gain calculation

$$\text{Average Weight Gain} = \frac{\text{Sum of individual weight gains (g/kg/d)}}{\text{Total number of children}} = \ldots\ldots\ldots \text{ g/kg/d}$$

Reference values

The reference value for children under five years:

- (I)TFC (24 hours or day care): is 10 g/kg/d.

• ATFC: 5 g/kg/day.
• SFC, around 3-5 g/kg/d.
– Clear reference values for adults do not exist. Experience in ITFC shows that adults gain weight slightly slower than children (6 g/kg/d).
– Adolescents in an ITFP show an average weight gain 10 g/kg/d or above.

11. 3.3 - Average length of stay

Average length of stay (from admission until cured) is an indicator of nutritional and medical care quality. It should be calculated monthly in TFP's. In SFP's is only calculated when a comprehensive evaluation is required. Information is provided from the registration book or individual patient cards.

Calculation of the average length of stay
The length of stay is individually calculated for all the patients who are cured. Individual length of stay is defined as the number of days elapsed between admission and discharge (calculated from the first day of admission) .

Average length of stay calculation

$$\text{The average length of stay} = \frac{\text{Sum of the length of stay of discharged}}{\text{Number of discharged patients}} = \ldots \text{ days}$$

Reference values
– Reference values for children under 5 years.
  • TFP in patient (24 hours or Day care) : < 30 days.
  • TFP outpatient (ITFC and ATFC) : < 45 days.
  • Dry SFP dry: < 60 days.
– For adults the average length of stay may be longer.

Average weight gain and length of stay are closely interrelated and thus need to be interpreted in relation to each other.

Several factors may influence average weight gain and length of stay:
• Quality of medical and nutritional care.
• Quantity of food received or consumed.
• Preparation of therapeutic food (e.g.: dilution, recipes).

- Level of household food security.
- High proportion of kwashiorkor cases (weight gain more slower than marasmic patients).
- High proportion of chronic disease (see morbidity and mortality register for number of cases with TB, HIV).

11.3.4 - Prolonged stay

Patients that don't reach discharge criteria within a reasonable time are called prolonged stays.
This can be due to similar factors responsible for low weight gain, but it can also be due to lack of individual monitoring of the patient. Especially in ATFC and SFPs patients can stay long periods while their long stay is unnoticed.

Prolonged stays are defined as:
- More than 60 days for ATFC's and SFP's.
- More than 45 days for ITFC's as inpatients.

Patients classified as "prolonged stay" should be investigated medically and socially through home visits. Prolonged stay can be caused by underlying chronic clinical conditions (e.g. TB, HIV) and social issues.

Those found to have a chronic condition should be referred to a specific (e.g.: HIV, TB) programme and treated accordingly (discharged as a "transfer" from the feeding programme). Social issues should be addressed to improve outcomes. Patients in SFP or ATFC with prolonged stay could be sent for observation to an ITFC or day-care TFC.

If no specific reason is found or there is no action that can improve the treatment, patients can be discharged from the feeding programme as "non respondent" (see Section 11.2.2, Outcome indicators).
The proportion of patients with a prolonged stay is calculated over all patients currently in the program. This is a different denominator to exit indicators. Currently there are no reference values available.

Prolonged stay calculation

$$\text{Prolonged stay (\%)} = \frac{\text{Number of patients classified as prolonged stay}}{\text{Total number of patients in the programme}}$$

11.3.5 - Programme coverage

Programme coverage gives information about awareness, acceptability and accessibility of the programme and is one of the indicators to assess impact of the program. It can be estimated by a nutritional survey. Coverage is calculated only for the population under five years.

Calculation of programme coverage

The most reliable method for estimating programme coverage is to inquire about registration in a feeding programme during an anthropometric survey.

Coverage based on survey data only

$$\text{Coverage} = \frac{\text{Number maln. in survey registered in programme}}{\text{Total number of maln. in survey}} \times 100\ \%$$

This coverage is the proportion of malnourished found in the survey that are actually admitted in a feeding program as a proportion of all malnourished found in the survey.

Alternatively, programme coverage can be estimated by comparing the number of beneficiaries actually registered in the programme with the number of expected beneficiaries. The number of expected beneficiaries is extrapolated from the malnutrition rates found in a recent anthropometric survey (of no older than 1 month) .

Coverage based on survey and feeding program data

$$\text{Coverage} = \frac{\text{Number of patients registered in the programme}}{\text{Number of expected malnourished children}} \times 100\ \%$$

Reference values

The reference values for coverage differ by setting as it can be influenced by several factors including:

- Awareness of the programme.
- Distance from home, transportation means.
- Security.
- Confidence between staff and beneficiaries.
- Time constraints of beneficiaries or caregivers.

- Social environment.

Reference values for coverage

	TFP	SFP
Camp	> 90%	>75%
Urban	> 70%	> 70%
Rural TFP	> 50%	>70%.
Rural ATFC	> 70%	

Coverage figures should be used with caution as:
- Prevalence of malnutrition may change rapidly.
- Often the survey area (administrative boundaries) differs from the catchment area of the feeding programme (walking distance to the centre)
- Population figures may change (arrival or departure) or may be inaccurate that makes extrapolation of the prevalence less accurate

11.3.6 - Percentage of children vaccinated against measles

In the feeding centre the percentage of children vaccinated against measles (previously and at the centre) should be calculated on a monthly basis for all admitted patients (0-5 years) (with a written proof e.g. a vaccination card). Reference value : Coverage must be 100%.

Vaccination coverage

$$\text{Vaccination coverage} = \frac{\text{Total number of patients admitted}}{\text{Number of patients ever vaccinated against measles}} \times 100\ \%$$

11.4 - Registration procedures

Proper registration is necessary to follow individual patient progress and monitor the programme. It is recommended to keep a minimal number of documents (cards or registers) to avoid duplication of information, reduce workload and to limit writing mistakes.
The table below indicates which registers and cards are used in different feeding programmes.

Overview registration books and cards in selective feeding programs

	TFP	SFP		Blanket FP
		Dry	Wet	
Register	X	X	X	-
Identification bracelet	X	X	X	

Individual card	X	X	X	-
Mortality report form	X	X	X	
Morbidity report form	X	X	X	-
Tracing booklet	X	X	X	
Milk card	X	-	-	-
Daily reporting sheet	-	-	-	X

11.4.1 - Registration book and attendance sheet

The purpose of the attendance register and daily attendance is to:
- Know the number of patients registered, newly admitted and exiting.
- To monitor daily attendance.
- Enable to monitor program indicators.
- Facilitate the tracing of a defaulter/absentees.

The register book should always indicate:
- Identification number (ID): must be recorded on the ID bracelet and on all cards of the beneficiary.
- New admission/re-admission/relapse: is especially useful after a few months of programme functioning.
- Date of admission.
- Patient's name: full name is required to avoid confusion with other beneficiaries.
- Complete address: for tracing of defaulters.
- Age and sex: age should be preferably recorded in months for children.
- Nutritional status at admission: oedema, weight, height, W/H%, MUAC (for TFC only).
- Date and conditions of exit: the date will be indicated on the register with the symbol corresponding to the reason of the exit.
- Dates to indicate attendance (X = presence , O = absence) (Optional)

Examples of register books for different feeding programme options can be found in Annex 11.3.
In order to avoid confusion and double registrations when different distribution sites are used and when centres are open on several days (dry SFPs and ATFCs) it is recommended to have one attendance-register book per site and per day. For example, if a dry SFC is using 4 sites, 4 register books are used. The site/day assigned to each beneficiary must be clearly indicated on the ID bracelet and the individual card.

Patients moving from an ITFC to an ATFC (internal movements within the TFP) will be exited from the ITFC registration book; as they are internal movements within the same programme. In the register of the ATFC it must clearly be noted that the patient came from a ITFC, preferably the patient keeps the same registration number.

11.4.2 - Identification bracelet

Identification bracelets are useful for rapid identification of beneficiaries and ease in finding their individual cards. They avoid massive double registration and improves the reliability of data. Bracelets are available in different colours. Consistency is necessary between centres and agencies in colours used for TFP and SFP. Permanent markers should be used to mark bracelets. Bracelets should include the following information:
- Identification of feeding centre (name, symbol or colour).
- ID number of the patient (identical to the one in the register).
- AFP/ATFC several days open: the first letter of the day assigned to the patient. For example “M”, meaning that the beneficiary should come every Monday.

11.4.3 - Daily reporting sheets for Blanket Feeding Centres

In blanket feeding centres, no individual follow up is performed. The number of beneficiaries attending are counted daily.

Other qualitative and quantitative information is also collected that allows evaluating performance of the blanket distribution. This includes:
- Coverage: comparing the number of attending the distribution with the number of expected beneficiaries (estimated from population numbers).
- Information about the ration (food items distributed, micro and macronutrient composition).
- Quantity of food distributed in relation to number of beneficiaries.
- Organization of the distribution (including sites, staff, patient flow, security, efficiency).
- Geographical area covered and food security situation in this area.

As parallel activities are usually performed (screening for malnutrition, identification and referral of sick people, vaccination, deworming) activity - specific reporting sheets are also used to evaluate performance of each activity and characterize targeted population:
- Nutritional status of screened beneficiaries (MUAC screening).
- Doses of vaccines administered.
- Number of referrals.
- Number of children given Vitamin A.

A sample blanket feeding reporting form can be found in Annex 11.4.

11.4.4 - Individual patient cards

The objective of the individual card is monitor carefully the medical and nutritional progress of each beneficiary. Different cards are used in the different feeding programs: (I)TFC, ATFC, dry SFC and wet SFC. Examples of such patient cards are provided in annexes 6.7 (TFP) and 7.4 (SFP).

In (I)TFCs, shifts of the treatment phase and products used should be clearly indicated.
Individual patient cards should be kept in the centre (except when ID bracelets are not used)
When referred from (I)TFC to ATFC the card is given for reference in the ATFC. However, different patient cards will be used.

11.4.5. Morbidity tally sheet and mortality registration book

Information on pathologies and cause of deaths will provide valuable information about
- Main communicable diseases seen amongst the beneficiaries.
- Outbreaks of diseases.
- Nutrient deficiencies.
- Quality of treatment and management.
- Probable causes of death.

See Annexes 11.5 to 11. 6 for mortality registration book and morbidity-mortality reporting forms.

11.4.6 - Tracing booklet

To trace defaulters, it is recommended to maintain a notebook with the following information:
- Name and address of the absentee (potential defaulter).
- Date of home visit to the absentee (defaulter).
- Reasons for defaulting (departure, dislike of the care delivered in the centre, lack of time etc.) and indication if the patient plans to come back to the centre.
- End result: return of the absentee or definitive defaulter.

The tracing booklet should be filled in regularly at each distribution day and provided to outreach team members in order to carry out default tracing activities.
In TFP's tracing should be carried out in absent patients from the first day of absenteeism.

11.5 - Monitoring the impact of the programme

In general, measuring the impact of a nutritional programme is difficult. The cumulative absolute number of persons successfully treated, combined with trends in malnutrition and mortality rates can give some indication that a programme has had a positive effect.

However, changes in mortality and nutritional status can be related to various factors (e.g.: sanitation, food security, general food availability, curative care,

epidemics, morbidity patterns, security etc.). Thus, it is difficult to know to which extent a positive trend in nutritional status can be attributed to a selective feeding programme.

Regular monitoring of the situation, specially mortality and prevalence of acute malnutrition will help to evaluate and adapt the initial objectives/design of the programme. Chapter 1 provides the basis for assessing and monitoring the food and nutritional situation in a population. Such regular assessments are crucial to adapt the programme to the rapidly changing situation ensuring pertinence of nutritional activities and an efficient use of resources.

CHAPTER 12

Organisation of nutritional centres

12.5.2 – Organisation of the pharmacy and drugs distribution

12.5.3 – Organisation of the premix centre

12.6 Human resources

12.6.1 – Human resource requirements

12.6.2 – Recruitment and training

12.6.3 – Supervision

This chapter discusses practical organisation at feeding centre level; unlike the other chapters, the abbreviations most frequently used are TFC, SFC, with "C" for "centre" instead than "P" for "programme".
Some issues are similar to the different types of programmes and some are specific; in this case it is indicated.

12.1 - Beneficiaries

12.1.1 - Expected number of beneficiaries

An estimation of the number of beneficiaries is needed for the planning of staff, materials, food and sites. The expected number of beneficiaries is estimated from malnutrition rates and trends (e.g. new admissions) as well as the coverage of the programs and the foreseen development of the food and nutritional situation (surveillance data). This can be calculated from nutritional surveys and surveillance and it is based on malnutrition rates in populations less than 5 years old.

Calculation of expected number of beneficiaries

Number expected in TFP: n = N x SAM x c x 1.1
Number expected in SFP: n = N x (GAM-SAM) x c x 1.1

Key:

- N : total number of children under five years in the population. The proportion of children under five years can be derived from a census or previous surveys. Alternatively 20% is a standard ratio of the under fives in the population.
- SAM: severe acute malnutrition (in % of median).
- GAM: global acute malnutrition (in% of median).
- c: coverage TFP: 90% (or coverage SFP: 70%).
- Factor 1.1: 10 % allowance for admission on MUAC and other age groups and for beneficiaries coming from outside the area covered by the survey.

12.1.2 - Screening and selection of beneficiaries

Community

Before opening a feeding centre (programme) the key persons in the community should be informed about the objective of the program and selection procedures. Their help is necessary to promote the programme, to identify malnourished people and motivate caretakers to attend the program. Also

community members can reveal potential obstacles that should be addressed.

Screening
In order to rapidly select malnourished cases in a community, a two stage screening method is used. Children are pre-selected based on presence of oedema and on Mid Upper Arm Circumference (MUAC) measurements (e.g. MUAC< 135 mm). MUAC and oedema are systematically measured in all children aged from 6 months to 5 years. When a child has a low MUAC W/H% is assessed to decide on referral as appropriate to a ITFC, TFC, ATFC or SFC.

Children older then 1 year with a MUAC below 110 mm and cases with bilateral oedema should be referred directly to a TFP.

In some situations, MUAC cut-off values may be lowered to < 130 mm or < 125 mm, depending on the extent to which pre-selected children are not meeting the admission criteria. Too many false positives will result in the decreased interest of the population in being checked, and this results in a low coverage. A nutritional survey can help to define an appropriate MUAC cut-off point.

Punctual screening methods:
– *Mass screening* can be conducted in a camp or urban setting at the start of a programme. In scattered rural areas or large towns it is often impossible to conduct this type of screening.
– *Blanket distribution*: as children < 5 years are often the target population for blanket feeding programmes, it is a good opportunity to screen them at the same time.
– *Measles vaccination* campaigns.

Regular screening*:*
- *In the communities* routine screening by home visitors, outreach workers and community health workers
- *In remote rural areas* nutritional screening teams can be organised, especially in remote rural areas. In this case, the team will also do W/H measurements to select children that are within the admission criteria of feeding programmes.
- *At registration* point in refugee or displaced populations, for new arrivals.
– *In health facilities* in curative consultations or during EPI and growth monitoring sessions. The majority of malnourished children are detected in the curative consultations. Train the health centre staff to recognise acute malnutrition and to refer cases to the appropriate programme.
– *At feeding centres* MUAC screening at the entrance of a feeding program, people presenting for admission are screened systematically in order to admit the very weak children rapidly and to turn away the nutritionally strong before weight and height measuring procedures. This reduces the time consuming weight for height measuring in the centre.

Screening and selection reports
Every screening activity should be reported. The number of children referred to a feeding centre should be noted and the feeding centres must be informed. Statistics of the screening activities can show changes in the nutritional situation in the community. Screening reports help interpretation of an increase in

the number of admissions to a feeding programme (whether the change in feeding centre also seen in the community).

The following information should monthly (weekly) be collected for each screening site:
- Total number of children screened.
- Percentage of children with oedema, MUAC <110, W/H% <70% out of the total children screened (severe malnutrition).
- Percentage of children W/H% 70-79% out of the total number of children screened (moderate malnutrition).

For reporting forms see annex 11.8.

12.2 - Site and construction

Planning when and how to build feeding centres or to rehabilitate an existing structure should be decided with input from nutrition, medical, logistical and water and sanitation staff.

12.2.1 - Site allocation and layout

Site allocation

– Feeding structures should be close to a health facility *(hospitals, clinics, health centres)* to facilitate patient care and transfer.
– (Internal) Therapeutic feeding centres (ITFC) and wet supplementary feeding centres (SFC) should be located in an accessible area and close to a source of water. Avoid areas prone to flooding or hills exposed to wind.
– Security is an important consideration when deciding where to locate a feeding centre. When the population feels unsafe travelling to, and staying in, a feeding centre low attendance and poor coverage will be the result.
– The authorisation to use the land should be guaranteed before beginning the construction work.
– The centre must be accepted by the neighbourhood (possible disturbance by the influx of beneficiaries, competition on resources e.g. water)
– An ITFC or TFC can be set-up independently or within a hospital (integrated into a paediatric ward) or as a separate structure.
– A SFC and an ATFC can be set-up independently or as an extension of a dispensary or a therapeutic feeding centre, or as a separate structure.

Layout of feeding centres

For examples of layouts of feeding centres (see Annex 12.1 for layout of TFC/ITFC, 12. 2 for SFC and 12.3 for BFD).
Before initiating a new construction for a feeding centre, check whether existing buildings can be rehabilitated. In this case, some rules must be respected:
– The same principles of security, space requirement, logical flow, hygiene should be applied as in a new centre (see below).
– The modifications done must be accepted by the owner and not prevent it from being used as originally (e.g. schools) after closure.
– The building constructions must be in good condition (safe from physical hazards)

Space required for a feeding centre for 150 patients

Infrastructure	Size (m²)	(I)TFC	ATFC	SFC wet	SFC dry	BFC
Registration + W/H area	30	+	+	+	+	+*
Treatment room + pharmacy	30	+	+	+	+	+*
ORS corner	30	-	+	+	+	+*
Waiting area (m^2/patient)	1	-	+	+	+	+
Kitchen	60 – 80	+	-	+	-	-
Food store	30	+	+	+	+	+
Wood store	15	+	-	+	-	-
Dish washing area	10	+	-	+	-	-
Washing and cleaning area	15	+	-	+	-	-
Logistic building	30	+	+	+	+	+
Observation area	20	-	+	-	-	-
Shelters (m^2/beneficiary)	4[43]	+	-	-	-	-

* When screening and W/H measuring is organized at distribution site.

In a (I)TFC, the total surface of the compound should correspond to 20 m² per patient. For example, for 150 patients, the surface should be 3000 m²:
SFC's and ATFC's require less infrastructure and space than (I)TFC's. This is especially the case for dry SFC, since they do not require space for cooking, eating, washing etc.

- Wet SFC: 10 m² per patient, from which 1 m² is covered surface.
- Dry SFC: total surface 1100 m² for 900 patients per week (150 patients/day), from which 200 m² is covered and 300 m² in shade (waiting area).
- ATFC: It requires similar space as a dry SFC. In addition, an observation area should be added for sick children or testing appetite.

Design

– **Drainage:** Proper drainage of the buildings and washing areas should be constructed to prevent stagnant water near or in the compound. Drainage for rainwater should be separate from drainage for washing areas.

– **Fencing**: A fence should be installed around the compound to increase the safety and facilitate the management of the centre. Within the compound itself, clear separations between logistic and technical areas and hospitalisation areas should be built. At entrances, fences that zigzag are useful for crowd control and efficient working

– **Logical flow**: The layout of the feeding centres should enable a logical progression of activities (e.g. waiting area, registration, diagnostic and curative medical care, feeding, etc.) and patients. The principle of the circuit is that the patient may not reverse direction.

– **Entry and exit gates**: The best is to have only one gate for the entry and exit of the patients and staff. In Dry SFC and ATFC it is necessary to have one entry point and another gate for exit to facilitate a fluent and strict patient flow. All entries and exits should be guarded and have a shelter for weather protection.

[43] Caretaker included

– **Waiting room**: It is necessary to plan a waiting area outside the centre in front of the entry, with a shelter to protect the patients and carers against the sun and the rain. Drinking water should be available to avoid dehydration. Plan space for educational sessions.
– **Registration point**: It should be located near the entrance in order to control attendance.
– **Eating area**: Floors and walls in (I)TFC and Wet SFC should be easy to clean (e.g. in plastic sheeting). Walls should be at least 1 meter high to avoid dust collection and protection for rain.
– **Playground:** In a (I)TFC a playground should be built for children staying in TFCs. Shelters should protect children from sun, rain and dust.
– **The 24-hour (I)TFC**: Shelters should be well protected against cold, rain, dust, wind and heat. Light should be provided for the night. Mosquito and fly screens should be placed for windows with an open space between roof and wall. Special care should be taken for the Intensive Care Unit: it should be spacious and in a quiet environment, with 1 shelter for 15-20 children.
– **Infants unit**: Infants should be isolated in a separate unit that requires the same conditions as the Intensive Care Unit (ICU).
– **Adolescents and adults unit**: Adolescents and adults should be separated from children.
– **Isolation area**: There should be enough spare space to set-up an isolation area (e.g. in case of measles or other epidemics) and the floor should be easy to clean (of concrete or plastic).
– **Kitchen**: Access to the kitchen in TFC and Wet SFC should be limited to staff only for hygienic and safety reasons. Cooking stoves should be sufficient in number; allow one stove per 25-50 children (depending the size of the stove). The kitchen must have good ventilation to allow proper diffusion of smoke (open space between roof and walls). Eventually, a kitchen for the mothers can be built in the patients' area. The kitchen should not be too far from the shelter and far enough (at least 50m) from the latrines. The kitchen should be provided with screened windows, water supply system, drainage for waste water and garbage containers. Supply cleaning equipment (soap, cloth, sponge, broom etc) and clothes for staff (e.g. cleaning gloves, apron etc).
– **Food storage**: The food storage area should be a solid construction (ideally bricks, concrete) with a secure door, well drained and good ventilation. The entrance should be easily accessible by car or trucks for food delivery, but distant from patients' entrance and exit gates. Ensure regular stock rotation and inspection, cleaning of the store according to schedule (e.g. weekly).
– **Wood store*:*** It should be protected from the rain and have a good ventilation to allow the wood to remain dry.

12.2.2 - Water, Hygiene and Sanitation[44]

The provision of safe water, waste disposal systems and vector control are essential to reduce the spread of communicable diseases. TFC and Wet SFC should only open once:
- Water supply is organized (adequate quantity and quality).
- Excreta disposal is organized (latrines, soak away pit/infiltration trench).
- Hygiene is organized (cleaning, disinfections, drainage, garbage collection, treatment and disposal of waste).
- Shelters have been sprayed if necessary.

[44] See "Public Health Engineering in emergency situation", MSF

Water supply

Quantity
In (I)TFC and Wet SFC, it is recommended to have the water storage (water tank) and distribution system independent from other activities (e.g. camp water supply). It must be made clear to staff that this supply is only for people attending the centre and not for the general population (e.g. visitors, other patients).

Water requirements in feeding programs

	Minimal quantity Litres/ day/ beneficiary	Optimal quantity Litres/day/beneficiary
(I)TFC	30	50
Wet SFC	20	30
Dry SFC /ATFC	0.3	0.5

Quality
Water must be free from contamination. It often requires treatment before drinking, usually by chlorination. Water quality tests should be conducted at the initiation of a programme, on regular intervals thereafter, and when problems are suspected. One person of the staff should be specially trained to be in charge of water treatment and monitoring[45].

Ideally the water should be treated at the source (e.g. chlorination in tank, bladder) and an extra purification should be applied for use in the (I)TFC: water used to make milk, RESOMAL, ORS, porridge should be either boiled or filtered just before use.
Also, depending on the water system, containers should be clearly labelled, marking the difference between drinking water and water intended for washing (supply soap for hand washing).

Water distribution
Water taps/containers should be installed in:
– **Kitchens**: the tap is easily accessible and placed next to the dishwashing area enabling hand and dishwashing, meal preparation, etc.
– **Shelters**: taps should be built outside clinics and shelters, in easily accessible areas. Mainly beneficiaries, for hand washing, will use these taps.
– **Washing areas** (especially in (I)TFC): taps should be set-up in the washing area, allowing mothers to wash their children and clothes.
– **Drinking and hand washing** (including ATFC). An additional water container should be placed at the exit of latrines.
– **Entrance** of (I)TFC/ATFC: compulsory hand washing for all (including staff) who enters the facility; activity supervised by the guard.

[45] If aluminum sulphate is used for water purification, special attention should be taken on the concentration of residual aluminium. A high level of aluminium sulphate impairs food absorption.

Location of water containers

Places	(I)TFC	Wet SFC	Dry SFC / ATFC
Units /Shelter	X	-	-
Eating shelters	X	X	-
Medical care post	X	X	X
ORS corner	X	X	X
Kitchen	X	X	-
Washing area	X	X	-
Latrines	X	X	X
Waiting room	X	X	X
Entrance	X	X	X

Hygiene

Cleaning the centre:

– One person (staff) should be responsible for managing cleaning duties and the provision of detergents, hand soaps, chlorine, etc.
– Caretakers should participate in cleaning activities (e.g. disposal of the potties, cleaning dishes and shelter areas, etc.)
– Floors should be cleaned every day with soap and water. Kitchen, shelters and latrines should be disinfected with 0.5% active chlorine solution *(*See Annex 12.5 for preparation of chlorine solution).
– Supply protective clothing for cleaning staff (cleaning gloves, apron, boots).
– Ensure adequate supply of detergent, chlorine solutions and cleaning equipment.

Bathing and washing

– Beneficiaries should be able to bath in privacy. Showers are recommended for adults (1 per 25 patients) and children and for the staff. For children, the mothers often prefer to wash them at the washing area (in basins or on a plinth of 50 cm high with central drainage).
– Soap (1 pc) is distributed to each beneficiary (or caretaker) at admission and every week thereafter.
– Carers should have enough space for washing and drying clothes.

Hand washing:

– Hands of health care workers are the main route of transmitting infections. Good hygiene is essential. Hand washing points and soap should be available in all shelters, medical and dressing places, kitchen, waste zone. Make sure also staff wash their hands at entrance of the feeding centre.
– Mothers and children must wash their hands before meals.

Hygiene promotion

In large centres, it is preferable to have a team of hygiene promoters who will deliver hygiene messages and explain to the carers the rules in the use of water points, latrines, waste disposal etc. They will also ensure that these rules are respected. The 'hygiene promoters' should also work on hygiene of health educators, nutritional assistants and cleaners. Nevertheless, all staff should be involved in creating awareness for improved hygiene practices. The team should be involved in the preparation of messages to make it culturally sensitive; it can also be involved in general education sessions by health educators on health and hygiene (see Annex 12.18 and 12.19 for job description).

Sanitation

Latrines

– Latrines and hand washing points are essential to prevent faecal-oral transmission.
– Latrines must be located > 30 meters from any water sources (tank, containers, distribution points, well etc.) but a hand-washing point should be near.
– Latrines must not interfere with the drainage of the water points; a soak-away pit is necessary.
– Prior to building latrines or other excreta disposal systems, the cultural habits of the population must be taken in consideration.
– Latrines especially designed for small children can be built (see Annex 12.4).
– One cleaner should be responsible for latrine maintenance.
– Number of latrines needed:
  • (I)TFC: 1 latrine for 20 persons. Provide potties for children below 2 years of age and bedpans for adolescent or adults unable to walk. Additional latrines should also be built for the staff and for an isolation ward. (See Annex 12.1 lay out TFC).
  • Wet SFC: 1 latrine for 50 beneficiaries. Consider separate latrines for the staff.
  • Dry SFC and ATFC: 2 latrines for children + 2 latrines for adults (1 female, 1 male).
  • BFC: 2 defecation areas or latrines in the waiting zone.

Waste management

One person should be responsible for waste collection, transport, treatment and disposal.

Soft and domestic waste

– A system of waste collection should be installed in each feeding centre. It is essential to separate "soft" waste generated from health care (e.g. syringes, gauzes, gloves, etc.) from domestic waste (e.g. food residues).
– "Soft" and domestic waste will be segregated in separated and clearly identified containers: plastic buckets with a lid. Ensure adequate supply of waste buckets in all places where waste is generated (eating shelters, kitchen, dressing room, units, etc.)
– Promotion of correct use of waste containers is important. Children, mothers, caregivers and staff must know where and how to discard waste.
– "Soft" waste can be burned in a temporary 200 l metal drum. If the (I)TFC or wet SFC will continue for several months, plan the construction of an

incinerator and ash pit.
– In the 1st phase of the programme, domestic waste can be discarded in a garbage pit. For long term intervention, plan the construction of an organic pit.
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Sharp material collection

Needles, razors, scalpels etc. should be disposed of separately, in puncture resistant waterproof containers that prevent retrieval. When the container is full, it should be hermetically closed and placed in a sharps pit. This pit can be within the feeding centre or in the nearest hospital or health facility. Sharps should not be burned.

Vector control

Insuring a good hygiene and sanitation in the compound, is already an important part of the vector control activities.
– Rodents, cats etc.: ensure good management and maintenance of food stores. Avoid collections of waste and refuse.
– Flies: Keep food covered. Avoid collections of waste and refuse.
– Lice: transmits typhus or recurrent fever, develops when poor hygiene, overcrowding, cold climate. Insure sufficient quantity of water, showers, distribution of soap and avoid overcrowding. If there is a risk of epidemic, treat systematically everybody (especially adults) with an appropriate insecticide (e.g. Perméthrine).
– Mosquitoes: Avoid breeding sites by avoiding collections of stagnant water, covering water containers and soak-away pits, emptying and cleaning regularly water containers. Impregnated mosquito nets should be provided in areas where malaria is endemic.
Spraying of shelters or buildings can be done (seek technical advice first).

12.3 - Equipment and material

12.3.1 - Nutritional kits

There are currently four different nutritional kits that contain the necessary material to open feeding centres in emergencies. The kits are composed of different modules that can be ordered separately or as a part of a complete package (except for the anthropometric kit). See Annex 12.6 for the composition of nutritional kits.

Nutritional kits

Kits	Modules	Code MSF	Code OXFAM
Kit anthropometric, nutritional survey and surveillance	None	KMEDKNUT4	Kit 1
Kit therapeutic feeding for 100 children for 3 months	Anthropometric Registration Feeding equipment	KMEDKNUT5	Kit 1 + Kit 4 + Kit 4A

Kit supplementary wet feeding for 250 children for 3 months	Anthropometric Registration Feeding equipment	KMEDKNUT6	Kit 1 + Kit 2 + Kit 2A
Kit supplementary dry feeding for 500 children for 3 months	Anthropometric Registration Feeding equipment	KMEDKNUT7	Kit 1 + Kit 3 + Kit 3A

Notes:
– Many of the items contained in these kits may be available locally in order to replenish the needed materials (e.g. cups). The need for materials (and whether these are in a kit) are indicated in Annex 12.7.
– Drugs, dressing material and examination equipment are not included in these nutrition kits. They should be ordered separately.
– There is no specific kits yet for ITFC or ATFC. The ITFC has similar needs as a TFC. The necessary equipment for ATFC's is similar to Dry SFCs and it includes anthropometric items, registration, feeding equipment (i.e. cups for drinking water) and bracelets. These may be found in the available kits and modules.

12.3.2 - Medical supplies and other equipment

In Annex 12.7 you will find a list of the main medical and non-medical items needed to open a (I)TFC, ATFC or SFC with approximate quantities for 100 or 500 patients. An ATFC should have an emergency stock of drugs, but it is assumed that a patient will be referred to a ITFC when needing intensive treatment with injectables.
The drug list includes drugs for systematic treatment, for treatment of complications or other possible diseases and for an emergency box. Laboratory material consists essentially of Paracheck kits and a haemoglobin-meter.

12.4 - Food supply and management[46]

Food supply and management require expertise in planning and logistical organisation. Food shortages, delays in food provision and poor food quality have a significant effect on feeding programmes. The logistical team is responsible for regulating food supply through procurement, storage, transport and quality control.

Objectives
- Ensure a timely and adequate food supply.
- Ensure all food products are of good quality.

[46] See A Logistical Handbook for Food Aid Programmes. Huart J.P. 1996. Bruxelles: MSF.

• Foresee and adapt food needs in a timely manner.

12.4.1 - Food ordering

Food requirements
The estimated monthly requirement is based on current and expected number of beneficiaries, changes in protocols and consumption and stock levels in the different program sites. The final estimation of requirements should be established by both logistic and medical responsible who jointly establish the order.

Food needs are calculated according to:
• *Recipes*: Determines the type and quantity of food product, however the recipes can be adapted according to local availability of the food.
• *Number of beneficiaries*: current and expected number of beneficiaries.
• *Time period:* Determines the expected length of time food is needed. See Annex 12.11 12.12 and 12.13.

Example calculation of food needs/3 months

dry SFC	**Quantity**	**Calculation**
Number of patients / week	3000	
Ration / week	1.8 kg of CSB	
Daily amount of CSB per child	257 g	1800g/7 days
Daily amount of CSB for 3000 children	771 kg	0.257kg x 3000
Amount of CSB for 90 days:	69 390 kg	771kgx90days
10% for the loses	6939 kg	69 390 x 0.1
Total (metric Tons)	**76.5 MT**	(69390+6939)/1000

Comments
– Food orders are calculated in days (e.g. 30 days instead of 1 month; 90 days instead of 3 months).
– 10% is added to the calculated food order to compensate for losses (food spoiled, bags broken during transport etc.).
– Food quantities in the international orders are expressed in Metric Tons (1 metric Ton (MT) = 1000 kg).

Ordering
The follow-up of the order, procurement and monitoring stock versus consumption are the responsibility of the food manager (or technical logistic coordinator) .See Annex 12.12 for job description. The food order depends the food needs as described above and on:
• **Food availability**: Recipes can be adapted (especially for SFC) according to food immediately available for local purchase and procurement, as mobilising food by ship or road takes considerable time (2-3 months). However specialised food products (e.g. F75/100, biscuits, etc.) can be delivered by air during emergencies.

• **Anticipation and adaptation**: The first order should cover 3 months. Needs should be continuously up-dated according to the evolution of the situation. A good prediction is crucial to avoid food shortages or losses through expiry date. It is important to base the orders on the foreseen needs and not on the past consumption.
• **Buffer stock**: A buffer stock mitigates a rupture in pipeline and food supply and is a reserve for a sudden increase of beneficiaries. The buffer stock depends on current of consumption and delivery lead time and anticipated consumption. The delivery lead-time is the time needed between order and delivery. It depends on supplier, area of origin, transport, handling etc. Also when the regular supply of food is donated (UNICEF, WFP) a buffer stock is needed (e.g. purchased independently). Usually, the period covered by the buffer stock corresponds to the maximum delivery delay.
• **Order threshold:** The last point in time to order a new stock. It is reached when the existing stock is equal to the buffer stock plus the consumption before the new order arrives (the delivery lead time). This means that products purchased internationally should be ordered 3-4 months before stocks are expected to run out.
• **Contingency stock:** The contingency stock is a fixed number of vital items that should always be in stock. This is used for unexpected events (e.g. emergencies and pipeline breaks). It is composed of long shelf life items (e.g. BP5, BP100, etc.)

Food procurement
The food items used in feeding programmes are either purchased locally or internationally, or received from a donation. A purchasing or donation contract should be established and certificates of quality obtained (per batch). International organisations such as WFP, UNHCR, UNICEF or ICRC often donate food for feeding programmes. Avoid overstocking when accepting a large donation. Overstocking results in food losses as it prevents a good stock ration and usage before expiry.

Certain food items require special consideration:
• **Milk products** (DSM, Therapeutic milk, breast-milk substitute). Accepting donations or purchasing milk products (e.g. breast-milk substitutes, DSM) must observe the UN code on use of milk products in emergencies. It should not be purchased locally unless the quality is guaranteed. Many traders are not able to provide certificates of composition and quality tests and often the origin of the product is unknown.
• **Blended food** such as CSB or Unimix (a mix of precooked cereals and legumes) can be purchased locally (regionally) only if the quality is guaranteed and submitted to regular testing, because germs or moisture can easily contaminate them and the level of micronutrients can vary a lot according to producer.
• **RUTF** (plumpynut) can be purchased locally, provided the quality (micronutrients and aflatoxin) is guaranteed.
• **Basic food commodities** such as sugar, oil, rice, maize and beans, can be purchased locally. However, it is important not to destabilise the local market. It is not recommended to purchase large amounts of food in an area affected by a food crisis or famine.

12.3.2 Quality control procedures

Before delivery
The quality of food should be guaranteed in terms of composition, quality, and safety of products (suitable for human consumption), packaging and labelling. Poor quality food items will not only result in patients receiving inappropriate treatment and potentially endanger the patients; it will also results in food

shortages within the feeding programme, loss of time, energy and money.
– Before food arrives: Obtain a certificate that describes the composition of the fortified product, including the exact amounts of vitamins and minerals. Obtain a certificate that indicates the product is fit for human consumption.
– Transport of food must be hygienic (e.g. bags well-protected, lorry or pick-up cleaned, plastic sheeting on the floor to protect the food, no mixing with fuel or toxic products etc.)
– (Un)loading food: Never expose the bags to rain; this can seriously damage the food, particularly for the blended food. If bags are damaged by moisture, the number of bags should be counted and a report given to the transporters (negotiate re-imbursement).

Accepting the delivery
Check upon delivery the labelling of the bags. The following information should be visible:
- Manufacturer name.
- Manufacturing date.
- Expiration date.
- Product composition.
- Batch number.

A sample of 3 bags per batch, selected out of the truck, should be physically inspected:
- Packaging should be checked on cracks and irregularities. Open bags should be consumed as soon as possible
- Presence of infestation (weevils), appearance, texture, odour, colour and taste of the product.

When no defects are seen during the inspection, the receiver and the transporting agency can sign the delivery report.

In case of problems
There is a problem when:
- Content and quality (certificates) of bags is unclear or not correct.
- Appearance: insect infestation, clumping of flour, visible moisture, caking, wet.
- Smelling: rancid, acrid, and unusual.
- Colour: different that the usual colour, unfamiliar brownish, green etc.
- Taste: acid, rancid, bitter.

The measures taken will depend on the importance of the problem:
– If few bags are broken or spoiled, the delivery should be accepted; but a report should mention the problems to the transporting agency, producers and food donors.

– If several irregularities are seen, more bags should be inspected and a report should be sent to food donors, producers, headquarters and transport agency. An analysis of the food sample may be necessary.
– If many bags have irregularities, refuse the delivery and return the food. Quickly report this to the food transporting agency, donors, producer and headquarters.

12.4.3 Warehousing

Proper management of the food store is essential to avoid food shortage, loss and adverse effects of food storage (reduced micronutrient content in blended food and oil). Food stocks are managed are central warehouse level (that supplies individual feeding centres) and feeding centre level. The principles are the same.

Food store

– The store must be properly secured (locked doors, watchmen, fencing etc.) with an easily accessible and spacious entrance. See details in Annex 12.8.
– The store should be cleaned continually. Cleanliness is essential as it reduces the risk of food spoilage by rodents, insects, and moisture.
– The store should be very well ventilated and dry. Windows should be covered with screens
– Food items must be stored per category on wooden pallets (reduces risk of food deterioration; easy for counting). See details in annex 12.8.
– There must be a space between the different food items and between the walls of the building.
– The stock must be rotated: first product in, first product out (a rapid turn over of the food reduces the risk of food infestation).
– No more than a 1-month food stock should be kept in the feeding centres.
– The food should never be stored with fuels or toxic products. If it is necessary to combine food with other items (material) separate the food with walls.
– Do not use the store to mix food (i.e. pre-mix preparation).
– Regularly inspect the warehouse (once a week); check storage conditions for cleanliness, infested or damaged food bags etc.
– Use broken bags first if the food is not spoiled (appearance, colour, smell and taste). Separate spoiled food bags from non-infested bags. Infested bags will either have to be disposed or fumigated[47].

Stock keeping

Key elements are:
• **Waybills:** Waybills in and waybills out should be filled in properly.
• **Stock cards:** food item entry and exit must be recorded on stock cards (one stock card per food item). Waste and spoiled food must also be recorded on the card.

[47] The use chemicals against insects and rodents are dangerous if not applied correctly and must used with caution. Ask advice of specialists or experienced persons (headquarters, food officer or other organisations such WFP).

• **Stock balance sheet:** the supply and consumption of food products should be summarised in a monthly stock balance sheet. Each feeding centre should have its own stock balance sheet. Stock balance sheet will detect risks of food shortages, overstocking and food losses and disappearance of food; the quantities sent to a feeding centre should correspond to what has been received. See example in Annex 12.9.
• **Physical inventory** (stock count) should be taken regularly (weekly and monthly) and recorded on the stock cards and stock balance sheets. The theoretical closing stock and physical count of the stock should be similar. A difference can be due to errors in the filling of the stock cards or a problem of theft.
• **Storekeeper**: Only one person should be responsible for the store. In a feeding centre, it will be the storekeeper under the responsibility of the supervisor of the centre. The storekeeper has an important responsibility and should be paid accordingly.

Food consumption report

The food consumption report summarises the quantity used (from stock balance sheet), the number of beneficiaries and the ration details. Objectives of the food consumption report include:
• To know the actual consumption and stocks to adapt the food orders accordingly.
• To compare the consumption of food per patient with the intended rations.
• To provide figures for donors-partners (UNHCR, WFP, EEC etc.)

Investigate the cause when the difference between the expected consumption and what actually has been consumed (over- or under-consumption). Over-consumption can be the result of mistakes in food preparation (not respecting recipe), distribution or can be caused by diversion. Under-consumption can result from errors in food preparation and food distribution, or from low attendance rates.
A weekly and monthly food consumption report should be done in each feeding centre and included in the routine nutritional report.

12.4.4 Supplying feeding centres

Conditions for a good supply system

– Close collaboration between medical, nutritional and logistic staff, and clear task distribution are essential.
– Information (number of beneficiaries, food consumption, food stock) should be centralised (nutritionist, logistician) to plan the food needs for the coming weeks or months.
– Logisticians are responsible for organising the food supply of the feeding centres.
– Supervisors of a feeding centre should transmit food orders to the central warehouse in time. Fix a day in the week/month for sending the orders.
– Food should be transported and handled correctly (see the above mentioned procedures).
– Transport capacity should be sufficient to deliver the food on time with a safety margin in case of logistical problems.

Frequency supply of the feeding centres

Feeding centres can be supplied on a:
• **Monthly basis**: in stable situations, when the number of beneficiaries is stable and when the centre has safe and sufficient storage capacity (e.g. (I)TFC, wet SFC).
• **Weekly or fortnight basis**: in emergency situations, when the number of patients varies or when the storage capacity is limited or unsafe. (e.g. weekly services in ATFC, dry SFC, in secure conditions the food can be delivered a day before the activity).
• **Daily basis**: in highly insecure areas or when a centre has no storage capacity (e.g. ATFC, dry SFC, and blanket feeding programs).

12.5 - Organisation of kitchen, meals and pharmacy

12.5.1 - Organisation of the kitchen and distribution of the meals

In an ITFC, TFC and wet SFP the number of meals made in the centre is considerable: e.g. in a 24h TFC of 150 patients, the kitchen will have to produce 1290 meals daily (30 x 8 meals for phase 1 (30% of total patients in phase 1) + 120 x 6 meals for phase 2 + 2 x 150 meals for carers).
Good organisation is essential to provide timely and appropriate meals (in quality and quantity) and to avoid food shortages.

Requirements kitchen
• **Instructions***:* The staff should be well instructed on the hygiene and meal preparation procedures; the tasks should be well defined and known by everyone. See examples of job descriptions in Annex 12.17 and 12.1.
• **Meals timetable** and clock should be available in the kitchen. Cooking times should be estimated for different type of meals in order to ensure they are ready on time.
• **Planning** of the daily tasks with timing can be put up in the kitchen to help the staff to be organized and on time.
• **Recipes** and cooking procedures should be clearly indicated in the kitchen to ensure all meals are prepared and cooked according to protocols. See Annex 12.11, 12.12, 12.13, 12.14.
• **Tables with quantities** of food to prepare according to the number of patients and carers should be available as it avoid risks of miscalculations. See Annex 12.11, 12.12, 12.13, 12.14.

Distribution of the meals
The distribution of meals is crucial: it needs good communication and coordination between the nutritional assistants, the kitchen and storekeeper. The distribution can be done in 2 ways: per shelter or at the bed of the patient (phase 1 and transition phase) or in the shared patients area (phase 2, wet SFC). Central distribution points where patients must queue up should be avoided. Support and surveillance during the meals is very important to identify difficulties, inform the mother, and help her if needed.

The individual milk card (see Annex 12.15) helps the nutritional assistant or the food distributor to deliver the correct quantity to each patient.

12.5.2 Organisation of the pharmacy and drug distribution[48]

Good management of the pharmacy avoids drug shortages and contributes to correct drug distribution that is also a key point in the treatment of malnutrition. According to the size of the centre, the pharmacy can be simply a locked cupboard or trunk in the ward (under the responsibility of the supervisor) or a separate structure with a pharmacist.

Supply and management documents
The supply can be done weekly or monthly. See Annex 12.10 for example of drug order form.
Documents used are:
• Stock card (see Annex 12.9) for each item and filled for each in and out.
• Drugs consumption sheet should be filled weekly or monthly.
• Physical inventory should be done regularly (e.g. weekly)[49].

Drugs delivery
Different systems can be used:
– **Daily or weekly quota**: Each ward receives a daily or weekly minimum quantity (quota) of drugs. The quota is calculated according to the number of patients and theoretical needs + a security stock. Every day or week, the pharmacist replaces the used drugs to reach again the quota. Suitable for (I)TFC, ATFC and SFP.
– **Individual prescriptions**: the pharmacist prepares the individual treatments according to the patient card. Each patient has his own drug-box or sachet. This system is labour intensive but can be useful when there is a lot of diversion of drugs or in small centres were individualized treatment is easier to implement.
– **Daily order**: Each ward makes a daily order to the pharmacy, according to the needs estimated through the medical prescriptions: this system is cumbersome as the responsible staff of the ward must check all patient cards (I)TFC or to count the number of patients (ATFC, SFP) to assess the requirements.

In all cases, an emergency box should be available in the admission room or intensive care, also accessible during the night.

Drug distribution:
The timetable must be respected, especially for antibiotics. In (I)TFC the drugs must be given under supervision (DOT) and the drug distributor should inform the nurse if a patient vomits or cannot take his treatment.

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[48] MSF (2001) Essential drugs. Practical guidelines: 2nd revised edition.
[49] For more detail on organization of a pharmacy, see "E*ssential drugs" guideline*

12.5.3 - Organisation of the premix centre

For SFP, the premix can either be done in the SFC, by the food distributors, or in a central premix centre. If there are several SFC's, it is better to have a centralised premix centre to facilitate the supervision. The premix centre should be located near the central food stock, but physically separated.
The team can work every day or only a few days per week, depending on the size of the programme. A team of 2 workers can prepare 200-300 Kg of premix / day. For the material needed see Annex 12.7.

Hygiene
– The place must be clean, with cement or plastic sheeting on the floor. Water should be available for hand washing and cleaning of the material and floor (with soap) every day.
– Floor should be cleaned with chlorine solution every day.
– The staff must have aprons or overalls and know the hygienic procedures.

Preparation of the food
– All the ingredients (including the oil) are weighed on a 50 kg Salter scale and mixed in a pan or in a drum (cut into 2 on the length and fixed on support at the right height of the premixer). The premixers can use a paddle or their (clean) hands to mix.
– Recipes should be put up on the wall with quantities for one mixture (e.g. for one 25 kg bag of CSB, or for the capacity of one container, or for a fixed number of beneficiaries). See Annexe 12.13 for recipes.
– The premix can be packed in individual rations or in 50 kg bags. The individual packaging is more work in the premix centre but facilitates the distribution in the SFC.
– Once prepared, the premix shelf life is about 2 weeks when kept in a dry and clean place. Thus, if the distribution is done every 2 weeks, the preparation should be done immediately before the distribution.

12.6 - HUMAN RESOURCES

12.6.1 - Human resources requirements

Human resources (i.e. staff placement, training, support and management) are crucial to ensure that quality care is provided.

Positions required
The number of personnel (national or expatriate) and their required skills will depend on:
• Number of expected beneficiaries.

- Number and design/type of the feeding centre.
- Size and accessibility of the geographic zone.
- Stage of the programme (initially more experienced personnel will be required).
- Level and number of skilled and qualified personnel locally available.
- Level of insecurity.

An indication of staff requirement per type of feeding centre is given below. The requirements are expressed in "positions" as the number of persons depends on the combination of tasks and openings hours (daily versus weekly; day or nights shifts in 24h care), the national regulations on number of working hours/week, the holidays :

Indication of staff required per feeding centre

Position	Per	ITFC	TFC	Wet SFC	Dry SFC / ATFC
Supervisor	centre	1	1	1	1
Physician	100 patients	1	1	X	X
Medical assistants /qualified nurses	100 patients	4	3	1	2
Drug distributors (lower nurses)	100 patients	2	1	1	1
Weight / Height measurers	centre	2	2	2	2
Registrar	centre	1	1	1	2
Nutritional assistant	100 patients	10	6	4	2 (ATFC)
Assistant ORS corner	centre			1	1 (option)
Pharmacist	centre	1	1	X	X
Cooks	100 patients	3	3	2	X
Cooks assistant	100 patients	3	3	2	X
Cleaner/sanitarian	100 patients	2	2	2	1
Hygiene promoter[50] / Health educator	centre	1	1	1	1
Store keeper	centre	1	1	1	1
Watchmen	centre	2	3-6	2	3
Psycho-social workers	centre	1	1	X	X
Outreach workers or (and 1 pair per 10.000 population)	100 patients	4	Min 4	2	6

Reference values:

- Medical assistant, nurses: 1 / 25 in phase I; 1 / 50 in phase II.
- Nutritional assistant: day-care: 1 / 10 patients in phase I, 1 / 20 patients in phase II and 1 / 5 infants; additional for night-care: 1 ; also responsible for food distributions in SFP and ATFC.
- Cooks 1/ 30 patients (depending on protocols used: e.g. if includes ready to use food and if meals are cooked for carers). Per cook 1 cook assistant for fetching water, firewood and cleaning of cups and plates
- Watchmen: depends on the number of entrances and day/night care
- Food distributors: pre-packing and/or handing our dry rations /meals; explanation of use
- Outreach workers: Depends on other outreach activities: in general 1 outreach worker per 10.000 population is needed; for ATFC at least 4 per 100 patients are added.

Several positions can be combined when necessary. For example, in a dry SFP the supervisor can also be in charge of the food store and pharmacy. In a TFC and wet SFC, nutritional assistants can participate in cleaning the centres and in the hygiene promotion activities.

[50] IEC activities can be shared between hygiene promoters & psycho-social workers.

Job Description
An organigram illustrates the level of responsibility and accountability of each position and the relationships between the different hierarchical positions. The organigram should be known and accessible to all the personnel of the centre. See annex 12.16 and 12.17 for example of organigram.

The supervisor must be sure that each worker has well understood his job description and accepted his responsibilities by signing it. The worker will keep a copy and the supervisor the original. Job descriptions are also the base for evaluations of the staff (it is more motivating for the staff to do regular evaluations based on their job descriptions, than to give warnings). See Annex 12.18 and 12.19 for job descriptions.
Activity schedules can be developed for various positions. That may be useful at the early stage of the program to guide the staff in their daily activities.

12.6.2 - Recruitment and training

Recruitment and hiring
Once human resource requirements and job profiles are established, information about vacancies should be disseminated to the local population (key persons and social groups). Timely advertising/posting of positions is essential and often also required by law. Selection criteria for successful candidates should be identified prior to theoretical test and interviews.
Recruit and hire from different ethnic and social groups (include women) as much as possible to avoid over and under representation, and to make sure all population groups can be reached by the staff.
National labour laws should be well-understood and respected when hiring new staff and creating contracts (seek support from Human Resources specialists).

Training
Provision of adequate and appropriate training is crucial to ensure the quality of nutritional programmes.

Preparation and planning:
- Define objectives and content of training (for all workers and for specific job profiles).
- Make a training plan.
- Prepare and gather training materials.

See training manual for detailed information on required steps.

Training is required:
– Prior to a programme*:* Participatory classroom training should be organised to teach participants about the programme objectives as well as goals and the basic procedures to ensure proper opening. It is better to delay the opening of the centre for some days, until personnel are properly prepared.
– At the opening of a programme: Practical training is necessary to direct personnel in their tasks and make modifications when necessary**.**
– During a programme: Training and follow-up can be formal or informal. Refresher courses should be regularly organised according to the monitoring and

evaluation of activities, evaluation of training and feedback from staff. More advanced topics should not be taught before the basic knowledge is mastered. Continuous on-the-job training and regular formal training sessions for upgrading skills is necessary.

Evaluation of training:
– A post-test can evaluate theoretical knowledge.
– Supervision will evaluate if staff have incorporated what was learnt into their daily activities.
– Evaluation should be ongoing. For this purpose a systematic check-up should be done by the supervisors.
– Staff will be re-positioned according to their evaluation.

12.6.3 - Supervision

Objectives:
- To improve job performance.
- Identify what works well and what is not functioning.
- Detect problems and constraints faced by patients, caretakers and staff.
- Determine new and refresher training needs.
- Determine which activities need to be re-organised.

Staff
The staff should be supervised regularly with the help of checklists, functioning indicators of the feeding centre, food stock calculations, and staff evaluation interviews and on the job training.
Personnel should be informed of the objectives and conclusions of supervision. It is useful if the staff themselves help in creating a tasks and supervision checklist. For each department (kitchen, security, nurse etc.), a checklist should be established which thoroughly describes all staff responsibilities and tasks based on their job description. The checklist will contribute to overall job performance evaluations of the staff. Examples of checklists are given in annex 12.21.

Example of observation checklist for a cook

Are the following tasks and activities done properly?		
	Yes	No
Comes to work on time		
Washes hands before handling food		
Measures the quantities according to the recipes		
Hands out the food according to the prescription		
Uses proper utensils		
etc.		

The results of monitoring and supervision should be discussed with all personnel concerned. Each worker should get regular feedback on his/her individual performance.
With the help of supervisors, define a plan for the necessary changes, objectives, and time frame. During future visits, give feedback on the changes implemented from the last supervision.

Patient care
Regular surveillance to ensure compliance with therapeutic nutritional and medical protocols is critical when monitoring patient care. The nurses, medical

assistants and nutrition assistants have the task to observe an note systematically the patients' food intake, medical compliance, the physical progress etc. The accuracy of data entry and completeness (e.g. actions undertaken) of individual patient cards should be checked regularly.

Equally important is understanding how the patient perceives the care delivered in the centre. Discuss with patients what is appreciated or not. It should be easy for patients to approach the staff with his or her (medical) problems. This will help in adapting activities with the aim of increasing compliance.

ANNEX 1.1
Assessment topics

Information required	Comments
1. Population	
Population figures – Total number of people affected – Total number of displaced people – When did displaced first arrive? – Are people still arriving? – Number arrived last week – Number arrived the week before – Number of residents affected – Information on population composition: women, men, children under five, adults, and elderly	– Population displacement is a sign of crisis. It should not be confused with temporary seasonal migration. – Resident populations are often put under stress and destabilised when a displaced population arrive; they may also be in need and should not be forgotten. – A rough estimation of population structure is useful to calculate medical and nutritional needs. A displaced population composed mainly of women, children and the elderly is at high nutritional risk.
Vulnerable groups – Do authorities or others discriminate against any population group? – Are elderly, disabled, unaccompanied children, women head of household, etc. neglected by authorities?	Food insecurity and famine do not affect an entire population in a consistent manner. Some groups are at higher nutritional risk than others: • Children under five years (particularly those between 6 and 24 months). • Pregnant and lactating women • Marginalized groups: households headed by women or elderly, disabled, (in some societies), unaccompanied children, street children, homeless, etc.
2. Context	
Causes of crisis – Natural disaster, man-made disaster or both – Brief history of the crisis, origin, and main events leading to the current situation	– Natural disasters: repeated droughts, flooding, earthquakes, insect invasions, livestock epidemics etc. – Man-made disasters: war, political instability, economic crises etc.
Security – What is the overall security situation? – Can people move freely, how far, at night? – Are any groups at particular risk? – Is food a source of insecurity (at individual, familial and programme level)?	- Security determines people's behaviour and the potential to take care of themselves. If certain groups or entire populations are unsafe, they have limited freedom of movement, which, in turn, influence access to market, land and productive resources. - Food can become a security problem in situations of military or political crisis, since it becomes a valuable commodity.
Environment and background – Rural, urban or camp setting – Climate: arid, wet, rainfall patterns, night temperature etc.	– Location and origin can influence the effects of a crisis and the ability to develop coping mechanisms. (e.g. it may be easier for people to find income generating activities and aid in an urban area, than in a rural area or, an urban displaced population may have difficulties to develop coping strategies in the rural areas)

– What are/were main resources: livestock, agriculture, fish, wage, trade etc.? – What are the living conditions (shelter, crowding)? – Are people fleeing from rural or urban areas; arid or wet areas; what were the main occupations? – What was taken from home (food, cooking utensils, livestock etc.)?	– Displaced populations arriving without any possessions are in immediate danger of nutritional deterioration because commodities are not available to sell in exchange for food.
3. Health information	
Mortality – Crude mortality rate/10,000/day – Under-five mortality rate/10,000/day – Specific mortality rates (according to context)	– The crude and under-five mortality rates are key indicators for determining the severity of a situation: • CMR 0.6/10,000/day = stable situation in developing countries • CMR 1/10,000/day = severe situation; > 2/10,000/day = critical situation • U5MR 2/10,000/day = severe situation; > 4/10 000/day = critical situation – If exact figures cannot be obtained, trends are useful.
Morbidity/Epidemics – Incidence of bloody and non-bloody diarrhoea, respiratory tract infections, malaria, measles etc. – Evidence of epidemics – Measles vaccination coverage	– Epidemics of measles and shigellosis have a direct impact on the nutritional status of the population. – If all children are not protected against measles, a campaign should be immediately organized.
Water and sanitation – Access to adequate supply of water (quantity, quality), has it changed from normal? – Are people buying water? If yes, at what price? – Distance to and time of queuing at water point (< 30 minutes queuing?) – Latrines: Presence? Condition? Number of users (less or more than 20 persons/latrine)?	– During the first days of the emergency phase, the minimal amount of water required for survival (drinking and cooking) is 7 litres/person/day. As soon as possible, 15 to 20 litres/person/day must be available. – At least one hand-pump for 500-750 persons, a tap for 200-250 persons should be available. - A minimum of 20 persons per latrine
Health and nutritional activities **– Are health facilities accessible and functioning? Distance? Type of structures? Accessibility (payment, discrimination etc.)?** – What feeding programmes exist? – Who is in charge of these programmes? – Is the capacity sufficient (coverage, quality)?	Information on the existence, access and regular functioning of health facilities is necessary to define needs and plan interventions.

– What is planned in the near future, number of feeding centres and number of beneficiaries?	
4. Nutritional status and diet of the population	
Malnutrition – Visible cases of adult malnutrition? – Increase in admission of malnourished children in hospital, TFP or SFP? – Global and severe acute malnutrition in children < 5 years or in other age groups (including oedema) – If figures exist: present trend in MUAC, W/A or W/H?	– Visible malnutrition among adolescents and adults is an obvious sign of severe food crisis or famine. – A high percentage of MUAC below 110 mm is a sign of a severe situation. – In areas where MUAC, W/A or W/H is systematically measured in sentinel sites, the comparison of the present figures with a normal year can show a deterioration of the nutritional status.
Diet – What is the usual diet during this season? – Are people eating unusual foods? – How many meals/day were given to the children yesterday? Is this the same number as before the crisis? –To what age are infants usually breast-fed? How are infants usually weaned? Has infant-feeding practices been changed recently? In which way?	– The present diet compared to a normal year in the same season, gives information on severity of the food shortage in a resident population, and on the risk of nutrient deficiencies or risk of food intoxication (toxins from wild-foods or improperly soaked cassava, or aflatoxin from poor storage). – Information on infant feeding practices will help deciding how to address malnutrition in infants. In countries where bottle-feeding is a common practice, it is important to gain information regarding the availability and accessibility (price) of infant formula, as well as on availability of water (quantity, quality and price).
5. Food security	
Food availability, access and markets ***Food stock*** – Do stocks exist at household, community, and regional levels? ***Food origin*** – Change in origin of food eaten now: own reserve, market, gathering, food aid, gift (remittances), and loan?	– National, regional and village food reserves: several countries have established buffer food reserves to be rapidly mobilised in case of food shortages. At national and regional levels, different strategies are possible. Authorities can decide to supply the market with staple food at low prices, food for work programmes can be developed, or food can be distributed to sectors of the population considered particularly vulnerable. – Food provenance helps define the level of food insecurity: • Food aid exclusively: severe food crisis or famine. • Change from own production to purchases in the market rather than consuming own production: may be a sign of food crisis • Wild-foods (if unusual for the population): food insecurity or crisis – Availability of food and basic commodities on the market gives valuable information on the stage of food insecurity. For example:

Market – What types of foods are sold on the market? – Condition of the market: full, empty, and similar to a normal year? – Price changes of few essential food items and commodities? – Comparison of the present prices with a normal year in the same period. – Are non-productive goods increasingly sold (jewellery, furniture etc.)? Is this unusual for the season? – Are productive assets being sold (tools, seeds, large part of the livestock, farm etc.)? – Are markets accessible to the entire population? – Are means for cooking available? If so, describe (firewood, fuel etc.)	• An empty market with only a few expensive food items can be a sign of a severe food crisis or famine. • Fewer local foods sold at higher prices (than in other years at the same time) can be a sign of a food crisis. • Food aid sold at low prices on the market can indicate that beneficiaries are missing essential commodities (soap, cooking pots, blankets etc.) or need to diversify their diet, or that food items are not acceptable. • In pastoral regions, livestock sold at low prices and cereals at high prices are a sign of seasonal food insecurity or food crisis (the ratio of livestock to cereal is much worse than in the same period of a normal year). • Many situations involve problems in food accessibility rather than food availability, meaning that markets may be well stocked, but for various reasons, people have no access to foods. – Sale of non-productive and productive assets is an important factor indicating the stage of food insecurity. – Market accessibility for displaced people offers the opportunity to diversify the diet and to have access to non-food essential commodities.
Food production For agricultural communities: – How do harvests of the present year compare with a normal year? – Has planting been as expected and what type of harvest is expected? – Are seeds accessible and available for next planting season (price)? For pastoral populations: – Livestock health (any epidemic?) - Is dead livestock visible along the roads? – How is the slaughtering, death and growth rate of	- Seeds: it is crucial that seeds are available and accessible (price affordable) for the next cultivation season. In cases of severe food crisis and famine, when households are obliged to eat or sell their own seeds or when the price of seeds on the market are too high, the farmers will not be able to plant on time and future harvests are impaired. Livestock: Food shortage for livestock will oblige herders to slaughter a part of their livestock (food insecurity or food crisis) or all their livestock (severe food crisis or famine). Therefore, the price of the meat on the market decreases. The presence of dead livestock along roads or in the bush is a sign of great distress (severe food crisis or famine). When herders are no longer able to slaughter their livestock (lack of market or animals too weak), animals die and are left. When figures are available from veterinary services or EWS (Early Warning System), the comparison of the present birth, mortality and slaughter rates with those from a normal year helps to determine the stage of the crisis: food insecurity or food crisis. It should be noted that recovery time (restocking) takes much longer - several years - in pastoral communities, than in agricultural ones.

livestock compared to a normal year? – What is the price ratio meat/staple cereal?	
Activities – Are new activities being developed (trading, fishing etc.)?	New activities can temporarily alleviate the effects of the crisis. In times of food insecurity, they are usually temporary. In food crises or famines, when households have lost all of their capital assets, this change can become permanent and threaten future self-reliance.
Migration – Has temporary migration in search of food, temporary jobs or grazing areas increased?	**A** difference must be made between usual and unusual migrations. Background knowledge on the region is necessary to interpret the significance of various movements. • For all societies, numerous people moving in search of food for immediate survival (distress migration) indicates famine. • In rural populations, when more families than usual or when more family members than usual migrate, an impending crisis is likely. • In pastoral societies, when families or family members are obliged to move further than usual in search of grazing areas, or water, a food crisis is likely.
Purchasing power – Are wages stable? Decreased? – What is the trend in the purchasing power?	**U**rban population and wage labourers are very sensitive to increased prices of essential commodities and to market employment. A net decrease in purchasing power is a sign of economic crisis. In urban areas, food insecurity is often more difficult to assess due to the large disparities existing within the population. The role, which the informal sector plays in regulation, can be important, but quite difficult to assess.
General food distribution (GFD) – Who is in charge of distribution? – Number of beneficiaries – Is the distribution equitable? Is any group excluded? – What is the theoretical ration? – Date, content and quantity of last distribution – Implementation of the distributions (chaotic, violent, etc.) – Any food shortages now or expected (pipeline, transport etc.)? – When is the next distribution planned? – Any suspicion of food diversion	In a food crisis situation or famine, GFD is one of the key interventions to maintain the health status of the population (see Chapter 4).
Operational information	
Accessibility – Main constraints faced by the population and agencies working in the area	This information is necessary to determine strategies, program design and size of intervention.

– Geographical accessibility of the affected area - Communication means **Other actors** – Who are the other humanitarian actors?	- The information must consider access to the population in need with respect to the presence and condition of roads and availability of an airstrip or other mode of transport and their capacity. - Security issues in the area should be considered as they too will influence the maximum number of expatriates and determine the freedom of movement that the team will have in surrounding areas and during the evening and night.
Resources – Possibility of acquiring food and/or materials locally (WFP, local market) – Constraints and opportunities concerning human resources (skilled local staff, maximum number of expatriates) – Are there suitable health facilities or buildings, which can be used for feeding centres? – What type of storage facilities exists? – What type of communication means exist?	**Food and materials:** The purchasing possibilities for material and food, at local, regional and capital levels are a consideration for planning procurement and logistics. The pros and cons of local purchasing should always be considered to support the local economy. In the case of purchasing food, caution should be exercised as buying food in areas suffering from food shortage can aggravate the shortage as it may increase the prices and reduce food access for others. If local food purchase is possible, strict criteria (quality, packaging, labelling, etc.) should be respected. **Skilled human resources:** The presence or absence of skilled personnel at the local level is important when designing programmes. In an area with almost no skilled personnel, treatment protocols should be simple, training time increased and more external personnel recruited. Additionally, the possibility to recruit skilled expatriates should be taken into consideration. **Existing infrastructure:** lists of possible locations (health facilities, buildings, etc.) where feeding centres could be implemented are important to plan the logistic needs and the time necessary to set-up the feeding centres.

ANNEX 1.2

Example of an initial assessment report

Population, context and cause of the crisis

An assessment was carried out in town X, the capital of province Z, after the civil war. The population of town X is approximately 600,000. Rebels seized the town in March. In the past, the area was rich in resources (diamond and gold mines); however, the wealth of town X has declined due to decades of economic crisis, political instability and war. Signs of economic collapse are evident by the large numbers of empty commercial buildings and an increase in unemployment.

Background

Prior to the civil war there were four main job categories in town X: miners, workers in enterprise (state or private), traders (shops, street), and military.

Miner's families: (mainly diamond miners). Miners work outside the town for 3-6 months per year. During their absence, no income is sent to families in the town.

Military families: There are two types of military families: those in which the men were previously enrolled in the Governmental army and have now fled the area, abandoning their families; and those who have been actively recruited by the rebel army. This second group is not paid on a regular basis, and recruitment is not well perceived by the population.

State workers: These families have faced a chronic problem of irregular payment of their wage for ten years.

Traders and street-seller families: Many women become breadwinners. Their main occupation is casual street vending (bananas, fruits, firewood, etc.). These women are generally away from home during an entire day. Small children are left with older siblings who are not always able to care for them properly.

Food availability and accessibility

Food is traditionally supplied from the hinterland and transported by boat and road. Presently, both roads and rivers are partially blocked. Food availability in the market is low. The last local harvest was successful. A portion of the products still reaches the town. Prices for common foods and commodities have increased an average of 30% compared to the same season in a normal year. Interviews with the mothers of malnourished children show that many are alone (men absent) and have no regular source of income. They rely on handouts and loans, and have already sold much of their household goods (plates, furniture, clothes, etc.). Families spend on average 100,000 to 200,000 (33-66 US cents) per day on food. The local staple diet is composed of cassava flour and leaves, plantain bananas and palm oil, sometime rice and maize. There is no food aid in the town.

Nutritional status of the population

Chronic malnutrition has been prevalent in town X for years, due to poverty, low educational levels and food taboos. A nutritional survey carried out in April showed a high prevalence (20%) of global malnutrition (<-2 Z-scores or oedema) and a severe malnutrition rate of 7% (<-3 Z-scores or oedema). Many cases of oedema (5%) were reported.

Health

The drug supply for the health facilities has broken down. Dispensaries and the hospital have few essential drugs. A measles vaccination campaign was carried out one week ago, covering 51 000 children from 6 months to 59 months. No data on mortality is available.

Conclusion and recommendations

In conclusion, the population is facing a **food crisis situation**, the nutritional situation is alarming, and the prevalence of acute malnutrition is high. The food availability has decreased slightly; but food accessibility is markedly reduced for disadvantaged families, especially households headed by women (belonging to families of miners or the military).

Recommendations include:

- Food distribution to families at risk. This can be funnelled through local organisations.

- Initiate a TFC and SFC for a limited period to provide care to malnourished children. In addition, a supportive family ration should be given to the families of children admitted in the TFP.
- Identify malnourished children for admission to feeding programmes
- Lobby for other organisations to intervene where MSF is not active
- Monitor the situation (food availability and price on the market, etc.) and conduct a nutritional survey in 3 months.

ANNEX 1.3

Methods for nutritional assessment and surveillance

Direct observation of settlement, environment, livelihood, physical appearance of the affected population is essential for assessing many qualitative aspects. Walking through a camp, village, or urban area during meal-time provides information about what people eat. Visiting markets provides information about availability and access (price) of food products and essential commodities.

Interviews with key informants are essential for providing in-depth details about the target community and people. Key informants can include government workers or NGO employees working in agricultural, veterinary, health and education sectors; and local community leaders, religious representatives or representatives of specific groups (farmers' union, women group etc.), at any level (village, camp, town, district, provincial, federal etc.).

Rapid MUAC assessments provide information about the extent of malnutrition in a population. During an initial assessment, the Mid Upper Arm Circumference (MUAC) of 100 children (between 12 and 59 months) is measured. Children should be chosen randomly (e.g. every 20th household can be visited; alternatively one third of children in a market place, village and outskirts can be measured). If the ratio found is below 10% and other indicators are not alarming, then it can be assumed that acute malnutrition is not a problem. If the ratio is between 10 % and 25%, a survey should assess the actual malnutrition rate before starting a nutritional programme. If rapid MUAC assessments show a ratio above 25%, immediate action should be taken. An anthropometric survey should confirm an emergency as soon as possible.

MUAC trends are the systematic measurement of all children in health facilities, events or in sentinel sites with MUAC (e.g. vaccination campaign, and blanket feeding distributions). They give information about the trend and evolution of the nutritional status of children.

Sentinel sites are selected places (villages, health centres etc.) where indicators are followed on a routine basis. The selection of a sentinel site should be based on the degree of vulnerability of the area selected, the quality and reliability of the data collected, the size of the population and the accessibility of the site. (E.g. trends of the % of children with MUAC < 110 and 135 mm)

Anthropometric survey measures the prevalence of global and severe acute malnutrition among children under 5 years old. It is an important quantitative indicator in food crises and famines.

Mortality weekly report is one of the most important indicators to assess the degree of emergency. Weekly mortality reports should contain information from household visits, and through the daily counting of new graves or consultation with health authorities or agency registration.

Retrospective mortality survey can be coupled with an anthropometric survey. Mortality rates are estimated over a certain period of time in the recent past (mostly 3 months).

Epidemiological surveillance includes regular morbidity reports and outbreak reports from health services. Information on measles vaccination campaigns and vaccination coverage should be included. Include **Health environment indicators** information and reports on water, hygiene and sanitation, settlement, the number of health facilities etc.

Household surveys measure food availability inside the home. This kind of survey is difficult and time consuming and must respect a strict methodology.

General Food Distribution monitoring: see *GFD monitoring*, Chapter 4

ANNEX 1.4

Example of a surveillance system

WEEK: from _____ to _____

Place(s): …Village X, Village Y, Camp Z, camp

A. Population

A.1 Total local Population

	Village X	Village Y	Camp Z	Camp ZZ
< 5 years				
≥ 5 years				

A.2 IDP's (Internally Displaced Population) or refugees

	Village X	Village Y	Camp Z	Camp ZZ
New arrivals < 5 years				
New arrivals ≥ 5 years				
Total IDP/refugees < 5 years				
Total IDP/refugees > 5 years				

B. Mortality

B.1 Mortality expressed in number of death per 10,000 population per day

	Village X	Village Y	Camp Z	Camp ZZ
Crude Mortality rate				
< 5 years mortality rate				

C. Morbidity

C.1 Main communicable diseases (no outbreak declared)

	Village X	Village Y	Camp Z	Camp ZZ
ARI				
Diarrhoea				
Malaria				
Meningitis				
Cholera				
Measles				
Other				

C.2 Outbreaks: Number of new cases

	Village X	Village Y	Camp Z	Camp ZZ
Measles				
Cholera				
Shigellosis				
Pellagra				
Other				

D. Nutrition

D.1 MUAC screening

	Cazo	Koti	Luffa	Ndoli
Total screened				
# (%) < 125 -110 mm				
# (%) < 110 mm				
# (%)oedema				

D.2 TFC

	Cazo	Koti	Luffa	Ndoli
New Admissions < 5 years				
New Admissions > 5years				
Total admissions				
% with oedema				

D.3 SFC

	Cazo	Koti	Luffa	Ndoli
New Admissions < 5 years				
New Admissions > 5 years				
Total admissions				

E. Food security

E.1 Market price (Price in KWZ)

	Cazo	Koti	Luffa	Ndoli
Wheat/kg				
Rice/kg				
Beans/kg				
Sugar/kg				
Oil/L				
Soap/bar				
Beer/can				
Daily wage				
Exchange rate				

E.2 General food distribution (GFD)

	Cazo	Koti	Luffa	Ndoli
Date GFD				
Kcal/p/d				
# beneficiaries				
# days covered				

F. Comments

CAZO :

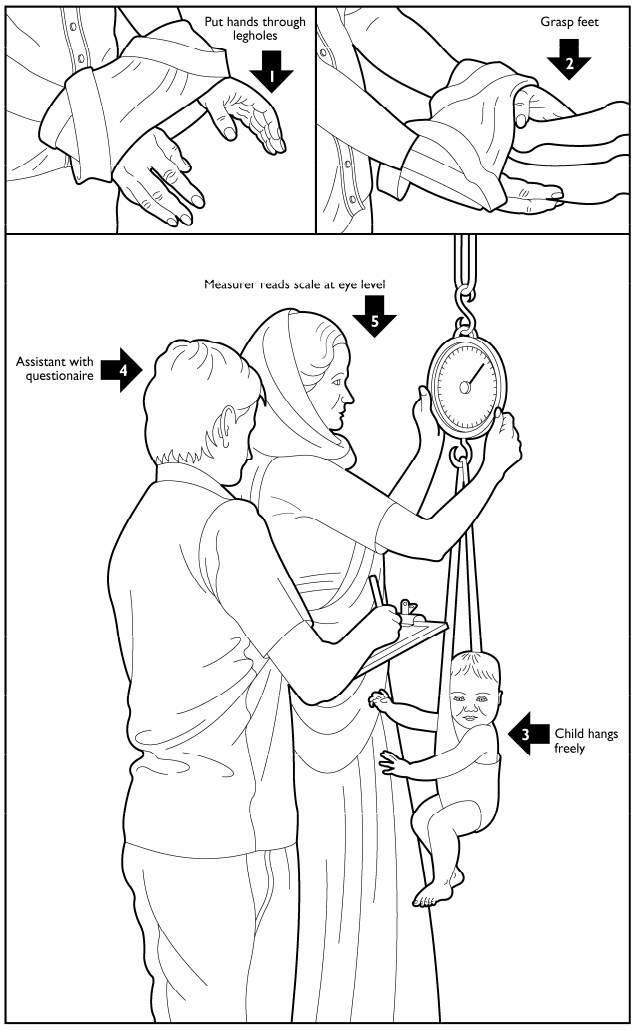
KOTI :

LUFFA :

NDOLI :

ANNEX 2.1

Weight assessment in children



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

Children

– Install a 25 kg hanging scale graduated by 100 g. If mobile weighing is needed, the scale can be hooked onto a tree or attached to a stick held by 2 people.

– Suspend weighing pants (trousers) from the lower hook of the scale and recalibrate to zero, allowing the pants to hang freely from the hook.

– Remove the child's clothes and place him/her in the weighing pants. Older children can suspend themselves from the scale by their hands

– Read the scale at eye level. If the child is moving and the needle does not stabilise, estimate the weight by using the value at the midpoint of oscillation.

– Announce the value to an assistant.

Notes:

– Cold weather or cultural custom may make it impossible to undress a child. In this case, children can be given a "dress" (i.e. a bag with large holes for the head and arms).

– The scale must be checked against a 10-kg weight every morning, especially during a nutritional survey. If the reading does not match the weight, it should be replaced.

Infants

Use a proper infant weighing scale with a 10 g graduation

Adolescents and adults

Scales for adolescents and adults should provide a degree of precision of 100 g. By preference use a mechanical beam scale with two sliding weights (one for kg, one for grams; weight graduation 100 g). A 0-50 kg hanging scale graduated by 200 g may be used as an alternative to weigh adolescents.

The accuracy of mechanical bathroom-type scales graduated by 500 g is not sufficient to monitor malnourished patients. In addition they can be easily disturbed and variation of several kilograms can occur. Poor quality electronic scales may have a short lifespan and become imprecise in heat and humidity.

ANNEX 2.2

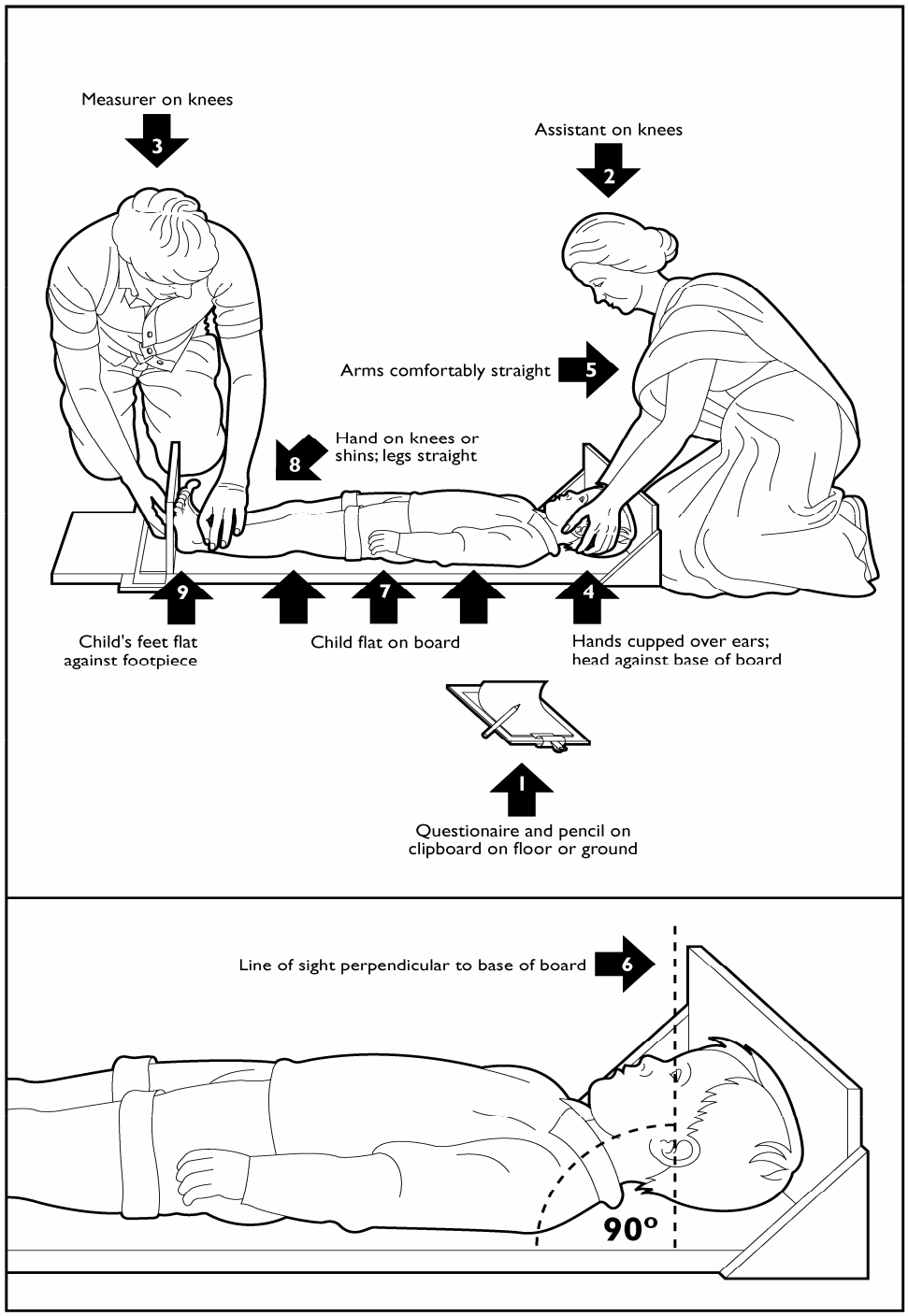
Measuring length in lying position (children < 85 cm)

• Place the measuring board on the ground, and lay the child in the middle of it.

• The assistant holds the sides of the child's head, and positions the child so that the top of the head touches the "foot board".

• The measurer positions and holds the child's knees or ankles in a straight line, then places the "cursor" (movable portion) at a 90° angle against the child's feet.

• The measurer reads the length to the nearest 0.1 cm and announces it to an assistant.



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

ANNEX 2.3

Measuring height in standing position (children > 85 cm)

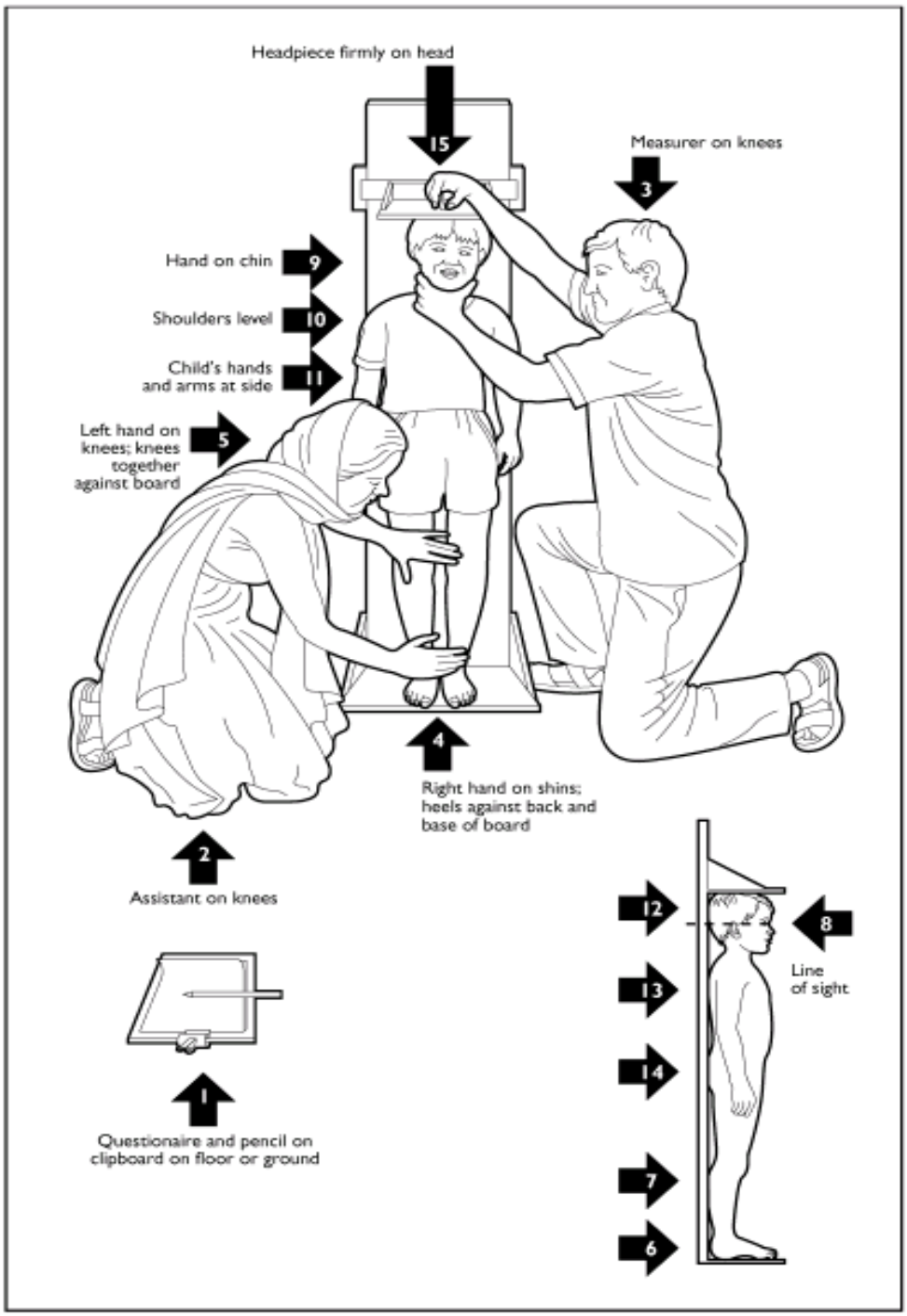
• Place the measuring board upright on a level space in a location where there is room for movement.

• Remove the child's shoes and stand her/him on the middle of the measuring board.

• The assistant presses the child's ankles and knees against the board, ensuring his/her head, shoulders, buttocks, knees and heels touch the board.

• The measurer positions the head at a 90° angle to the cursor.

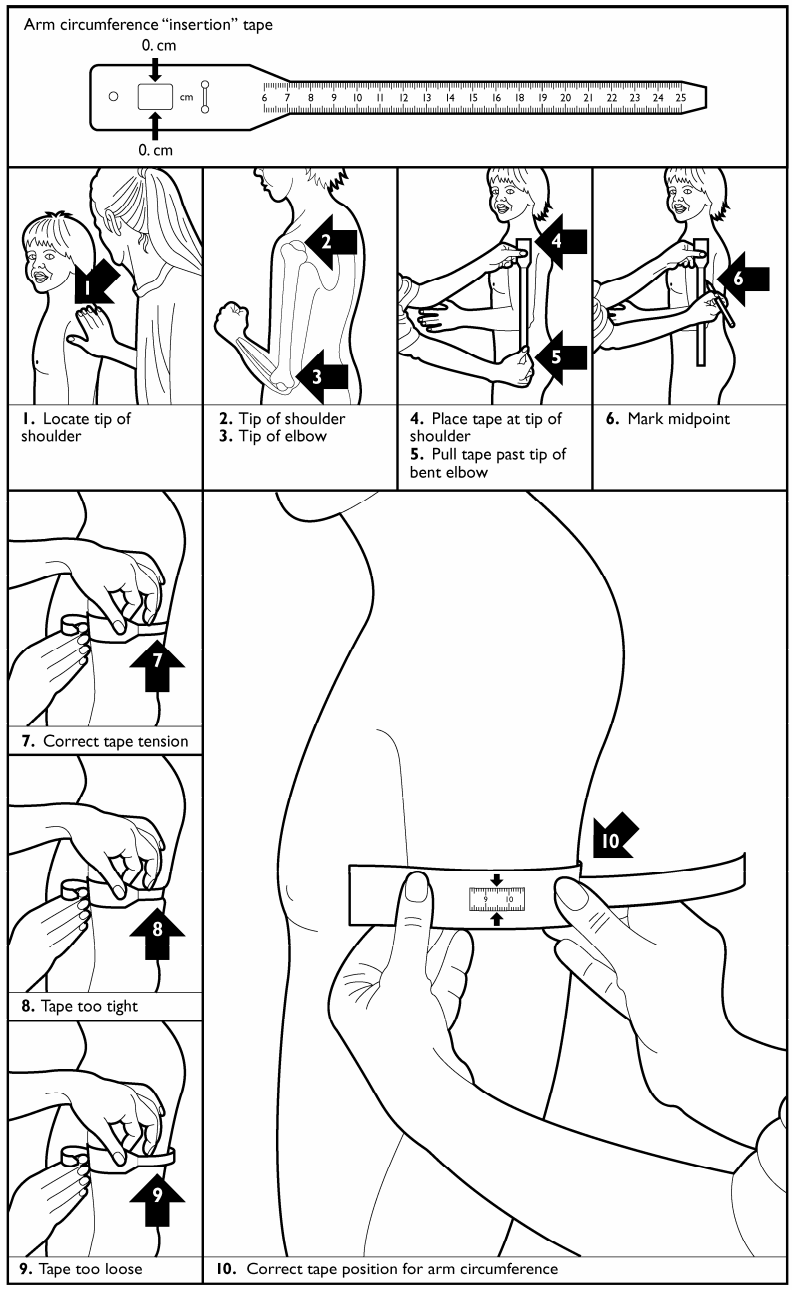
• The measurer reads the height to the nearest 0.1 cm and announces it to an assistant.



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

ANNEX 2.4

MUAC measurement



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

For children, adolescents and adults

– Let the left arm hang relaxed at the side of the body.
– Place the MUAC tape midway between elbow and shoulder.
– Fit the tape securely around the arm. The tape should not be too slack, nor pulled too tightly.
– Read the measurement through the window of the tape.
– Record to the nearest millimetre.

Annex 2.5

Weight-for-Height references: height versus weight in % of median

(Height assessed lying up to 84.5cm, sexes combined upto 130 cm; adapted from NCHS/CDC/WHO, 1982)

height	*weight in kg*				*height*	*weight in kg*			
cm	**100%**	**85%**	**80%**	**70%**	**cm**	**100%**	**85%**	**80%**	**70%**
Lying down					**71.5**	*8.9*	7.6	7.1	6.2
49.0	*3.2*	2.7	2.6	2.2	**72.0**	*9.0*	7.7	7.2	6.3
49.5	*3.3*	2.8	2.6	2.3	**72.5**	*9.1*	7.7	7.3	6.4
50.0	*3.4*	2.9	2.7	2.4	**73.0**	*9.2*	7.8	7.4	6.4
50.5	*3.4*	2.9	2.7	2.4	**73.5**	*9.4*	8.0	7.5	6.6
51.0	*3.5*	3.0	2.8	2.5	**74.0**	*9.5*	8.1	7.6	6.7
51.5	*3.6*	3.1	2.9	2.5	**74.5**	*9.6*	8.2	7.7	6.7
52.0	*3.7*	3.1	3.0	2.6	**75.0**	*9.7*	8.2	7.8	6.8
52.5	*3.8*	3.2	3.0	2.7	**75.5**	*9.8*	8.3	7.8	6.9
53.0	*3.9*	3.3	3.1	2.7	**76.0**	*9.9*	8.4	7.9	6.9
53.5	*4.0*	3.4	3.2	2.8	**76.5**	*10.0*	8.5	8.0	7.0
54.0	*4.1*	3.5	3.3	2.9	**77.0**	*10.1*	8.6	8.1	7.1
54.5	*4.2*	3.6	3.4	2.9	**77.5**	*10.2*	8.7	8.2	7.1
55.0	*4.3*	3.7	3.4	3.0	**78.0**	*10.4*	8.8	8.3	7.3
55.5	*4.4*	3.7	3.5	3.1	**78.5**	*10.5*	8.9	8.4	7.4
56.0	*4.6*	3.9	3.7	3.2	**79.0**	*10.6*	9.0	8.5	7.4
56.5	*4.7*	4.0	3.8	3.3	**79.5**	*10.7*	9.1	8.6	7.5
57.0	*4.8*	4.1	3.8	3.4	**80.0**	*10.8*	9.2	8.6	7.6
57.5	*4.9*	4.2	3.9	3.4	**80.5**	*10.9*	9.3	8.7	7.6
58.0	*5.1*	4.3	4.1	3.6	**81.0**	*11.0*	9.4	8.8	7.7
58.5	*5.2*	4.4	4.2	3.6	**81.5**	*11.1*	9.4	8.9	7.8
59.0	*5.3*	4.5	4.2	3.7	**82.0**	*11.2*	9.5	9.0	7.8
59.5	*5.5*	4.7	4.4	3.9	**82.5**	*11.3*	9.6	9.0	7.9
60.0	*5.6*	4.8	4.5	3.9	**83.0**	*11.4*	9.7	9.1	8.0
60.5	*5.7*	4.8	4.6	4.0	**83.5**	*11.5*	9.8	9.2	8.1
61.0	*5.9*	5.0	4.7	4.1	**84.0**	*11.5*	9.8	9.2	8.1
61.5	*6.0*	5.1	4.8	4.2	**84.5**	*11.6*	9.9	9.3	8.1
62.0	*6.2*	5.3	5.0	4.3	***standing up right***				
62.5	*6.3*	5.4	5.0	4.4	**85.0**	*12.0*	10.2	9.6	8.4
63.0	*6.5*	5.5	5.2	4.6	**85.5**	*12.1*	10.3	9.7	8.5
63.5	*6.6*	5.6	5.3	4.6	**86.0**	*12.2*	10.4	9.8	8.5
64.0	*6.7*	5.7	5.4	4.7	**86.5**	*12.3*	10.5	9.8	8.6
64.5	*6.9*	5.9	5.5	4.8	**87.0**	*12.4*	10.5	9.9	8.7
65.0	*7.0*	6.0	5.6	4.9	**87.5**	*12.5*	10.6	10.0	8.8
65.5	*7.2*	6.1	5.8	5.0	**88.0**	*12.6*	10.7	10.1	8.8
66.0	*7.3*	6.2	5.8	5.1	**88.5**	*12.8*	10.9	10.2	9.0
66.5	*7.5*	6.4	6.0	5.3	**89.0**	*12.9*	11.0	10.3	9.0
67.0	*7.6*	6.5	6.1	5.3	**89.5**	*13.0*	11.1	10.4	9.1
67.5	*7.8*	6.6	6.2	5.5	**90.0**	*13.1*	11.1	10.5	9.2
68.0	*7.9*	6.7	6.3	5.5	**90.5**	*13.2*	11.2	10.6	9.2
68.5	*8.0*	6.8	6.4	5.6	**91.0**	*13.3*	11.3	10.6	9.3
69.0	*8.2*	7.0	6.6	5.7	**91.5**	*13.4*	11.4	10.7	9.4
69.5	*8.3*	7.1	6.6	5.8	**92.0**	*13.6*	11.6	10.9	9.5
70.0	*8.5*	7.2	6.8	6.0	**92.5**	*13.7*	11.6	11.0	9.6
70.5	*8.6*	7.3	6.9	6.0	**93.0**	*13.8*	11.7	11.0	9.7
71.0	*8.7*	7.4	7.0	6.1	**93.5**	*13.9*	11.8	11.1	9.7

Weight-for-Height references: height versus weight in % of median (Cont.)

(Height assessed lying up to 84.5cm, sexes combined upto 130 cm; adapted from NCHS/CDC/WHO, 1982)

height	*weight in kg*				*height*	*weight in kg*			
cm	**100%**	**85%**	**80%**	**70%**	**cm**	**100%**	**85%**	**80%**	**70%**
94.0	*14.0*	11.9	11.2	9.8	**117.0**	*20.8*	17.7	16.6	14.6
94.5	*14.2*	12.1	11.4	9.9	**117.5**	*21.0*	17.9	16.8	14.7
95.0	*14.3*	12.2	11.4	10.0	**118.0**	*21.2*	18.0	17.0	14.8
95.5	*14.4*	12.2	11.5	10.1	**118.5**	*21.4*	18.2	17.1	15.0
96.0	*14.5*	12.3	11.6	10.2	**119.0**	*21.6*	18.4	17.3	15.1
96.5	*14.7*	12.5	11.8	10.3	**119.5**	*21.8*	18.5	17.4	15.3
97.0	*14.8*	12.6	11.8	10.4	**120.0**	*22.0*	18.7	17.6	15.4
97.5	*14.9*	12.7	11.9	10.4	**120.5**	*22.2*	18.9	17.8	15.5
98.0	*15.0*	12.8	12.0	10.5	**121.0**	*22.4*	19.0	17.9	15.7
98.5	*15.2*	12.9	12.2	10.6	**121.5**	*22.6*	19.2	18.1	15.8
99.0	*15.3*	13.0	12.2	10.7	**122.0**	*22.8*	19.4	18.2	16.0
99.5	*15.4*	13.1	12.3	10.8	**122.5**	*23.1*	19.6	18.5	16.2
100.0	*15.6*	13.3	12.5	10.9	**123.0**	*23.3*	19.8	18.6	16.3
100.5	*15.7*	13.3	12.6	11.0	**123.5**	*23.5*	20.0	18.8	16.5
101.0	*15.8*	13.4	12.6	11.1	**124.0**	*23.7*	20.1	19.0	16.6
101.5	*16.0*	13.6	12.8	11.2	**124.5**	*24.0*	20.4	19.2	16.8
102.0	*16.1*	13.7	12.9	11.3	**125.0**	*24.2*	20.6	19.4	16.9
102.5	*16.2*	13.8	13.0	11.3	**125.5**	*24.4*	20.7	19.5	17.1
103.0	*16.4*	13.9	13.1	11.5	**126.0**	*24.7*	21.0	19.8	17.3
103.5	*16.5*	14.0	13.2	11.6	**126.5**	*24.9*	21.2	19.9	17.4
104.0	*16.7*	14.2	13.4	11.7	**127.0**	*25.2*	21.4	20.2	17.6
104.5	*16.8*	14.3	13.4	11.8	**127.5**	*25.4*	21.6	20.3	17.8
105.0	*16.9*	14.4	13.5	11.8	**128.0**	*25.7*	21.8	20.6	18.0
105.5	*17.1*	14.5	13.7	12.0	**128.5**	*26.0*	22.1	20.8	18.2
106.0	*17.2*	14.6	13.8	12.0	**129.0**	*26.2*	22.3	21.0	18.3
106.5	*17.4*	14.8	13.9	12.2	**129.5**	*26.5*	22.5	21.2	18.6
107.0	*17.5*	14.9	14.0	12.3	**130.0**	*26.8*	22.8	21.4	18.8
107.5	*17.7*	15.0	14.2	12.4					
108.0	*17.8*	15.1	14.2	12.5					
108.5	*18.0*	15.3	14.4	12.6					
109.0	*18.1*	15.4	14.5	12.7					
109.5	*18.3*	15.6	14.6	12.8					
110.0	*18.4*	15.6	14.7	12.9					
110.5	*18.6*	15.8	14.9	13.0					
111.0	*18.8*	16.0	15.0	13.2					
111.5	*18.9*	16.1	15.1	13.2					
112.0	*19.1*	16.2	15.3	13.4					
112.5	*19.3*	16.4	15.4	13.5					
113.0	*19.4*	16.5	15.5	13.6					
113.5	*19.6*	16.7	15.7	13.7					
114.0	*19.8*	16.8	15.8	13.9					
114.5	*19.9*	16.9	15.9	13.9					
115.0	*20.1*	17.1	16.1	14.1					
115.5	*20.3*	17.3	16.2	14.2					
116.0	*20.5*	17.4	16.4	14.4					
116.5	*20.7*	17.6	16.6	14.5					

ANNEX 2.6

Weight-for-Height references: height versus weight in Z-scores

(Height assessed lying up to 84.5cm, sexes combined upto 130 cm; NCHS/CDC/WHO, 1982)

Height		*weight in kg*			*height*		*weight in kg*		
cm	**Median**	**–2 Zs**	**-3 Zs**	**-4 Zs**	**cm**	**Median**	**–2 Zs**	**-3 Zs**	**-4 Zs**
50.0	*3.4*	2.6	2.2	1.8	**67.5**	*7.8*	6.3	5.5	4.8
50.5	*3.4*	2.6	2.2	1.8	**68.0**	*7.9*	6.4	5.7	4.9
51.0	*3.5*	2.7	2.3	1.9	**68.5**	*8.0*	6.5	5.8	5.0
51.5	*3.6*	2.7	2.3	1.9	**69.0**	*8.2*	6.7	5.9	5.1
52.0	*3.7*	2.8	2.4	1.9	**69.5**	*8.3*	6.8	6.0	5.3
52.5	*3.8*	2.9	2.4	2.0	**70.0**	*8.5*	6.9	6.1	5.4
53.0	*3.9*	2.9	2.5	2.0	**70.5**	*8.6*	7.0	6.3	5.5
53.5	*4.0*	3.0	2.5	2.1	**71.0**	*8.7*	7.2	6.4	5.6
54.0	*4.1*	3.1	2.6	2.1	**71.5**	*8.9*	7.3	6.5	5.7
54.5	*4.2*	3.2	2.7	2.2	**72.0**	*9.0*	7.4	6.6	5.8
55.0	*4.3*	3.3	2.8	2.2	**72.5**	*9.1*	7.5	6.7	5.9
55.5	*4.4*	3.4	2.8	2.3	**73.0**	*9.2*	7.6	6.8	6.0
56.0	*4.6*	3.5	2.9	2.4	**73.5**	*9.4*	7.7	6.9	6.4
56.5	*4.7*	3.6	3.0	2.5	**74.0**	*9.5*	7.8	7.0	6.2
57.0	*4.8*	3.7	3.1	2.5	**74.5**	*9.6*	7.9	7.1	6.3
57.5	*4.9*	3.8	3.2	2.6	**75.0**	*9.7*	8.1	7.2	6.4
58.0	*5.1*	3.9	3.3	2.7	**75.5**	*9.8*	8.2	7.3	6.5
58.5	*5.2*	4.0	3.4	2.8	**76.0**	*9.9*	8.3	7.4	6.6
59.0	*5.3*	4.1	3.5	2.9	**76.5**	*10.0*	8.4	7.5	6.7
59.5	*5.5*	4.2	3.6	3.0	**77.0**	*10.1*	8.5	7.6	6.8
60.0	*5.6*	4.3	3.7	3.1	**77.5**	*10.2*	8.5	7.7	6.9
60.5	*5.7*	4.5	3.8	3.2	**78.0**	*10.4*	8.6	7.8	6.9
61.0	*5.9*	4.6	3.9	3.3	**78.5**	*10.5*	8.7	7.9	7.0
61.5	*6.0*	4.7	4.1	3.4	**79.0**	*10.6*	8.8	8.0	7.1
62.0	*6.2*	4.8	4.2	3.5	**79.5**	*10.7*	8.9	8.1	7.2
62.5	*6.3*	5.0	4.3	3.6	**80.0**	*10.8*	9.0	8.1	7.3
63.0	*6.5*	5.1	4.4	3.7	**80.5**	*10.9*	9.1	8.2	7.4
63.5	*6.6*	5.2	4.5	3.9	**81.0**	*11.0*	9.2	8.3	7.4
64.0	*6.7*	5.4	4.7	4.0	**81.5**	*11.1*	9.3	8.4	7.5
64.5	*6.9*	5.5	4.8	4.1	**82.0**	*11.2*	9.4	8.5	7.6
65.0	*7.0*	5.6	4.9	4.2	**82.5**	*11.3*	9.5	8.6	7.7
65.5	*7.2*	5.8	5.0	4.3	**83.0**	*11.4*	9.6	8.7	7.8
66.0	*7.3*	5.9	5.2	4.4	**83.5**	*11.5*	9.6	8.7	7.8
66.5	*7.5*	6.0	5.3	4.6	**84.0**	*11.5*	9.7	8.8	7.9
67.0	*7.6*	6.1	5.4	4.7	**84.5**	*11.6*	9.8	8.9	8.0

Weight-for-Height references: height versus weight in Z-scores (cont)

(Height assessed standing from 85.0 cm, sexes combined, upto 130 cm; NCHS/CDC/WHO, 1982)

Height		*weight in kg*			*height*		*weight in kg*		
cm	**Median**	**–2 Zs**	**-3 Zs**	**-4 Zs**	**cm**	**Median**	**–2 Zs**	**-3 Zs**	**-4 Zs**
85.0	*12.0*	9.8	8.7	7.7	**111.0**	*18.8*	15.5	13.9	12.3
85.5	*12.1*	9.9	8.8	7.7	**111.5**	*18.9*	15.7	14.0	12.4
86.0	*12.2*	10.0	8.9	7.8	**112.0**	*19.1*	15.8	14.2	12.5
86.5	*12.3*	10.1	9.0	7.9	**112.5**	*19.3*	15.9	14.3	12.6
87.0	*12.4*	10.2	9.1	8.0	**113.0**	*19.4*	16.1	14.4	12.8
87.5	*12.5*	10.3	9.2	8.1	**113.5**	*19.6*	16.2	14.6	12.9
88.0	*12.6*	10.4	9.3	8.2	**114.0**	*19.8*	16.4	14.7	13.0
88.5	*12.8*	10.5	9.4	8.2	**114.5**	*19.9*	16.5	14.8	13.1
89.0	*12.9*	10.6	9.5	8.3	**115.0**	*20.1*	16.7	15.0	13.3
89.5	*13.0*	10.7	9.6	8.4	**115.5**	*20.3*	16.8	15.1	13.4
90.0	*13.1*	10.8	9.6	8.5	**116.0**	*20.5*	17.0	15.3	13.5
90.5	*13.2*	10.9	9.7	8.6	**116.5**	*20.7*	17.2	15.4	13.7
91.0	*13.3*	11.0	9.8	8.6	**117.0**	*20.8*	17.3	15.6	13.8
91.5	*13.4*	11.1	9.9	8.7	**117.5**	*21.0*	17.5	15.7	13.9
92.0	*13.6*	11.2	10.0	8.8	**118.0**	*21.2*	17.6	15.8	14.1
92.5	*13.7*	11.3	10.1	8.9	**118.5**	*21.4*	17.8	16.0	14.2
93.0	*13.8*	11.4	10.2	9.0	**119.0**	*21.6*	18.0	16.2	14.3
93.5	*13.9*	11.5	10.3	9.0	**119.5**	*21.8*	18.1	16.3	14.5
94.0	*14.0*	11.6	10.4	9.1	**120.0**	*22.0*	18.3	16.5	14.6
94.5	*14.2*	11.7	10.4	9.2	**120.5**	*22.2*	18.5	16.6	14.8
95.0	*14.3*	11.8	10.5	9.3	**121.0**	*22.4*	18.7	16.8	14.9
95.5	*14.4*	11.9	10.6	9.4	**121.5**	*22.6*	18.8	16.9	15.0
96.0	*14.5*	12.0	10.7	9.4	**122.0**	*22.8*	19.0	17.1	15.2
96.5	*14.7*	12.1	10.8	9.5	**122.5**	*23.1*	19.2	17.3	15.3
97.0	*14.8*	12.2	10.9	9.6	**123.0**	*23.3*	19.4	17.4	15.5
97.5	*14.9*	12.3	11.0	9.7	**123.5**	*23.5*	19.6	17.6	15.6
98.0	*15.0*	12.4	11.1	9.8	**124.0**	*23.7*	19.7	17.7	15.7
98.5	*15.2*	12.5	11.2	9.8	**124.5**	*24.0*	19.9	17.9	15.9
99.0	*15.3*	12.6	11.3	9.9	**125.0**	*24.2*	20.1	18.1	16.0
99.5	*15.4*	12.7	11.4	10.0	**125.5**	*24.4*	20.3	18.2	16.2
100.0	*15.6*	12.8	11.5	10.1	**126.0**	*24.7*	20.5	18.4	16.3
100.5	*15.7*	12.9	11.6	10.2	**126.5**	*24.9*	20.7	18.6	16.4
101.0	*15.8*	13.0	11.7	10.3	**127.0**	*25.2*	20.9	18.7	16.6
101.5	*16.0*	13.2	11.8	10.4	**127.5**	*25.4*	21.1	18.9	16.7
102.0	*16.1*	13.3	11.9	10.4	**128.0**	*25.7*	21.3	19.1	16.9
102.5	*16.2*	13.4	12.0	10.5	**128.5**	*26.0*	21.5	19.2	17.0
103.0	*16.4*	13.5	12.1	10.6	**129.0**	*26.2*	21.7	19.4	17.1
103.5	*16.5*	13.6	12.2	10.7	**129.5**	*26.5*	21.9	19.6	17.3
104.0	*16.7*	13.7	12.3	10.8	**130.0**	*26.8*	22.1	19.7	17.4
104.5	*16.8*	13.8	12.4	10.9	**130.5**	*27.1*	22.3	19.9	17.5
105.0	*16.9*	14.0	12.5	11.0	**131.0**	*27.4*	22.5	20.1	17.6
105.5	*17.1*	14.1	12.6	11.1	**131.5**	*27.6*	22.7	20.2	17.8
106.0	*17.2*	14.2	12.7	11.2	**132.0**	*27.9*	22.9	20.4	17.9
106.5	*17.4*	14.3	12.8	11.3	**132.5**	*28.2*	23.1	20.6	18.0
107.0	*17.5*	14.5	12.9	11.4	**133.0**	*28.6*	23.3	20.7	18.1
107.5	*17.7*	14.6	13.0	11.5	**133.5**	*28.9*	23.6	20.9	18.3
108.0	*17.8*	14.7	13.2	11.6	**134.0**	*29.2*	23.8	21.1	18.4
108.5	*18.0*	14.8	13.3	11.7	**134.5**	*29.5*	24.0	21.2	18.5
109.0	*18.1*	15.0	13.4	11.8	**135.0**	*29.8*	24.2	21.4	18.6
109.5	*18.3*	15.1	13.5	11.9	**135.5**	*30.2*	24.4	21.6	18.7

Annex 2. 7

Weight-for-Height references: height versus weight in % of median (Cont.)

(adapted from NCHS/CDC/WHO, 1982)

	male					***male***			
height	*weight in kg*				*height*	*weight in kg*			
cm	**100%**	**85%**	**80%**	**70%**	**cm**	**100%**	**85%**	**80%**	**70%**
130.5	*27.2*	23.1	21.8	19.0	**153.0**	*42.3*	36.0	33.8	29.6
131.0	*27.5*	23.4	22.0	19.3	**153.5**	*42.6*	36.2	34.1	29.8
131.5	*27.8*	23.6	22.2	19.5	**154.0**	*43.0*	36.6	34.4	30.1
132.0	*28.0*	23.8	22.4	19.6	**154.5**	*43.4*	36.9	34.7	30.4
132.5	*28.3*	24.1	22.6	19.8	**155.0**	*43.8*	37.2	35.0	30.7
133.0	*28.6*	24.3	22.9	20.0	**155.5**	*44.2*	37.6	35.4	30.9
133.5	*28.9*	24.6	23.1	20.2	**156.0**	*44.6*	37.9	35.7	31.2
134.0	*29.2*	24.8	23.4	20.4	**156.5**	*45.0*	38.3	36.0	31.5
134.5	*29.5*	25.1	23.6	20.7	**157.0**	*45.4*	38.6	36.3	31.8
135.0	*29.9*	25.4	23.9	20.9	**157.5**	*45.8*	38.9	36.6	32.1
135.5	*30.2*	25.7	24.2	21.1	**158.0**	*46.2*	39.3	37.0	32.3
136.0	*30.5*	25.9	24.4	21.4	**158.5**	*46.7*	39.7	37.4	32.7
136.5	*30.8*	26.2	24.6	21.6	**159.0**	*47.1*	40.0	37.7	33.0
137.0	*31.1*	26.4	24.9	21.8	**159.5**	*47.5*	40.4	38.0	33.3
137.5	*31.4*	26.7	25.1	22.0	**160.0**	*48.0*	40.8	38.4	33.6
138.0	*31.8*	27.0	25.4	22.3	**160.5**	*48.4*	41.1	38.7	33.9
138.5	*32.1*	27.3	25.7	22.5	**161.0**	*48.8*	41.5	39.0	34.2
139.0	*32.4*	27.5	25.9	22.7	**161.5**	*49.3*	41.9	39.4	34.5
139.5	*32.7*	27.8	26.2	22.9	**162.0**	*49.8*	42.3	39.8	34.9
140.0	*33.1*	28.1	26.5	23.2	**162.5**	*50.2*	42.7	40.2	35.1
140.5	*33.4*	28.4	26.7	23.4	**163.0**	*50.7*	43.1	40.6	35.5
141.0	*33.8*	28.7	27.0	23.7	**163.5**	*51.2*	43.5	41.0	35.8
141.5	*34.1*	29.0	27.3	23.9	**164.0**	*51.6*	43.9	41.3	36.1
142.0	*34.4*	29.2	27.5	24.1	**164.5**	*52.1*	44.3	41.7	36.5
142.5	*34.8*	29.6	27.8	24.4	**165.0**	*52.6*	44.7	42.1	36.8
143.0	*35.1*	29.8	28.1	24.6	**165.5**	*53.1*	45.1	42.5	37.2
143.5	*35.5*	30.2	28.4	24.9	**166.0**	*53.6*	45.6	42.9	37.5
144.0	*35.8*	30.4	28.6	25.1	**166.5**	*54.1*	46.0	43.3	37.9
144.5	*36.1*	30.7	28.9	25.3	**167.0**	*54.6*	46.4	43.7	38.2
145.0	*36.5*	31.0	29.2	25.6	**167.5**	*55.1*	46.8	44.1	38.6
145.5	*36.9*	31.4	29.5	25.8	**168.0**	*55.6*	47.3	44.5	38.9
146.0	*37.2*	31.6	29.8	26.0	**168.5**	*56.2*	47.8	45.0	39.3
146.5	*37.6*	32.0	30.1	26.3	**169.0**	*56.7*	48.2	45.4	39.7
147.0	*37.9*	32.2	30.3	26.5	**169.5**	*57.3*	48.7	45.8	40.1
147.5	*38.3*	32.6	30.6	26.8	**170.0**	*57.8*	49.1	46.2	40.5
148.0	*38.6*	32.8	30.9	27.0	**170.5**	*58.4*	49.6	46.7	40.9
148.5	*39.0*	33.2	31.2	27.3	**171.0**	*59.0*	50.2	47.2	41.3
149.0	*39.3*	33.4	31.4	27.5	**171.5**	*59.6*	50.7	47.7	41.7
149.5	*39.7*	33.7	31.8	27.8	**172.0**	*60.2*	51.2	48.2	42.1
150.0	*40.0*	34.0	32.0	28.0	**172.5**	*60.8*	51.7	48.6	42.6
150.5	*40.4*	34.3	32.3	28.3	**173.0**	*61.4*	52.2	49.1	43.0
151.0	*40.8*	34.7	32.6	28.6	**173.5**	*62.1*	52.8	49.7	43.5
151.5	*41.1*	34.9	32.9	28.8	**174.0**	*62.7*	53.3	50.2	43.9
152.0	*41.5*	35.3	33.2	29.1	**174.5**	*63.4*	53.9	50.7	44.4
152.5	*41.9*	35.6	33.5	29.3					

Annex 2. 8

Weight-for-Height references: height (cm) versus median weight (kg) (Cont.)

(adapted from NCHS/CDC/WHO, 1982)

	female					***female***			
height	*weight in kg*				*height*	*weight in kg*			
cm	**100%**	**85%**	**80%**	**70%**	**cm**	**100%**	**85%**	**80%**	**70%**
130.5	*27.4*	23.3	21.9	19.2	**152.5**	*42.3*	36.0	33.8	29.6
131.0	*27.7*	23.5	22.2	19.4	**153.0**	*42.6*	36.2	34.1	29.8
131.5	*28.0*	23.8	22.4	19.6	**153.5**	*43.0*	36.6	34.4	30.1
132.0	*28.3*	24.1	22.6	19.8	**154.0**	*43.4*	36.9	34.7	30.4
132.5	*28.6*	24.3	22.9	20.0	**154.5**	*43.8*	37.2	35.0	30.7
133.0	*29.0*	24.7	23.2	20.3	**155.0**	*44.2*	37.6	35.4	30.9
133.5	*29.3*	24.9	23.4	20.5	**155.5**	*44.6*	37.9	35.7	31.2
134.0	*29.6*	25.2	23.7	20.7	**156.0**	*45.1*	38.3	36.1	31.6
134.5	*3.0*	2.6	2.4	2.1	**156.5**	*45.5*	38.7	36.4	31.9
135.0	*30.3*	25.8	24.2	21.2	**157.0**	*46.0*	39.1	36.8	32.2
135.5	*30.6*	26.0	24.5	21.4	**157.5**	*46.5*	39.5	37.2	32.6
136.0	*31.0*	26.4	24.8	21.7	**158.0**	*47.0*	40.0	37.6	32.9
136.5	*31.3*	26.6	25.0	21.9	**158.5**	*47.6*	40.5	38.1	33.3
137.0	*31.7*	26.9	25.4	22.2	**159.0**	*48.2*	41.0	38.6	33.7
137.5	*32.0*	27.2	25.6	22.4	**159.5**	*48.9*	41.6	39.1	34.2
138.0	*32.4*	27.5	25.9	22.7	**160.0**	*49.7*	42.2	39.8	34.8
138.5	*32.7*	27.8	26.2	22.9	**160.5**	*50.5*	42.9	40.4	35.4
139.0	*33.0*	28.1	26.4	23.1	**161.0**	*51.6*	43.9	41.3	36.1
139.5	*33.4*	28.4	26.7	23.4	**161.5**	*52.8*	44.9	42.2	37.0
140.0	*33.7*	28.6	27.0	23.6	**162.0**	*54.5*	46.3	43.6	38.2
140.5	*34.1*	29.0	27.3	23.9	**162.5**	*56.1*	47.7	44.9	39.3
141.0	*34.4*	29.2	27.5	24.1	**163.0**	*56.4*	47.9	45.1	39.5
141.5	*34.7*	29.5	27.8	24.3	**163.5**	*56.7*	48.2	45.4	39.7
142.0	*35.1*	29.8	28.1	24.6					
142.5	*35.4*	30.1	28.3	24.8					
143.0	*35.8*	30.4	28.6	25.1					
143.5	*36.1*	30.7	28.9	25.3					
144.0	*36.4*	30.9	29.1	25.5					
144.5	*36.8*	31.3	29.4	25.8					
145.0	*37.1*	31.5	29.7	26.0					
145.5	*37.4*	31.8	29.9	26.2					
146.0	*37.8*	32.1	30.2	26.5					
146.5	*38.1*	32.4	30.5	26.7					
147.0	*38.4*	32.6	30.7	26.9					
147.5	*38.8*	33.0	31.0	27.2					
148.0	*39.1*	33.2	31.3	27.4					
148.5	*39.5*	33.6	31.6	27.7					
149.0	*39.8*	33.8	31.8	27.9					
149.5	*40.1*	34.1	32.1	28.1					
150.0	*40.5*	34.4	32.4	28.4					
150.5	*40.8*	34.7	32.6	28.6					
151.0	*41.2*	35.0	33.0	28.8					
151.5	*41.5*	35.3	33.2	29.1					
152.0	*41.9*	35.6	33.5	29.3					

ANNEX 2.9

Incorporating a mortality questionnaire into a nutritional survey

Assessments of Crude Mortality Rates (CMR) and Under Five Mortality Rates (U5MR) are often incorporated into nutritional surveys. When incorporating these assessments into a nutritional survey, the following should be taken into account:

Sampling
A sample should be representative of an entire population, and not only of families with children under the age of five. When conducting a nutritional survey by means of cluster sampling, households without children should be included in the mortality survey.

Recall period
The recall period depends on the expected mortality rate:
When the CMR is expected to be > 1/10,000/day, the recall period is around 3 to 6 months
When the CMR is expected to be < 1/10,000/day, the recall period is around 6 months
A date that everybody can remember should be identified e.g. since new year, or since the war started.

Questions to ask each household
1- Total number of people in the household?
2- Total number of children under five (0 to 59 months)?
3- Total number of deaths in the household during the recall period?
4- Total number of children under five, who died during the recall period?

Note: the recall period should start from a date or day that people will remember, for example the Independence Day, Christmas, other local celebrations etc.

Data handling in EPIINFO
Data on mortality rates should be recorded on a separate sheet. To be able to link files containing anthropometric information with files containing information on mortality within households, all records should have common identifiers: the cluster number plus family number should be entered in both files.

Calculation of CMR and U5MR

$$\text{CMR} = \frac{\text{total number of deaths} \times 10{,}000}{\text{mid population} \times \text{recall period in days}}$$

$$\text{Mid population} = \text{total number of people at the time of the survey} + (0.5 \times \text{total number of deaths registered during the survey})$$

$$\text{U5MR} = \frac{\text{total number of deaths of children under five} \times 10{,}000}{\text{mid under five population} \times \text{recall period in days}}$$

$$\text{Mid} < 5 \text{ years population} = \text{total number} < 5 \text{ years at the time of the survey} + (0.5 \times \text{total number of} < 5 \text{ years deaths registered during the survey})$$

Results should be presented along with confidence intervals.

ANNEX 2.10

Nutritional survey – Data collection form – Children under 5

Child form (1/3) Team n° ..... Cluster n° ..... District/camp: ..... Date: ...../..... Birth date from…… to ……..

N°	Family °	Birth date dd/mm/yy	Age years/months	Sex F/ M	Weight kg/g	Height cm/mm	Oedema Y/N	MUAC mm	TFP Y/N	SFP Y/N	Measles C/H/N/U
1											
2											
3											
4											
5											
6											
7											
...											
...											
...											
...											
33											
34											
35											

Child's identification number <##>
Every child has a unique pre-assigned number.

Family number <##>
Report the family number from the family questionnaire also used for retrospective mortality survey (see Annex 2.7). Every child should have a family number. On this form, some family numbers will not appear (when there are no children in the family) or can appear more than once (when there are various under 5 children in the family).

Birth date <dd/mm/yy> **=** day, month and year, with two digits.
If possible. In the absence of documents (e.g. vaccination card), this is not always completely reliable.

Age <years – months>
Sex <M> = male; <F> = female
Weight <kg/g> ;The weight is reported to the nearest 100 g.
Height <cm/mm> ; The height is read to the nearest 0.1 cm.
Oedema <yes/no**>;** Only bilateral oedemas are recorded.
MUAC <mm**>**
TFP <yes/no**>;** If a child is currently enrolled in the therapeutic feeding programme.
SFP <yes/no**>;** If a child is currently enrolled in the supplementary feeding programme (check for SFP bracelet).

Measles vaccination
<C> = the child has a card recording a measles vaccination (**C**ard).
<H> = the mother tells the child has been vaccinated but there is no card (**H**istory).
<N> = the mother tells the child has not been vaccinated (**N**o).
<U> = unknown: this should be limited as much as possible (**U**nknown)

ANNEX 2.11

Retrospective mortality survey – Data collection form - Family

Team n° ..... Cluster n° ..... District/camp ..... Date ...../...../.....……..

Family n°	**Status** D = displaced R = resident	**Date of arrival** <month/year>	**Number of children under 5**	**Number of children 5 years and older**	**Deaths among children under 5**	**Deaths among children 5 years and older**
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
...						
...						
...						
...						
...						
18						
39						
40						

A family is difficult to define, especially in unstable populations (recently displaced populations, war contexts). Generally, all individuals who slept in the house over the previous week are considered family members.
Individuals who are hospitalised (or in feeding centres) as well as those who have recently arrived should be considered family members.
Short term visitors (less than one week) are not considered family members.
Recall period for mortality is 3 months (expressed in a convenient date to remember (e.g. after New year).

ANNEX 2.12 NOTE FOR PRINTING: "V" IN THE FORMULA IS A SQUARE ROOT COVERING THE FRACTION

Calculation of Confidence Interval

Example - 510 children have been surveyed: the prevalence of global malnutrition is 7.6%.

Formula for random and systematic sampling:

$$z \times \sqrt{\frac{p \times q}{n}} = d$$

n = Sample size
z = Parameter related to the risk of error, equals 1.96 for an error risk of 5%
p = Prevalence of malnutrition in the population, expressed as a fraction of 1
q = 1 - p, proportion of children not presenting malnutrition, expressed as a fraction of 1
d = Absolute precision or confidence interval, expressed as a fraction of 1.

$$1.96 \times \sqrt{\frac{0.076 \times 0.924}{510}} = 0.023$$

Prevalence = 7.6 +/- 2.3% =7.6 % [5.3 – 9.9]

Formula for cluster sampling:

$$z \times \sqrt{2 \times \frac{p \times q}{n}} = d$$

n = Sample size
z = Parameter related to risk of error, equals 1.96 for an error risk of 5%
p = Prevalence of malnutrition in the population, expressed as a fraction of 1
q = 1 - p, proportion of children not presenting malnutrition, expressed as a fraction of 1
d = Absolute precision, expressed as a fraction of 1.
2 = Cluster effect

$$1.96 \times \sqrt{2 \times \frac{0.076 \times 0.924}{510}} = 0.033$$

Prevalence= 7.6 +/- 3.3 % = 7.6 % [4.3 – 10.9]

Comment :
If the observed prevalence is closer to 50% than the predicted one, the precision will be less accurate than expected. If the observed prevalence is less than expected, the precision will be better than expected. It is better to overestimate the expected prevalence when calculating the sample size, in order to be on the safe side when the survey is completed.

ANNEX 4.1

Food composition table

Nutritional value of common food aid commodities in emergencies

	Nutritional value/100g		
	Energy (kcal)	**Protein (g)**	**Fat (g)**
Cereals			
Wheat	330	12.3	1.5
Rice	360	7.0	0.5
Sorghum/Millet	335	11.0	3.0
Maize	350	10.0	4.0
Processed cereals			
Maize meal	360	9.0	3.5
Wheat flour	350	11.5	1.5
Bulgur wheat	350	11.0	1.5
Blended foods			
Corn soya blend (CSB)	380	18.0	6.0
Wheat soya blend (WSB)	370	20.0	6.0
Soya-fortified bulgur wheat	350	17.0	1.5
Soya-fortified maize meal	390	13.0	1.5
Soya-fortified wheat flour	360	16.0	1.3
Dairy products			
Dried skim milk (DSM)	360	36.0	1.0
Dried whole milk (DWM)	500	25.0	27.0
Canned cheese	355	22.5	28.0
Meat and fish			
Canned meat	220	21.0	15.0
Dried salted fish	270	47.0	7.5
Canned fish	305	22.0	24.0
Oil and fat			
Vegetable oil	885	-	100.0
Butter oil	860	-	98.0
Edible fat	900	-	100.0
Red palm oil	884	-	100.0
Margarine	735	-	82.0
Pulses			
Beans	335	20.0	1.2
Peas	335	22.0	1.4
Lentils	340	20.0	0.6
Dry groundnuts	580	27.0	45.0
Fresh groundnuts	330	15.0	25.0
Miscellaneous			
High Energy biscuits BP5®	458	14.7	17.0
Sugar	400	-	-
Pasta	365	12.5	1.2
Dates	245	2.0	0.5
Tea (black)	-	-	-
Iodised salt	-	-	-

Calculation of the nutritional value of a food ration

1 gram protein = 4 kcal
1 gram of fat = 9 kcal

Example

Food item	**Quantity in g/day**	**Kcal/day**
Sorghum	350	1172
Oil	50	443
Peas	70	235
CSB	60	228
Total	**–**	**2078 kcal**

With the help of the composition table the following can be calculated:

1) **Examples Kcal content**:
350 g sorghum: 350 x 335/100 = 1172 kcal
50 g oil: 50 x 885/100 = 443 kcal

2) **Examples Protein content**
350 g sorghum: 350 x 11/100 = 38.5
70 g peas: 70 x 22/100 = 15.4

3) **Examples Fat content**
350 g sorghum: 350 x 3/100 = 10.5
70 g peas: 70 x 1.4/100 = 0.98

4) **Examples Percentage of kcal provided by protein**
Total gram of proteins = 64
64 x 4 = 256 kcal
Proportion: 256/2078 = 12 %

5) **Examples Percentage of kcal provided by fat**
Total gram of fat = 65
65 x 9 = 585 kcal
Proportion: 585/2078 = 28 %

ANNEX 4.2

Food distribution surveys

Objectives of food distribution surveys

– To measure the quantity and quality of the ration distributed (kcal, protein and fat content, nutrient content, spoiled food)

– To compare the kcal value, protein and fat content of the received ration to the theoretical planned ration

– To determine equity of the distribution between the household receiving the ration

– To have quantitative figures collected in a standardized system of lobbying and advocacy

Methodology of food distribution surveys

1) Choose a clean and secure shelter near the distribution point, with a possibility to install weighing equipment. Typically, there should be 2 monitors and one supervisor with plastic buckets, extra bags and a 50 kg, 25 kg and 5 kg scale and stationary.

2) 35 families should be randomly selected at the distribution site after they receive their ration. This should be done in a systematic way (see chapter 2)

> ***Example***
> 1500 head of households are expected for the distribution in one site.
> 35 head-households should be checked, 1500/35 = 43 (sampling interval).
> Choose at random one number from 1 to 43, for example 18.
> The first head-household will be the 18th.
> Then add the sampling interval 18 + 43 = 61 and continue to add 43 until you get 35 head-households.
> If the number of heads of household is unknown, the sample should be calculated according to distribution time. For a distribution taking around 6 hours, select 1 household every 10 minutes (6 h/35).

3) The selected family is accompanied to the survey point.
4) The size of the family is noted.
5) They are asked about the date of last distribution.
6) Each food item should be inspected (colour, odour, taste, aspect) and weighed. Results should be reported.

When all selected families have been surveyed:
1) Calculate the average kcal/person/day and the protein and fat content of the average ration.
Calculation can be done by software FDS and Excel or manually.

– The kcal values of the different food items are added, giving the total kcal value of the family ration received.

– The total kcal value of the family ration is then divided by the number of persons in the family, resulting in the energy available per person (kcal/person).

– The individual kcal value is then divided by the number of days covered by the ration to give kcal/ persons/day.

> *Example: a family of 5 persons received for 10 days: 16.6 kg of maize, 1,7 kg of oil and 2.6 kg of beans.*
> With the food composition table, calculate the energy value of each food item:

Maize: 16 600 g x 350/100	= 58 100 kcal/family *plus*
Oil: 1700 g x 900/100	= 15 300 kcal/family *plus*
Beans: 2600 g x 335/100	= 8 710 kcal/family *minus*
Spoiled food: for example, 600 g of maize	= *2 100 kcal/family*
Total	**= 80 010 kcal/family**
Kcal/person: 80 010 /5	= **16 002**
Kcal/person/day: 16 002/10	= **1 600**

2) Analyse and report findings.

Sampling in complex distribution systems

Distributions can be quite chaotic during the beginning of an emergency. Food items are rapidly distributed (i.e. as they arrive) and often occur in several sites. It may not always be feasible to sample 35 families per site per day. An option is to randomly sample at distribution sites daily. Alternatively, 35 families could be sampled covering all different sites every day. Although these methods do not give a clear picture of the ration received by each individual, they give an idea of the distribution performance for the whole population.

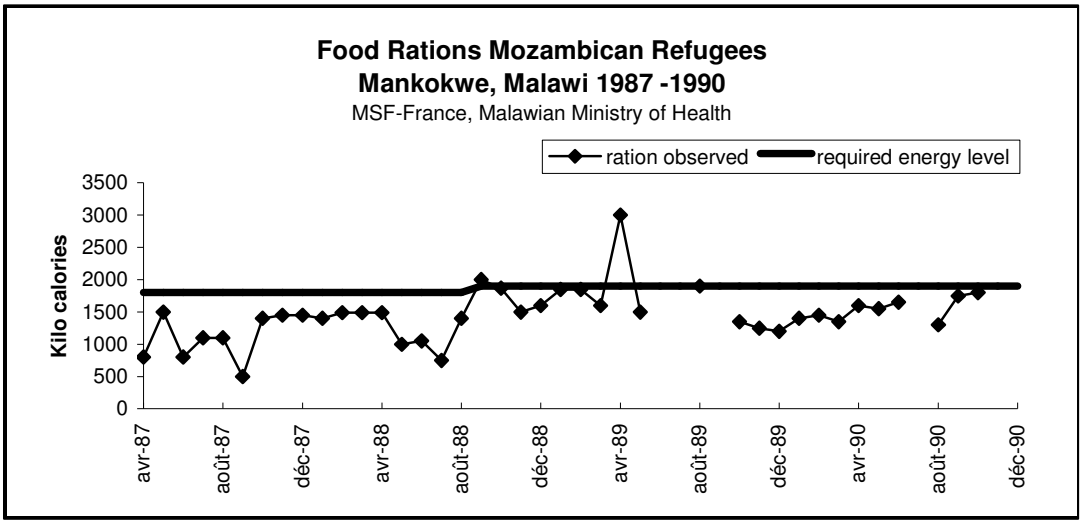
Example

	One distribution site	Several distribution sites
Ration distributed: at 1 day	35 families selected	35 families per site of distribution
Ration distributed over several days (one item a day, 2 others an other day's etc.)	35 families selected every day of distribution	35 families per site of distribution and every day of the distribution If not feasible, sample at random sites and days

Results food distribution survey

– A ration of at least 2 100 kcal/person/day should be provided during the initial stages of an emergency. Once the situation evolves, other rations can be set.

– Plotting the average kcal/person/day on a graph can easily monitor the trend of the quantity of food distributed per month.



The energy value of the observed ration should be compared to the planned ration according to the following methods:

- **Average: A confidence interval (CI) for the observed individual energetic value can be calculated. When the planned ration falls within the CI of the observed ration, the ration distributed is considered globally correct. If the planned ration is above and outside the CI, the ration handed out is significantly too low.**
- Equity: A deviation of 10% around the planned ration is acceptable. Food distribution can be considered as equitable when 95% of individuals receive not more or less than 10% of the planned daily ration[51].
- Systematic bias: Different population groups may receive different rations (large families, female headed households, child headed households, ethnic groups). This must be identified, analysed (correlation test or compare the mean kcal of the two groups) and reported.

[51] Statistical calculations: the maximum statistical variance of the planned ration accepted is: variance ^{planned} = [(0.1 * average observed ration)/1,96]^2 If the variance ^{observed} is lower than the variance $^{planned:}$: the distribution is considered as equitable; if the variance ^{observed} is higher than the variance ^{planned} : the distribution is considered as inequitable

Interpretation of results and action

– If the observed average kcal/person/day is lower than the planned average, the distribution chain should be audited. If it is higher, suspect survey bias and control the measurement, method used etc.

– If variation between families or groups is high (Observed Variance), the distribution is inequitable and the distribution point should be audited.

– Calculations can be misleading if, for example, an actual family size differs considerably from the family size as indicated on the ration card.

Comments regarding food distribution surveys

– Food rations may not be equally distributed throughout the day. Commodities may run out, meaning some families receive less towards the end of the day.

– Distribution intervals may be irregular, making it hard to calculate a daily ration.

– By carrying out a food distribution survey, behavior may be influenced and bias may occur (distributors know the ration is surveyed and therefore give more to families who may be checked). A way of avoiding this would be to select 175 families instead of 35, and at the measuring point, only take one in five.

GFD Survey- Data collection and calculation form at the distribution sites

Date:……..Place:……
Fill by:…….

No	Family size		Cereal	Oil	Pulse	CSB	Other item	Spoiled food	Total kcal/ family	Total kcal/ pers	Total kcal/pers/day	Date last distribution
1		kg										
		kcal										
2		kg										
		kcal										
3		kg										
		kcal										
4		kg										
		kcal										
5		kg										
		kcal										
6		kg										
		kcal										
7		kg										
		kcal										
8		kg										
		kcal										
9		kg										
		kcal										
10		kg										
		kcal										
11		kg										
		kcal										
12		kg										
		kcal										
13		kg										
		kcal										
14		kg										
		kcal										
15		kg										
		kcal										
16		kg										
		kcal										
17		kg										
		kcal										
18		kg										
		kcal										
etc.		kg										
		kcal										
35		kg										
		kcal										

Report form for GFD survey

Place: ……..Distribution site:……
Date:…….

1. Planned ration
Number of kcal/person/day:……
Composition:……
……

2. Rations distributed
Number of days covered by this distribution:……

Items	Cereal	Pulse	Oil	Sugar	CSB	Other	Average kcal/person/day
Planned ration g/person/day							
Planned ration kcal/person/day							

% of kcal provided by proteins:……
% of kcal provided by fats:……

Spoiled food seen: No ☐ Yes ☐
If YES:
– which items:…….
– which type of damage:……...
– % of families receiving spoiled food:…….

3. Efficiency of the distribution system
With *CI method:*

Planned ration falls within the CI of the observed ration: No ☐ Yes ☐

or
with deviation around planned ration:
90% of planned ration = ……. kcal/person/day
110% of planned ration = …….kcal/person/day

% of kcal actually received	< 90%	90% – 110%	> 110%
Number of families			
% of families			

4. Comments and suggestions for action

ANNEX 4.3
Tools for assessing GFD

Information required/level	Methods/sources
1. Assessment of theoretical general food ration – When was the last evaluation done? By whom? How? – Is the theoretical ration adequate to cover the needs of the affected population ? 1) Composition: • Quantity, quality, acceptability • Kcal/person/day • Proteins, fat, micronutrient content 2) Access to others food sources: which ones, who has access? 3) Beneficiaries: • Definition of beneficiaries (displaced, resident population etc.) • Number of beneficiaries • Are the number of beneficiaries and definition used appropriate? 4) Needs: is there a problem in the identification of the needs? Which one? For what reasons (lack of objectivity in the assessment, to quickly done etc.)? 5) Timing: is the timing good and respected? – Has action been sought to solve the problems?	– See *Joint Food Assessment Mission* (JFAM) document. – See *FAO evaluation*, WFP, etc. (at international and capital level). – Meet agencies in charge of evaluation.
2. Funding appeal response – How much funding was requested in the appeal? When? – Who are donors? – From the funding appeal, how much has been received by WFP? – Does the funding response cover the needs? (if not, why and what are the consequences?) – Has there been a delay in responding to the appeal? How long? – Were donations in kind or money? (if in kind, does it create a problem?) – Has action been sought to solve the problems?	See WFP at different levels (Rome, capital level, field level).
3. Transport/customs – Where is the food transported from (country, factory etc.)? – How is it transported (boat, train, plane, truck etc.)? – Are the transport and customs procedures to dispatch goods well implemented? – If no, where is the problem, at which level (international, national, local)? Why? • Capacity: enough planes, trucks etc? • Lack of funds for transport? • Security: trucks blocked, stolen convoys, roads insecure etc. • Road conditions: rainy season, broken bridges etc. • Customs: blockage, delays etc. – Has action been sought to solve the problems?	WFP country or regional level office.
4. Storage – Who is in charge? – What is the capacity (how many MT can be stored at each level)? – How much is currently being stored ? • At country level: X MT corresponding to X weeks of consumption for the country (reference to pledge quantity and consumption) • At local level: X MT corresponding to X weeks of consumption. – What are the storage conditions (tents etc.) – Has action been sought to solve the problems?	– WFP country level or implementing partners. – Observation – Quality of food received, sign of contamination?
5. Distribution **Registration**: **is the registration done efficiently, fairly, regularly, safely and with transparency?** – Which agency is in charge of registration? – How is the registration system organized? – Are the new beneficiaries registered? How long does it take to be registered? – What are the criteria to be registered? – How many persons are registered? Does the number of people receiving food	– Meet agency in charge – Observation – Food distribution surveys – Interviews

rations correspond to the planned number of beneficiaries? – Is it corresponding to the affected population (presumed population covered by the distribution)? – Delay or problems in the registration process? Why? – Has action been sought to solve the problems? **Ration distributed**: **is the population receiving adequate ration?** – What it the composition of the theoretical ration (see point 1. Theoretical ration)? – What is the composition of the received ration (kcal, proteins, fat, vitamins, etc.)? – Are quality and quantity sufficient? – Is the ration well accepted by the population? If no, why? – Is the food distributed suitable for consumption: organoleptic test, expiry dates, etc. – Has action been sought to solve the problems? **Distribution**: **is the distribution done efficiently, fairly, regularly, safely and with transparency?** – How is it organised? Where is it done? – How many distribution sites? – What is the distance to reach GFD point? – Are beneficiaries receiving food in time? If no why? How long was distribution delayed and what is the time interval between 2 distributions? (number of days) – Interval planned (presumed duration of the ration) • Real interval (date of last distributions) • What is foreseen for the next distribution? – To whom is the food distributed (head of family, village chiefs, etc.)? – Are there some excluded groups ? – Is there any abuse during the distribution? – Is the information shared? – Is the distribution well organised? – How is the distribution: calm, chaotic, security incidents, etc? – Has action been sought to solve the problems? **Population level**: – Does the population have cooking facilities (water, utensils, firewood, etc)? – Is the distribution of food fair within the families (all members of the family are receiving correct amount of food) ? – Is food creating insecurity for the family ? – Has action been sought to solve the problems?	– Households surveys

Examples of useful reports

Food security reports by FEWS (USAID) and GIEWS (FAO) early warning systems

- Monthly reports (FEWS) : update of the food security situation in each country
- Crop prospects and food situation (GIEWS, every 2-3 months): overviews of the food security situation, list of countries in crisis requiring external assistance

Annual Needs Assessment (ANA) by WFP

Forecast of expected food insecurity.

- Projection based on agricultural production and population size and variability in wealth
- Estimated food deficit for the region and percentage of people affected.

Joint food assessment missions (JFAM) by WFP and FAO or UNHCR

- Recommended rations
- Beneficiaries
- Duration
- Logistic arrangements

Food Availability Status Report (FASREP) by WFP

This information can identify potential breaks in the pipeline. However the FASREP only reflects food channelled through WFP; bilateral or private NGO food supplies are not covered in this report.

- Supply and distribution
- Projections based on estimated population figures for the following 6 months
- Agreed ration scale
- In-country stocks and expected supply

Distribution reports by distributing agencies

General information concerning distributions.

- Number of beneficiaries (theoretical: registered and practical: during the distribution)
- Opening and closing balance
- Quantity distributed and lost
- Type of food

Nutritional and health reports by health organizations/structures/government

ANNEX 6.1

Type of food used in therapeutic feeding programmes

	Indications	Characteristics	Preparation
F-75 formula *for* **Phase 1**	Therapeutic milk F-75 is not intended to make the patient gain weight. The use of F-75 is advantageous especially for children suffering from kwashiorkor and critically ill patients. The use of F-75 is restricted to **phase 1**.	F-75 is a ready-mixed powder made from skimmed milk powder, fat, sugar, vitamins and minerals. Therapeutic milk F75 has a: • Low energy density (75 kcal /100 ml) • Low protein content (0.9 g/100 ml) • Low fat and sodium content • High carbohydrates content • Low osmolarity (280 mOsmol/litre) F-75 causes less stress on the kidneys, vascular system and liver than F-100.	Dilute one 410 g bag of F-75 in 2 litres of boiled and cooled water to obtain 2.4 litres of F-75. 100 kcal/kg/day corresponds to 135 ml/kg/day Once prepared, F-75 cannot be kept for more than 2 hours. **F-75 contains all nutrients necessary for the treatment of severe malnutrition. Nothing else should be added after dilution.**
SDTM (Specially Diluted Therapeutic Milk) *for* **Phase 1**	**STDM can be used as an alternative to F-75 when F-75 is not available.** .	SDTM is F-100 ready-mixed powder that is diluted with greater volume of water than usual Therefore has a lower osmolarity than full-strength F-100.	Dilute one 456 g bag of F-100 in 2.8 litres of boiled and cooled water to obtain 3.2 litres of SDTM or When small quantities are needed: add 350 ml of water to 1 litre of F-100 milk to obtain 1.35 litres of SDTM. 100 kcal/kg/day corresponds to 135 ml/kg/day Once prepared, SDTM cannot be kept for more than 2 hours. SDTM contains all nutrients necessary for the treatment of severe malnutrition. Nothing else should be added after dilution.

F-100 formula *for* **Phase 2**.	Therapeutic milk F-100 is designed to maximise weight gain	F-100 is a ready-mixed powder made from skimmed milk powder, fat, sugar, vitamins and minerals F-100 provides: 100 kcal/100 ml 2.9 g protein/100 ml Osmolarity: 419 mOsmol/litre	Dilute one 456 g bag of F-100 in 2 litres of boiled and cooled water to obtain 2.4 litres of full-strength F-100 100 kcal/kg/day corresponds to 100 ml/kg/day Once prepared, F-100 cannot be kept for more than 2 hours. F-100 contains all nutrients necessary for the treatment of severe malnutrition. Nothing else should be added after dilution.
HEM *for* **Phase 2**.	High Energy Milk (HEM) is intended to maximise weight gain It is used as a temporary replacement for F-100 when F-100 is not available.	HEM is not a commercially available milk formula such as F-100. HEM is a formula made on site from basic ingredients. Its preparation requires trained staff and time. HEM provides: 100 kcal/100 ml 2.9 g protein/100 ml	Mix: 80 g of dry skimmed milk + 60 g of oil + 50 g of sugar + 3 g CMV and add boiled and cooled water to make 1 litre CMV should be added only once the milk solution is diluted (see Annex 6.2 for recipe of large quantities of HEM) 100 kcal/kg/day corresponds to 100 ml/kg/day Once prepared, HEM cannot be kept for more than 2 hours.
RUTF *for* **Phase 2**.	RUTF is designed for **phase2** (rehabilitation) at home or day care to maximise weight gain in **RUTF should not be used in children under 6 months of age.**	RTUF is a solid ready-to-use therapeutic mixture of skimmed milk powder, cereal flour, fat, sugar, vitamins and minerals. Nutritional composition of RUTF such as Plumpy'nut® or BP100®is based on the F-100 formula. For Plumpy'nut®: one 92 g sachet = 500 kcal For BP100®: one bar = 2 tablets = 300 kcal	RUTF is packed in individual rations. RUTF does not require cooking or dilution. However, the consumption must be accompanied by drinking water. **RUTF contain all nutrients necessary for the treatment of severe malnutrition. Nothing else should be added.**

Porridge *for* **Phase 2**.	Porridge is used in **phase 2**. Porridge is not a therapeutic food; it should not be used alone but as a supplement in phase 2.	Porridge should preferably be prepared with blended fortified food. Blended fortified food is a mixture of cereals or other ingredients fortified with a vitamin mineral premix. CSB (Corn Soya Blend), WSB (Wheat Soya Blend) and Unimix (Maize Soya Blend) are fortified blended foods.	Premix: mix first blended fortified food + oil + sugar (see Annex 7.3 for recipes) Boil clean water; let it cool for 2 to 3 minutes. Add this premix to the water, mix, and let simmer for 10 minutes.
Local food *for* **Phase 2**.	Family-like meals may be given (e.g. in stead of porridge) to adolescents and adults in **phase 2**.	Family-like meals are prepared with non-fortified basic food items.	

ANNEX 6.2

Meal plan

Structure	**Inpatient**			**Ambulatory**
Phase	**Phase 1**	**Transition Phase**	**Phase 2**	**Phase 2**
Quantity	100 kcal/kg/day	150 kcal/kg/day	200 kcal/kg/day	150-200 kcal/kg/day
Therapeutic food	F-75 130ml/kg/day	F-100 150 ml/kg/day	F-100 200ml/kg/day	RUTF
Diet 24h care	Divided into 8 meals	Divided into 8 meals	F-100 divided into 4 meals + porridge and local meal; + 1 RUTF for the night	
Diet day-care	Divided into 6 meals	Divided into 6 meals	F-100 divided into 3 meals + 2x porridge + 1 RUTF for the night	

Quantity per meal per child in 24 h care, inpatient

Weight in kg	**Phase 1**	**Transition phase**	**Phase 2**	
	24 h care 8 x F-75 in ml	**8 x F-100** in ml	**4 x** F-100 in ml + **2x Porridge** in cup **+ 1 RUTF** for the night	
	F-75	**F-100**	**F-100**	**Porridge**
4	65	65	130	½ cup
5	80	80	150	½ cup
6	100	100	200	½ cup
7	115	115	240	¾ cup
8	130	130	270	¾ cup
9	150	150	300	¾ cup
10	165	165	350	1 cup
11	180	180	350	1 cup
12	200	200	450	1 cup
13	215	215	450	1 cup
14	230	230	450	1 cup
15	250	250	500	1 cup
16-19	265	265	500	1 cup
20-24	290	290	500	1 cup
25-29	300	300	500	1 cup
30-39	320	320	500	1 cup
40 +	340	340	500	1 cup

Quantity per meal per child in day care

Weight in kg	Phase 1	**Transition phase**	**Phase 2**	
	6 x F-75 in ml	**6 x F-100** in ml	**3 x F-100** (in ml) **+ 2 x Porridge** (in cup) **+ 1 RUTF** for the night	
	F-75	**F-100**	**F-100**	**Porridge**
4	85	85	150	½ cup
5	105	105	200	½ cup
6	135	135	250	½ cup
7	155	155	300	¾ cup
8	175	175	300	¾ cup
9	200	200	350	¾ cup
10	220	220	400	1 cup
11	240	240	450	1 cup
12	265	265	450	1 cup
13	285	285	500	1 cup
14	300	300	500	1 cup
15	315	315	500	1 cup
16-19	330	330	500	1 cup
20-24	350	350	500	1 cup
25-29	370	370	500	1 cup
30-39	400	400	500	1 cup
40 +	400	400	500	1 cup

ANNEX 6.3

Quantity RUTF per child according to the weight in ATFC

Examples of RUTF:

6 Plumpynut®. One sachet of Plumpynut® (500 kcal)
7 BP100®: 1 bar (=2 tablets = 300 kcal)

Phase 2 should provide 150-200 kcal/kg/day. In ambulatory feeding the RUTF will provide most of the needs, but it is difficult to eat RUTF solely. Therefore it is allowed to take also some of the family meal (after RUTF is finished).

Quantity *Plumpy-Nut (sachet)*

Body weight (kg)	Daily	Weekly
< 6	2	14
6 - 10	3	21
> 10	4	28

BP100 (bars)

Body weight (kg)	Daily	Weekly
<4	2	14
4 - 5	3	21
6 – 7	4	24
8 - 9	5	35
> 9	6	42

Simplified:

In emergencies Plumpynut can be distributed only according to 2 weight groups.

	Plumpynut		**BP 100 bars**	
	Daily	Weekly	Daily	Weekly
<8kg	2	14	4	28
>8kg	3	21	6	42

When simplicity is very important 3 Plumpynut sachets/day or 4 BP100 bars/day can be handed out to all patients. In this case is advisable to complement the ATFP with family rations or blanket feeding programme.

ANNEX 6.4

ReSoMal

ReSoMal = Rehydration **So**lution for **Mal**nourished patients

Presentation

– Sachet containing 84 g of powder, to be diluted in 2 litres of clean, boiled and cooled water for treatment of 3 children

– Sachet containing 420 g of powder, to be diluted in 10 litres of clean, boiled and cooled water for treatment of 15 children

Composition for one litre

Glucose	55 mmol	Citrate	7 mmol
Saccharose	73 mmol	Magnesium	3 mmol
Sodium	45 mmol	Zinc	0.3 mmol
Potassium	40 mmol	Copper	0.045 mmol
Chloride	70 mmol		

Osmolarity 294 mEq/litre

Alternative recipes in the absence of ReSoMal

Solutions can be made by using one of the following types of rehydration salts:

• **Standard WHO-ORS** (sachet containing 3.5 g of sodium chloride, 1.5 g of potassium chloride, 20 g of glucose, total weigh: 27.9 g per sachet)

Water	Standard WHO-ORS	Sugar	CMV*
2 litres	1 sachet	50 g	1 measure
10 litres	5 sachets	250 g	5 measures

* CMV® mineral and vitamin complex: 1 measure = 6,5 grams.

• **Reduced osmolarity WHO-ORS** (sachet containing 2.6 g of sodium chloride, 1.5 g of potassium chloride, 13.5 g of glucose, total weigh: 20.5 g per sachet)

Water	Reduced osmolarity WHO-ORS	Sugar	CMV*
1.7 litres	1 sachet	40 g	1 measure
8.5 litres	5 sachets	200 g	5 measures

* CMV ® mineral and vitamin complex: 1 measure = 6,5 grams.

Oral rehydration with ReSoMal for severe malnourished

	During the first 2 hrs		During the next 10 hrs		Total over 12 hrs
Weight in kg	5 ml/kg every 30 minutes	Total over 2 hrs 20 ml/kg	5 ml/kg every hour	Total over 10 hrs 50 ml/kg	70 ml/kg
3	**15 ml** every 30 min	60 ml	**15 ml** every hour	150 ml	210 ml
4	**20 ml** every 30 min	80 ml	**20 ml** every hour	200 ml	280 ml
5	**25 ml** every 30 min	100 ml	**25 ml** every hour	250 ml	350 ml
6	**30 ml** every 30 min	120 ml	**30 ml** every hour	300 ml	420 ml
7	**35 ml** every 30 min	140 ml	**35 ml** every hour	350 ml	490 ml
8	**40 ml** every 30 min	160 ml	**40 ml** every hour	400 ml	560 ml
9	**45 ml** every 30 min	180 ml	**45 ml** every hour	450 ml	630 ml
10	**50 ml** every 30 min	200 ml	**50 ml** every hour	500 ml	700 ml
11	**55 ml** every 30 min	220 ml	**55 ml** every hour	550 ml	770 ml
12	**60 ml** every 30 min	240 ml	**60 ml** every hour	600 ml	840 ml
13	**65 ml** every 30 min	260 ml	**65 ml** every hour	650 ml	910 ml
14	**70 ml** every 30 min	280 ml	**70 ml** every hour	700 ml	980 ml
15	**75 ml** every 30 min	300 ml	**75 ml** every hour	750 ml	1050 ml
16	**80 ml** every 30 min	320 ml	**80 ml** every hour	800 ml	1120 ml
17	**85 ml** every 30 min	340 ml	**85 ml** every hour	850 ml	1190 ml
18	**90 ml** every 30 min	360 ml	**90 ml** every hour	900 ml	1260 ml
19	**95 ml** every 30 min	380 ml	**95 ml** every hour	950 ml	1330 ml
20	**100 ml** every 30 min	400 ml	**100 ml** every hour	1000 ml	1400 ml
21	**105 ml** every 30 min	420 ml	**105 ml** every hour	1050 ml	1470 ml
22	**110 ml** every 30 min	440 ml	**110 ml** every hour	1100 ml	1540 ml
23	**115 ml** every 30 min	460 ml	**115 ml** every hour	1150 ml	1610 ml
24	**120 ml** every 30 min	480 ml	**120 ml** every hour	1200 ml	1680 ml
25	**125 ml** every 30 min	500 ml	**125 ml** every hour	1250 ml	1750 ml

IV : Volume and infusion rate with half strength Darrow's or Ringer Lactate

Weight kg	Quantity over 1 hour	Rate drops/min	Weight kg	Quantity over 1 hour	Rate drops/min	Weight kg	Quantity over 1 hour	Rate drops/min
4.5	67 ml	22	**11.5**	172 ml	57	**18.5**	277 ml	92
5	75 ml	25	**12**	180 ml	60	**19.5**	292 ml	97
5.5	82 ml	27	**12.5**	187 ml	62	**20**	300 ml	100
6	90 ml	30	**13**	195 ml	65	**20.5**	307 ml	102
6.5	97 ml	32	**13.5**	202 ml	67	**21**	315 ml	105
7	105 ml	35	**14**	210 ml	70	**21.5**	322 ml	107
7.5	112 ml	37	**14.5**	217 ml	72	**22**	330 ml	110
8	120 ml	40	**15**	225 ml	75	**22.5**	337 ml	112
8.5	127 ml	42	**15.5**	232 ml	77	**23**	345 ml	115
9	135 ml	45	**16**	240 ml	80	**23.5**	352 ml	117
9.5	142 ml	47	**16.5**	247 ml	82	**24**	360 ml	120
10	150 ml	50	**17**	255 ml	85	**24.5**	367 ml	122
10.5	157 ml	52	**17.5**	262 ml	87	**25**	375 ml	125
11	165 ml	55	**18**	270 ml	90	**25.5**	382 ml	127

Note: use paediatric micro-infusion set to limit the risk of over-administration of fluids

ANNEX 6.5

Tuberculosis (TB) in children

Tuberculosis is an important cause of treatment failure in feeding programs. Clinical diagnosis is difficult as the signs are not specific.

Indicative signs

TB should be suspected in children in the following situations:
- Chronic cough (> 4 weeks);
- Prolonged fever (> 1 week) without evident aetiology;
- Pleural effusion;
- Static or reduction of weight in 4 weeks while household's food security is not problematic.
- Persistent malnutrition (often after initial improvement) after one month of nutritional treatment.
- Persistent pneumopathy after 2 different, well-monitored antibiotic treatments;
- Meningeal signs, sub-acute (i.e. headache, irritability) progressively evolving towards disorders of consciousness (lethargy, etc.), occasionally associated with a focal neurological deficit.
- Stiffness and vertebral deformation or sub-acute arthritis;
- One or more adenopathies, firm or soft, painless, and occasionally abscessed.
- Existence of a known TB case in the immediate circle of a child as young children is almost always infected by close familial contact.

Crofton scale or Keith-Edward TB scoring chart

The Crofton scale or Keith-Edward TB scoring chart is using a scoring system according to history and clinical and examinations. A score of 7 or higher is highly suggestive of TB.

The Crofton scale is not adapted for use in feeding centers, as there malnutrition is always present, what influences the total score.
However, it is very useful for initial diagnosis and for monitoring a child's condition.

Confirmation of diagnosis

Confirmation by sputum smear microscopy is rarely possible since M+ forms are rare and because it is difficult to obtain sputum from children.
When bacteriological confirmation cannot be obtained, tuberculin skin tests and chest X-rays may be used, but none of these approaches in itself can be absolutely conclusive.
TB diagnosis in children is most often presumptive. After careful clinical examination and investigation, a decision has to be made whether or not to start a TB treatment. A treatment trial should be avoided.

For TB treatment, see the MSF Handbook *Tuberculosis*.

Nutritional treatment:
Children in feeding programs will follow the protocol as normal.
M+ TB is rare in children and therefore children play a minor role in transmission. Children with TB can stay in a feeing center, but should be separated form others as much as possible. Caretakers of the children should be examined on TB as well. When an adult (from adolescence is diagnosed for TB, they should not stay in the feeding center, as the risk for transmission of TB to other patient is high.

Paediatric TB score chart[52]

Name:.....……..	Site:.....……..
Age:.....	Date:.....
Birth date:.....	
Sex: M/F.....	Score assessed by:.....……
Weight:.....	
BCG scar:.....	

	0	**1**	**3**	**Score**
Duration of the disease	< 2 weeks	2-4 weeks	> 4 weeks	
Nutritional status[53]	W/H > 80%	W/H ≤ 80% and ≥ 70 %	W/H < 70%	
Family contact with TB patient	None	Reported by family	Contact with confirmed M+ subject	
			Total (1) =	

Positive tuberculin skin test	**3**
Painless adenopathies in one or several regions, with fistulization	**3**
Night sweats, unexplained fever	**2**
No considerable improvement after 4 weeks of re-nutrition[54]	**3**
Presence of vertebral deformation	**4**
Arthritis with bone deformation, of sub-acute character, with or without fistulization	**3**
Unexplained abdominal mass or ascites	**3**
Neurological disorders: change in behavior, convulsions, coma, etc.	**3**
Total (2) =	
Total (1) + (2) =	

[52] Source : Crofton and al, Clinical Tuberculosis, 1999
[53] Adapted from Crofton and al, original text: above 80%W/A, between 60% and 80% W/A, less then 60% W/A
[54] Adapted from Crofton and al, original text: Malnutrition, not improving after 4 weeks

ANNEX 6.6

Intraosseous infusion procedure

Indications

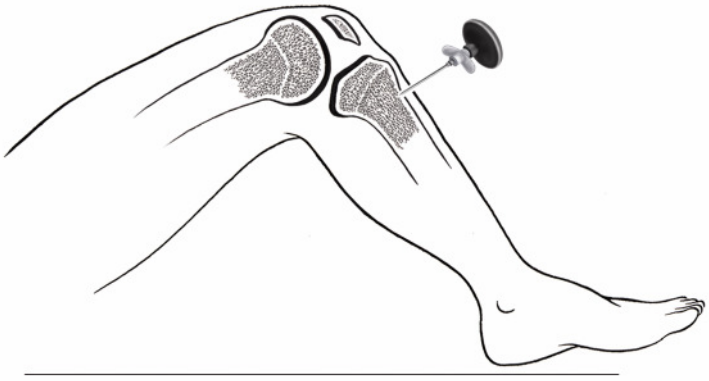
In infants and children under 6 years of age, intraosseous route is indicated in life-threatening situations when attempts at venous access fail.

Contra-indications

– Fracture of involved bone
– Osteomyelitis
– Infection overlying the site
– Femur fracture on the ipsilateral side

Equipment

– Polyvidone iodine 10%
– Sterile gauze pads
– Sterile 5-ml syringes
– Sodium chloride 0.9%
– Sterile gloves
– Intraosseous infusion needle[55]. There are different needle sizes. The 16G are usually used for children > 10 kg and 18G for children < 10 kg; however any size can be used.
– Tape
– Local anaesthetic and needles for local anaesthesia (if needed)
– Infusion



Site for puncture

The best site is the flat antero-medial surface of the tibia. The anterior surface of the femur and the superior iliac crest can also be used. The tibia is preferred since the antero-medial surface of the bone lies just under the skin and can easily be identified.

Technique

1) Bend the knee and stabilize the leg (put a sandbag or a pillow as support under the knee).
2) Palpate the tibial tuberosity and locate the site for cannulation. It lies 1-3 cm below the tuberosity on the antero-medial surface of the tibia.
3) Put on sterile gloves.
4) Clean the skin over and surrounding the site.
5) When the child is unconscious it is not necessary to use a local anaesthetic. If the child is conscious, inject a small amount of local anaesthetic into the skin and continue to infiltrate down to the periostium.
6) Stabilize the proximal tibia with the left hand (this hand is not sterile anymore) by grasping the thigh and the knee above and lateral to the cannulation site, with the fingers and thumb wrapped around the knee but not directly behind the insertion site.
7) Palpate the cannulation site again with the right hand (sterile glove).
9) With trochar in place, insert the needle at a 90-degree angle with the bevel pointing toward the foot. Advance the needle using a gentle but firm, twisting or drilling motion.

[55] It is possible but not ideal to use a 16-20G butterfly needle, spinal needle or even hypodermic needle. However, there is a higher risk of these needles getting blocked with bone marrow than if a needle with a trochar is used.

10) Stop advancing the needle when a sudden decrease in resistance is felt. The needle should be fixed in the bone.
11) Remove the trochar and confirm that the needle is in the marrow cavity by aspirating one ml of marrow content (looks like blood), using a 5-ml syringe.
12) Attach the second 5-ml syringe filled with sodium chloride 0.9%. Stabilize the needle and slowly inject 3 ml while palpating the area for any leakage under the skin.

- If there is infiltration, remove the needle and try the other leg.
- If there is no infiltration, the needle is correctly placed. Detach syringe and connect tubing to begin infusion. Stabilize in position with sterile gauze pads and secure with tape.

Infusion

– Check that the flow rate is steady, and assess clinical response.
– Fluid administration may require active assistance: fluid can be infused under gentle pressure, manually by using a 50-ml syringe or by inflating a blood-pressure cuff around the infusion bag.
– Darrow solution, Ringer Lactate, blood products and drugs can be infused using this technique.
– Stop intraosseous infusion as soon as the venous access is possible. The longer the period of use the greater the risk of complications.

Complications

– Serious complications include tibial fracture especially in neonates, compartment syndrome, skin necrosis and osteomyelitis.
– Strict compliance to asepsis is essential to avoid the risk of osteomyelitis and cellulitis. The incidence of osteomyelitis is less than 1% when asepsis is observed.

ANNEX 6.7

TFC patient card

There are three individual patient cards for feeding centres: the ITFC card for 24H or day care, the ATFC card for ambulatory care and the SFC card for supplementary feeding centres. The ITFC card can be used for ATFC as well.
A patient referred form one type of centre to another receives a new card, the centre referring the child should provide the original patient card to the centre to which the child is referred. Preferably the patient keeps the old ID number, but at least the old ID number is noted on the new card to enable to trace the history of the patient.

In the ITFC card each column refers to the days the patient is managed in the ITFC. In the ATFC card each column refers to each (weekly) visit of the beneficiary. In the SFP card each column refers to a weekly or bi-weekly visit. If the patient did had not been seen on the day/week of appointment , the column must be skipped (left open).

All feeding cards:

Box ID
ID Nº: Write up patient's identification number as appearing in the bracelet and the centre's register.
Centre: Write all details referring to the centre. Name of the centre, distribution day (first letter of the day of the week the distribution takes place) and frequency of distribution.
Patient details: Allows identification and tracing of the patient in case s/he eventually defaults or becomes absent from the centre. Specify whether age is expressed in months (m) (for patients aged up to 5 years) or years (y)
Sheet number…of…: Use this section in case a patient needs more than one ITFC card (e.g.: stays for longer than 21 days). This helps preventing loosing patients cards that might be accidentally detached.

Box Admission
Date: Monitor length of stay and results.
Time: For TFC note the hour of admission: In some instances, mortality is higher among beneficiaries admitted in the late hours or just before staffs shift changes.
Admission type: Refer to section 11.3 for definition of admission types.
Admission criteria: Record admission criteria. For SFP cards use code as prompted in the footnote and according to program protocol admission criteria cut offs:
Old ID number: For those patients admitted as "relapse" or "readmission", note the Identification Number that was used for the patient when s/he was managed in the centre before relapsing or defaulting. The former patient's card should be attached to the new card. This will help identifying problems already detected when the patient was in the centre for the first time and finding possible causes of defaulting or relapsing. In case the old number is lost, use a new number.

Box Discharge
Discharge date: Write the date the patient is discharged. Refer to section 11.5 for definitions and calculation of outcome indicators
Cured: Tick as appropriate if the patient was discharged as cured. There is space provided for weight gain and length of stay recording.
Dead: If the patient was discharged as dead, tick as appropriate and record the cause of death.
Defaulter: If the patient has been discharged from the program as defaulter, a tracing visit should be organising ascertaining the cause for defaulting. (of course the racing should have been done when the patient was still absentee). Record this cause, to analyse the reasons and for program adaptation.
Transferred: If the patient has been transferred outside the feeding program, record the centre or program to which the patient has been transferred. This will allow follow up and organisation of adequate nutritional support to those transferred patients in need.
Non-respondent: If the patient is classified as a Non-respondent record the possible cause.
I.e.: If the cause is found to be high ration sharing this information can be utilized to devise actions for improvement (improvement of General Food Distribution, attachment of family rations, revising SFC ration size,…)

Box at exit
Weight gain*:* total weight gained in g/kg/day. (for ITFC from phase 2). This is standard calculated for cured patients, but it can be informative to do it for all patients exiting the feeding centre. See chapter 11 for calculations.
Length of stay: total number of days in the centre.

Box referral
Referral: Record date of referral and tick the institute the patient is referred by. This can be a OPD or outreach worker, or this can be an other feeding centre in which case the name of the centre and the old ID number should be recorded. Similarly if the patient is referred to another institute.

Box Routine treatment, or Given at admission (TFC)
Routine treatment: Record any routine treatment provided to the patient including dosages and dates in which treatment was provided. Dates for iron and folic acid provision are recorded in the medical follow up (treatment) chart below.

Box Immunisation
Immunisation status: the child has an immunisation: tick Yes or No; note dates of immunisation as prompted by the table.

For SFC

Box target weight
Target 1: Record target weight according to discharge criteria. This should be calculated every time height is measured (once a month)

Box Distribution
Record for each column the information required: date of distribution in which the patient attends to the centre, weight, height (once a month) weight for height index, tick whether iron tablets were provided and record any relevant remarks related to the distribution date.
From week 8, (>60 days stay) investigation for such a long stay should be pursued. See section 11.5.5. for further information on prolonged stays. This chart assumes a maximum length of stay of 3 months. If required, additional sheets can be attached always stating the total number of sheets and writing up the patient's ID number in each of them.

Box Examination at admission:
Examination: signs that need immediate follow up: level of consciousness, cardiovascular troubles, dehydration or signs of systemic infection.
Once all life-threatening signs have been discarded it is important to check for other signs as outlined in the card.
Moderately malnourished children with complicated clinical picture might be referred to ATFC or ITFCs for treatment, according to protocol. Clinical signs to look for as, outlined in section 6.3.1 include:
History: Record main aspects which may explain occurrence of severe malnutrition and clinical condition and that may help in ascertaining the best treatment: diet, breastfeeding practices, access to food, diseases (measles, chronic diarrhoea...) long lasting displacement.

Box Follow up
Date: Date of any observation and sign and symptom during routine follow up. IF nothing in particular, nothing is filled in.
Test: Note specific rapid tests or lab test
Specific treatment: Note dates, name of drug, dosages and prescription details of any drug prescribed in addition to systematic treatment.

For TFC:

Box Anthropometric measurements
Anthropometric follow up: Write the dates each anthropometric measurement is taken as its value. Refer to section 6.6.2 for frequency of measurements and routine patient monitoring.
Target weight: Write up the weight the beneficiary needs to achieve in order to reach discharge criteria and

the date this is recorded. Target weight need to be recalculated if changes in height occur while the patient stays in the program. This is especially relevant in ATFCs where lengths of stay can be long. Write new target weight one moth after admission.

Box Weight graph

The column of the left is used to write up weights every 500g. Start the graph at the fifth line with a weight at 1 kg or 500 g precise closest to the admission weight. Plot in the chart weights with 100g precision. Each thin line corresponds to 100g and each thick line represents 500g.

Leave enough space for kwashiorkor cases to be able to record loss of weigh.

Also the target weight should be recorded in the growth chart drawing a visible line corresponding to that weight. This will help identify children reaching discharge criteria and can be used as a reference to see weight changes in the child. Draw target weight line leaving 500 g above the growth chart.

Box Medical Treatment chart

This is used to record, hand out drugs and check compliance to treatment. Column on the left should be completed specifying drug name, dose and route of administration. Columns on the right are divided in three rows for each drug. Write time the drug is to be taken. Nurse in charge to tick each time the drug is actually taken.

Box Daily clinical examination chart:

Record all information requested in the chart. Use "others" for other signs you consider important to follow or other tests performed on the patient. In case a patient needs special fluids for rehydration, use the specific rehydration monitoring form to record patient evolution.

Box Observations and examination:

Write the date the observation is made and any information relevant for follow up or further clinical investigations of the patient.

For ITFC:

Box Feeding

Specify the type of product used (F- 75, F-100, type of RUTF) as well as the quantity of the main product prescribed to the patient per day per meal (e.g. 1st phase F75 and transition and 2nd phase F100, and RUTF when used. Not the porridge and local meals).

Feeding monitoring

Especially in the first phase it is important to record food intake. This will help ascertain possible failures to grow and also will assist in the supervision of nutrition assistants, in charge of direct observation of meal intake in ITFCs. In ATFCs this information can be requested to the caretaker every week.

It is also important to record why the patient did not eat the full quantity of food offered.

Each row of the table represents a meal. The last row can be used to record any extra meal offered to patients or any extra quantity offered at any give meal. This, is specially useful during phase 2, where extra quantities of milk should be offered to patients (200 Kcal/kg/d is a minimum intake). Use codes as indicated.

Inpatient TFC patient card
2 pages

ATFC patient card (Ambulatory)

2 pages

ANNEX 6.8

Alternative MSF protocol for infections and sepsis

1. Systematically all admissions are given:
Amoxicilline PO 50-100 mg/kg/day for 5 days (repeat once if necessary)

2. Moderate infection
Amoxicillin+Clav.Ac (8:1) PO 50 to 100 mg kg/day (of Amoxicillin) in two divided doses for 5 days (repeat once if necessary) oral
Alternatively to avoid the diarrhoea associated with high doses of Clavulanic Acid the ratio **Amoxicillin : Clav.Ac** can be increased**: Amoxicillin+Clav.Ac** PO 50 mg/kg/day Amoxicillin + **Amoxicillin** PO 50 mg/kg/day

3. Severe infection and the patient needs rapidly available antibiotic:
Ceftriaxone IV or IM 100 mg/kg/day in one dose 5-7 days, substituting with **Amoxicillin+Clav.Ac + Amoxicillin (50: 50)** as above

4. Sepsis
• Respiratory or cutaneous focus:
Ceftriaxone 100 mg/kg/d IM or IV in one injection 7 days (divided in two IM sites if the volume is over 2.5 ml) + **Cloxacillin** 100 mg/kg/d IM, IV or PO divided in 2 or 3 doses. (10-14 days)

• Gastrointestinal focus:
Ceftriaxone 100 mg/kg/d IM or IV in one injection + **Ciprofloxacin** PO 30 mg/kg/d divided in 2 doses.

• Candidial septicemia:
add
Fluconazole PO 3 mg/kg/d in one dose[56]

- As soon as the patient improves, substitute *Ceftriaxon + Cloxacillin (or Ciprofloxacin)* by oral **Amoxicillin+Clavul.Ac** PO 80 mg/kg/d, divided in 2 doses
The total duration of therapy should be 5 to 10 days according to response.

- In the above, Ceftriaxone can be replaced by **Gentamycin** 5 to 7.5 mg/kg/d IM or IV in one injection.

[56] included in WHO updated protocol

ANNEX 6.9

Anti Malaria Combination Therapy (ACT)

OR

1 **artesunate (AS):** 4 mg/kg once daily for 3 days combined with **amodiaquine (AQ):**10 mg base/kg once daily for 3 days.

Dosage AS + AQ

AS *tablets containing 50mg*
AQ *tablets containing 153 mg base (200 mg amodiaquine hydrochloride)*

Weight	**Day 1,2,3**	
2.5 to 5.0 kg	**AS**	1/4 tab
	+ AQ	1/4 tab
5.0 to 10 kg	**AS**	1/2 tab
	+ AQ	1/2 tab
11 to 20 kg	**AS**	1 tab
	+ AQ	1 tab
21 to 40 kg	**AS**	2 tab
	+ AQ	2 tab
41 to 50 kg	**AS**	3 tab
	+ AQ	3 tab
> 50 kg	**AS**	4 tab
	+ AQ	4 tab

OR

2 **artesunate (AS**): 4 mg/kg once daily for 3 days combined with **mefloquine (MQ**): 10 -15 mg base/kg once daily for 2 days; give on day 3 AS only

Dosage AS + MQ

AS *tablets containing 50mg*
MQ *(tablets containing **250mg**)*

Weight (kgs)	**Day 1,2**		**Day 3**	
< 5.0 kg	**AS**	1/4 tab	**AS**	1/2 tab
	+ MQ	1/4 tab		
5.0 to 10 kg	**AS**	1/2 tab	**AS**	1/2 tab
	+ MQ	1/2 tab		
11 to 20 kg	**AS**	1 tab	**AS**	1 tab
	+ MQ	1 tab		
21 to 40 kg	**AS**	2 tab	**AS**	2 tab
	+ MQ	2 tab		
41 to 50 kg	**AS**	3 tab	**AS**	3 tab
	+ MQ	3 tab		
> 50 kg	**AS**	4 tab	**AS**	4 tab
	+ MQ	4 tab		

OR

3 **artemether** (AM): 4 mg/kg twice daily for 3 days combined with Lumefantrine 24mg/kg twice daily (combination called Coartemether):

Dosage AM + Lumefantrine, twice daily

(AM and Lumefantrine are combined in one tablet that contains 20mg of AM and 120 mg of lumefantrine)

Weight (kg)	**Day 1,2,3**	
5 to 10kgs	**AM + Lumefantrine**	½ tab morning
		½ tab evening
10 to 14	**AM + Lumefantrine**	1 tab morning
		1 tab evening
15 to 24	**AM + Lumefantrine**	2 tab morning
		2 tab evening

25 to 34	**AM + Lumefantrine**	3 tab 3 tab	morning evening
>35	**AM + Lumefantrine**	4 tab 4 tab	morning evening

Coartemether is not recommended for children under 5 kilos but can be used if no other suitable equivalent is available

OR

4 **artesunate** (**AS**): 4 mg/kg once daily for 3 days combined with **sulfadoxine-pyrimethamine** (**SP**): 25 mg of sulfadoxine + 1.25 mg of pyrimethamine/kg as a single dose at day 1 (1 tab for 20kgs)

Dosage AS + SP

AS *tablets containing 50mg; SP tablets containing 500 mg of sulfadoxine + 25 mg of pyrimethamine*

Weight	**Day 1**		**Day 2 , 3**	
5 to 10 kg	**AS** **+ SP**	½ tab ½ tab	**AS**	½ tab
11 to 20 kg	**AS** **+ SP**	1 tab 1 tab	**AS**	1 tab
21 to 30 kg	**AS** **+ SP**	2 tab 1½ tab	**AS**	2 tab
31 to 40 kg	**AS** **+ SP**	2 tab 2 tab	**AS**	2 tab
> 40 kg	**AS** **+ SP**	3 tab 3 tab	**AS**	3 tab

Note: folic acid can antagonize the action of SP and may lead to treatment failure. Supplementation with folic acid must be postponed to the 7th day when SP is given on admission

Young Children

For children below 4 kg, give **artesunate** (AS) 4mg /kg for 3days followed by AS 2 mg/kg/day for 4 days totalling 7 days of treatment.

Artesunate does not exist in paediatric tablets or oral suspension. To prepare an oral solution containing 10 mg/ml, dissolve one crushed 50 mg-tablet of artesunate in 5 ml of water. As dosing instrument, use a syringe.

Weight	4 mg/kg on Day 1,2,3	2 mg/kg on Day 4, 5, 6, 7
< 2 kg	0.6 ml	0.3 ml
2 – 2.9 kg	0.8 ml	0.4 ml
3 – 3.9 kg	1.2 ml	0.6 ml
4 – 4.9 kg	1.6 ml	0.8 ml

AS+AQ and **Coartemether** are not recommended for use in children under five kilos unless no other suitable treatment is available.

ANNEX 7.1

Type of meals in supplementary feeding programmes

Meals	Use	Items	Preparation
Porridge	Dry and wet feeding	Porridge should be composed of fortified blended food, oil and sugar: • Blended food (CSB, WSB, Unimix, etc.) is a pre-cooked mixture of cereals (maize, wheat etc.) and other ingredients (pulses, beans, soya, etc.), fortified with vitamins and minerals (check label to ensure that mixture is fortified). • Vegetable or palm oil must be added in order to increase energy content, palatability and to provide essential fatty acids. • Sugar can be added in order to improve taste and energy density.	***Preparation of dry ration before distribution*** • Ingredients (including oil) should be mixed prior to handout to ensure that the porridge contains all the nutrients. The premix can be kept at home for up to 2 weeks, covered and in a dry and clean place. • There are two possibilities for preparing the premix: 1) Preparation at a central point involves mixing ingredients together, and packaging the premix in individual bags. Premix rations can then be delivered to each supplementary feeding centre the day before distribution. 2) Preparation at the supplementary feeding centre involves preparing premix the afternoon before the day of distribution. This is done by the distribution team (2 or 3 persons). • See Annex 7.2 for examples of recipes for dry SFP. ***Preparation of the porridge at home***: see Annex 7.2 Preparation of the porridge taken on site See Annex 7.3 for examples of recipes for wet SFP and preparation of the porridge taken on site. See annex 12.13 for quantities to order
High-energy biscuits BP5®	Dry and wet feeding	BP5® is a mixture of blended flour, soybean oil, sugar, enriched with vitamins and minerals and compacted into biscuit form.	Compressed bars of BP5® can be eaten dry (as a biscuit) or can be crushed in drinking water or milk to make porridge. **BP5® biscuits are unfamiliar to some populations and possibly unpopular (too dry, hard to eat, thirst provoking). They are likely to be more acceptable when used as porridge. Explain how to make them into porridge at home.** See annex 12.13 for quantity of biscuits/person/week and quantities to order
HEM	Wet feeding only		**Mix 80 g of dry skimmed milk + 60 g of oil + 50 g of sugar + 3 g CMV and add boiled and cooled water to make 1 litre.** CMV should be added only once the milk solution is diluted. (See Annex 6.2 for recipe of large quantities of HEM)

ANNEX 7.2
Recipes for dry SFP

Examples of recipes for dry SFP per beneficiary

Food item	**Daily in grams**	**Weekly in grams**	**Kcal/day**	**Grams of proteins/day**	**Grams of fat/day**
RECIPE 1					
CSB/Unimix	243 g	1700 g	923	44	15
Oil	43 g	300 g	386		43
Sugar	14 g	100 g	57		
Total	300 g	2100 g	**1366**	44	58
% of kcal				**12.9 %**	**38.2 %**
RECIPE 2					
CSB/Unimix	229 g	1 600 g	870	41	13
Oil	29 g	200 g	261	0	29
Sugar	29 g	200 g	114	0	0
Total	290	2 000 g	**1 245**		
% of kcal				**13.2 % (1)**	**30.4 % (2)**
RECIPE 3					
CSB/Unimix	257 g	1800 g	977	46	15
Oil	43 g	300 g	386	0	43
Sugar	29 g	200 g	114	0	0
Total	330 g	2300 g	**1477**	46	58
% of kcal				**12.5 %**	**35.3 %**
RECIPE 4					
WSB	140 g	980 g	518	28	8.4
DSM	50 g	350 g	180	18	0.5
Oil	50 g	350 g	442	0	50
Sugar	30 g	210 g	120	0	0
Total	270 g	1890 g	**1260**	46	58.9
% of kcal				**14.6 %**	**42 %**
RECIPE 5					
Maize	114 g	800 g	400	11	4.6
DSM	86 g	600 g	308	31	0.9
Oil	57 g	400 g	506	0	57
Sugar	29 g	200 g	114	0	0
Total	290 g	2000 g	**1328**	37	62.5
% of kcal				**11 %**	**42 %**
RECIPE 6					
Sorghum	171 g	1200 g	574	19	5
Lentils	78 g	550 g	267	16	0.5
Oil	47 g	330 g	417	0	47
Sugar	16 g	110 g	63	0	0
Total	310 g	2200 g	**1321**	35	52.5
% of kcal				**10.6 %**	**35.8 %**

(1) Calculation of protein: 41 g of protein x 4 = 164 kcal; % of kcal provided by proteins: 164/1245 x 100 = 13.2 %
(2) Calculation of fat: 42 g of fat x 9 = 378 kcal; % of kcal provided by fats: 378/1245 x 100 = 30.4 %

Preparation of dry ration at home: Add one volume of premix to 2-3 volumes of water and simmer for 10-15 minutes (longer for recipes 5 and 6). cooked porridge cannot be kept for more than 2 hours Premix should not be kept longer then 2 weeks.

ANNEX 7.3

Recipes for porridge for TFP and wet SFP

Recipe 1 : Corn Soya Blend (CSB) oil and sugar: WFP ration

Items	Quantity	Kcal	Proteins (in g)	Fat (in g)
CSB	80 g	304	14	5
Sugar	15 g	60	0	0
Oil	20 g	176	0	20
Water	± 300 ml	0	0	0
Total	415 g	540	14 (10%[57])	25 (42%[58])

Recipe 2 : Corn Soya Blend (CSB) oil and sugar

Items	Quantity	Kcal	Proteins (in g)	Fat (in g)
CSB	100 g	380	18	6
Sugar	20 g	80	0	0
Oil	30 g	265	0	30
Water	± 350 ml	0	0	0
Total	500 g	725	18 (10%[1])	36 (45%[2])

Recipe 3: Wheat Soya Blend (WSB) oil and sugar

Items	Quantity	Kcal	Proteins (in g)	Fat (in g)
WSB	100 g	370	20	6
Sugar	20 g	80	0	0
Oil	30 g	265	0	30
Water	± 350 ml	0	0	0
Total	500 g	715	20 (11%[1])	36 (45%[2])

Recipe 4: Maize flour and DSM, oil and sugar

Items	Quantity	Kcal	Proteins (in g)	Fat (in g)
Maize flour	60 g	215	6	2
DSM	45 g	160	16	0
Sugar	15 g	60	0	0
Oil	30 g	265	0	30
Water	± 400 ml	0	0	0
Total	550 g	700	22 (12.5 %[1])	32 (41 %[2])

Preparation of the porridge

– Boil clean water, and let cool for 2 to 3 minutes.

– Add the premix to the water, mix, and let simmer for 10 minutes.

– Porridge should be served in semi-liquid form. If the porridge is too thick or too liquid, modify the amount of water.

– Cooked porridge cannot be kept for more than 2 hours.

[57] % of kcal provided by proteins

[58] % of kcal provided by fat

ANNEX 7.4

SFP patient card

2 pages

ANNEX 8.1
Infant formula instructions

Preparation of powdered infant formula
– Boil drinking water and let it cool in a covered container.
– Wash hands with soap and water.
– Wash a cup with soap and water and rinse thoroughly.
– Put the necessary amount of boiled water in the cup.
– Add the required amount of milk powder to the water (level the spoonfuls with a knife).
– Stir well until the powder is completely dissolved.
– Strictly respect the quantities indicated on the label for both infant formula and water.

Feeding the infant with a cup
– Hold the infant sitting semi-upright on your lap.
– Hold the cup to the infant's lips. Tip the cup so that the milk just reaches the lips. The cup rests lightly on the infant's lower lip.
– A low birth weight infant starts to take the milk with his tongue; a full term or older infant sucks the milk, spilling some of it.
– Do not pour milk quickly into his/her mouth, let him/her sip slowly.
– Let the infant drink as much formula as he/she wants.
– Do not use a feeding bottle or teat

Conservation of prepared milk
Prepared milk should be used immediately and cannot be kept for more than 1 to 2 hours. Throw away any prepared milk that is not used.

Information for mothers and supervision
– Mothers should:
  • Be trained to properly prepare and give milk through repeated demonstrations of preparation and feeding techniques.
  • Receive clear information about the risks associated with inappropriate preparation.
  • Receive clear instructions about meal frequency and quantities per meal.
– Mothers must be regularly supervised to ensure that they follow the milk preparation and infant feeding techniques described above

Estimation of consumption

Quantity of infant formula required

	Number of 500 g tins
1st month	4
2 nd month	6
3rd month	7
4th month	7
5th month	8
6th month	8
Total for 6 months	40

ANNEX 8.2

Therapeutic milk requirements for infants under 6 months with possibility of being breast-fed

Phase 1 100-120 kcal/kg/day = 133-160 ml/kg/day ***(F-75 or SDTM)*** - 8 meals/day			**Transition** 50 kcal/kg/day= 67ml/kg/day ***(SDTM)*** - 8 meals/day		
Weight (in kg)	**Quantity per day (in ml)**	**Quantity per meal (in ml)**	**Weight (in kg)**	**Quantity per day (in ml)**	**Quantity per meal (in ml)**
1.5	240	30	1.5	100	15
1.6	255	32	1.6	107	15
1.7	270	34	1.7	114	15
1.8	284	36	1.8	121	15
1.9	299	37	1.9	127	15
2.0	313	39	2.0	134	20
2.1	328	41	2.1	141	20
2.2	342	43	2.2	147	20
2.3	356	44	2.3	154	20
2.4	370	46	2.4	161	20
2.5	383	48	2.5	167	20
2.6	397	50	2.6	174	25
2.7	410	51	2.7	181	25
2.8	424	53	2.8	188	25
2.9	437	55	2.9	195	25
3.0	450	56	3.0	201	25
3.1	463	58	3.1	208	25
3.2	476	59	3.2	214	30
3.3	488	61	3.3	221	30
3.4	501	63	3.4	228	30
3.5	513	64	3.5	235	30
3.6	526	66	3.6	241	30
3.7	538	67	3.7	248	30
3.8	550	69	3.8	255	35
3.9	562	70	3.9	261	35
4	573	72	4	268	35
4.1	585	73	4.1	275	35
4.2	596	75	4.2	281	35
4.3	608	76	4.3	288	35
4.4	619	77	4.4	295	40
4.5	630	79	4.5	301	40
4.6	641	80	4.6	308	40
4.7	652	81	4.7	315	40
4.8	662	83	4.8	322	40
4.9	673	84	4.9	328	40
5	683	85	5	335	40

Example of F75 calculation for an infant of 2.7 kg

Phase 1: F75 required = = 410 ml/24 hours ÷ 8 feeds = 51 ml/feed

Transition: F75 required = 67 (ml) x 2.7 (kg) = 181 ml/24 hours ÷ 8 feeds =23 ml/feed approx 25 ml / feed

ANNEX 8.3

Milk requirements for infants under 6 months of agewith no possibility of being breast-fed

Phase 1 100-120 kcal/kg/day = 133-160 ml/kg/day ***(F-75 or SDTM)*** - 8 meals/day			**Transition phase** 150 kcal/kg/day= 200 ml/kg/day ***(F-75 or SDTM)*** - 8 meals/day		**Phase 2** 200 kcal/kg/day =300 ml/kg/day ***infant formula-*** 8 meals/day		**Phase 2** 200 kcal/kg/day =270 ml/kg/day ***SDTM*** - 8 meals/day	
Weight (in kg)	**Quantity per day (in ml)**	**Quantity per meal (in ml)**	**Quantity per day (in ml)**	**Quantity per meal (in ml)**	**Quantity per day (in ml)**	**Quantity per meal (in ml)**	**Quantity per day (in ml)**	**Quantity per meal (in ml)**
1.5	240	30	300	40	450	55	405	50
1.6	255	32	320	40	480	60	432	55
1.7	270	34	340	45	510	65	460	60
1.8	284	36	360	45	540	65	486	65
1.9	299	37	380	50	570	70	513	65
2.0	313	39	400	50	600	75	540	70
2.1	328	41	420	55	630	80	567	75
2.2	342	43	440	55	660	85	594	75
2.3	356	44	460	60	690	85	621	80
2.4	370	46	480	60	720	90	648	85
2.5	383	48	500	65	750	95	675	85
2.6	397	50	520	65	780	100	702	90
2.7	410	51	540	70	810	100	729	90
2.8	424	53	560	70	840	105	756	90
2.9	437	55	580	75	870	110	783	100
3.0	450	56	600	75	900	115	810	100
3.1	463	58	620	80	930	115	837	100
3.2	476	59	640	80	960	120	864	110
3.3	488	61	660	85	990	125	891	110
3.4	501	63	680	85	1020	120	918	110
3.5	513	64	700	90	1050	130	945	120
3.6	526	66	720	90	1080	135	972	120
3.7	538	67	740	95	1110	140	1000	130
3.8	550	69	760	95	1140	145	1025	130
3.9	562	70	780	100	1170	145	1053	130
4	573	72	800	100	1200	150	1080	130
4.1	585	73	820	100	1230	155	1107	140
4.2	596	75	840	100	1260	160	1135	140
4.3	608	76	860	110	1290	160	1161	140
4.4	619	77	880	110	1320	165	1188	150
4.5	630	79	900	110	1350	170	1215	150
4.6	641	80	920	115	1380	175	1242	155
4.7	652	81	940	115	1410	175	1269	160
4.8	662	83	960	120	1440	180	1296	160
4.9	673	84	980	120	1470	185	1323	165

5	683	85	1000	125	1500	190	1350	170

Example of milk calculation for an infant of 2.7 kg :

Phase 1: F75 required = 410 ml/24 hours ÷ 8 (feeds) = 51 ml/feed

Transition phase: F75 required = 200 (ml) x 2.7 (kg) = 540 ml/24 hours ÷ 8 (feeds) = 68 ml/feed

Phase 2: Infant formula: 810 ml = 100 ml per feed.

Alternatively SDTM required = 270 (ml) x 2.7 (kg) = 730 ml/24 hours ÷ 8 (feeds) = 91 ml/feed

Note: infants under 1.5 kg should receive the daily quantity divided in 12 meals.

Annex 9.1

Sources and risk factors micronutrients – Summary

Micronutrient	Dietary sources	Stability	SLI*	Deficiency	Risk factors
Vitamin A (retinol)	Retinol: milk, butter, cheese, egg yolk, liver and fatty fish Carotene: green leafy vegetables, yellow and red fruit and vegetable, palm oil	Stable to normal cooking conditions Partially destroyed by sunlight	500 µg 1IU vitamin A = 0.55 mg retinol =	Impaired immunity Xerophthalmia	Poor nutritional status Measles Poor health environment
Vitamin B_1 (thiamine)	Many foods, especially cereals, nuts, legumes (beans, peas) and yeast	± 50 % lost in water during cooking	0.9 mg**	Beriberi	Monotonous diet based on polished rice
Vitamin B_2 (riboflavin)	Milk, dairy products, liver, eggs, green leafy vegetables	Destroyed by sunlight or at an alkaline pH	1.4 mg**	Ariboflavinosis	Monotonous diet based on refined cereal with a high proportion of carbohydrates compared to fats and proteins
Vitamin B_3 or PP (niacin)	Meat, fish, groundnuts, yeast	15-25 % lost during cooking	12-20 mg**	Pellagra	Monotonous diet based on maize or sorghum with limited access to groundnuts, fish, meat or blended food
Vitamin B_5 (panthothenic acid)	Animal products, legumes and grain cereals	Readily destroyed by heat, acid or alkaline pH	4-7 mg	Nutritional neuropathy	Monotonous diet based on refined cereal (wheat flour, etc.) with a high proportion of carbohydrates compared to fats and proteins
Vitamin B_6 (pyridoxine)	Meats, dairy products, eggs, cereals and legumes	Stable at an acid pH but highly light sensitive	2.2 mg	Anaemia, dermatitis, cheilosis, peripheral neuritis	Monotonous diet based on refined cereal (wheat flour, etc.) with a high proportion of carbohydrates compared to fats and proteins
Vitamin B_{12} (cobalamine)	Eggs, meat, poultry, milk and milk products	Partially destroyed by light, air. Stable to heat. ± 70 % lost in water during cooking	0.9 µg	Anaemia and neurologic disorders	Exclusively vegetarian diet Cassava intoxication

Vitamin C (ascorbic acid)	Fresh fruit or vegetables, liver, fresh milk	Quickly destroyed by heat, air and cooking	28 mg	Scurvy	Semi-arid areas with limited access to fresh fruit, vegetables or fresh milk for several months
Vitamin D (calciferol)	Fish liver oils. Note: Fat is needed for absorption of dietary vitamin D Sunlight on the skin is the major source of vitamin D	Stable	3.8 µg (1ug = 40 IU)	Rickets Osteomalacia	Region without enough sunlight or where children are kept indoors and women veiled
Calcium	Milk and dairy products	Stable	0.50 g		Diet poor in dairy products
Folate (folic acid)	Red meat (especially liver), dark green leafy vegetables, groundnuts, bananas, avocados	Easily destroyed during cooking	160 µg	Anaemia	Diet limited in meat products and green leafy vegetables
Iron	Red meat (especially liver), dark green leafy vegetables, pulses and tubers	Stable	22 mg		Diet limited in meat products
Iodine	The only food rich in iodine is seafood; otherwise the content of iodine in foods depends on the iodine content in soil	Stable	150 µg	Goitre Cretinism	Area with low iodine soil content and no iodine fortification
Zinc	Liver, meat, poultry, seafood, eggs, dairy, seeds, nut, whole grain and refined cereals		RDA : 5-15 mg	Growth retardation Diarrhoea Skin lesion Anorexia	Vegetarian diet High consumption of phytates (whole grain products) Diarrhoea

The reference values of the:

- Safe Level of Intake (SLI) – The safe level of intake is the minimum intake to keep people free of deficiency; for population level, source: Nutrition in emergencies WHO 2002
- Recommended Daily Intake (RDI) – UK
- Recommended Daily Allowance (RDA) – USA

** Requirements of B vitamins are proportional to energy intake: B_1 0.4 mg/1000 kcal
B_2 0.6 mg/1000 kcal
B_3 6.6 mg/1000 kcal

Annex 9.2
Recommended intakes FAO 2002

2 pages

continued

ANNEX 10.1

Proper storage and handling of food and water

Water:

- Be sure water is clean. Boil water at least 5-10 minutes to kill germs (for drinking water while cooking water).
- Keep water stored in a container with a lid.
- Always wash your hands with soap before and after touching foods.
- Have a large quantity of water ready for use.

Animal products

- Cook all animal products (meat, chicken, pork, fish and eggs) at high temperatures until thoroughly cooked.
- Do not eat soft-boiled eggs or meat that still has red juice.
- Thoroughly wash utensils and surfaces where you placed uncooked foods, particularly meats, before you handle other foods.
- Cover meat, poultry or fish with a clean cover or cloth and keep separate from other foods to avoid contamination.

Fruits and vegetable

- Use clean water to thoroughly wash all fruits and vegetables that are to be eaten raw to avoid contamination.
- If it is not possible to wash fruits and vegetables properly, remove the skin to avoid contamination.
- Remove the bruised parts of fruits and vegetables to remove any moulds and bacteria that are growing.

General foods storage and handling

- Make sure that the areas where you prepare and eat food are free of flies.
- Keep hot foods hot and cold food cold.
- If food products have expiration labels, do not eat after the “best before” date has expired.
- Store cooked food at most for one day and re-heat before eating.
- If you have a refrigerator, put all leftover food in refrigerator.

ANNEX 10.2

Maximise food intake during common HIV/AIDS related infections[59,60]

Symptom	**Suggested strategy**
Anorexia (loss of appetite)	• Eat favourite foods (soft, preferred foods, pleasing aroma and texture) • Eat small amounts, and more frequently (include "snacks") • Select energy and nutrient dense foods (high energy biscuits, stews with oil) • Avoid strong smelling foods
Sore mouth and throat (e.g. thrush)	• Eat soft mashed foods, such as carrot, scrambled eggs, mashed potatoes, bananas, soups, porridge, pudding • Eat non-acidic fruits and vegetables • Avoid citrus fruits and juices, tomato, and spicy foods • Avoid foods with sugar • Avoid alcohol • Avoid spicy, salty or sticky foods • Use cup, spoon or drink with a straw • Eat foods at room temperature • Rinse mouth with boiled, warm salt water after eating
Abnormal and loss of taste	• Use taste enhancers (salt, spices, herbs, lemon, magi) • Chew food well and move around in mouth
Bloated ness/heartburn	• Eat small frequent meals • Avoid gas forming foods (cabbage, sodas, onions) • Drink fluids (fennel or anise tea) • Eat long enough before sleeping (food must be digested)
Fever	• Eat small and frequent meals • Eat soups which are energy and nutrient dense (maize, potato, carrot soups) • Drink liquids frequently (beyond thirst)
Nausea and vomiting	• Eat small and frequently snacks throughout the day • Eat soups, unsweetened porridge and fruits like bananas • Eat simple boiled foods, such as porridge, potato, beans • Eat light and salty and dry foods like crackers, toast, • Avoid large meals • Avoid spicy, fatty foods or foods with a strong aroma • Avoid caffeine (coffee or tea) and alcohol • Drink liquids (water, diluted fruit juices, soup, fennel, anise or mint tea) • Avoid laying down after eating (wait 20 minutes after eating)
Diarrhoea	• Drink often liquids (water, tea, soups, fruit juices, passion fruit) • Eat small meals frequently • Eat foods rich in fibre (bananas, millet, peas lentils, whole grain bread) • Eat easily digestible carbohydrates (rice, bread, millet, maize, sorghum, potato, sweet potato, cassava, blended foods, porridge) • Eat easy digestible proteins (egg, chicken, fish) • Avoid fried foods • Eat fermented foods (yoghurt, rampuku, Soya)

[59] HIV/AIDS and nutrition; a review of the literature and recommendations for nutritional care and support in sub-Saharan Africa, E.G. Piwoz; E.A. Preble, SARA 2000

[60] HIVAIDS: a guide for nutrition care and support. July 2001; FANTA, Washington

	• Eat soft fruits and vegetables (bananas, sweet potato, mashed carrots) • Drink non-fat milk • Avoid high-fat foods *(fried foods, oil enriched foods)* • Limit gas forming foods (cabbage, onions, soft drinks (sodas) • Avoid caffeine (coffee and tea) and alcohol • Avoid citrus (orange, lemon) • Find out whether fats or dairy products are the cause (by elimination) and adapt diet accordingly • Drink oral rehydration solution if necessary
Constipation	• Eat foods high in fibre (maize, whole bread, green vegetables, fruits with skin) • Drink liquids • Avoid processed and refined foods (white bread, polished rice, crackers)
Muscle wasting	• Increase food intake by eating more and more often • Eat a variety of foods • Eat carbohydrate, protein and nutrient dense foods (blended food, high energy biscuits, fortified foods)
Fatigue, lethargy	• Eat fresh fruits and precook foods to save time and energy (care with reheating) • Eat snacks throughout the day • Drink high-energy, high protein liquids • Set aside time each day for eating

Side effects of medication

Medication	**Recommended to be taken**	**Potential side effects**
Sulfadoxine and Pyrimethamine (SP)	With food and water	• Nausea, • Vomiting
Quinine	With food	• Abdominal or stomach pain • Diarrhoea • Nausea, vomiting • Lower blood sugar
Chloroquine	With food	• Stomach pain , nausea, vomiting • Diarrhoea
Ferrous supphate		Constipation
Fluconazole	With food	Nausea, Vomiting Diarrhoea
Nystatin	With food	Infrequent diarrhoea Nausea, vomiting
Rifampin	On an empty stomach 1-2 hour before a meal	• Diarrhoea • Nausea, vomiting • Loss of appetite
Isoniazid	On an empty stomach 1-2 hour before a meal	Possible reactions with: bananas, beer, avocados, caffeinated beverages, chocolate, sausage, liver, smoked pickled fish, yeast, yoghurt; requires vitamin B6 supplement.
Zidovudine (AZT)	With food	• Anaemia • Nausea, vomiting
Nevirapine	With food	• Sedative effect Diarrhoea • Nausea • Rash
Vitamin A	With fatty food	

ANNEX 11.1 Forms for monitoring a Therapeutic Feeding Program

Back side of reporting forms (optional)

Detailed reporting form SFC

ANNEX 11.2

Filling in Feeding Centre's reporting forms (ITFC, ATFC, TFP, SFC)

These sheets have been designed to facilitate calculation of basic indicators in case no computer is available. Please refer to chapter 11 to assist in the calculation of such indicators. If data will be entered in a computer, coloured cells do not need to be filled.
A TFP reporting for is needed for collation of data from the different sites (ITFC and ATFC)

Box identification:

Specifying the name of the reporting centre, type of centre (SFC, ITFC or ATFC) and reporting period as stated in the forms provided.

Box Admission and discharge

Age categories: Enter the number of beneficiaries in each category according to the age group they belong. Beware that age category "<6m" is only relevant to ITFC as treatment of malnutrition and re-lactation can only be managed in an inpatient structure. Also other age groups can be distinguished: height is also proposed (e.g.:60 months to 130 cm) to account for children of unknown age. Height of 130 cm refers to children aged 10 years. Age from which a person is considered an elder should be adapted to each specific context. In the example 50 years is proposed.

Total at the beginning of the period: Total number of beneficiaries in each age category that were registered in the feeding centre the first day of the reporting period.

Admission: Number of admitted beneficiaries according to their admission criteria as specified in the program protocol. "Other" criteria can be defined depending on the setting (e.g.: W/H% between ≥70 -<80% and bad clinical condition). Note that some criteria (e.g.: TFP follow up) are specific for SFCs and some (oedema) for TFPs. Readmissions (after defaulting) should be entered in this section according to the criteria beneficiaries have when they are readmitted: for those fitting in the TFP/SFP admission criteria they will be entered in the corresponding column. New patients above admission criteria (e.g.: W/H%>70%) but who get treatment are entered as "others".

Total admissions: Total number of beneficiaries that have been admitted in the reporting period. Check that:
Total admissions = Total by admission type (New + Readmissions + Relapses) = Total by admission criteria (Oedema + P/T% or BMI + MUAC + Other)

Discharges: Enter the number of beneficiaries discharged during the reporting period according to discharge mode. Section 11.5.1. provides definitions for each of the discharge modes.

Total discharges: Total number of beneficiaries discharged within the reporting period. Check that Total discharges = cured + death + defaulters + transfers + non respondents.

Internal movements: This section is *only* relevant for ATFC's (or a TFP with different TFCs within the same program). "To ATFC/ITFC" is the number of beneficiaries that go out of the

centre because they have been referred *to* a different centre within the same Therapeutic Feeding Program. "From ATFC/ITFC" refers to beneficiaries that are admitted into the *centre* because they have been referred by a different centre within the same Therapeutic Feeding Program.

Total end of period: Enter the total number of beneficiaries registered in the centre the last day of the reporting period. Check that:
Total end of the period = Total at the beginning of the period + total admissions – total discharges. (for individual SFC and TFC centres)

For the summary of the complete TFP program *with* ambulatory components *internal movements* have to be excluded. In this case beneficiaries coming *from* another centre and beneficiaries referred *to* another centre have to be considered in the balance of beneficiaries. In this case:
Total end of the period = Total at the beginning of the period + (Total admissions - *From ATFC/ITFC)* – (Total discharges – *To ATFC/ITFC)*
More easy is to add per category and disregard the internal movements.

Exit indicators for 6-59 months": proportion of children 6-59 months who are cured, dead, defaulted or transferred calculated as a proportion of total exits in this age range. Allows an overview of programme performance.

Boxes details admissions
Admission type: Number of admitted beneficiaries according to type of admission. This is independent of the admission criteria. E.g.: a "new" admission can also be under the admission criteria "W/H% or BMI". Definitions for type of admissions (New, Readmission and Relapse) are provided in section 11.3.

Origin of new admissions*:*
Divide the centre's catchment area into (maximum) geographical areas that are both meaningful and easily identifiable for the population (e.g.: rural council, district's division,…).
Make use of those 12 areas consistently in all your monthly reports.
When asking about origin to beneficiaries, make sure they refer to *current* origin and not to locations before population displacement.
If number or proportion of beneficiaries coming from a specific area is unexpectedly high an specific assessment will need to be organised to investigate causes and adapt the program (e.g.: a new settlement recently created with no access to food)

Referral of new admissions:
Monitor efficiency of an outreach team, health centres etc. or devise possible new ways to increase program coverage. Write up number of admitted beneficiaries referred by each of the health structures outlined in the table as well as those not being referred by any health structure (spontaneous). A high number of spontaneous admissions may reflect high acceptance and awareness of the program.

Box rates and calculations
Total expected at each distribution*:* This, will assist in the calculation of the attendance rate.

Total present at each distribution: *T*he number of beneficiaries physically present at each distribution day.

Number prolonged stay*:* Number of beneficiaries that were classified as prolonged stays (see section 11.5.5 for case definition) .

Sum of weight gains: Write the sum of individual weight gains that occurred in all children aged 6 to 59 months discharged from the centre as cured. To calculate average weight gain per centre, divide this number by the total number of children discharged from the centre as cured. For individual children in TFPs with ambulatory components weight gain should *only* be reported by the centre who is discharging the child.

Sum of length of stays: Write the sum of individual length of stays (in days) for all children aged 6 to 59 months discharged from the centre as cured. To calculate average length of stay per centre, divide this number by the total number of children discharged as cured from the centre. For individual children in TFPs with ambulatory components length of stay should *only* be reported by the centre who is discharging the child.

Number vaccinated for measles: of children aged 6 to 59 months. State the number of admitted children from 6 to 59 months that have received a dose of measles vaccine.

Attendance rate, Measles immunisation coverage, Average weight gain and average length of stay: These indicators can either be calculated by hand (follow chapter 11 instructions) or automatically calculated when entered in an excel spread sheet.

Box comments

Comments: This is as important as numbers and should provide relevant information to assist in data interpretation. It can also be used to report achievements (e.g.: a new team of outreach workers has been incorporated) and plans for the following period based on the analysis of the statistics that are being reported.

Also systematic extra information can be gathered, e.g. number of new admissions that that remain in the initial centre (ITFC or ATFC) despite recommendation to be transferred to another centre (ATFC or ITFC). This is most often occurring among clinically compromised beneficiaries treated in ATFC that chose to remain in the centre despite recommendation to go for an inpatient facility (ITFC)

ANNEX 11.3
Sample register books for different feeding program designs

Therapeutic Feeding Centre (TFC), Internal TFC (ITFC), and wet Supplementary Feeding Centre (SFC)

ID n°	Date entry	Name	Address	Sex	Age	Food Aid	Oed.	W	H	W/H	MUAC	Admission criteria		Measles vaccine	Week from: 19/10 to: 26/10/99						
					month		Y/N	kg	cm	%	mm	N/R/RL	W/H, M, O, OT	Y/N	M	T	W	T	F	S	S
1	13/9	John Ford	paniet	M	12	y	N	6.6	75.5	< 70	116	N	W/H	Y	X	X	X	X	X	X	NR
2	15/9	Paula Jones	paniet	F	36	y	Y	10.9	96	75	128	R	O	Y	X	X	X	X	X	X	C
3	16/9	Bea Pouldu	rabit	F	32	n	N	8.7	93.5	< 70	125	N	W/H	N	X	X	D				
4	18/9	Toure Kunda	racca	M	18	n	N	7.5	80	70	109	N	M	Y	X	X	-	-	-	A	
5	19/9	Ric Martin	paniet	M	25	y	Y	8	84	< 70	118	N	W/H	Y	X	X	X	X	-	-	X
6	13/9	Emmanuel Simon*	Karatu	M	12	y	N	6.6	75.5	< 70	116	N	W/H	Y	X	X	X	X	C		
7	15/9	Paula Jones	paniet	F	36	y	Y	10.9	96	75	128	R	O	Y			frATFC	X	X	X	X
8	16/9	Bea Pouldu	rabit	F	32	n	N	8.7	93.5	< 70	125	N	W/H	N	X	X	D				
9	18/9	Toure Kunda	racca	M	18	n	N	7.5	80	70	109	N	M	Y	X	X	-	-	-	A	
10	19/9	Thomas Msemo	Gorofani	M	25	y	Y	8	84	< 70	118	N	W/H	Y	X	X	X	X	toATFC		
Total															9/9	9/9	8/10	6/8	5/8	3/6	4/4

*= choice

Admission: (N = new admission; R= re-admission; Rl=relapse)(w/h= weight for height; M= MUAC; O= Oedema; OT=Other (i.e. Moderate malnutrition + clinical condition)

Exits: C = cured or recovered, A = abandon or defaulter, D = death, T = transfer, NR= Non respondent

Internal movements: toITFC= to ITFC; frITFC= from ITFC, toATFC= to ambulatory therapeutic feeding centre; frATFC= From ambulatory therapeutic feeding centre

Attendance: X= present; - = Absent

Total: at the end of each page the total of children present should be noted. Total = Present / expected. This will help with calculating daily attendance rate.

Ambulatory Therapeutic Feeding Centre (ATFC)

															Distribution week							
															May				June			
					month		Y/N	kg	cm	%	mm	N/R/ RL	W/H, M,O, C, OT	Y/N	1 3 - 10	2 11 - 18	3 19 - 26	4 26 - 31	1 1 - 4	2 5 - 12	3 13 - 20	4 21 -
1	3/5	John Ford*	paniet	M	12	y	N	6.6	75.5	< 70	116	N	W/H	Y	x	x	x	x	x	C		
2	3/5	Paula Jones	paniet	F	36	y	N	10.9	96	75	128	R	C	Y	x	TITFC			FITFC	x	x	C
3	10/5	Bea Pouldu	rabit	F	32	n	N	8.7	93.5	< 70	125	N	W/H	N		x	-	D				
4	3/5	Toure Kunda	racca	M	18	n	N	7.5	80	70	109	N	M	Y	x	x	-	A				
5	17/5	Ric Martin	paniet	M	25	y	Y	8	84	< 70	118	N	W/H	Y			x	x	-	X	TATFC	
6	24/5	Gida police	Jobaji	M	23	y	N	7,2	80	<70	123	R	W/H	N				x	x	x	x	x
Total															3/3	3/3	2/4	3/3	4/4	4/4	3/3	2/

*= choice.

Admission: (N = new admission; R= re-admission; Rl=relapse)(w/h= weight for height; M= MUAC; O= Oedema; OT= Other (i.e. Moderate malnutrition + clinical condition)

Exits: C = cured or recovered, A = abandon or defaulter, D = death, T = transfer, NR= Non respondent

Internal movements: toITFC= to ITFC; frITFC= from ITFC, toATFC= to ambulatory therapeutic feeding centre; frATFC= From ambulatory therapeutic feeding centre

Attendance: X= present; - = Absent

Total: at the end of each page the total of children present should be noted. Total = Present / expected. This will help with calculating daily attendance rate.

Dry Supplementary Feeding Centre (SFC)

													Distribution week							
													May				June			
					month		kg	cm	%	N/R/R L	W/H,T FP	Y/N	1 3 to 10	2 11 - 18	3 19 - 26	4 26 - 31	1 1 - 4	2 5 - 12	3 13 - 20	4 21 - 28
1	8/9	John Ford	paniet	M	12	y	8,1	75.5	< 85	N	TFP	Y	x	x	x	x	C			
2	15/9	Paula Jones	paniet	F	36	y	10.9	96	75	R	W/H	Y	x	x	x	-	X	x	x	C
3	16/9	Bea Pouldu	rabit	F	32	n	10.7	93.5	< 80	N	W/H	N	x	x	D					
4	18/9	Toure Kunda	racca	M	18	n	8,1	80	75	N	W/H	Y	x	x	-	-	A			
5	19/9	Ric Martin	paniet	M	25	y	8,9	84	< 80			Y	x	x	x	x	-	X	T	
Total													5/5	5/5	3/4	2/4	2/4	2/3	2/2	1/1

Admission: (N = new admission; R= re-admission; Rl=relapse)(w/h= weight for height; TFP= TFP follow up)

Exits: C = cured or recovered, A = abandon or defaulter, D = death, T = transfer, LS= Long stay

Attendance: X= present; - = Absent

Tot: at the end of each page the total of children present should be noted. Total = Present / expected. This will help with calculating daily attendance rate.

ANNEX 11.4

Blanket feeding distribution summary sheet

Average family size: ____ Area covered : _____ Estimated population in the area: _____

Frequency of distribution (days): ____ Last distribution date: _____ / _____ / _____ Reporting Distribution Date ____ / ____ / _____

Time elapsed since last distribution (days): ____ Next planned distribution date: _____ / _____ / _____

Nr Beneficiaries	Expected	Observed	Coverage					
Food distributed (Kg/person)	Item 1	Item 2	Item 3	Item 4				
MUAC screening	Total	<135 mm	< 125 mm	< 110 mm	oedema			
Sick screening	Total seen	Malaria	Diarrhoea	Dehydration	ARI	Skin	Other	Other
Referrals	SFP	TFP	Hospital	OPD	Others	Others	Total	
Vaccines provided	Total seen	Previously vaccinated		Vaccinated on site		% vaccinated of total seen		

Remarks

ANNEX 11.5
Morbidity form

Annex 11.6.
Mortality registration book

Name of centre **Period** **From** **To**

Reg. number	Diagnosis	Sex (M,F)	Age (m, y)	Oedema (Y/N)	Weight admission (Kg)	Weight death (kg)	Height (cm)	W/H%	Date admission	Date death	Time admission	Time death

Comments

Annex 11.7
Weight gain calculation sheet

ANNEX 11.8
Forms for screening activities

Oedema and MUAC screening report form

Date:
Place:
Reported by:

	Number	%
Oedema*		
< 110 mm		
>=110 – 125 mm		
>= 125 – 135 mm		
> 135 mm°		
Total		
N. referral to W/H site		

*Children with oedema should be counted only once.

Weight-for-Height site report form

Date:
Place:
Reported by:

	Number	%
Oedema*		
< 70% W/H		
70 – 79 % W/H		
>= 80 % W/H		
Total		
N. Referral to TFC		
N. Referral to SFC		

*Children with oedema should be counted only once.

Annex 12.1
Layout of Therapeutic Feeding Centre

Annex 12.2
Layout of Supplementary Feeding Centre: Dry rations

Annex 12.3
Layout of Blanket Feeding Centre

Annex 12. 4
Construction of measuring board and latrines

ANNEX 12.5
Preparation and use of chlorine solutions

Caution
- Chlorine is a very aggressive and corrosive chemical.
- Always wear protective clothing when handling chlorine products and solutions.
- Always prepare chlorine solutions in a well-ventilated area, preferably in the open air
- Never use with detergent or acid solution (e.g. urine)

Preparation
- Make the dilution of chlorine disinfectant just before use
- Wear apron, goggles, and cleaning gloves for preparation
- Use clean cold water
- Avoid inhaling vapours and dust (ideally wear a dust-face mask)

Recommended chlorine solutions:

	Indications		
	"High" disinfection of semi-critical[61] non-autoclavable medical devices (anaesthesia mask, thermometer…) Disinfection of basins, stethoscopes, …[62] Disinfection of linen, clothes 0.1% = 1,000 ppm active chlorine	Disinfection of floors, toilet, sinks, plastic waste buckets 0.5% = 5,000 ppm active chlorine	Disinfection of any surfaces contaminated with blood, sputum or excreta[63] 1% = 10,000 ppm active chlorine
Calcium hypochlorite (70% active chlorine)	1.5g/liter = +/- 1 level tablespoon for 10 liters	7.5g/liter = +/- 5 level table spoons for 10 liters	15g/litre = +/- 10 level table spoons for 10 liters
Sodium dichloroisocyanurate NaDCC, 1.67g tablet (1g active chlorine/ tablet)	1 tablet/liter 10 tablets / 10 liters	5 tablets / liter 50 tablets / 10 liters	10 tablets / liter 100 tablets / 10 liters
	Renew solution daily	Renew the solution weekly	Renew the solution weekly

[61] "Semi-critical" items refer to items that come in contact with mucous membranes or non-intact skin of the patient.
[62] It refers to "non-critical" items that come in contact with intact skin or do not come in contact with the patient.
[63] Flood the area with chlorine solution and leave in contact for 10 minutes, then remove with rag or paper and rinse. Wash the surface with detergent and rinse with clean water

To use only if NaDCC or HTH are not available and only if manufactured very recently (<3months) and stored under proper conditions.

Preparation of chlorine solutions using sodioçum Hypochlorite (Bleach)

Solution in % of active chlorine	Preparation (volume of solution)	
	Using bleach at 3,5% active chlorine (e.g. JIK (tm))	Using bleach at 5% active chlorine (e.g. ACE (tm))
1%	300 ml/litre 3 litres for 10 litres 6 litres for 20 litres	200 ml /litre 2 litres for 10 litres 4 litres for 20 litres
0,5%	150 ml/litre 1,5% litres for 10 litres 3 litres for 20 litres	100 ml/litre 1 litre for 10 litres 2 litres for 20 litres

Storage

- Do not bring the dry product into contact with organic materials (e.g. corpses) or fuels (= risk of fire and explosion)
- Store the product in a dry and ventilated place
- Store the solution in a closed, opaque plastic container (non-metallic) (e.g. jerry can).

Chlorine disinfectants are only fully effective on clean surfaces. The areas must be cleaned before they are applied. Nevertheless, they have the advantage of clearly proven antiviral activity and are relatively cheap.

ANNEX 12.6

NUTRITIONAL KITS

The kits contains the necessary equipment to set up nutritional programmes. Some conditions have to be fullfilled before starting a nutritional programme. It is essential to have the adequate infrastructure, to organize the food supply and to ensure the medical follow up of the beneficiaries.

Warning: The MSF anthropometric, nutritional survey kit is different to the Oxfam one (KIT 1)!

The other new nutrition kits are corresponding to the new revised Oxfam kits.

OXFAM References		*MSF Codes*
KIT 2	Supplementary Feeding (Wet)	**KMEDMNUT62-**
KIT 2A	Registration Kit for Supplementary Feeding (Wet)	**KMEDMNUT61-**
KIT 3	Supplementary Feeding (Dry)	**KMEDMNUT72-**
KIT 3A	Registration Kit for Supplementary Feeding (Dry)	**KMEDMNUT71-**
KIT 4	Therapeutic Feeding	**KMEDMNUT52-**
KIT 4A	Registration Kit for Therapeutic Feeding	**KMEDMNUT51-**

KIT, ANTHROPOMETRIC, NUTRITIONAL SURVEY & SURVEILLANCE (KMEDKNUT4M)

Equipment allowing two teams to carry out a nutritional anthropometric survey among children below 5 years of age, in a population. Anthropometric equipment, aimed to measure weight, height and brachial circumference, complementing the therapeutic and supplementary feeding kits, in a feeding centre. This kit is one of the three modules composing the following kits: TFC, SFC dry ration and SFC cooked ration.

Detailed list of articles	*MSF Code*	*Qty*	*Liste détaillée des articles*
COUNTER, manual	ALIFCOUN1M-	2	COMPTEUR manuel
CALCULATOR, solar & battery	AOFFCALC02S	2	CALCULATRICE, solaire & pile
EXER. BOOK, 170 x 220 mm, spiral bind., 5 mm squared, 180 p.	ASTABOOE1SS	4	CAHIER, 170 x 220 mm, à spirales, quadrillé 5 mm, 180 p.
DIVIDER, plastic, transparent, A4, open on 2 sides	ASTADIVI1P-	10	CHEMISE, plastique, transparent, A4, ouvert 2 côtés
ERASER, rubber, white	ASTAERAS1R-	4	GOMME, plastique, blanche
PAPER HOLDER, hardback, with spring clip and A4 cover	ASTAHOLD1P-	4	PORTE BLOC, ECRITOIRE, rigide, avec pince et rabat A4
PAD, GRAPH PAPER in mm, 210 x 300 mm	ASTAPADP4G-	1	BLOC PAPIER MILLIMETRE, 210 x 300 mm
PAD, PAPER, 90 x 90 mm, 4 colors, bloc	ASTAPADP9--	2	BLOC PAPIER, 90 x 90 mm, 4 couleurs, le bloc
PENCIL, BALL POINT, black	ASTAPENB1B-	10	CRAYON BILLE, noir
PENCIL, lead, HB	ASTAPENC1HB	12	CRAYON A PAPIER, HB
MARKER, black, permanent, large, square tip	ASTAPENM3BB	4	MARQUEUR, noir, indélébile, géant, pointe carrée
PENCIL SHARPENER, 2 size	ASTAPENS2--	4	TAILLE-CRAYON, 2 dimensions
RULE, 30 cm, plastic, transparent, flat	ASTARULE30-	4	REGLE, 30 cm, plastique transparent, plate
SCISSORS, 17 cm, blunt ends	ASTASCISS7B	2	CISEAUX, 17 cm, bouts arrondis
ROPE, diam. 5 mm, POLYPROPYLENE, endless fibers (per meter)	CSHEROPE05P	10	CORDE, diam. 5 mm, POLYPROPYLENE, fibre continue (le metre)
BRACE, BRACHIAL PERIMETER, (MUAC), PVC, pediatric	EMEQBRAB1--	50	BRACELET PERIMETRE BRACHIAL, (MUAC), PVC, pediatrique
MEASURING APPARATUS, ped., hor./vert., 130 cm, wood, UNICEF	EMEQMEAA3P-	2	TOISE, pédiatrique, hor./vert., 130 cm, bois, UNICEF
SCALE, SALTER TYPE, 0 to 25 kg, no trousers (grad. 100 g)	EMEQSCAL25-	4	BALANCE DE TYPE SALTER, 0 a 25 kg, ss culotte (grad. 100 g)
TAPE, MEASURE, 1.5 m, fiber glass	EMEQTAPM1--	2	METRE, RUBAN, 1,5 m, fibre de verre
TROUSERS for Salter type scale (set of 5 trousers)	EMEQTROU5--	4	CULOTTES pour balance de type Salter (jeu de 5 culottes)

NUTRITION GUIDELINES	L016NUTG01E	1	NUTRITION GUIDELINES
GUIDE NUTRITION	L016NUTG01F	1	GUIDE NUTRITION
BAG, RUCKSAC, nylon, light	PPACBAGT2--	2	SAC A DOS, nylon, leger
CARD, RANDOM NUMBER, A4 recto	SMSTCARD3RN	4	FICHE, NOMBRES ALEATOIRES, A4 recto
CARD, WEIGHT/LENGHT, %, engl., untear/plast, A4 recto/verso	SMSTCARD3WE	4	FICHE POIDS/TAILLE, %, anglais, indech/plat, A4, recto/verso

Related articles	*MSF code*	*Articles apparentés*
MEASURING APPARATUS, ped./ad., hor./vert., 200 cm, aluminium	EMEQMEAA5P-	TOISE, péd./adulte, hor./vert., 200 cm, aluminium
SCALE, SALTER TYPE, 0 to 50 kg, no trousers, (grad. 200 g)	EMEQSCAL50-	BALANCE DE TYPE SALTER, 0 a 50 kg, ss culotte, (grad. 200 g)
TAPE, MEASURE, 1 m, adhesive	EMEQTAPM1A-	METRE, RUBAN, 1 m, adhesif
CARD, WEIGHT/LENGHT, %, fren. untear/plast, A4, recto/verso	SMSTCARD3WF	FICHE POIDS/TAILLE, %, franc. indech/plast, A4, recto/verso
CARD, WEIGHT FOR LENGHT, span., untear/plast, A4 recto/verso	SMSTCARD3WS	FICHE POIDS/TAILLE, espagnol, indech/plast. A4, recto/verso
CARD, WEIGHT FOR HEIGHT, Z-score, sex combined, plasticized	SMSTCARD3ZE	FICHE POIDS/TAILLE, Z-score, sexe combined, plastifiée

KIT, THERAPEUTIC FEEDING, 100 severely malnourished children (KMEDMNUT5)

New kit (= Kit anthropometric/ nutrional survey + OXFAM Kit 4A + OXFAM Kit 4)

This kit is composed of three kits which contains the equipment necessary to weigh, measure, register and feed 100 severely malnourished children.

Related articles	*MSF code*	*Articles apparentés*
MEASURING APP., ped.,hor/vert, 130cm,wood,UNICEF	EMEQMEAA3P-	TOISE, pédiatrique, hor./vert., 130 cm, bois, UNICEF
MEASURING APP., ped./ad., hor./vert., 200 cm, alumin.	EMEQMEAA5P-	TOISE, péd./adulte, hor./vert., 200 cm, aluminium
SCALE, SALTER TYPE, 0-25 kg, no trouser (grad.100g)	EMEQSCAL25-	BALANCE SALTER, 0-25kg, ss culotte (grad.100g)
MODULE, DRESSING EQUIPMENT	KMEDMDRE1--	MODULE MATERIEL DE SOINS
MODULE, DRESSING, 50 dressings	KMEDMDRS50-	MODULE PANSEMENTS, 50 pansements
MODULE, EXAMINATION EQUIPMENT	KMEDMEXA1--	MODULE MATERIEL D'EXAMEN

Detailed list of articles	*MSF Code*	*Qty*	*Liste détaillée des articles*
KIT, ANTHROPOMETRIC, NUTRITIONAL SURVEY & SURVEILLANCE	**KMEDKNUT4M-**	**1**	**KIT ANTROPOMETRIQUE, ENQUETE & SURVEILLANCE NUTRITIONNELLE**
See above for detailed list			
(module nut.ther) REGISTRATION, 100 severe/3m, Oxfam kit 4A	**KMEDMNUT51-**	**1**	**(module nut.ther) ENREGISTREM., 100 sévères/3m, kit Oxfam 4A**
Hardback book A4, ruled NK8	OXFAM	1	Cahier - couverture rigide A4, quadrillé NK8
Box - Storage A4, twin-lock Tidyfile NK13	OXFAM	1	Boîte pour fiches A4, serrure jumelle, tidyfile NK13
A4 Index Cards, A-Z, set NK14	OXFAM	1	Fiches index, A4, A-Z, sets NK14
Bracelets - Red ID NK16	OXFAM	400	Bracelets identification - rouge NK16
Cards - milk NK22	OXFAM	500	Cartes de lait NK22
Cards -TFP Monitoring A4 NK25	OXFAM	500	Fiche - Nutrition therapeutique A4 NK25
Eraser NK31	OXFAM	4	Gomme NK31
Notes on the revised Oxfam Feeding Kits - English NK33A	OXFAM	1	Notes de modification des kits d'Oxfam - Anglais NK33A

Notes on the revised Oxfam Feeding Kits - French NK33B	OXFAM		1	Notes de modification des kits d'Oxfam - Français NK33B
Paper - Graph, A4 in mm, pad NK40	OXFAM		1	Papier - Graphes, A4 en mm, bloc NK40
Pen - BIC ballpoint, black, medium NK41	OXFAM		10	Stylo - à bille BIC, noir, medium NK41
Pen - large, black, indelible marker NK42	OXFAM		2	Marquer large, indélébile, noir NK42
Pen - large, red, indelible marker NK43	OXFAM		2	Marquer large, indélébile, rouge NK43
Pencils - HB NK44	OXFAM		10	Crayon - HB NK44
Pencil sharpener, metal, single hole NK45	OXFAM		4	Taille-crayon - metal, trou unique NK45
Register - hardback A3, accounting book NK50	OXFAM		1	Registre - couverture rigide A3, comptabilité NK50
Ruler - 30 cm, transparent plastic, flat, shatterproof NK51	OXFAM		4	Regle - 30 cm, transparente, plate, plastique, incassable NK51
Scissors - 17 cm, blunt NK55	OXFAM		2	Ciseaux - 17 cm, bouts ronds NK55
Stapler - small, desk type NK58	OXFAM		1	Agrafeuse - petite, type bureau NK58
Spales for above - 26/6 (box 1000) NK59	OXFAM		1	Agrafes pour ci-dessus - 26/6 (boîte 1000) NK59
(module nut.ther) THER. FEED. EQUIP, 100 severe, Oxfam kit 4	**KMEDMNUT52-**	**1**		**(module nut.ther) EQUIP. NUT. THER, 100 sévères, kit Oxfam 4**
Beaker - orange plastic, volume 500 ml NK5	OXFAM		200	Gobelet - orange, plastique, volume 500 ml NK5
Bowl - small, orange plastic, volume 500 ml NK9	OXFAM		200	Bol - petit, orange plastique, volume 500 ml NK9
Bowl - washing up, plastic, volume 20 ml NK10	OXFAM		4	Seau, plastic, volume 20 litres NK10
Brushes - scrubbing NK18	OXFAM		4	Brosses - à récurer NK18
Bucket - plastic, graduated, with lid, volume 8.5 liters NK19	OXFAM		12	Seau - plastique blance, gradué, avec bec verseur, volume 8,5 liters NK19
Calculator - solar and battery NK20	OXFAM		1	Calculatrice - solaire et pile NK20
Candles, box NK21	OXFAM		1	Bougies , boîte NK21
Cards - milk NK22	OXFAM		500	Cartes de lait NK22
Clock - mechanical, alarm NK27	OXFAM		1	Minuterie - mécanique, alarme NK27
Notes on the revised Oxfam feeding kits - English NK33A	OXFAM		1	Notes de modification des kits d'Oxfam - Anglais NK33A
Notes on the revised Oxfam feeding kits - French NK33B	OXFAM		1	Notes de modification des kits d'Oxfam - Français NK33B
Jugs - measuring, transparent plastic, graduated, volume 1 liter NK35A	OXFAM		4	Pot à mesure - plastique transparent, gradué, volume 1 litre NK35A
Jugs - measuring, transparent plastic, graduated, volume 2 liter NK35B	OXFAM		4	Pot à mesure - plastique transparent, gradué, volume 2 litres NK35B
Ladles - metal, length 43 cm, volume 250 ml NK36	OXFAM		4	Louches - metal, longeur 43 cm, volume 250 ml NK36
Lamps - hurricane NK37	OXFAM		4	Lampes - tempête NK37
Padles - wooden, length 89 cm (35") NK38	OXFAM		3	Mélangeur-cuiller, bois longueur 89 cm ..NK38
Plaster - adhesive tape, 2 cm x 5m, zinc oxide, roll NK46	OXFAM		2	Sparadrap - adhésif, 2 cm x 5 m, oxyde de zinc, rouleau NK46
Pot - cooking, metal, diameter 47cm (18"), depth 16", volume 50 liters NK47	OXFAM		2	Casserole, metal, diamètre 18", profond. 16", volume 50 litres NK47
Pot - cooking, metal, diameter 57cm(22"), depth 21", volume 100 liters NK48	OXFAM		1	Casserole, metal, diamètre 22", profond. 21", volume 100 litres NK48
Potties - plastic, stackable NK49	OXFAM		10	Pot de chambre - plastique, couvercle NK49
Scale - kitchen type, 5 kg NK52	OXFAM		1	Balance - type cuisine , 5 kg NK52
Scale - hanging, 50 kg, 200 g graduation NK54	OXFAM		1	Balance - type salter, 50 kg, graduation 200 gr NK54
Scoops - metal, lenght 30 cm NK56	OXFAM		2	Epuisettes - metal, longeur 30 cm NK56
Soap - 24 bars, 100/200 g weight, box NK57	OXFAM		1	Savon - 24 barres, poids 100/200 g NK57
Stethoscope - paediatric, single head NK60	OXFAM		1	Stethoscope - pédiatrique, tête unique NK60
Syringes - 10 ml, disposable, Luer NK61	OXFAM		100	Seringes - 10 ml, usage unique, Luer NK61
Syringes - 60 ml, disposable, Luer NK62	OXFAM		50	Seringes - 60 ml, usage unique, Luer NK62
Teaspoon - metal, volume 5 ml NK69	OXFAM		50	Cuiller à café - metal, volume 5 ml NK69
Teaspoon - orange plastic, volume 5 ml NK70	OXFAM		250	Cuiller à café - orange, plastique, volume 5 ml NK70
Tin opener - metal, heavy duty NK71	OXFAM		2	Ouvre-boîte - metallique, NK71
Torches - rubber NK72	OXFAM		4	Lampe torche - caoutchouc NK72
Torch batteries NK73	OXFAM		16	Piles NK73
Tubes - N°6, feeding NK74	OXFAM		10	Sonde gastrique - N°6 NK74

Tubes - N°8, feeding NK75	OXFAM	30	Sonde gastrique - N°8 NK75
Tubes - N°10, feeding NK76	OXFAM	30	Sonde gastrique - N°10 NK76
Whisk - metal; lenght 76 cm (30") NK78	OXFAM	3	Fouet - metal, longeur 76 cm (30") NK78
Water carrier - plastic, collapsible, with tap, volume 20 liters NK79	OXFAM	10	Nourrice à eau - plastique pliable, robinet, volume 20 litres NK79
Food scarcity and Famine - Oxfam Practical Guide N°7 NK80	OXFAM	2	Food scarcity and Famine - Guide pratique Oxfam N°7 NK80
MSF Clinical Guidelines - English NK81	OXFAM	1	Guide clinique et thérapeutique - Anglais NK81
MSF Clinical Guidelines - French NK82	OXFAM	1	Guide clinique et thérapeutique - Français NK82
MSF Nutrition Guidelines - English NK83	OXFAM	1	MSF Guide Nutrition - Anglais NK83
MSF Nutrition Guidelines - French NK84	OXFAM	1	MSF Guide Nutrition - Français NK84
Refugee Health Care - Oxfam Practical Guide N° 9 - English NK85A	OXFAM	1	Soins de santé pour réfugiés - Guide Pratique Oxfam N° 9 - Anglais NK85A
Refugee Health Care - Oxfam Practical Guide N° 9 - French NK85B	OXFAM	1	Soins de santé pour réfugiés - Guide Pratique Oxfam N° 9 – Français NK85B
Selective Feeding Programme - Oxfam Practical Guide N° 1 - English NK86	OXFAM	1	Programmes sélectifs d'alimentation - Guide pratique Oxfam N° 1 - Anglais NK86
Selective Feeding Programme - Oxfam Practical Guide N° 1 - French NK87	OXFAM	1	Programmes sélectifs d'alimentation - Guide pratique Oxfam N° 1 - Français NK87

KIT, NUTRITION, SUPPLEMENTARY WET FEEDING, 250 benefic. (KMEDKNUT6)

New kit (= Kit anthropometric/ nutrional survey + OXFAM Kit 2A + OXFAM Kit 2)

This kit is made up of three kits which contain the equipment needed to weigh, measure, register and feed 250 moderately malnourished children, with wet rations.

Detailed list of articles	*MSF Code*	*Qty*	*Liste détaillée des articles*
KIT, ANTHROPOMETRIC, NUTRITIONAL SURVEY & SURVEILLANCE	**KMEDKNUT4M-**	**1**	**KIT ANTROPOMETRIQUE, ENQUETE & SURVEILLANCE NUTRITIONNELLE**
See above for detailed list			
(module nut.suppl) REGIS. WET FEED, 250 ben/3m, Oxfam kit 2A	**KMEDMNUT61-**	**1**	**(module nut.suppl) ENREG.RAT HUMID, 250 bén/3m, kit Oxfam 2A**
Attendance sheets - each 50 sheets of 500 numbers (1-500), pads NK2	OXFAM	2	Feuille de présence, bloc de 50, numérotées de 1-500 par feuille NK2
Book - hardback A4, ruled NK8	OXFAM	1	Cahier - couverture rigide A4, quadrillé NK8
Box - card index A4, twin lock, tidyfile NK13	OXFAM	2	Boîte pour fiches A4, serrure jumelle, tidyfile NK13
A4 index cards, A-Z, sets NK14	OXFAM	2	Fiches index, A4, A-Z, sets NK14
Bracelets - blue ID NK15	OXFAM	600	Bracelets identification - bleu NK15
Cards - SFP/Wet monitoring, A4 NK24	OXFAM	600	Fiche - Nutrition suppl./ration humide NK24
Eraser NK31	OXFAM	4	Gomme NK31
Notes on the revised Oxfam Feeding Kits - English NK33A	OXFAM	1	Notes de modification des kits d'Oxfam - Anglais NK33A
Notes on the revised Oxfam Feeding Kits - French NK33B	OXFAM	1	Notes de modification des kits d'Oxfam - Français NK33B
Paper - graph, A4 in mm, pad NK40	OXFAM	1	Papier - Graphes, A4 en mm, bloc NK40
Pen - BIC ballpoint, black, medium NK41	OXFAM	10	Stylo - à bille BIC, noir, medium NK41
Pen - large, black, indelible marker NK42	OXFAM	2	Marquer large, indélébile, noir NK42
Pencils - HB NK44	OXFAM	10	Crayon - HB NK44
Pencil sharpener, metal, single hole NK45	OXFAM	4	Taille-crayon - metal, trou unique NK45
Register - hardback A3, Accounting book NK50	OXFAM	1	Registre - couverture rigide, comptabilité NK54
Ruler - 30 cm, transparent plastic, flat, shatterproof NK51	OXFAM	4	Regle - 30 cm, transparente, plate, plastique, incassable NK51
Scissors - 17 cm, blended NK55	OXFAM	2	Ciseaux - 17 cm, bouts ronds NK55

Stapler - small, desk type NK58	OXFAM	1	Agrafeuse - petite, type bureau NK58
Staples for above - 26/6 (box 1000) NK59	OXFAM	1	Agrafes pour ci-dessus - 26/6 (boîte 1000) NK59
(module nut.suppl) WET FEEDING EQUIPM, 250 ben., Oxfam kit 2	**KMEDMNUT62-**	**1**	**(module nut.suppl) EQUIP RATION HUMIDE, 250 bén, kit Oxfam 2**
Attendance sheets, pads of 50, numbered 1-500 per sheet NK2	OXFAM	2	Feuille de présence, bloc de 50, numérotées de 1-500 par feuille NK2
Beaker - orange plastic, volume 500 ml NK5	OXFAM	400	Gobelet - orange, plastique, volume 500 ml NK5
Bowl - small, orange plastic, volume 500 ml NK9	OXFAM	300	Bol - petit, orange plastique, volume 500 ml NK9
Bowl - washing up, plastic, volume 20 litres NK10	OXFAM	4	Seau, plastic, volume 20 litres NK10
Brushes - scrubbing NK18	OXFAM	4	Brosses - à récurer NK18
Bucket - plastic, graduated, with lid, volume 8.5 litres NK19	OXFAM	4	Seau - plastique, gradué, avec bec verseur, vol. 8,5 litres NK19
Calculator - solar and battery NK20	OXFAM	1	Calculatrice - solaire et pile NK20
Notes on the revised Oxfam Feeding Kits - English NK33A	OXFAM	1	Notes de modification des kits d'Oxfam - Anglais NK33A
Notes on the revised Oxfam Feeding Kits - French NK33B	OXFAM	1	Notes de modification des kits d'Oxfam - Français NK33B
Jugs - measuring, transparent plastic, graduated, volume 2 litres NK35	OXFAM	4	Pot à mesure, plastique transparent, gradué, volume 2 litres NK35
Ladles - metal, length 43 cm, volume 250 ml NK36	OXFAM	4	Louches - metal, longeur 43 cm, volume 250 ml NK36
Paddles - wooden, length 89 cm NK38	OXFAM	3	Mélangeur - cuiller, bois longuer 89 cm NK38
Pot - cooking, metal, diameter 18", depth 16", volume 50 litres NK47	OXFAM	1	Casserole, metal, diamètre 18", profond. 16", volume 50 litres NK47
Pot - cooking, metal, diameter 22", depth 21", volume 100 litres NK48	OXFAM	2	Casserole, metal, diamètre 22", profond. 21", volume 100 litres NK48
Scale - kitchen type, 5 kg NK52	OXFAM	1	Balance - type cuisine , 5 kg NK52
Scale - Hanging, 50 kg, 200 gr graduation NK54	OXFAM	1	Balance - type salter, 50 kg, graduation 200 gr NK54
Scoops - metal, length 30 cm NK56	OXFAM	2	Epuisettes - metal, longeur 30 cm NK56
Soap - 24 bars, 100/200 g weight NK57	OXFAM	1	Savon - 24 barres, poids 100/200 g NK57
Teaspoon - metal, volume 5 ml NK69	OXFAM	10	Cuiller à café - metal, volume 5 ml NK69
Teaspoon - orange, plastic, volume 5 ml NK70	OXFAM	400	Cuiller à café - orange, plastique, volume 5 ml NK70
Tin opener - metal, heavy duty NK71	OXFAM	2	Ouvre-boîte - metallique, NK71
Whisk - metal, lenght 76 cm (30") NK71	OXFAM	3	Fouet - metal, longeur 76 cm (30") NK71
Water carrier - plastic collapsible, with tap, volume 20 litres NK79	OXFAM	10	Nourrice à eau - plastique pliable, robinet, volume 20 litres NK79
Food scarcity and Famine - Oxfam Practical Guide N°7 NK80	OXFAM	2	Food scarcity and Famine - Guide pratique Oxfam N°7 NK80
MSF Clinical Guidelines - English NK81	OXFAM	1	Guide clinique et thérapeutique - Anglais NK81
MSF Clinical Guidelines - French NK82	OXFAM	1	Guide clinique et thérapeutique - Français NK82
MSF Nutrition Guidelines - English NK83	OXFAM	1	MSF Guide Nutrition - Anglais NK83
MSF Nutrition Guidelines - French NK84	OXFAM	1	MSF Guide Nutrition - Français NK84
Refugee Health Care - Oxfam Practical Guide N° 9 - English NK85A	OXFAM	1	Soins de santé pour réfugiés - Guide Pratique Oxfam N° 9 - Anglais NK85A
Refugee Health Care - Oxfam Practical Guide N° 9 - French NK85B	OXFAM	1	Soins de santé pour réfugiés - Guide Pratique Oxfam N° 9 – Français NK85B
Selective Feeding Programme - Oxfam Practical Guide N° 1 - English NK86	OXFAM	1	Programmes sélectifs d'alimentation - Guide pratique Oxfam N° 1 - Anglais NK86
Selective Feeding Programme - Oxfam Practical Guide N° 1 - French NK87	OXFAM	1	Programmes sélectifs d'alimentation - Guide pratique Oxfam N° 1 - Français NK87

KIT, NUTRITION, SUPPLEMENTARY DRY FEEDING, 500 beneficiaries (KMEDKNUT7)

New kit (= Kit anthropometric/ nutrional survey + OXFAM Kit 3A + OXFAM Kit 3).

This kit is made up of three kitswhich contain the equipment needed to weigh, measure, register and distribute dry rations for 500 people suffering from moderate malnutrition. The plastic bags for distribution could be reused. But it's recommended to advise people to wash them with soap and to dry them correctly.

Detailed list of articles	*MSF Code*	*Qty*	*Liste détaillée des articles*
KIT, ANTHROPOMETRIC, NUTRITIONAL SURVEY & SURVEILLANCE	**KMEDKNUT4M-**	**1**	**KIT ANTROPOMETRIQUE, ENQUETE & SURVEILLANCE NUTRITIONNELLE**
See above for detailed list			
(module nut.suppl) REGIS.DRY FEED, 500 ben/3m, Oxfam kit 3A	**KMEDMNUT71-**	**1**	**(module nut.suppl) ENREG.RAT.SECHE, 500 bén/3m, kit Oxfam 3A**
Attendance sheets - each 50 sheets of 500 numbers (1-500), pad NK2	OXFAM	1	Feuille de présence, bloc de 50, numérotées de 1-500 par feuille NK2
Book - hardback A4, ruled NK8	OXFAM	1	Cahier - couverture rigide A4, quadrillé NK8
Box - card index 8" x 5" NK11	OXFAM	4	Boîte pour fiches 8" x 5" NK13
A5 Index cards, A-Z, sets NK12	OXFAM	2	Fiches index A5, A-Z, sets NK12
Bracelets - white ID NK17	OXFAM	1000	Bracelets identification - blanc NK17
Cards - SFP/Dry monitoring, A5 NK23	OXFAM	1000	Fiche - Nutrition suppl./ration sèche, A5 NK23
Eraser NK31	OXFAM	4	Gomme NK31
Notes on the revised Oxfam feeding kits - English NK33A	OXFAM	1	Notes de modification des kits d'Oxfam - Anglais NK33A
Notes on the revised Oxfam feeding kits - French NK33B	OXFAM	1	Notes de modification des kits d'Oxfam - Français NK33B
Paper - graph, A4 in mm, pad NK40	OXFAM	1	Papier - Graphes, A4 en mm, bloc NK40
Pen - BIC ballpoint, black, medium NK41	OXFAM	10	Stylo - à bille BIC, noir, medium NK41
Pen - large, black, indelible marker NK42	OXFAM	4	Marquer large, indélébile, noir NK42
Pen - large, red, indelible marker NK43	OXFAM	4	Marquer large, indélébile, rouge NK43
Pencils - HB NK44	OXFAM	10	Crayon - HB NK44
Pencil sharpener, metal, single hole NK45	OXFAM	4	Taille-crayon - metal, trou unique NK45
Register - hardback A3, accounting book NK50	OXFAM	2	Registre - couverture rigide, comptabilité NK54
Ruler - 30 cm, transparent plastic, flat, shatterproof NK51	OXFAM	4	Regle - 30 cm, transparente, plate, plastique, incassable NK51
Scissors - 17 cm, blended NK55	OXFAM	4	Ciseaux - 17 cm, bouts ronds NK55
Stapler - small, desk type NK58	OXFAM	2	Agrafeuse - petite, type bureau NK58
Staples for above - 26/6 (box 1000), box NK59	OXFAM	2	Agrafes pour ci-dessus - 26/6 (boîte 1000) NK59
(module nut.suppl) DRY FEED. EQUIPMENT, 500 ben, Oxfam kit 3	**KMEDMNUT72-**	**1**	**(module nut.suppl) EQUIP. RATION SECHE, 500 bén, kit Oxfam 3**
Aprons - plastic, durable NK1	OXFAM	6	Tabliers - plastique+E74, durable NK1
Attendance sheets - 50 per pad, numbered sheets, 1-500 per sheet, pad NK2	OXFAM	2	Feuille de présence, bloc de 50, numérotées de 1-500 par feuille NK2
Bags - plastic, orange, mini-grip seal, 41 x 32 cm (12.5" x 16"), vol- kg, gauge NK4	OXFAM	1000	Sacs - plastique, orange, mini-grip , 41 x 32 cm (12.5" x 16"), vol- kg, gauge NK4
Bucket - white plastic, graduated, with lid, volume 8.5 liters NK19	OXFAM	4	Seau - plastique blance, gradué, avec bec verseur, volume 8,5 liters NK19
Calculator - solar and battery NK20	OXFAM	1	Calculatrice - solaire et pile NK20
Container - plastic (polyethylene or polypropylene), vol 100-120 l, diam 57 cm, h 52 cm NK28	OXFAM	1	Container - plastic (polyethylene or polypropylene), vol 100-120 l, diam 57 cm, h 52 cm NK28
Cord - polypropylene, 5 mm, endless fibres, length 10 m, roll NK29	OXFAM	1	Cord - polypropylene, 5 mm, endless fibres, length 10 m, roll NK29
Notes on the revised Oxfam Feeding Kits - English NK33A	OXFAM	1	Notes de modification des kits d'Oxfam - Anglais NK33A
Notes on the revised Oxfam Feeding Kits - French NK33B	OXFAM	1	Notes de modification des kits d'Oxfam - Français NK33B

Jug - transparent plastic, graduated, volume 2 litres NK35	OXFAM	4	Jug - transparent plastic, graduated, volume 2 litres NK35
Paddles - wooden, length 89 cm NK38	OXFAM	2	Paddles - wooden, length 89 cm NK38
Scales - kitchen type, 5 kg NK52	OXFAM	1	Scales - kitchen type, 5 kg NK52
Scales - hanging, 50 kg, 200 g graduation NK54	OXFAM	1	Scales - hanging, 50 kg, 200 g graduation NK54
Soap - 24 bars, weight 100-200 g, box NK57	OXFAM	1	Soap - 24 bars, weight 100-200 g, box NK57
Food Scarcity and Famine - Oxfam practical guide N°7 NK80	OXFAM	2	Food scarcity and Famine - Guide pratique Oxfam N°7 NK80
MSF Nutrition Guidelines - English NK83	OXFAM	1	Guide clinique et thérapeutique - Anglais NK81
MSF Nutrition Guidelines - French NK84	OXFAM	1	Guide clinique et thérapeutique - Français NK82
Refugee Health Care - Oxfam practical guide N°9 - English NK85A	OXFAM	1	Soins de santé pour réfugiés - Guide Pratique Oxfam N° 9 - Anglais NK85A
Refugee Health Care - Oxfam practical guide N°9 - French NK85B	OXFAM	1	Soins de santé pour réfugiés - Guide Pratique Oxfam N° 9 - Français NK85B
Selective Feeding - Oxfam practical guide N°1 - English NK86	OXFAM	1	Programmes sélectifs d'alimentation - Guide pratique Oxfam N° 1 - Anglais NK86
Selective Feeding - Oxfam practical guide N°1 - French NK87	OXFAM	1	Programmes sélectifs d'alimentation - Guide pratique Oxfam N° 1 - Français NK87

ANNEX 12.7

Materials required to equip feeding centres

To help in the estimation of the needs, a list of material and equipment per type of centres are given below. This is the minimum quantity, not taking a buffer stock or fluctuation of admissions into consideration.
Items that are not in a standard kit are noted in the last column, and these items must be ordered in addition to the kits.

ADMISSION/ REGISTRATION/ WAITING ROOM

ORDER CODE	**ITEM DESCRIPTION**	**(I)TFC 100 p**	Wet SFC **250 p**	**Dry SFC 500 p**	ATFC **100 p**	**Additional requirement***
Local purchase	Table	1	1	1	1	X
Local purchase	Chair	3	3	3	3	X
Local purchase	Bench	2	4	6	3	X
Local purchase	Water Container (50 L) with taps for drinking water: 1 for the waiting room and 1 in admission area	2	2	2	2	X
Local purchase	Water Container (100 L) with tap for hand washing	1	1	1	1	X
EMQSCAL25-	25 kg Salter scale (with packing case, tare)	2	2	2	2	Kit
EMEQSCAL1B-	Baby weighing scale (100 g)	1			1	
EMEQTROU5—	Hanging Pants	4	6	6	6	Kit
EMEQSCAL1B-	Infant Scale	1	1	1	1	X
EMEQMEAA5P- EMEQMEAA3P	Height Board	2	2	2	2	Kit
SMSTCARD3	W/H Reference Tables (children and adolescents)	2	2	2	2	Kit
EMEQBRAB1--	MUAC Tapes (children)	50	50	50	50	Kit
	Attendance/Register Book	4	4	8	4	Kit
	Stationary: pens, marker, eraser, ruler, booklet...	Several	Several	Several	Several	Kit
	Scissors	2	2	2	2	Kit
	Calculator	2	2	2	2	Kit
SMSUBRAI1B-	ID Bracelets	400	600	1000	400	Kit
SMSTCARD3IE	Individual Admission Cards	500	600	1000	500	Kit
SMSTCARD3ME	Milk Cards	500	0	0	0	Kit
	ADULTS/adolescent					
	Reference table for adult	1	1	1	1	X
	Reference table for adolescent	1	1	1	1	X
EMEQSCAL3A-	Adult scale - 100 kg	2	2	2	2	X
EMEQMEAA5P-	Adult height board	1	1	1	1	X

EMEQBRAB2A-	MUAC bracelets	20	20	20	20	Kit
SMSUBRAI1B-	ID bracelets, large	100	300	500	500	X

CONSULTATION ROOM

	ITEM DESCRIPTION	**(I)TFC 100**	**Wet SFC 250**	**Dry SFC 500**	**ATFC 100**	**Additional requirement**
Local	Table	2	2	2	2	X
Local	Chair	3	3	3	3	X
Local	Bench	1	1	1	1	X
Local	Cupboard with lock (1 for drugs and 1 for material)	2	2	2	2	X
Local	Examination bed	1	1	1	1	X
	Clock	1	0	0	0	Kit
	Stationary: pen, scissors, booklet etc.	Several	Several	Several	Several	Kit
	Boards (for writing information)	2	0	0	0	X
Local	Water container with tap for hand washing	1	1	1	1	X
Local	Water container with tap for drinking water	1	1	1	1	X
	Cups	5	5	5	5	Kit
	Spoons	5	5	5	5	Kit
Local	Garbage bucket	1	1	1	1	X

KITS

	ITEM DESCRIPTION	**(I)TFC 100**	**Wet SFC 250**	**Dry SFC 500**	**ATFC 100**	
KMEDKNUT5	Kit, Nutritional, Therapeutic Feeding	1		1	1	
KMEDKNUT7	Kit, Nutritional, Supplementary Dry Feeding			1		
KMEDKNUT6	Kit, Nutritional, Supplementary Wet Feeding		1			
KMEDMDRE1	Module, Dressing Equipment	1				
KMEDMDRS50	Module, Dressing, 50 dressings	1				
KMEDMEXA1	Module, Examination Equipment	1	1	1	1	

MEDICAL MATERIAL for 3 months

	ITEM DESCRIPTION	**(I)TFC 100**	**Wet SFC 250**	**Dry SFC 500**	**ATFC 100**	**Remarks**
KMEDMEXA1	Module, Examination Equipment	1	1	1	1	
only adult found in catalogue	Paediatric sphygmomanometer (in addition to the adult one in the module)	1	0	0	1	X

EMEQSTET2—	Stethoscope (in addition to the one in the module)	2	1	1	2	X
SMSUDEPT1W-	Tongue depressor in wood (extra to the one in the module)	500	100	200	500	X
SMSUTHER1D-	Thermometer (in addition to the one in the module)	100	10	10	10	X
KMEDMDRE1	Module, Dressing Equipment	1	1	1	1	
KMEDMDRS50	Module, Dressing, 50 dressings	1	1	1	1	
SMSUGLOE1M-	Disposable gloves (single use) size medium	1000	1000	1000	1000	X
SINSSETP150	IV catheters 23 G + paediatric set(only 22 or 24 G)	50	0	0	5	X
(only 22 or 24 G)	IV catheters 25G	50				
SINSSCAV25-	Scalp Vein Infusion Set, 25 G (orange)	20				
SINSNEED19-	Needles 19 G	100	0	0	100	X
SINSNEED21-	Needles 21 G	100			100	
SINSNEED23-	Needles 23 G	200			200	
SINSSYDL02-	Disposable Syringes 2	300	0	0	20	X
SINSSYDL05-	Disposable Syringes 5	100				
SINSSYDL10-	Disposable Syringes 10	100				
SINSSYDF60L	*Syringes Luer 60 ml	50	0	0	5	
SCTDTUGL06-	*Naso-gastric tube Luer, Ch 6, 40 cm	10	0	0	5	Add some extra if a lot of infants
SCTDTUGL08-	*Naso-gastric tube Luer, Ch 8, 40 cm	30	0	0	5	
SCTDTUGL10-	*Naso-gastric tube Luer, Ch 10, 60 cm	30	0	0	5	
ELAEHAEM2--	HB test	?	-	-	1	Depends test
DDGTURIS1GP	Urine test glucose, protein (box 100)	1	-	-	-	
SINCONT5C-	Needle disposal container(5l size)	4			1	
SMSUBLAN1--	Survival blanket	10	-	-	20	
SMSUBAGP06-	Plastic bags for medication	1000	1000	1000	1000	

*The material necessary for the feeding by naso-gastric tube is included in the nutrition kit for TFC.

DRUGS SUPPLIES for 3 months

	ITEMS	**(I)TFC 100**	**Wet SFC 250**	**Dry SFC 500**	**ATFC 100**	**Remarks**
	ORAL	Nb Tab or unit	Nb of Tab or unit	Nb of Tab or unit	Nb Tab or unit	
DORAALBE4T	Albendazole, 400 mg tablet (preferable over Mebendazole)	400	750	1000	400	Alternative for Mebendazol
	Mebendazole, 500 mg tablet OR	400 (300)	1000 (750)	2000 (1500)	400 (300)	Alternative for Albendazole
	Mebendazole, 100 mg tablet	2000 (600)	4000 (1500)	8000 (3000)	2000 (600)	
DORAAMOX2T	Amoxicillin, 250 mg, breakable tablet	6000	1000	1000	6000	

DORAAMOX1S1	Amoxicillin oral susp 125mg/5ml for 100ml	50			50	
DORAAMOC5T1	Amoxicillin + Clavulanic acid (1 tab = 500+125 mg)	500			500	optional
DORAAMOC1S1	Amoxicillin + Clavulanic acid oral susp. (125+31.25/5ml)	20			20	optional
DORAASCA2T	Ascorbic Acid (1 tab = 250 mg)	1000	optional 25.000	optional 50.000	1 000	
DORACHLO2C	Chloramphenicol (1 tab = 250 mg) (note:	100	0	0	100	Careful, in MSF catal capsule (tablet and syrup do exist as well)
DORACLOX1S1	Cloxacillin, 125 mg/5ml, 100ml oral susp.	20			20	optional
DORACIPR5T	Ciprofloxacin hydrochloride (1 tab =500 mg)	100			100	optional
DORACOTR4T	Cotrimoxazole, 400+80 mg, breakable tab	2000	4000	4000	2000	
DORADIAZ5T	Diazepam, 5mg, tablet	20	0	0	0	
DORAFERF2T	Ferrous Sulphate 200 mg + Folic Acid 0.25 mg, tablet	3000	4 000	8 000	1000	depends on therapeutic food
DORAFLUC2C	Fluconazole (1tab=200)	50			50	Optional
DORAFOLA5T	Folic Acid, 5 mg, tablet	1000 (1500)	0	0	300 (1500)	
DORAMETN2T	Metronidazole, 250 mg, tablet	1000	0	0	1000	
DORANYST1T OR	Nystatin, 100,000 IU, oral lozenge	1000	0	0	1000	
DORANYST1S	Nystatin, 100,000 IU/ml, oral susp.	100	0	0	25	
DORAORSA2S	ORS, low osmol., sachet 20.5 g/1L	0	3 000	6 000	0	
DORAPARA1T	Paracetamol, 100 mg tablet	3000	2 000	4 000	3000	
DORAPARA5T	Paracetamol, 500 mg tablet	1000	1000	1000	1000	
DORAPARA1S6	Paracetamol, 120 mg/5ml, syrup, 60 ml, bot.	50			50	
DORAPENV2T	Phenoxymthylpenicillin (Pen V), 250 mg, breakable tablet	1000	0	0	1000	
DORAORMA2S4	Resomal (bag of 420 g) 1 bag for 10 litre	100	0	0	100	
DORAZTF0073	Resomal (bag of 84 g) 1 bag for 2 litre	150	0	0	300	
DORARETI2T	Retinol (vitamin A), 200,000 IU, soft gel capsule	300	500	1000	300	
DORAYINS2T	Zinc Sulfate, eq. To 20 mg zinc mineral	0	200	400	0	
	INJECTABLE					
DINJAMPI1V	Ampicillin, 1G, powder vial	150	0	0	0	
DINJAMIN2A	Aminophylline, 25 mg/ml, 10 ml, amp	10	0	0	10	
DINJATRO1A	Atropine Sulfate, 1 mg/ml, 1 ml, amp	5				
DINJDIAZ1A	Diazepam, 5 mg/ml, 2 ml, amp	5	0	0	0	
DINJCEFT1V	Ceftriaxone 1G, powder vial	200	0	0	200	

DINJCHLO1V	Chloramphenicol, 1G, powder vial	200	0	0	20	
DINJDEXA4A	Dexamethasone, 4 mg/ml, 1 ml, amp	20	0	0	2	
DINJEPIN1A	Epinephrine (adrenaline), 1 mg/ml, 1 ml, amp	10	0	0	1	
DINJFURO2A	Furosemide, 10 mg/ml, 2 ml, amp	10	0	0	0	
DINJGENT8A	Gentamycin, 40 mg/ml, 2 ml, amp	200	0	0	1	
DINJGLUC5V5	Glucose Hyper, 50%, 50 ml, vial	40	0	0	4	
DINJLIDO1V2	Lidocaine, 1%, 20 ml, vial	10				
DINJWATE1A	Water for injection, 10 ml, plastic amp	550	0	0	250	
DINFRINL1P5	Ringer Lactate, 500 ml, plastic pouch, + set	25	0	0	5	
DINFDEXT5P5	Glucose 5%, 500 ml, plastic pouch, + set	25	0	0	5	
	MALARIA (DEPENDING PROTOCOLS)					
DDGTMALF2--	Test, Malaria, rapid (Paracheck), 25 tests, kit	500	250	500	500	
Not in MSF catalo	Arthemether Lumefantrine (Coartem)	1000	200	300	1000	Depends protocol
DORAARAB06C	Artesunate + Amodiaquine (AS+AQ), blister child	1000	200	300	200	Depends protocol
Not in MSF catalo	Artesunate, 500 mg + Sulfadoxine pyrimethamine, 25 mg (AS+SP)	1000	optional	optional	1000	Depends protocol
DORAQUIN2T	Quinine Sulfate, 200 mg, tablet	1000	0	0	1000	
DINJQUIN6A	Quinine Di-Hydrochloride, 300 mg/ml, 2 ml, amp	50	0	0	25	
DINJARTE2A	Artemether, 20 mg/ml, 1 ml, amp	200	0	0	100	
DINJARTE8A	Artemether, 80 mg/ml, 1 ml, amp	50	0	0	25	
ALIFMOSN21-	Bednets	200	250	500	200	
	EXTERNAL USE					
DEXTBENS6O4	Benzoic Acid 6% + Salicylic Acid 3%, ointment, 40 g, tube	100 tubes	150 tubes	250 tubes	100 tubes	Tx for 3 weeks!
DEXTBENZ2L1	Benzyl Benzoate, 25%, lotion, 1 L, bot.	20 L	30 L	60 L	20 L	
DEXTCHLC1S1	Chlorhexidine 1.5% + Cetrimide 15%, solution, 1 L, bot.	2 L	4 L	6 L	2 L	
DEXTGENV1C2	Gentian Violet, powder, 25 g, bot.	2	4	6	2	
DEXTIODP1S2	Iodine povidone 10%, 200 ml, dropper bottle	2	1	1	2	In Kit dressing
DEXOTETR1O5	Tetracycline, 1%, eye ointment, 5 g, tube	100	150	250	100	
DEXTZINO1O1	Zinc Oxide, 10%, ointment, 100 g, tube	50	100	200	50	

* Pediatric dosage is preferable to avoid doing dilution.

FEEDING MATERIAL

	ITEM DESCRIPTION	**(I)TFC 100**	**Wet SFC 250**	**Dry SFC 500**	**ATFC 100**	**Additional requirement**
EMEQSCAL25-	Salter scale 25 kg	1	1	1	1	

EMEQSCAL50-	Salter scale 50 kg	1	1	1	1	
PCOOCOOP10A	100 lit pot w/ cover	1	1	0	0	
PCOOCOOP50A	50 lit pot w/ cover	4	2	0	0	
(not in catalogue)	30 lit pot w/ cover	1	1	0	0	
(not in catalogue)	15 lit pot w/ cover	1	0	0	0	
PCOOPADD1W-	Wooden paddle, small	3	3	2	0	
PCOOLADL5A-	Ladle, large	4	4	0	0	
PCOOWHIS1S-	Whisk, large	3	3	0	0	
PCOOBUCK08L	Bucket w/ cover	12	10	10	10	For SFC
(not in catalogue)	Plastic bucket for washing dishes	4	4	1	1	
PCOOMEAJ1G-	Measuring cup (1L)	4	4	4	4	
Local purchase	Water container with tap	2	2	2	2	X
	Clock	1	1	1	1	
	Matches	YES	YES	NO	None	X
	Firewood, charcoal	YES	YES	NO	None	X
PCOOCUPP5G-	Plastic cup (500 ml)	200	400	0	200	
PCOOSPOO5P-	Tea spoon (5ml) (Plastic)	250	400	0	100	
PCOOSPOO1P-	Soup spoon (20 ml) (15 ml plastic)	10	10	0	100	X
PCOOPLAT5P-	Plastic plate (0.5 L)	200	300	0	100	
(not in catalogue)	Half drums	0	0	2	0	
Local	Plastic bags for packing the food ration (around 5 L)*	0	0	6000	1500	
PCOOPEN1T-	Can opener	2	2	1	1	Kit
Local	Plastic gloves			6	6	X
ELINAPRP1P-	Aprons	2	1	4	4	Kit
Local	Thermos bottle	(4)	0	0	0	X

FURNITURE AND MATERIAL FOR WARDS AND WAITING ROOM/AREA

	ITEM DESCRIPTION	**(I)TFC 100**	**Wet SFC 250**	**Dry SFC 500**	**ATFC**	**Additional requirement**
Local	Bench	6	10	10	10	X
Local	Chairs	10	4	4	2	X
Local	Tables	10	3	3	3	X
Local	Cup-board	1	1	1	1	X
Local	Water container with tap for drinking water	12	6	3	3	X
Local	Water container with tap for hand-washing	10	5	3	3	X

CLEANING MATERIAL + MISCELLANEOUS ITEMS

	ITEM DESCRIPTION	**(I)TFC 100**	**Wet SFC 250**	**Dry SFC 500**	**ATFC**	**Additional requirement**
Local	Broom	4	4	2	2	X
Local	Scrubbing brush	4	4	2	2	For Dry SFC
Local	Bucket	6	5	2	2	X
Local	Bar soap	300	50	10	10	X
Local	Trash bin	10	5	4	4	X
Local	Powdered soap	4 kg	2kg	2kg	2kg	X
Local	Mops (loques in Belgian, torchon in French)	20	10	5	5	X
Local	Plastic gloves	4	4	2	2	X
Local	Petrol lamp	4	1	1	0	For SFC
Local	Torch	4	2	2	2	For SFC
Local	Plastic boots	2	2	2	2	X

Reference tables vs. complete tables giving exact percentage based on weight
Drugs that only come in capsules vs. tablets
Limit the number of variations on drugs (not 3 types of the same drug with different mg)
For the KITS list the actual order #/code

ANNEX 12.8

Food Warehouse

The required storage capacity will depend on the rate of consumption established by the feeding programs and the supply line. The more difficult it is to supply the camp, the greater the storage capacity required. The effects of the rainy seasons, which can result in impassable roads, should also be taken into consideration.
The general rule is that 1 m2, which includes space for access and ventilation, is required to store 1 m3 of foodstuffs.
For example:
- 2 m^3 are required to store one ton of beans/cereals packed in 50 kg bags,
- 2.4 m^3 are required to store one ton of powdered milk packed in 25 kg bags,
4 m^3 are required to store one ton of cooking oil packed in 20 kg boxes,
0.8 m^3 are required to store one ton of BP5 biscuits packed in 24 kg boxes.

The warehouse should be properly secured (locked doors, guard, fencing, etc.), protected from sun and rain and clean inside and outside (to avoid the risk of food spoilage by rodents, insects and moisture). All the openings (windows, air holes) should be covered with a screen.

The floor should be slightly raised (10-15 cm) and covered with a cement slab, or hard-packed and covered with plastic sheeting. The walls should be whitewashed.

The warehouse should be well-ventilated.
A space of 0.7 m surrounding each pile will provide the necessary ventilation. The piles should be placed at 70 cm from the walls (in a tent avoid any contact with the cloth).

All items should be raised off the floor on pallets (or bricks or wooden logs) to avoid the bottom layer being damaged by damp ground. The food items should be stacked in criss-cross formation in piles of 2m x 2m x 2m for stability and easy counting. The height of the piles should be limited to facilitate the access and avoid any damage caused by pressure.

Estimation of material required:
- For temporary shelters
27 m^2 dispensary tents,
Furniture: if possible pallets or a grill to protect the foodstuffs, shelving units.
- For semi-permanent shelter
36 m^2 classical or modular construction,
Furniture: as above.
N.B.: provide cleaning equipment (brooms, buckets, shovels, etc.)

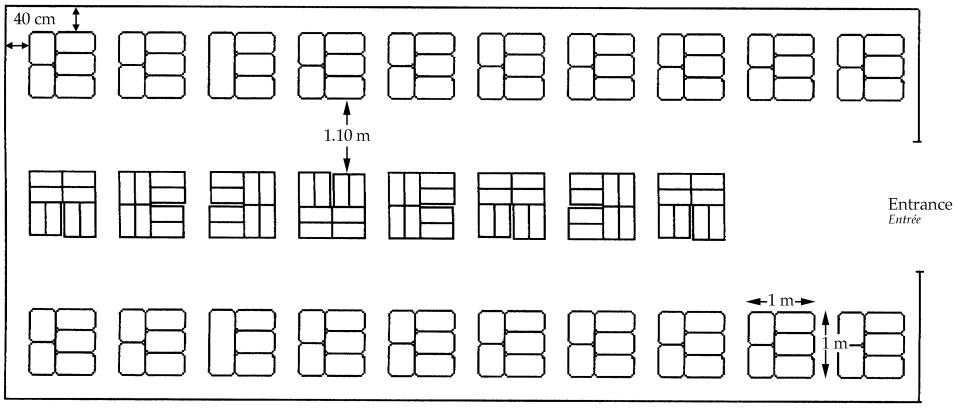


Fig. 4

Food store. Semi-permanent building of 14 m long (classic or modular).
Plan a large way, a handling area in the entrance and 40 to 50 cm around the food piles to allow ventilation.
Stock alimentaire. Bâtiment semi-permanent de 14 m de long (classique ou modulaire).
Prévoir des allées larges, une aire de manutention à l'entrée, 40 à 50 cm autour des piles d'alimentation pour l'aération.

ANNEX 12.9

STOCK CARD

ITEM	DOSAGE/TYPE
CODE	STANDARD UNIT OF DISTRIBUTION
REMARKS	BATCH NUMBER

DATE	ORIGIN/DESTINATION Waybill n^{o} or other reference	IN	OUT	STOCK	REMARKS
STOCK TRANSFERRED FROM PREVIOUS CARD:					

MONTHLY STOCK BALANCE SHEET

Month_____ Place:_____
Filled by:_____

Product	**Opening stock**	**IN**			**OUT**			**Closing stock**	
		D	P	B	F	W	L	1	2
CSB									
F 100									
Sugar									
Oil									
Rice									

Opening stock = food stock physically present at the beginning of the month
IN = all food items entering in the store during the month. D= donation; P = purchasing; B = borrow
OUT = all includes all the food items exiting the stock during the month. F = sent to feeding programme; W = wasted food (lost, spoiled, stolen); L = loaned
Closing stock = food stock at the end of the month.

- 1 = the theoretical stock calculated as: Opening stock + IN - OUT = Closing stock n° 1.
- 2 = the physical count of the food stock, closing stock n°2. This figure will be used for the opening stock of the next month.

Comments:

ANNEX 12.10

DRUG ORDER FORM FOR FEEDING CENTRES

Place: Filled by:

Date: Reference N°:

Period: Page N°:

N°	Name of drug or medical material	Existing Stock	Quantity order in Units	Quantity Sent	Quantity Received	Remark

Order prepared by: Date:

Signatures:

Pharmacy: Transporter: Receiver:

ANNEX 12.11

Quantity milk in kitchen

Quantities of therapeutic milk - prepare in a TFP for one meal according
- the phase, product and number of children

PHASE 1 – Therapeutic milk F-75

The daily ration is 100 kcal/kg/day = 135 ml/kg/day divided in 8 meals.
On bag of F-75 serves 15 children (weight average 9 kg) for one meal.

Number of children	Number of bags per meal	Litres of water - add	Litres of milk per meal
0 -15	**1**	**2**	2.4
15 - 30	**2**	**4**	4.8
30 - 45	**3**	**6**	7.2
45 - 60	**4**	**8**	9.6
60 - 75	**5**	**10**	12
75 - 90	**6**	**12**	14.4
90 - 105	**7**	**14**	16.8
105 - 120	**8**	**16**	19.2
120 - 135	**9**	**18**	21.6
135 - 150	**10**	**20**	24
150 - 165	**11**	**22**	26.4
165 - 180	**12**	**24**	28.8
180 - 195	**13**	**26**	31.2
195 - 210	**14**	**28**	33.6

PHASE 1 – SDTM

The daily ration is 100 kcal/kg/day = 135 ml/kg/day divided in 8 meals.
On bag of specially diluted F-100 serves 20 children (weight average 9 kg) for one meal.

Number of children	Number of bags per meal	Litres of water - add	Litres of milk per meal
0 - 20	**1**	**2.8**	3.2
20 - 40	**2**	**5.6**	6.4
40 - 60	**3**	**8.4**	9.6
60 - 80	**4**	**11.2**	12.8
80 - 100	**5**	**14**	16
100 - 120	**6**	**16.8**	19.2
120 - 140	**7**	**19.6**	22.4
140 - 160	**8**	**22.4**	25.6
160 - 180	**9**	**25.2**	28.8
180 - 200	**10**	**28**	32

PHASE 1 – Therapeutic milk F-100
The daily ration is 100 kcal/kg/day = 100 ml/kg/day divided in 8 meals.
On bag of F-100 serves 20 children (weight average 9 kg) for one meal.

Number of children	Number of bags per meal	Litres of water - add	Litres of milk per meal
0 - 20	**1**	**2**	2.4
20 - 40	**2**	**4**	4.8
40 - 60	**3**	**6**	7.2
60 - 80	**4**	**8**	9.6
80 - 100	**5**	**10**	12
100 - 120	**6**	**12**	14.4
120 - 140	**7**	**14**	16.8
140 - 160	**8**	**16**	19.2
160 - 180	**9**	**18**	21.6
180 - 200	**10**	**20**	24

TRANSITION PHASE – Therapeutic milk F-100
The daily ration is 150 kcal/kg/day = 150 ml/kg/day divided in 8 meals.
On bag of F-100 serves 14 children (weight average 9 kg) for one meal.

Number of children	Number of bags per meal	Litres of water - add	Litres of milk per meal
0 - 14	**1**	**2**	2.4
14 - 28	**2**	**4**	4.8
28 - 42	**3**	**6**	7.2
42 - 56	**4**	**8**	9.6
56 - 70	**5**	**10**	12
70 - 84	**6**	**12**	14.4
84 - 98	**7**	**14**	16.8
98 - 112	**8**	**16**	19.2
112 - 126	**9**	**18**	21.6
126 - 140	**10**	**20**	24
140 - 154	**11**	**22**	26.4
154 - 168	**12**	**24**	28.8
168 - 182	**13**	**26**	31.2
182 - 196	**14**	**28**	33.6

PHASE 2 – Therapeutic milk F-100

The daily ration is at least 200 kcal/kg/day = at least 200 ml/kg/day divided in 6 meals.
On bag of F-100 serves 7 children (weight average 9 kg) for one meal.

Number of children	Number of bags per meal	Litres of water - add	Litres of milk per meal
0 - 7	**1**	**2**	2.4
7 - 14	**2**	**4**	4.8
14 - 21	**3**	**6**	7.2
21 - 28	**4**	**8**	9.6
28 - 42	**6**	**12**	14.4
42 - 56	**8**	**16**	19.2
56 - 70	**10**	**20**	24
70 - 84	**12**	**24**	28.8
84 - 98	**14**	**28**	33.6
98 - 112	**16**	**32**	38.4
112 - 126	**18**	**36**	43.2
126 - 140	**20**	**40**	48
140 - 154	**22**	**44**	52.8
154 - 168	**24**	**48**	57.6
168 - 182	**26**	**52**	62.4
182 - 196	**28**	**56**	67.2
196 - 210	**30**	**60**	72

ANNEX 12.12

Ordering THERAPEUTIC MILK and RUTF

F75: Phase 1

Needs calculated for a child of 9 Kg receiving 1200 ml of F75/ day (205 gr of dry product, including 10 % losses)

Number of sachets of 410 gr or cartons of 20 sachets

Number of children	**Day**	**30 days**	**90 days**	***90 days cartons (20 sachets/carton)***
1	0.5	15	45	*3*
10	6	180	540	*27*
50	29	900	2 700	*135*
100	59	1 800	5 400	*270*
250	147	4 500	13 500	*675*
500	293	9 000	27 000	*1350*
1000	587	18 000	54 000	*2700*

Note: in general 25% of the children will need a treatment of 3 days in phase 1 (F75)

F100: Phase 2 and transition phase

Needs calculated for a child of 9 Kg receiving 1800 ml of F100/ day (380 gr of dry product, including 10 % losses)

Number of sachets of 456 gr or cartons of 30 sachets

Number of children	**Day**	**30 days**	**90 days**	***90 days cartons (30 sachets/carton)***
1	1	25	75	*2.5*
10	9	250	750	*25*
50	42	1250	3 750	*125*
100	84	2500	7 500	*250*
250	209	6250	18 800	*625*
500	417	12500	37 500	*1 250*
1000	834	25000	75 000	*2 500*

RUTF, sachets of 500 kcal: phase 2 ATFC

Needs calculated with an average of 2.5 sachets (including 10 % losses)

Number of sachets of 500 kcal [64] or boxes (150 sachets)

Number of children	**Day** **sachets**	**7 days** **sachets**	**30 days** **sachets**	**45 days = 1 treatment** **sachets**	**90 days** **sachets**	***45 days boxes of 150 sachets boxes***	***90 days boxes of 150 sachets boxes***
1	3	19.25	82.5	123.75	247.5	*1*	*2*
10	28	192.5	825	1237.5	2475	*8*	*17*
50	138	962.5	4125	6187.5	12375	*41*	*83*
100	275	1925	8250	12375	24750	*83*	*165*
250	688	4812.5	20625	30937.5	61875	*206*	*413*
500	1375	9625	41250	61875	123750	*413*	*825*
1000	2750	19250	82500	123750	247500	*825*	*1650*

RUTF, bars of 300 kcal: phase 2 ATFC

Needs calculated with 4.5 bars per day of (including 10 % losses)

Number of bars of 300 kcal[65] or boxes (9 bars) or cartons (24 boxes)

Number of children	**Day** ***bar***	**7 days** ***bar***	**7 days boxes (9bars/box)** ***box***	**30 days** ***bar***	**45 days** ***bar***	**90 days** ***bar***	***45 days cartons (24box/carton)*** ***carton***	***90 days cartons (24box/carton)*** ***carton***
1	4.95	35	4	149	223	446	*1*	*2*
10	50	347	39	1485	2228	4455	*10*	*21*
50	248	1733	193	7425	11138	22275	*52*	*103*
100	495	3465	385	14850	22275	44550	*103*	*206*
250	1238	8663	963	37125	55688	111375	*258*	*516*
500	2475	17325	1925	74250	111375	222750	*516*	*1031*
1000	4950	34650	3850	148500	222750	445500	*1031*	*2063*

[64] E.g. Plumpynut
[65] E.g. BP100

ANNEX 12.13

Order for porridges (TFC and wet SFC)

Recipe 1 (in annex 7.3) for 1 porridge /child

CSB : 80 gr
Oil : 20 gr
Sugar : 15 gr
Kcal: 540

Quantity for 1 porridge (recipe 1 annex 7.3)

Nb children	CSB (Kg)	Oil (kg)	Sugar (kg)	Water (L)
1	0. 080	0. 020	0. 015	0.4
5	0. 400	0. 100	0. 075	2
10	0.800	0. 200	0. 150	4
15	1.2	0. 300	0. 225	6
20	1.6	0. 400	0. 300	8
25	2	0.5	0. 375	10
50	4	1	0.75	20
75	6	1.5	1.15	30
100	8	2	1.5	40
125	10	2.5	1.9	50
150	12	3	2.25	60
175	14	3.5	2.65	70
200	16	4	3	80
225	18	4.5	3.4	90
250	20	5	3.75	100
275	22	5.5	4.15	110
300	24	6	4.5	120
325	26	6.5	4.9	130
350	28	7	5..25	140
375	30	7.5	5.65	150
400	32	8	6	160
425	34	8.5	6.4	170

Preparation

1. Prepare the premix in the morning according to the number of beneficiaries that is communicated to the kitchen;
2. Boil the quantity of water required;
3. Add ´a bit´ of hot water with the premix;
4. Mix until the premix becomes smooth;
5. Add the remaining water and mix until smooth;
6. Cook for 10 minutes ONLY!

Order for 1 porridge (recipe 1 annex 7.3) per day:
(In Kg, 10% losses included)

Nb Persons	30 DAYS			90 DAYS		
	CSB	**Oil**	**Sugar**	**CSB**	**Oil**	**Sugar**
10	27	7	5	80	20	15
50	132	33	25	400	100	75
100	264	66	50	792	200	150
250	660	165	123	1 980	495	370
500	1 320	330	250	3 960	990	743
1000	2 640	660	495	7 920	1 980	2 485

Order for 2 porridges (recipe 1 annex 7.3) per day:
(In Kg, 10% losses included)

Nb Persons	30 DAYS			90 DAYS		
	CSB	**Oil**	**Sugar**	**CSB**	**Oil**	**Sugar**
10	53	13	10	159	40	30
50	264	66	50	792	198	149
100	528	132	100	1 584	396	297
250	1 320	330	248	3 960	990	743
500	2 640	660	495	7 920	1 980	1 485
1000	5 280	1 320	990	15 840	3 960	2 970

Order for porridge mix as dry ration in dry SFC or BFD

Recipe 1 of annex 7.2

(In Kg, 10% losses included in 30 and 90 days order, not in daily and weekly rations)

Nb Persons	1 DAY			1WEEK			30 DAYS			90 DAYS		
	CSB	Oil	Sugar	CSB	Oil	Sugar	CSB	Oil	Sugar	CSB	Oil	Sugar
1	0.243	0.043	0.014	1.8	0.3	0.1	7.7	1.4	0.5	23.2	4.3	1.4
10	2.6	0.5	0.2	18	3.3	1.1	77	14	4.6	232	43	14
50	13	2.4	0.8	90	17	5	386	71	23	1 158	213	69
100	26	5	2	180	33	11	772	142	46	2 317	426	139
250	64	12	4	450	83	27	1 931	355	116	5 792	1 064	347
500	129	24	8	901	166	54	3 861	710	231	11 583	2 129	693
1000	257	47	15	1 802	331	108	7 722	1 419	462	23 166	4 257	1 386

Recipe 2 of annex 7.2

(In Kg, 10% losses included in 30 and 90 days order, not in daily and weekly rations)

Nb Persons	1 DAY			1WEEK			30 DAYS			90 DAYS		
	CSB	Oil	Sugar	CSB	Oil	Sugar	CSB	Oil	Sugar	CSB	Oil	Sugar
1	0.229	0.029	0.029	1.6	2	2	7.6	0.9	0.9	22.6	2.8	2.8
10	2.3	0.3	0.3	16	2	2	75.4	9.4	9.4	226	28	28
50	11.4	1.4	1.4	80	10	10	337	47	47	1 131	141	141
100	23	3	3	160	20	20	754	94	94	2 260	280	280
250	57	7	7	400	50	50	1 886	235	235	5 657	707	707
500	114	14	14	800	100	100	3 771	471	471	11 314	1 414	1 414
1000	229	29	29	1 600	200	200	7 542	942	942	22 829	2 828	2 828

Order for BP5 as dry ration in dry SFC or BFD

Needs caculated on 100 kcal/p/day; 2 bars of BP5 gives 508 kcal, 9 bars in 1 pack, 24 packs in a carton

Nb Persons	1 DAY		1WEEK			30 DAYS		
	Bars	packs	bars	packs	cartons	bars	packs	cartons
1	2		14	1.5		60	7	
10	20	2.2	140	16		600	67	3
50	100	6	700	78	4	3 000	334	14
100	200	23	1 400	155	7	6 000	667	28
250	500	56	3 500	388	16	15 000	1 667	70
500	1000	112	7 000	778	33	30 000	3 334	139
1000	2000	223	14 000	1 556	65	60 000	6 667	278

ANNEX 12.14

Order food for one local meal
according to the number of adolescents/adults/carers in the TFC

Recipe 1 : Maize, beans, oil, salt
(1000 kcal/meal)

Number of adolescents/adults	**Maize** kg	**Beans/Peas** kg	**Oil** kg	**Salt** grams
1	180 g	80 g	20 g	3
10	1.8	0.8	0.2	30
20	3.6	1.6	0.4	60
30	5.4	2.4	0.6	90
40	7.2	3.2	0.8	120
50	9	4	1	150
60	10.8	4.8	1.2	180
70	12.6	5.6	1.4	210
80	14.4	6.4	1.6	240
90	16.2	7.2	1.8	270
100	18	8	2	300
250	45	20	5	750
500	90	40	10	1 500
1000	180	80	20	3 000

Order recipe 1: Maize, beans, oil, salt
(In Kg, 10% loss included)

Nb Pers	**30 DAYS**				**90 DAYS**			
	Maize	**Beans**	**Oil**	**Salt**	**Maize**	**Beans**	**Oil**	**Salt**
10	60	27	7	1	178	79	20	3
50	300	132	33	5	891	396	100	15
100	600	264	66	10	1 782	792	200	30
250	1 485	660	165	25	4 455	1 980	495	75
500	2 970	1 320	330	50	8 910	3 960	990	150
1000	5 940	2 640	660	100	17 820	7 920	1980	300

Recipe 2 : Rice, beans, oil, salt
(1000 kcal/meal)

Number of adolescents/adults	**Rice** in kg	**Beans/Peas** in kg	**Oil** in kg	**Salt** in g
1	200 g	40 g	20 g	3
10	2	0.4	0.2	30
20	4	0.8	0.4	60
30	6	1.2	0.6	90
40	8	1.6	0.8	120
50	10	2	1	150
60	12	2.4	1.2	180
70	14	2.8	1.4	210
80	16	3.2	1.6	240
90	18	3.6	1.8	270
100	20	4	2	300
250	50	10	5	750
500	100	20	10	1500
1000	200	40	20	3000

Order recipe 2: Rice, beans, oil, salt
(In Kg, 10% losses included)

Nb Persons	**30 DAYS**				**90 DAYS**			
	Maize	**Beans**	**Oil**	**Salt**	**Maize**	**Beans**	**Oil**	**Salt**
10	66	13	7	1	198	40	20	3
50	330	66	33	5	990	200	100	15
100	660	132	66	10	1 980	400	200	30
250	1 650	330	165	25	4 950	990	495	75
500	3 300	660	330	50	9 900	1 980	990	150
1000	6 600	1 320	660	100	19 800	3 960	1980	300

ANNEX 15
Milk card

1 page

ANNEX 12.16

Organigram ATFC/SFP

1 page

ANNEX 12.17
Organigram TFP
1 page

ANNEX 12.18

JOB DESCRIPTION FOR TFC

SUPERVISOR

Main responsibilities: to ensure that the TFC is functioning properly, providing care of quality to all the patients. Respect of the protocols.
Under the supervision: of the nutritional co-ordinator of the whole nutritional programme or the medical co-ordinator.
Supervise: all the personnel of the feeding centre
The supervisor needs to have a good overview and management capacity.

Specific tasks

- to daily calculate the quantity of food needed for the day based on the number of children present in Phase I and II. Or he refers the work to somebody who will calculate and he supervises him.
- to order the food for the TFC in collaboration with the store-keeper
- to order the drugs for the centre in collaboration with the pharmacist
- to daily collect the number of new admissions and exits and attendance from the registrar.
- to weekly check and transmit the statistics to the nutritional co-ordinator.
- To give feed back to the team.
- to work in collaboration with medical or nutritional co-ordinator of the whole programme.

Supervision of activities

- to check the pharmacy: correct drug preparation, storage and stock balance etc..
- to check food stock: food consumption and cleaning of the store.
- food distribution: meals distributed on time and respect of the quantity.
- food preparation: correct recipes and food preparation, cleaning of the kitchen.
- check the cleaning of the centre
- quality of medical care dispensed: drugs distribution, correct application of the medical protocols; clinical follow-up, rehydration, detection in times of the medical complications.
- nutritional follow-up: correct measurements and follow-up of the weight and oedema.
- individual cards and the attendance register book: correct filling
- admission and exit: respect of the criteria
- the respect of the dignity of the patients and their accompanying
- resolution of problems occurring between the patients and the personnel
- to ensure that mothers are well informed about the functioning of the centre; the state and evolution of their child; their tasks (help in cleaning, feeding of the children etc.).

Personnel management:

- to point out the presence, the day-off and the absence of the staff, in collaboration with the administrator (if existing)
- to plan and manage the working schedule
- to plan and organise the replacements of workers
- to respect the existing working rules and to be attentive to the working condition of the personnel.
- to distribute the work within the personnel according to their knowledge's
- to conduct weekly meetings with the personnel in charge of each phase
- to organise training course for the staff when necessary.
- to inform the co-ordinator in case of difficulties.

WEIGHT/ HEIGHT MEASURERS

Main responsibilities: perform correct anthropometrical measurements of the patients
Under the supervision of: the registrar

Specific tasks
Admission

- to accurately take the MUAC of the patients
- to accurately take the weight and height of the patients
- to ensure that height is measured monthly

- to properly check oedema

W/H monitoring
- to daily take weight of all the children in phase 1 and every two days in phase II.
- to properly record the measurements on the individual card of the patient.
- to inform the caretakers and patients on their weight (increase, same or loose).

to inform the nutrition assistant about the weight evolution of their patients, especially for children who lost weight.

REGISTRAR

Main responsibilities: Admission and registration of patients, control of the attendance and record of the patient exits
Under the supervision of: the supervisor
Supervise: outreach workers and Z>H ;easurers

Specific tasks
Admissions
- to refer to SFP patients fitting the admission criteria for SFP.
- to admit the patients respecting the admission criteria. When admission is borderline, to refer to the medical responsible in duty for taking a decision.
- to properly register the patient in the register-attendance book (n°, name, address, date etc.).
- to put an identification bracelet with the n° of the child and name of the centre.
- to fill the individual card of the patient with the administrative and measurements information.

- to inform the mother about the functioning of the centre. And inform her about where she has to go
- Fill the daily statistic and give to the supervisor (number of admissions)

Monitoring
- to record on the attendance-register book the daily attendance, the exits (cured, defaulter, death or transfer).
- to work closely with the outreach team: to inform them about the name and address of the defaulter, to check if after tracing the defaulters are coming back.
- to daily report to the supervisor the attendance in phase I and II, (to determine the daily quantity of food necessary to prepare) .
- to weekly fill and transmit to the supervisor the admissions and exits forms.

PSYCHO-SOCIAL WORKER

Main responsibilities: orientate the mothers at admission (NB: in small centres, this job can be done by the registrar)
Under the supervision of: the registrar

Specific tasks
- To make rounds among the new admissions in the waiting room to select the children with severe oedema, fever or who look very sick to send them in priority to the admission team.
- To distribute milk or sugary water to the children waiting for registration
- To inform the mother about the functioning of the centre.
- To distribute the material to the mothers (blanket, soap, cup…etc)
- To bring them to the shelters after the registration and consultation.
- To go around the centre with them to explain the organisation (latrines, showers, water points….)

+ Other task related to psycho-development of the child I have some jobdescription for psycho in Brussels (I will send it when I'm back
- **Organise play ground activities**

MEDICAL PRESCRIPTOR

Main responsibilities: to ensure the basic medical care of the beneficiaries: examination at admission, routine and basic prescription, daily follow-up and referral to the physician**.**

Under the supervision: of the physician
Supervise: nurses (for the medical issues)
The medical prescriptors can be a medical assistant, a prescriptor-nurse or a medical doctor.

Specific tasks
At admission
- to examine all the new cases admitted in the TFC and screen those who should be sent to ATFC (with no complicated malnutrition)
- to check the measles vaccination status,
- to make a basic clinical examination
- to recognise, call and refer immediately to the physician the children in severe condition requiring emergency interventions.
- to refer to the physician the complicated cases for further examinations.
- to control the hydration status and to prescribe the rehydration regimen.
- to prescribe routine and basic treatments according the protocol used in respecting the drug dosage based on the weight of the patient
- to completely and properly fill the individual card with the medical information.
- to transmit clear instruction to the nurse on medical care and specific monitoring of the patient.

Monitoring of the patients
In phase I and transition phase:
- to daily follow the patients in phase I:
- to estimate the medical evolution (improvement, deterioration etc.)
- to change the medical treatment according to the instructions of the physician
- to decide in collaboration with the nurse of the transfer of the patient in phase II
- to do a quick late-afternoon round to be sure that patients are OK for the night.

In phase II (day care) I would not precise (day-care) as phase 2 can also be in 24h
- to daily follow the patients with medical problems
- to control 3 times a week the medical status of all the patients.
- to prescribe basic medical treatments
- to refer to the physician the patient gaining no weight or with complicated medical problems.
- to decide of the discharge of the patients in collaboration with the nurse.

Reports
- to fill the daily and weekly morbidity forms.

PHYSICIAN

Main responsibility: medical diagnosis and treatment of the patients presenting medical complications. To insure the correct application of the treatment protocols.
Under the responsibility: of the supervisor, (medical and nutritional co-ordinator)
Supervise: the medical prescriptors and nurse (for the medical issue)

Specific tasks
- clinical examination of all patients with signs of complicated pathologies or presenting complication or refer by the medical prescriptors.
- prescription and follow-up of the severe and complicated cases.
- adaptation and change of medical treatment
- referral of patients to hospital
- training of the pharmacist, medical prescriptors on the rational use of drugs.
- training of the medical prescriptors on basic diagnosis and treatment prescriptions (theoretical and on the spot training)
- to work in collaboration with the nurses to ensure medical care of quality
- to work as a member of the team, taking in consideration the non medical problems encountered by the patients (feeding and caring problems etc.)
- to develop relationship with medical counterparts working in relation with the TFC (hospital physicians, etc.)

RESPONSABLE OF PHARMACY

Main responsibilities: management of the pharmacy and preparation of drugs for the patients.
Under-supervision: physician or expatriate nurse and supervisor

Specific tasks

- to daily prepare the drugs necessary for the treatment of each patient (bill boxes).
- to follow the distribution of the drugs
- to organise and control the emergency box
- to properly arrange and keep clean the pharmacy
- to do the weekly drugs and materials consumption report and inventory in collaboration with the supervisor.
- to prepare the monthly order in collaboration with the supervisor

NURSE

Main responsibilities: to ensure that medical and nutritional care are properly delivered to the patients and to daily follow the evolution of the patient.
Under the supervision of: supervisor and physician for the medical issue
Supervise: the nutrition assistant or nurse aids

Specific tasks
Medical care

- to monitor the health state of the patients (including weight)
- to inform quickly the medical responsible on duty in case of problems like vomiting, diarrhoea, degradation of the status of the patient.
- to detect dehydration of the patients
- to follow the re-hydration state of the patients
- to follow strictly the medical prescription
- to take vital signs (every day in phase I and transition; every 2 days in phase II)
- to continuously check if there is no change in drug prescription and adapt consequently the treatment.
- to deliver the drugs at the right time
- to make dressing in respecting the hygienic rules.

Nutritional care

- monitor weight of patient
- to prescribe and adapt the quantity of milk according to the phase and weight of the patients.
- to monitor the meals distribution and intake: each patient should receive and eat the correct diet and amount of food.
- to keep informed on how the patients are eating,
- to encourage and advise the mothers having difficulties to feed their children
- to put a naso-gastric tube in respecting the hygienic rules.
- to daily check oedema
- to follow the evolution of the nutritional status of the patients.
- to draw the weight curve of each patient and calculate the %
- to decide of the discharge of the patients following the recovery criteria and in collaboration with the medical responsible.

Health education

- to participate to the health education of the mothers.
- to stimulate emotional and physical activities of the patients.

Personnel management

- to train and monitor all the cares delivered by the nutrition assistants.
- to organise the daily work and dispatch the activities among the nutrition assistants in collaboration with the supervisor
- to make an oral reports (for all patients), write relevant information on the individual cards and in the transmission booklet, for the next team, at the end of the shift.

NURSE -assistant in Resomal corner

Mean responsibility: to ensure proper rehydration of patients
Under the supervision of : medical responsible and nurse

Specific tasks

- to daily prepare Resomal.
- to give the amount of Resomal prescribed by the medical responsible
- to explain to the mother the importance of the re-hydration
- to help the mother to give the Resomal to her child
- for naso-gastric tube: to control the number of drops/minute.
- to monitor according to plan (every 30min or hour) and fill the re-hydration form

- to inform the medical responsible about the evolution of the patient during re-hydration (vital signs, weight, vomiting, diarrhoea, clinical deterioration, clinical improvement.)
- to distribute the meals to the patients attending the Resomal corner.
- to keep all the material clean.

NUTRITION ASSISTANT

Main responsibilities: taking care of the patients assigned to her/him
Under the supervision of: the nurse

Specific tasks

Relationship with care-takers

- To direct and inform caretakers in the functioning of the centre:
- the location of the toilets, showers, washing room, playing place etc.
- how the activities are organised during a day (number and time of the meals, medical visit, weight measurement etc), and to whom address their problems.
- what will be their participation toward their relative (feeding, hygiene body and clothes washing, stimulation) and their participation to the cleaning of the ward and TFC.
- what they will receive: food for their meals, soap, blanket etc.
- to respect dignity of the patients and care-takers
- to participate to the health education sessions

Nutritional care

- To distribute meals respecting the diet and amount of food prescribed for each patient.
- to observe and report on the card how much the patient has eaten after each single meal
- to help and encourage the mothers for the feeding of their child (e.g feed slowly, up-right position etc)
- to ensure the hand-washing before the meals
- to ensure that no other food is given in phase I
- to ensure the feeding utensils are clean
- to report food intake less than 75% to nurses
- to propose for NG tube feeding
- to stimulate mother to breast-feed

Medical care and monitoring

- to measure the temperature of each patient
- to point out and report to the nurse the patients who are/have:
  - apathetic
  - not eating
  - not drinking
  - vomiting
  - fever
  - dehydrated
  - diarrhoea
  - or any other problems.
- to distribute the Resomal according the prescription or protocol

- to make sure that drinking water is always available in the ward, and well identified.

Hygiene
- to monitor and insure that the wards remain clean
- to check water availability for hand washing

Nutrition assistants for infants:
The tasks are more or less the same as the above. In addition the infant nutrition assistant should:
- ensure breastfeeding every 2 hours, in between meals
- check and support breastfeeding (e.g. baby's attachment, position)
- ensure that no feeding bottles is used
- ensure that no other food than breast-milk and/or SDTM is given
- ensure that mothers drink 2L of clean water per day
- ensure that mothers get all their meals (3 meals + 2 porridges a day)
- give personal counselling to mothers (related to personal problems: engorgements, no milk etc…)
- give health education about infant feeding practices
- ensure that kangaroo method is well applied

HYGIENE PROMOTOR

Main responsibilities: ensure that hygiene rules are respected in the centre.
Under the supervision of: the supervisor or the responsible of WHS (Water, Hygiene, Sanitation)

Specific tasks
- To educate the mothers to use correctly the water distribution points, latrines, hand washing points, washing areas, garbage collection…
- To control that they use it correctly.
- To help in the hand washing sessions before meals.
- To participate in health education sessions.
- To work in collaboration with cleaners and nutritional assistants.

HEALTH WORKER

Main responsibilities: Inform beneficiaries and care takers on important health issues.
Under the supervision of: the nurse

Specific tasks
- To educate the mothers on health issues like vaccinations, hygiene, HIV, STD's, etc.

CLEANER

Main responsibilities: ensure cleanliness and maintenance of the centre.
Under the supervision of: the supervisor or the responsible of WHS

Specific tasks
- to daily clean all the shelters with water and soap
- to dispose of garbage in a safe and appropriate fashion
- to prepare and use chlorine solutions as required
- to weekly clean in-depth part of the centre following the instruction of the supervisor.
- to make sure that drinking and washing water are available in all the water points.
- to clean every day the water containers

STORE KEEPER

Main responsibilities: proper management of the food and non-food store.
Under the responsibility of: the supervisor

Specific tasks
- to control and record any entry (in) and exit (out) of food items or other materials.
- to properly fill the stock cards

- to check the quality of the food received (labelling, packing, etc.) and inform the supervisor in case of problems
- to make weekly physical inventory in collaboration with the supervisor
- to calculate the weekly consumption food , to make the food balance stock.
- to make food order in collaboration with the supervisor. To immediately inform the supervisor when an item will be soon in shortage.
- to keep the store very clean
- to close well the store, to refuse any visitor inside the store and to inform the supervisor of any missing food or other material.
- to assist the kitchen staff for taking the daily amount of food.

HEAD-COOK

Main responsibilities: supervision of the food preparation and kitchen
Under the supervision of: supervisor
Supervise: the cooks

Specific tasks

- to supervise the work of the kitchen personnel and to participate to their activities. (food preparation of the recipes, hygiene etc.)
- to take from the store keeper or supervisor the right quantity of food items needed for each day.
- to control that all the items needed to prepare the meals are present, like salt, green leaves, ect and inform the store keeper on time of what is needed
- to check the quality of the food received and to immediately inform the supervisor if a problem occurs (broken bags, spoiled food etc.).
- to weekly check the kitchen stock (material conditions).

COOK

Main responsibility: preparation of the meals for the patients
Under the supervision of: the head-cook

Specific tasks

- to prepare the meals of the patients respecting the following rules:
- to have boiled water ready at any time
- to strictly follow the different recipes (milk, porridge, local meal etc.)
- to strictly follow the hygienic rules during meals' preparation
- to insure that meals are ready on time
- to bring the food to the wards.
- to keep clean the kitchen and kitchen area
- to keep the material in good condition
- to properly wash the dishes

WATCHMAN

Main responsibilities: ensure security and overcrowding control of the centre.
Under the supervision of: the supervisor

Specific tasks

- to ensure the reception and the regulation of entrances and exits in the centre.
- to check that the persons coming to the centre are the ones concerned by the activities.
- to insure that no visitors are coming during the meal time.
- to insure that there are no materials and food going out of the centre.

OUTREACH WORKERS

When a programme of home visitors or community health workers exists in the area, the task described below can be performed by them.
Mean responsibility: tracing of defaulters and nutritional screening

Under the supervision of: registrar

Specific tasks
- to trace the defaulters
- to inform the registrar on the reasons given for defaulting
- to check with the registrar how many of those who were traced came back
- to inform the community on the role and how is functioning the centre
- to participate to the health education session
- to visit the patients at home after they have been discharged from the TFC
- to conduct screening within the population to detect the malnourished cases (MUAC for children 1 year up to 5 years)
- to refer to the weight/height point, the children fitting the defined criteria.

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. **JOB DESCRIPTIONS FOR SIMPLIFIED TFC**

In the beginning of an acute emergency or when few qualified staff is available, the tasks described above can be shared between different people to accelerate the training (less tasks to learn):

For example:
The nutritional assistant can share his job with the **food distributors:**
- the food distributors will distribute the milk and help the mothers to feed the children (as this is time consuming but don't need high level of education)
- the nutritional assistant will supervise them, write on the card, measure the T°, report the problems to the nurse, distribute the Resomal.

A drug distributor can help the nurse for basic medical care.

As the program evolves (work load, human resources) the tasks will become more elaborated and specific to each position..

Thus, it is important to specify in the contract that the job description is susceptible to change, according to the evolution of the program and the training received.

In simplified TFC, the number of beneficiaries can be increased (if space and sanitation is available) with units/shelter of 30 to 50 children. Each shleter will have one supervisor who will refer to a nurse. One nurse will be responsible for 2 shelters (the units can also be divided according to the patients age: < 5 and >5 years).

ACTIVITIY SCHEDULE OF SHELTER SUPERVISOR.

7.30 AM: **-** Get the box with drugs from the storeroom and control if it's complete.
-Control the attendance of the children: after 2 days of absence, transfer the name to the defaulter book in admission tent.
- For the severe cases, give the name after one day of absence.
-Give the number of children and mothers to the storekeeper for food distribution.

8.30 AM: - Drug distribution
- Control the work of the nutritional assistants (distribution and control of meals, distribution of ORS, control of Temperature…
- Supervise the weighing of the children every 3 days and control the %.
- Do regularly a round among the children to discover the sick or dehydrated one's and refer them to the nurse.
- Give the explanation to the new comers about the functioning of the feeding centre.
- Control the work of the cleaner (filling the water containers, cleaning…)
- Refer to the centre supervisor for any problem.

2 & 5.00 PM: - Drug distribution

ANNEX 12.19

JOB DESCRIPTION: SFC/ ATFC

SUPERVISOR

Main responsibilities: to ensure that the SFC/ATFC is functioning properly, providing care of quality to all the patients.
Under the supervision: of the nutritional co-ordinator or the medical co-ordinator.
Supervise: all the personnel of the feeding centre
The supervisor needs to have a good overview and management capacity.

Specific tasks

- to calculate the quantity of food needed for the day based on the number of children registered.
- to daily collect the number of new admissions and exits and to check the attendance.
- to order the food for the SFC/ATFC.
- to order the drugs for the centre and check drug consumption in collaboration with the nurse
- to decide of admission or discharge when a problem occur
- to weekly check and transmit the statistics to the nutritional co-ordinator.
- to work in collaboration with the nutritional co-ordinator.

Supervision of activities

- food stock: check correct food management, food consumption and cleaning of the store.
- food distribution: correct quantity distributed.
- food preparation: correct recipes and food preparation, cleaning of the kitchen for wet-feeding.
- check the cleaning of the centre
- quality of medical care dispensed: drugs distribution, correct application of the medical protocols; clinical follow-up, rehydration, detection in times of the medical complications.
- nutritional follow-up: correct measurements and follow-up of the weight and oedema.
- individual cards and the attendance register book: correct filling
- admission and exit: respect of the criteria
- the respect of the dignity of the patients and their accompanying
- resolution of problems occurring between the patients and the personnel
- to ensure that mothers are well informed about the functioning of the centre; the state and evolution of their child.

Personnel management:

- to point out the presence, the day-off and the absence of the staff,
- to plan and manage the working schedule
- to plan and organise the replacements of workers
- to respect the existing working rules and to be attentive to the working condition of the personnel.
- to distribute the work within the personnel according to their competencies
- to conduct weekly meeting with the personnel.
- to organise training course for the staff when necessary.
- to inform the co-ordinator in case of difficulties.

WEIGHT/ HEIGHT MEASURERS

Idem TFC

REGISTRAR

Main responsibilities: Admission and registration of patients, control of the attendance and record of the patient exits
Under the supervision of: the supervisor
Supervise: outreach workers

Specific tasks
Admissions

- to refer to the SC/TFC (in patient or day care) the patients fitting the admission criteria (severe complicated malnutrition).
- to admit the patients respecting the admission criteria When admission is borderline, to refer to the supervisor for taking a decision (this should be done with the nurse in ATFC)..
- to properly register the patient in the register-attendance book (n°, name, address, date etc.).
- to put an identification bracelet with the n° of the child and name of the centre and day of visit (dry SFC).
- to fill the individual card of the patient with the administrative and measurements information.
- to inform the mother about the functioning of the centre.

Monitoring

- to record on the attendance-register book the daily attendance, the exits (cured, defaulter, death or transfer).
- to work closely with the outreach team: to inform them about the name and address of the defaulter, to check if after tracing the defaulters are coming back.
- to daily report to the supervisor the daily attendance.
- to weekly fill and transmit to the supervisor the admissions and exits forms.

NURSE

Main responsibilities: to ensure that medical and nutritional care are properly delivered to the patients and to daily follow the evolution of the patient. To ensure that children are medically fit to be admitted in ATFC, to refer ot SC/TFC and to take emergency measures for critically ill.
Under the supervision of: the supervisor
Supervise: the nurse aids

Specific tasks
Medical care

- clinical examination of all patients at admission
- to check the measles vaccination status
- to immunise against measles in wet SFC
- to dispense routine medical treatment
- to prescribe and deliver basic treatment respecting the protocols
- to refer patients with medical complications to OPD or hospital, or TFC.
- to make dressing in respecting the hygienic rules in wet SFC.
- to detect dehydration of the patients and send them to the ORT corner
- to follow the re-hydration state of the patients
- to monitor medical condition of children on one day observation (with RUTF) for ATFC

Nutritional care

- to monitor the meals (in wet SFC/ATFC): each patient should receive the food .
- to be informed on how the patients are eating (wet SFC/ATFC),
- to encourage and advised the mothers who have difficulties to feed their children
- to check oedema
- to follow the evolution of the nutritional status of the patients.
- to investigate the reasons when a patient does not gain weight
- to decide of the discharge of the patients following the recovery criteria.

Health education

- to organise the health education sessions.

Personnel management

- to monitor the care delivered by the nutrition assistants.
- to participate in training sessions if necessary
- to organise the daily work and dispatch the activities among the nutrition assistants in collaboration with the supervisor (wet SFC, ATFC)

NURSE -AID in ORT corner

Main responsibility: to ensure proper re-hydration of patients
Under the supervision of: nurse

Specific tasks

- to prepare ORS on a daily basis.
- to give the amount of ORS prescribed by the nurse
- to explain to the mother the importance of the ORS
- to help the mother to give the ORS to the child
- to inform the nurse about the evolution of the patient (improvement or deterioration , vomiting, diarrhoea etc.)
- to fill the rehydration form
- to keep all the material clean.

NUTRITION ASSISTANT (wet SFC and ATFC)

Main responsibilities: taking care of the patients assigned to her/him in wet SFC. To assist the nurse during the consultation and health education in dry SFC and ATFC. To ensure that the child eat well the RUTF with no vomiting in ATFC)
Under the supervision of: the nurse

Specific tasks for wet SFC
Relationship with care-takers

- To direct and inform caretakers in the functioning of the centre:
- the location of the toilets, washing area, playing place etc.
- how the activities are organised during a day (number and time of the meals, medical visit, weight measurement etc.) and to whom to address their problems.
- respect dignity of the patients and care-takers
- to participate to the health education sessions

Care and monitoring

- to distribute the meals
- to control how the patients eat
- to help and encourage the mother to feed the child
- to ensure hand-washing before the meals
- to point out and report to the nurse the patients who are sick or who are not eating.
- to make sure that drinking water are always available
- to check water availability for hand washing

FOOD DRY SFC/ ATFC

Main responsibilities: ensure correct food distribution to each patient
Under the supervision of: the supervisor

Specific tasks

- to distribute the premix, RUTF or family ration to each patient, when the patient has completed all the circuit (attendance, W/H measurement, medical and nutritional control by the nurse, health education)
- to mark on the card that the patient has received the food.
- to keep clean the food distribution area
- to control that no food disappears at the distribution point
- to prepare the premix the afternoon for the next day when premix is done in the centre.

OUTREACH WORKERS

Idem TFC

For ATFC:
In addition to defaulter tracing, active case finding and mortality surveillance, the out-reach workers should do home visits to give folllow up (1-2 times follow-up of newly admitted and those with no improvement). During the follow-up visits their specific tasks will include:

- Check with the carer the appetite of the child: how many sachet eaten, vomiting etc
- Check if presence of diarrhoea, cough, fever, dehydration
- Check oedema
- Check personal and environmental hygiene
- Check with the carer medications prescriptions
- Give support and counselling to carer
- Refer to TFC if the child is deteriorating (medical complications, dehydration, anorexia, frequent vomiting etc)
- Provide summary report for each child followed-up

CLEANER

idem TFC

STORE KEEPER for Wet SFC

Idem TFC

COOK FOR WET SFC

Main responsibility: preparation of the meals for the patients
Under the supervision of: the supervisor

Specific tasks

- To prepare the meals of the patients respecting the following rules:
- to have boiled water ready at any time
- to strictly follow the recipe
- to strictly respect the hygienic rules during preparation
- to insure that meals are ready on time
- to bring the food to the eating area.
- to keep clean the kitchen and kitchen area
- to keep the material in good condition
- to properly wash the dishes

- to take from the store keeper or supervisor the right quantity of food items needed for each day.
- to control that all the items needed to prepare the meal are present, like salt, green leaves, etc. and inform on time the store keeper of missing/needed items.
- to check the quality of the food received and to immediately inform the supervisor in case of problems (broken bags, spoiled food).
- to weekly check the kitchen stock (material condition).

WATCHMAN

Main responsibilities: ensure security and overcrowding control
Under the supervision of: supervisor

Specific tasks

- to ensure the reception and the regulation of entrances and exits in the centre.
- to check that the persons coming to the centre are the ones concerned by the activities.
- to insure that no visitors are entered inside the centre.
- to insure that patients go out after to have received their rations
- to insure that there are no materials and food going out of the centre.

ANNEX 12.20

Co-ordination of nutritional programme

When several different nutritional activities and centres exist it is necessary to have a nutritional co-ordinator and food manager to establish clear polices and procedures.

Role of the nutritional coordinator

The nutritional coordinator is hierarchically accountable to the medical co-ordinator. The objective of the post is to have a complete overview of the nutritional situation and programme activities. The nutritional co-ordinator is usually in charge of:

- Support and supervision of nutritional teams and programmes.
- Follow-up of the indicators of functioning in the feeding centres.
- Overview of the nutritional evolution of the situation.
- Contacts with authorities and organisations involved in food and nutrition.
- Proposals for programme adaptation.
- Training of expatriate and local staff.
- Conducting surveys and implement a nutritional surveillance system.

Role of the food manager

The food manager should work in close collaboration with the nutritional co-ordinator and be hierarchically accountable to either the medical co-ordinator or the logistic co-ordinator. National personnel working in food management can be placed under high pressure by the beneficiary population. Because of this pressure, it is recommended to employ an expatriate as food manager.

The objective of the post is to have a complete overview of the food situation and ensure that proper food management is ensured. The food manager is in charge of:

- Food procurement, timing planning and arrival.
- Checking the quality of the food products.
- Food transportation to regional stores or to the feeding centres.
- Food stock and store management.
- Planning food needs in collaboration with the nutritional co-ordinator.

(See Annex 12.2 for the job description of nutrition coordinator and food manager).

ANNEX 12.21

An Example of Supervision check list for Feeding Centres

Camp : Mankoko, Rwarmoukia
Centre : therapeutic **Type of centre :** 24h / day
Name of supervisor : Evariste and Judith

(The asterix means that is only for TFC)

	Date :		**Date:** 18/6/96	
	YES	**NO**	**YES**	**NO**
1. Staff				
Appropriate number of staff (1)	O	O	O	**x**
There is a clear job description for each staff category	O	O	O	**x**
A staff training program has been established	O	O	O	**x**
The training program has been carried out	O	O	O	O
2. Feeding Centre Structure				
The surface area of the structure is sufficient to receive all the children present (2)	O	O	O	**x**
The division of sectors is functional (3)	O	O	O	**x**
***** The different phases of the centre are separated	O	O	O	**x**
***** In phase I an intensive care zone has been organised	O	O	O	**x**
3. Water, Hygiene, Sanitation				
Sufficient quantity of water/number of children (4)	O	O	O	**x**
Drinking water is potable (5)	O	O	O	**x**
Drinking water is available in each sector	O	O	**x**	O
There is a sufficient number of latrines (6)	O	O	O	**x**
The latrines are clean	O	O	O	**x**
The floor is washed daily with chlorinated water (7) O	O	**x**	O	
There is a sufficient number of showers (8)	O	O	O	**x**
Garbage is regularly collected and incinerated	O	O	O	**x**
Separate collection and special pit for sharp material	O	O	O	**x**
4. Functioning				
Admissions (Supervisor or assistant)				
Explanations concerning the child's stay are given to the mother	O	O	O	**x**
* Mothers receive material to install themselves	O	O	**x**	O
Admission criteria are respected	O	O	O	**x**
A medical exam is carried out at moment of admission	O	O	**x**	O
The medical exam is copied onto the child's chart	O	O	**x**	**O**
Measles vaccination is checked and noted on the child's chart	O	O	**x**	O
The prescribed diet is correct	O	O	O	**x**
The diet is noted on the child's chart	O	O	O	**x**
Systematic treatments are correctly prescribed and given (see protocol)	O	O	**x**	O
Observation				

Weighing of children is correctly done		O	O	**x**	O
Weighing is done on a regular basis (9)		O	O	O	**x**
The weight curve is correctly drawn		O	O	**x**	O
***** In phase I:					
A daily check up of the child's clinical state is carried out		O	O	O	**x**
The medical reference system functions correctly		O	O	O	**x**
ORS is available and distributed if necessary	O	O	**x**	O	
Drugs are correctly distributed (time, prescribed dose)		O	O	**x**	O
Prescribed diets respect the dietetic protocol		O	O	**x**	O
Meals are correctly given out (time, quantity)		O	O	O	**x**
Meal consumption is monitored by the staff		O	O	O	**x**
* Length of stay in phase I is 1 week or less		O	O	O	**x**
The supervisor is notified when children are absent		O	O	O	**x**
The supervisor is notified when problems occur (10)		O	O	O	**x**
A hand-over booklet is filled in daily by each team		O	O	O	**x**
Discharge					
Discharge criteria are respected (see protocol)		O	O	O	**x**
Measles vaccination is up to date		O	O	**x**	O
*** Transfer chart is correctly filled in (11) (no transfers)**		O	O	O	O
5. Data Collection					
Registration					
The register is correctly filled in		O	O	O	**x**
Feeding Charts					
Feeding charts are correctly and completely filled in	O	O	O	**x**	
Weekly Statistics					
Weekly summaries are correctly filled in		O	O	O	**x**
Graphs are drawn up regularly (weekly, monthly)		O	O	O	**x**
Active searching is carried out for patients who abandon treatment (12)		O	O	O	**x**
Team/staff meetings are held regularly (13)		O	O	O	**x**
6. Kitchen					
The kitchen is of sufficient size for capacity of the centre (3)		O	O	O	**x**
The ratio 'stoves / children' is respected (14)	O	O	O	**x**	
The floor and shelves are clean		O	O	**x**	O
There is enough kitchen material		O	O	O	**x**
The premix is conserved in clean and dry conditions	O	O	**x**	O	
Washing up area is sufficiently large (3)		O	O	O	**x**
Washing up is correctly carried out (15)		O	O	**x**	O
Washing up is put away in a clean place		O	O	**x**	O
7. Stock Room					
The stock room area is of sufficient size (3)		O	O	O	**x**
The stock room is in good condition and well ventilated (16)		O	O	O	**x**
Stocking of goods respects the following rules:					
- stock piles are arranged correctly (17)		O	O	O	**x**
-stock rotation rules are respected		O	O	O	**x**

- damaged goods are stocked separately	O	O	**x**	O
- stock cards are filled in correctly (in-out-balance)	O	O	O	**x**
- dates of expiration of food products is checked regularly	O	O	O	**x**

8. Miscellaneous

Mothers participate in the functioning of the centre	O	O	**x**	O
Health/sanitary education sessions are held in the centre	O	O	**x**	O