

PART 2: TECHNICAL NOTES

The technical notes are part two of four parts contained in this module. They provide information on management of severe acute malnutrition and cover the major technical details, highlighting challenging areas and providing guidance on accepted current practice. Words in italics are explained in the glossary.

Other modules which are complementary to this one include:

- HTP Module 6: Measuring Malnutrition
- HTP Module 12: Management of Moderate Acute Malnutrition
- HTP Module 15: Health Interventions
- HTP Module 18: HIV-AIDS and Nutrition
- HTP Module 19: Working with communities in emergencies
- HTP Module 20: Monitoring and evaluation

Summary

This module is about management of cases with *Severe Acute Malnutrition (SAM)*. It describes the principles and the components of current approaches and the internationally validated protocols in use.

These technical notes are based on the following references and the Sphere Standard in the box below:

- WHO and UNICEF (2009) *Joint Statement on WHO Growth Standards and the Identification of Severe Acute Malnutrition in Infants and Children*
- FANTA-2/Valid/Concern Training Guide for CMAM, 2008
- WHO, WFP, SSCN, UNICEF (2007) *Joint Statement on Community-based Management of Severe Acute Malnutrition*
- Valid International (2006) *Community-based Therapeutic Care (CTC). A field manual*. Oxford: Valid International, First Edition.
- WHO (2003) *Guidelines for the Inpatient Management of Severely Malnourished Children* Geneva: WHO
- WHO (1999) *Management of severe malnutrition: a manual for physicians and other senior health workers*. Geneva: WHO
- The Sphere Project (2011), *Humanitarian Charter and Minimum Standards in Humanitarian Response*, chapter 3

Key messages

1. Severe acute malnutrition is a complex medical condition needing specialised care to save the patient's life. Current protocols for the management of severe acute malnutrition can obtain high recovery rates and good coverage by offering adapted care for the specific conditions of the patient.
2. Management of acute malnutrition cases involves a combination of routine medication, specific therapeutic foods and individualised care, and includes four components:
 - Community mobilisation and community case finding
 - Outpatient care for children 6-59 months with SAM without medical complications
 - Inpatient care for children 6-59 months with SAM with medical complications, and for infants, adolescents and adults
 - Management of *Moderate Acute Malnutrition* (MAM) for children, pregnant and lactating women with infant under 6 months, and other vulnerable groups (see module 12)
3. Activities for the management of SAM cases should be integrated, when possible, into routine health care services (outpatient and inpatient) with sites decentralised to provide optimal access to services
4. Community mobilisation combined with community case finding for early detection of cases are key elements for the success of the treatment and the reduction of SAM related mortality and morbidity
5. HIV-infected patients with SAM can recover their nutrition status with the current treatment protocols for SAM. Immediate cotrimoxazole prophylaxis and antiretroviral treatment (when available after the stabilisation of medical complications) should be given.

Sphere standard**Management of Acute Malnutrition standard 2: Severe acute malnutrition**

Severe acute malnutrition is addressed

Key Actions

- Establish from the outset clearly defined and agreed criteria for set-up or increased support to existing services, and scale down or closure
- Include inpatient care, outpatient care, referral and community mobilisation components interventions for the management of severe acute malnutrition
- Maximise access and coverage through involvement of the community from the outset
- Provide nutritional and medical care according to nationally and internationally recognised guidelines for the management of severe acute malnutrition.
- Discharge criteria include both anthropometric and non-anthropometric indices
- Investigate and act on causes of default and non response or an increase in deaths
- Address Infant and Young Child Feeding (IYCF) with particular emphasis on protecting, supporting and promoting breastfeeding

Key indicators

These indicators are primarily applicable to the 6-59 month age group, although others may be part of the programme.

- More than 90% of the target population is within <1 day's return walk (including time for treatment) of the programme site
- Coverage is >50% in rural areas, >70% in urban areas and >90% in camp situations
- The proportion of discharges from therapeutic care who have died is <10%, recovered is >75% and defaulted is <15%

Source: Sphere Handbook, 'Chapter 3: Minimum Standards in Food Security and Nutrition', The Sphere Project, Geneva, 2011.

1. Introduction

This module is based on international recommendations, updated protocols and existing training materials and covers current approaches and protocols for the management of severe acute malnutrition (SAM) as they are applied by agencies and national health systems in a variety of contexts (emergency, post-emergency and development).

In the past treatment of *acute malnutrition* was almost exclusively in response to a nutrition (humanitarian) emergency situation. Current development of simpler, effective and more affordable protocols has led many countries to integrate management of SAM into routine health care services. Nowadays, while seeking to make treatment available for the greatest number of individuals, most agencies' current emergency response interventions also aim to strengthen local capacities and seek sustainability of management of SAM by supporting Ministry of Health (MOH) structures/staff and facilitating integration and national scale up of activities for management of SAM. The module tries to illustrate through a variety of case studies the different scenarios for emergency response.

This module uses Community-based Management of Acute Malnutrition (CMAM) as the generic term for describing the approach and package of services for the management of individuals affected by acute malnutrition as it is the most widely used. However, different agencies use other expressions or phrasings when presenting the same activities and others differ on the specific components that should be considered as part of the model.

It is important to avoid inappropriate use of terms like 'community care' or 'treatment in the community', which causes confusion and leads people to think that CMAM refers to all aspects of child care happening in the community or that the decision for treatment is taken at community level. The term 'community-based' refers to involving communities from the outset of programmes to promote understanding of treatment and for early detection of cases, referral and follow-up.

2. Principles of management of severe acute malnutrition (SAM)

The management of SAM, with or without medical complications, includes the package of activities aiming to decrease mortality and morbidity related to acute malnutrition and potentially contributing to a reduction in its prevalence.

Until recently individuals with SAM were treated exclusively at the hospital level. Coverage rates obtained through the inpatient model were low and it was expensive for:

- The system, because of the need for complex infrastructure and expert human resources,
- The society, because of poor access and low coverage that causes late detection of cases and therefore poor outcomes (excess morbidity and mortality), and
- The families, because of high economic and social opportunity costs associated with e.g. hospital travel and stay, interrupted care of other household members and disrupted *livelihood* activities

In 2007 *community-based management of severe acute malnutrition* was endorsed by the United Nations for the treatment of SAM.¹ This was based on evidence from successful programmes that used the Community-based Therapeutic Care (CTC) approach.

The components of community-based management of acute malnutrition are:

- Community mobilisation and case-finding
- Outpatient *therapeutic care* for SAM without complications
- Inpatient therapeutic care for SAM with complications
- Inclusion of management of *moderate acute malnutrition* (MAM) where in place

Internal coordination between the different components is essential. Linkages with the community ensure the adequate referral of children to the services and the follow up of cases enrolled in outpatient care services. Efficient tracing systems are fundamental for the continuity of care for children moving between inpatient and outpatient care services, or between management of SAM and *Management of Acute Malnutrition* services.

Various terms have been used to describe the 'model' comprising these components and to reflect their integration within existing health systems:

¹ Community Based Management of Severe Acute Malnutrition: A Joint Statement by the World Health Organisation, World Food Programme, the United Nations System Standing Committee on Nutrition and the United Nations Children's Fund. May 2007.

Box 1: Terms commonly used

CTC or Community-based Therapeutic Care, Ambulatory Care, Home-based Care: terms used in the first programmes using the approach in emergency settings and led by NGOs. Still used by some agencies when referring to the approach itself or to its outpatient care component.

CMAM or Community-based Management of Acute Malnutrition: generic term used by various agencies for programmes comprising the above components in either emergency or non-emergency context. The term was proposed by a few agencies in 2008 and validated by the GNC. This term will therefore be used for the purposes of this document.

IMAM or Integrated Management of Acute Malnutrition: the shift from a hospital-based to a community-based approach facilitated the integration of outpatient care for the management of SAM without medical complications into routine primary health care services in MOH structures. The term IMAM has been used by various agencies and countries to emphasise this aspect of the approach.

In the same way, the designation of different components of CMAM can vary, mainly when countries adapt the name of the services to their own system specificities. Terms used are:

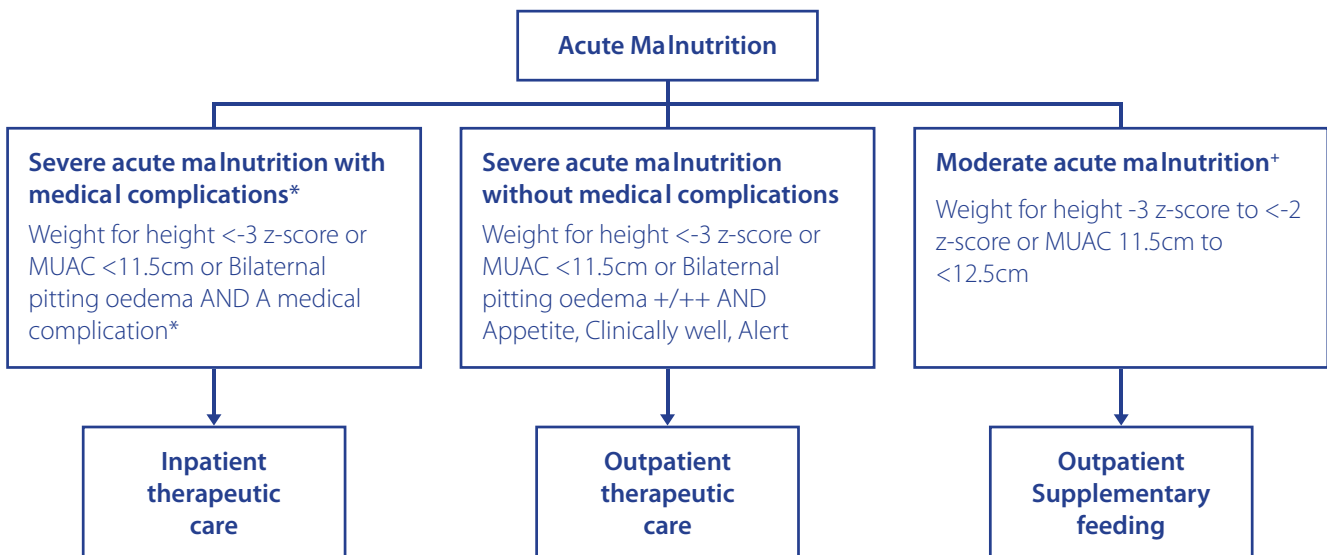
- **Outpatient Therapeutic Care or Programme (OTC/OTP)** for outpatient care
- **Stabilisation Centre (SC)** for *inpatient care*

This shift from hospital-based exclusively inpatient treatment to an integrated community-based approach was possible thanks to several elements, mainly:

- The advent of **Ready to Use Therapeutic Foods (RUTF)** that allows safe use of the dietary treatment at home (see below)
- The **new classification for acute malnutrition** (figure 1) that introduces new clinical elements to define SAM and allows for the provision of a more adapted treatment according to the patient's medical and nutrition condition
- Screening and admission by *Mid-Upper Arm Circumference (MUAC)*.

A new classification for acute malnutrition

Figure 1: The new classification of acute malnutrition²



* Medical Complications: severe bilateral pitting oedema (+++), marasmic kwashiorkor, anorexia (as demonstrated by an appetite test with RUTF), intractable vomiting, convulsions, lethargy or not alert, unconsciousness, lower respiratory track infection, high fever, severe dehydration, severe anaemia, hypoglycaemia, hypothermia, signs of xerophthalmia (corneal xerosis, ulceration, cloudiness or keratomalacia). Others always admitted to inpatient care are: infants less than 6 months (or <4kg) with visible wasting.

+ if a child with Moderate Acute Malnutrition has severe medical complications they would be referred to an inpatient facility for treatment of those complications but would still be registered for supplementary feeding and be provided with the corresponding ration.

² Adapted from Collins S, Yates R (2003), *The need to update the classification of acute malnutrition*. The Lancet Vol. 362, Issue 9379, Page 249, July 19

Other elements that underpin the new approach are:

- Community mobilisation,
- Timely detection of cases in the community,
- Simplified management of cases at health centre level and integration of treatment into routine health services.

Community mobilisation

Community mobilisation aims to sensitise, inform and educate the community on nutrition matters in order for the community to internalise them and to promote and encourage their active participation in the activities for the management of acute malnutrition. It allows early detection and referral of cases to appropriate nutrition or health services (clinics or hospitals) and their follow-up. It is an important factor for obtaining **good coverage** through good uptake of the services provided by the population in need within a specific health catchment area.

Timely detection of cases

Evidence shows that treatment of children with SAM is easier when they present for treatment before the onset of medical complications. Active case-finding is done in the communities by community health workers and/or community volunteers. They detect wasting using MUAC and the presence of oedema in children under 5 and refer all suspected cases to health facilities. Program experience has shown that, where community mobilisation is well implemented, self-referral/passive case finding also occurs. That is, where carers with children suffering from SAM self-present at health facilities for treatment. This may be as a result of hearing about the programme and the type of children it can help from other members of the community or other caregivers with children receiving treatment.

Integration

Integration into health care services implies the recognition by the ministry of health of the importance of the treatment of severe acute malnutrition for children under 5 and the role it can play in affecting morbidity and mortality in the country.

The CMAM approach provides a means of delivering services for children with SAM that are integrated into routine primary health systems of countries.

Where CMAM is already present in a country, efforts should be made during emergencies for the strengthening of the national health system, aiming for improvement of access to treatment and **greater coverage** at local and national level. In countries where integration is planned for the post-emergency period, emergency programmes should be designed in coordination with national authorities so that implementation modalities adopted during the emergency period are more likely to be successfully integrated into the national health services.

Linkages with other programmes

The linkages established between management of SAM activities/programmes and other health and nutrition related activities are key for its success. Because of this, where other interventions do not exist or are weak, efforts should be made to develop and support such interventions in an integrated fashion. Linkages should work in both directions in order to increase mutual benefits, mainly coverage of both SAM treatment and complementary services and effectiveness of treatment (e.g. for prevention of relapse from SAM). In some cases CMAM can be used as an additional entry point for provision of other health and nutrition related activities by using the contact created between the community and health facilities to provide wider services such as *infant and young child feeding* support.

Examples of programmes and strategies to which CMAM should, depending on the context, make connections with are:

- **Nutrition:** Infant and Young Child Feeding (IYCF), Growth Monitoring (GM), Essential Nutrition Actions (ENA), including micronutrient *supplementation*
- **Health³:** Integrated Management of Childhood Illnesses (IMCI) and Community-IMCI, Expanded Programme of Immunisation (EPI), HIV/AIDS and Tuberculosis treatment programs, *Diarrhoeal* disease and *Malaria* control, national child survival or immunization days
- Others related to: Water, Sanitation and Hygiene, *Food Security*, Social Welfare, Emergency Preparedness/Response plans, Education

Ready-to-use Therapeutic Foods (RUTF)

RUTF are soft or crushable foods that can be consumed directly from the packet by children from the age of six months. RUTF formulation is specifically for the dietary treatment of SAM before the onset of medical complications or when these are under control after stabilisation.

³ Refer to HTP Module 15: Health interventions

RUTF has a nutrient composition based on that of the F100 liquid/milk diet which has been recommended since 1999 by WHO for the recovery phase in the management of SAM. It differs in that it has an *energy* density that is >5 times that of F100 (543 kcal/100 g compared to 100kcal/100g in the F100 milk made up) due to the absence of water in the product. It does however have a similar ratio of nutrients to energy as the F100. It is produced by replacing part of the dried skim milk used in the F100 formula with peanut butter. It also differs in that it contains a low dose of iron not contained in the F100 formula. Studies have shown that it is at least as well accepted by children as F100; that it is effective for rehabilitating severely malnourished children, and that it promotes faster weight gain than F100.^{4,5,6,7} RUTF nutrition composition has been developed based on metabolic and clinical research and its formulation allows rapid growth and recovery of children with severe acute malnutrition.

RUTF can only be given to children aged six months or above. Infants less than 6 months do not have the reflexes to swallow solid foods and also have a metabolism which needs higher water intakes than older infants. (Note: it is advisable to use the actual age to determine suitability for RUTF and not to use length of 65cm as a proxy to indicate 6 months of age as in stunted populations many infants of 6 months or older have a length less than 65cm).

RUTF is designed to be consumed by children without addition of water to the product. Bacteria need water to grow and they cannot proliferate in RUTF in case of accidental contamination. For this reason, RUTF is safer than liquid diets in home settings and when hygienic conditions are not perfect. However, due to its nutrient density, children eating RUTF must drink plenty of safe water in addition to RUTF.

The most commonly used type of RUTF is a lipid based form made of peanuts, milk powder, oil, sugar and a mix of micronutrients. Amount of such type of RUTF per packaging unit varies, depending on the composition of the product and its origin. The most common presentation is sachets (packets) of 92gr of peanut-based spread⁸, equalling about 500 kcal. Other types of packaging contain larger amounts of the product thus prescription of rations in any specific context should be calculated according to the available product to provide 200kcal/kg/day for each child. Another RUTF is available in a dry biscuit form which requires a separate calculation.

3. Community mobilisation

Community mobilisation in CMAM covers a range of activities designed to open a dialogue, promote mutual understanding, encourage active and sustained engagement from the target community as well as improve case finding and follow up. The goal of the community mobilisation component of CMAM is to improve treatment outcomes and coverage. If community members are unaware of the service, or the type of children it treats, or are confused or misinformed about its purpose, they may not benefit from it or may even prevent others from benefiting. This promotion of understanding has therefore been found to be a crucial part of successful programmes.

A community mobilisation strategy should be planned and implemented before the start of treatment activities in the health facilities.

Initial community assessment

A community assessment is the first task for the development of the community mobilisation strategy and is the learning phase: it will provide planners with a rough sense of how the community is organised, how acute malnutrition is understood, how the CMAM services are likely to be received, and how the community can best support them. Information should be collected from lay people in the target communities and from staff and caregivers using a qualitative methodology. The following features are likely to impact on service delivery, demand and access and therefore should be included in any community assessment:

- Community perceptions of acute malnutrition
- Health seeking behaviour and decision makers for accessing treatment
- Key community figures, and structures (administrative and leadership)
- Existing community-based organisations and groups
- Potential candidates for case-finder role
- Existing links and communication systems between health facilities and the community
- Formal and informal channels of communication
- Formal and informal health services
- Potential barriers for children with SAM to accessing treatment

⁴ Briend A, et al. *Ready-to-use therapeutic food for the treatment of marasmus*. Lancet 1999;353:1767-8

⁵ Diop El et al. *Comparison of the efficacy of solid and liquid therapeutic foods for the rehabilitation of severely malnourished children: a randomized trial* Am J Clin Nutr 2003; 78: 302-7

⁶ Ciliberto MA et al. *Comparison of home-based therapy with ready-to-use therapeutic food with standard therapy in the treatment of malnourished Malawian children: a controlled, clinical effectiveness trial* Am J Clin Nutr 2005; 81: 864 -70

⁷ Linneman Z. *A large-scale operational study of home-based therapy with ready-to-use therapeutic food in childhood malnutrition in Malawi* Maternal and Child Nutrition 2007, 3, pp. 206-215

⁸ PlumpyNut® from NUTRISET France

A Community mobilisation strategy

The strategy will define the way that mobilisation activities – especially case-finding – are to be carried out and sustained. The community mobilisation strategy should define the parameters of the CMAM services; address the barriers to access identified in the assessment and build a case-finding and referral system around the existing skills and resources.

Developing messages and materials

The use of simple, standardised messages to explain CMAM (how it is offered, and to whom) will help to replace rumour with accurate information. Messages need to be informative but concise and be designed if necessary to be read aloud to an illiterate audience. They should be translated into the relevant local languages, and adapted as necessary for different audiences or method of use.

Core information to be communicated in most settings includes the following:

- Description of the target children using local descriptive terms for wasting and swelling,
- Explanation of the benefits of CMAM, noting that only a few children with SAM who are sick may need to be treated at the hospital,
- Explanation about the identification and referral process noting that thin or swollen children can also self-refer to the nearest health facility to be checked,
- Time and date of outpatient care sessions at the nearest health facility and locations of those facilities as well as locations of any hospitals or health centres offering inpatient care for SAM

Identify and use an appropriate term in the local language to communicate that the RUTF is a medicinal food. This will help to minimise misunderstandings about the services and the product when it is first introduced. In a country with several major language groups, several different terms may need to be used

Visual aids enhance the impact of messages. Pictures depicting SAM children with the most easily recognisable symptoms of oedema and wasting for the community will strengthen communications, and are an important means of circumventing some of the cultural and linguistic obstacles to describing the target population.

All messages, visual aids and suggested local language names for the RUTF should first be tested with the community to ensure they are comprehensible and appropriate for use.

Raising Community Awareness

Raising community awareness works best through existing channels, organisations and structures within the community. The following is a suggested order of priority through which awareness raising activities may initially be carried out:

1. A week/a few days prior to CMAM launch: Key community figures
 - Meeting at health facility to orient them to CMAM
2. At / just after launch: Selected official forums
 - Village meetings, committee meetings, health days and education sessions, church services or mosques, radio
3. In the weeks following launch: Informal channels
 - Funerals, markets, water-points
4. In the weeks following launch as children improve/ over long term: Caregivers of beneficiaries

N.B: Community mobilization is a continuous process. It is important that initial community mobilization activities are maintained throughout the service provision stages.

Box 2: Roles for Community Mobilisation

Assigning responsibility for community mobilisation is essential to ensure the adequate planning, implementation and monitoring of the activities.

An overall (**MOH national level**) focal person should be identified to manage the whole mobilisation process and ensure a coherent nationwide strategy, including the integration of community activities into existing community health/nutrition programmes

A responsible person for the implementation/monitoring should be identified at each **district/department/health zone level**. Often the most appropriate person is somebody who already has responsibility for Health Promotion, Outreach or Extended Health/Nutrition activities

In each **health facility**, the health worker in charge will be responsible for coordinating with Community Volunteers (CV) or Community Health Workers (CHWs) assigned to community case-finding and follow up

Community volunteers (CV) and community health workers (CHW) should be trained on MUAC measurements and detection of oedema (for case finding), home follow up of cases and community sensitisation. They should be the link between the population and the health/nutrition services and should be identified within existing networks. Where possible additional training on infant and young child feeding for example can help to ensure the sort of linkages for prevention of SAM and continued recovery post discharge that were mentioned earlier.

4. Case-finding and triage for severe acute malnutrition**Definition of severe acute malnutrition**

Severe acute malnutrition is defined by low *weight for height* (WFH) and/or low Mid-Upper Arm Circumference (MUAC)⁹ and/or the presence of bilateral pitting oedema. Cut off points for anthropometric measurements for the diagnosis of SAM are WFH <-3 z-score or MUAC <11.5cm.

The term SAM refers to two different entities with different clinical and pathological characteristics: *marasmus* and *kwashiorkor*.

The most evident clinical feature of marasmus is severe wasting with loss of muscle and fat mass, resulting in low WFH and/or low MUAC. Patients are extremely emaciated with thin, flaccid skin and prominent scapulae, spine and ribs. Advanced SAM also presents with anorexia, associated infections and behavioural changes (apathy and irritability).

Clinical features of *kwashiorkor* include bilateral pitting oedema of the lower legs and feet (generalized oedema in advanced cases, affecting face, hands, arms, trunk), loss of muscle and fat mass (that can be masked by oedema), skin lesions, changes of hair colour (lightening) and texture (dry, thin, and brittle) and behavioural change (apathy and more often irritability).

Box 3: Assessing kwashiorkor or nutritional oedema

Bilateral pitting oedema is verified when normal thumb pressure applied on top of both feet for three seconds leaves a pit (indentation) in the foot after the thumb is lifted.

There are three grades of nutrition oedema:

Grade 1 or (+): When oedema is present in both feet

Grade 2 or (++) : Oedema in both feet and legs

Grade 3 or (+++) : Oedema in both feet, in legs and in hands or face (or generalised)

Association of both forms, known as *marasmic-kwashiorkor*, has been found in various studies to correlate with a higher mortality than for the individual conditions¹⁰.

⁹ Refer to HTP Module 6: Measuring Malnutrition, for measurements (weight, height/length and MUAC) and WFH index

¹⁰ Ahmed et al. (1999), *Mortality in Severely Malnourished children with Diarrhoea and use of a standardised management protocol*. The Lancet, Volume 353, Issue 9168, 5 June 1999, Pages 1919-1922

Challenge 1: The “rejection” issue¹¹

An overall challenge is to ensure that the maximum number of children with SAM are identified in a timely fashion at community level while avoiding ineligible children presenting for treatment and carers having to be turned away. This can occur either as a result of self referral or of incorrect referral by community volunteers or community health workers. As new services are initiated there is always a compromise or balance to be struck between encouraging the community to attend without raising unrealistic expectations of what the service can provide to whom.

The use of MUAC (a simple and transparent measure of SAM), with the addition of the presence of bilateral pitting oedema, was found after review to be the indicator best suited to screening and case detection of malnutrition in the community. Unlike previous systems where community level screening was based on MUAC followed by admission based on WFH, both identification and admission based on MUAC minimises the problem of rejecting children once they reach the health centre.

Rejection of referred children on presentation at health facilities is a common cause of ill-feeling in the community, and has been shown to rapidly impact on participation and therefore coverage. Handling inadmissible children and their caregivers in a positive and informative way is paramount and can also contribute to raising awareness of the programme and of severe acute malnutrition as a life threatening condition.

Case finding for SAM

Early detection of SAM cases is essential for the success of their treatment and should be done both at community level and in health facilities.

- **Active case finding** refers to the identification of acutely malnourished children by community health workers or volunteers in communities.
- **Passive case finding** refers to the identification of acutely malnourished children by health workers after presenting during routine child visits and/ or general consultation at the health facility or hospital.
- When CMAM activities have been long established in an area and communities have been adequately mobilised most cases will arrive spontaneously at health facilities for screening and treatment and **self-referral** will become a great source of identifying new cases.

At the community level, identification of children with SAM is carried out by measuring MUAC and assessing presence of bilateral pitting oedema. All children aged 6-59 months with a MUAC less than 11.5cm or presenting with bilateral pitting oedema should be referred to the nearest health facility for confirmation and treatment. Older children and adults are identified by the presence of visible severe wasting, or by the use of MUAC where cut-offs have been agreed or bilateral pitting oedema and referred to the nearest health centre.

Infants less than 6 months will be referred based on their weight for height indicator or bilateral pitting oedema. If not possible at community level, cases with visible severe wasting and difficulties in breastfeeding should be referred. These infants will be sent directly to inpatient care for treatment.

At health facility level health staff should screen all children attending the structure. This should be done during routine primary health care services (e.g., EPI, Growth Monitoring) or when children attend any other consultation. Health facilities also play a critical role in confirming the eligibility of children referred by the community and ensuring they are enrolled in the appropriate nutrition service. Therefore, health workers should confirm MUAC measurement and recheck bilateral pitting oedema for children referred by the CHW or CV.

If the enrolment for treatment of SAM includes the WFH criteria, staff should also measure the weight and the length or height of all children presenting and compare the child's weight against a WFH look-up table to see whether the child's weight is below the -3 z-scores from the median.

Triage for identification of SAM with or without medical complications

Two elements support the decision on whether the child with SAM should be treated in outpatient or inpatient care:

- Absence or presence of **medical complications**: medical complications should be assessed by a thorough medical examination and accurate medical history with the mother (or caregiver)
- Good **appetite** or poor appetite: this is evaluated through the “appetite test” whereby the child passes or fails the test to eat RUTF

¹¹ Myatt et al. (2006), *A review of methods to detect cases of severely malnourished children in the community for their admission into community-based therapeutic care programs*. Food and Nutrition Bulletin Vol 27 (3 Suppl), S7-23.

Medical examination at health centre level

The medical examination for a child with SAM follows the same steps and procedures as those recommended for any sick child and is summarised in the IMCI protocols. The examination should be carried out by a trained health worker. It should start with the taking of a medical history followed by a physical examination.

The medical history provides a background to the episode of malnutrition and highlights immediate problems and concerns. It should include assessment of:

- Usual diet before current episode of illness,
- Breastfeeding history,
- Food and fluids taken in the past few days,
- Recent sinking of eyes,
- Duration and frequency of vomiting or *diarrhoea*, appearance of vomit or diarrhoeal stools,
- Time when urine was last passed,
- Contact with people with measles or tuberculosis,
- Any deaths of siblings
- Birth weight,
- Milestones reached (sitting up, standing, etc.)
- Immunisations.
- Chronically ill person in the household (HIV and TB)

The clinical examination assesses whether the child presents with any sign of severe illness or medical complications:

- Enlargement or tenderness of the liver, jaundice,
- Abdominal distension, bowel sounds, “abdominal splash” (a splashing sound in the abdomen),
- Severe pallor,
- Signs of circulatory collapse: cold hands and feet, weak radial pulse, diminished consciousness,
- Temperature: hypothermia or fever,
- Thirst,
- Eyes: corneal lesions indicative of Vitamin A deficiency,
- Ears, mouth, throat: evidence of infection,
- Skin: evidence of skin lesion or infection or purpura,
- Respiratory rate and type of respiration: Signs of pneumonia or heart failure,
- Appearance of faeces.

Taking axillary temperature and a respiration count for one full minute while the child is calm is an essential part of this examination.

Appetite test

Lack of or poor appetite is sometimes the only sign of the presence of medical complications in an acutely malnourished child. It can be caused by infection, poor liver and metabolic functions or deficient gastro intestinal function. A child unable to eat RUTF will not be consuming it at home leading to quick deterioration in nutrition status.

Pass appetite test: The child eats at least one third of a packet of RUTF (92 g) or three teaspoons from a pot.

Fail appetite test: The child does NOT eat one third of a packet of RUTF (92 g) or three teaspoons from a pot.

It is not necessary to conduct the appetite test if the child is very ill, e.g., has pneumonia, persistent diarrhoea, dysentery, measles or malaria, or any of the general danger signs. This child should be immediately referred to inpatient care.

Table 1: Case definitions for the most common medical complications at health centre/clinic

| Medical complication | Case definition |
|-----------------------------------|--|
| Anorexia, poor appetite* | Child is unable to drink or breastfeed; Failed RUTF appetite test |
| Intractable vomiting* | Child vomits after every oral intake |
| High fever | Child has high body temperature, or axillary temperature $\geq 38.5^{\circ}\text{C}$, rectal temperature $\geq 39^{\circ}\text{C}$ |
| Hypothermia | Child has low body temperature, or axillary temperature $< 35.0^{\circ}\text{C}$, rectal temperature $< 35.5^{\circ}\text{C}$ |
| Lower respiratory tract infection | Child has a cough with difficult breathing, fast breathing (If child is 2-12 months: 50 breaths per minute or more; if child is 12 months-5 years: 40 breaths per minute or more) or chest indrawing |
| Severe <i>anaemia</i> | Child has palmar pallor or unusual paleness of the skin (Compare the colour of the child's palm with your own palm and with the palms of other children) |
| Skin lesion | Child has broken skin, fissures, flaking of skin |
| Unconsciousness* | Child does not respond to painful stimuli (e.g., injection) |
| Lethargy, not alert* | Child is difficult to wake. Ask the mother if the child is drowsy, shows no interest in what is happening around him/her, does not look at the mother or watch your face when talking, is unusually sleepy |
| Hypoglycaemia | There are often no clinical signs of hypoglycaemia. One sign that does occur in a child with SAM is eye-lid retraction: child sleeps with eyes slightly open |
| Convulsions* | During a convulsion, child's arms and legs stiffen because the muscles are contracting. Ask the mother if the child had convulsions during this current illness |
| Severe dehydration | Child with SAM with a recent history of diarrhoea, vomiting, high fever or sweating and recent appearance of clinical signs of dehydration as reported by the caregiver |

The signs marked with (*) are IMCI danger signs

Box 4: How to conduct the appetite test

The appetite is tested by giving the child a packet (sachet, pot) of RUTF and observing how he/she eats it. It can be done while the health worker starts the medical history with the caregiver but it is generally better to leave the child with the mother alone in a calm and quiet place. This will prevent the child becoming afraid of the environment or health facility staff and refusing to eat.

- Leave the child with the caregiver in a separate and quiet place.
- Explain to the caregiver the reason for the test and how it is going to be carried out.
- Verify with the caregiver how long since the child ate or drank before the appetite test to ensure that a failed appetite test is not due to the child just having eaten.
- The caregiver should wash their hands and the child's hands and face before the test starts.
- The caregiver should be comfortably seated with the child before offering the sachet or pot of RUTF for the child to eat.
- If the child refuses to eat, the caregiver should continue to gently encourage the child to eat. However, the child should not be forced.
- Provide clean water for the child to drink while he is eating the RUTF.
- Observe the child eating the RUTF during 30 minutes and decide if the child passes or fails the test.

Box 5: Criteria for direct admission to inpatient therapeutic care

To be referred immediately to the nearest hospital for inpatient therapeutic care:

- All children 6-59 months with
- Bilateral pitting oedema (+++) or
- A combination of oedema and wasting or
- SAM with poor appetite (failed appetite test) or medical complications*
- All cases with SAM under 6 months

***Medical complications:**

- Intractable vomiting
- Convulsions
- Very weak, apathetic, lethargic, not alert or unconscious
- Fitting, convulsions
- Hypoglycaemia
- High fever $\geq 38.5^{\circ}\text{C}$
- Hypothermia $< 35^{\circ}\text{C}$
- Severe dehydration based on recent history of diarrhoea/vomiting and clinical signs
- Lower respiratory tract infection:
 - >50 resp/min for infants 2 to 12 months
 - >40 resp/min for children 1 to 5 years
 - >30 resp/min for children above 5 years
 - Any chest in-drawing
- Very pale, severe anaemia
- Signs of *xerophthalmia*, corneal xerosis, ulceration, cloudiness or keratomalacia
- Skin lesion or infection

NB: if hypoglycaemia is suspected at the triage stage: 50 ml of a 10% glucose solution should be given according to the following preparation. This should be given orally.

Decision making

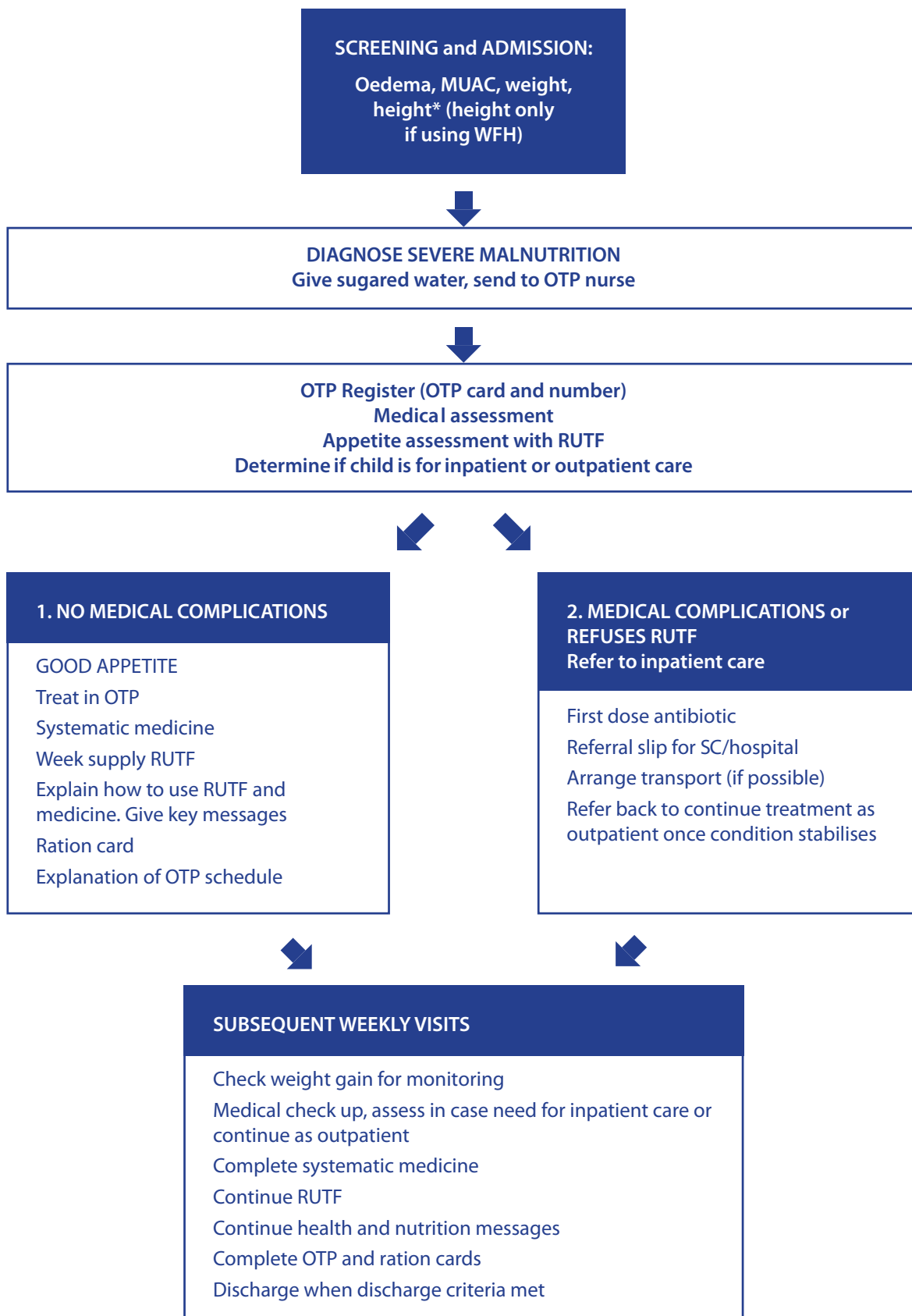
- Children 6-59 months with good appetite that pass the appetite test, and are free from medical complications can be treated as outpatients.
- Those with severe illness or with medical complications should be referred to inpatient care.

In practice in the absence of disease outbreaks (measles, cholera, malaria...) less than 15% of all cases with SAM will need hospitalisation if community mobilisation and the active case finding and referral system from the community are adequately performed so that cases present early.

Table 2: Preparation of sugar water (10% dilution)

| Quantity of Water | Quantity of Sugar | |
|-------------------|-------------------|--------------------|
| 100 ml | 10g | 2 heaped teaspoons |

Figure 2: Summary of screening and triage for Severe Acute Malnutrition



5. Outpatient Therapeutic Care for children 6-59 months with SAM

For all admissions to and treatment in Outpatient Therapeutic Care refer to national guidelines if they are in place.

Admission to outpatient therapeutic care

Current recommendations for admission to outpatient care are:

ALL with appetite (as demonstrated using the appetite test) and free from medical complications (as detailed in figure 2 and section 4).

Table 3: Criteria for new admissions in outpatient care (children 6-59 months)

| |
|--------------------------------------|
| MUAC <11.5cm and/or |
| WFH <-3 z-score or |
| Bilateral pitting oedema (+) or (++) |

Other age groups (older children and adults) identified with SAM according to agreed WFH or MUAC measurements (though there is currently a lack of international guidance on these criteria).

Admission categories

Table 4: Categories of admission for outpatient care (Children 6-59 months)

| | |
|-----------|---|
| New cases | Children 6-59 months with SAM who meet the criteria mentioned above |
| Old cases | Children Referred from Inpatient Care: Children with SAM referred from inpatient care after stabilisation to continue treatment as outpatients until full recovery |
| | Children with SAM already under treatment in outpatient care elsewhere and transferred to this health facility |
| | Returned Defaulters: Children who defaulted from treatment before recovery and return to continue treatment |

Note: **Relapsed cases** are considered new cases: the child was successfully treated (Discharged as Cured) before and now has a new episode of SAM.

Admission procedures

When a child fulfils the criteria for enrolment in outpatient care, the health worker has to:

1. Fill in the Individual monitoring, record or treatment card with the required information including the medical history and medical examination carried out at the triage stage.
2. Register the case in a Registration Book
3. Assign an admission number (see box 6 below)
4. Give explanations to the caregiver about the functioning of outpatient care and the expected evolution of the child while in treatment until he/she reaches discharge criteria, including expected length of stay in treatment
5. Prescribe and give routine medications and any other treatment the child may need with thorough explanation to the caregiver (see below)
6. Update vaccination schedule, if needed (prioritise giving of measles vaccination if required)
7. Prescribe and give RUTF and go over basic key messages with the caregiver, making sure they have been well understood (see below)
8. Link the child's family with the assigned CHW or CV for home visit and follow up
9. Give appointment for the next visit (the same day each week)
10. At subsequent appointments additional health/nutrition education (i.e. IYCF messages) can be given, and any additional vaccinations missing from the child's vaccination schedule administered.

Box 6: Individual unique number for CMAM beneficiaries

To ensure that cases can be tracked an individual and unique number should be allocated to each child when first enrolled into one of the CMAM services: Outpatient Therapeutic Care or Inpatient Therapeutic Care. A discharged child, who continues receiving nutrition support from a MAM service, can keep the same number.

To facilitate tracing and follow up between services or prevent double counting of cases the individual number should be used on all documents: Individual monitoring cards, Registration book, transfer/referral forms etc. Care must be taken to ensure that the number appears on transfer slips that accompany the child through the different services. The system of numbering can be developed appropriately for each programme.

Example of a registration numbering system:

Each registration number is made up of three parts, for example: **NYL/003/OTC**

NYL is the code that identifies the health facility that was the original point of entry for the child, either health centre or hospital.

003 is the number allocated to the child (this runs in sequence from the previous child registered at that centre). Starts from 0 for each individual facility

OTC refers to the service where the child was first enrolled (i.e. OTC for outpatient therapeutic care, ITC for inpatient therapeutic care).

Returning defaulters retain the same number that they were first given, as they are still suffering from the same episode of malnutrition. Their treatment continues on the same monitoring card.

Readmissions after relapse are given a new number and a new card as they are suffering from a separate episode of malnutrition and therefore require full treatment again. Standard **individual treatment and follow up cards** provide a section where to note the relapse status of the child.

Medical management in outpatient care**Routine medicines**

On admission, routine medicines should be given to all children attending outpatient care.

Table 5: Summary of routine medication for outpatient care for SAM

| Medication | When |
|---|-------------------------------------|
| Amoxicillin | At admission |
| Anti malaria (According to national protocol) | Test at admission if clinical signs |
| Mebendazole or Albendazole | Single dose at second week |
| Vitamin A | Single dose at discharge |
| Measles vaccination | During treatment |

Note: Children who have been transferred from hospital based management of SAM should not receive routine medications that have already been administered during hospital stay. However if any treatments received during inpatient care are incomplete (e.g. for clinical vitamin A deficiency), this information should be included on referral documents and the doses required to complete that treatment given during outpatient care.

Routine antibiotics

Should be given to all children, given the high prevalence of silent infection in severe malnutrition and **Amoxicillin** should be used as a broad spectrum antibiotic. If the patient continues to present infectious symptoms, he/she should be referred to an inpatient service.

The first dose of Amoxicillin should be taken during the admission process under the supervision of the health care provider. An explanation should be given to the caregiver on how to complete the treatment at home. The recommended dosages vary slightly between protocols mainly on the length of the treatment (from 5 to 7 or to 10 days). The table below shows dosages on the most common presentations for Amoxicillin.

Table 6: Recommended dosage for Amoxicillin

| Weight of the child | Syrup 125 mg/ 5ml 7 days | Syrup 250 mg/ 5ml 7 days | Tablets 250 mg 7 days |
|---------------------|-----------------------------|------------------------------|----------------------------------|
| <10 kg | 125 mg or 5 ml 3x a day | 125 mg or 2.5 ml 3x a day | 125 mg or 1/2 tablet 3x a day |
| 10-30 kg | 250 mg or 10 ml 3x a day | 250 mg or 5 ml 3x a day | 250 mg or 1 tablet 3x a day |
| >30 kg | Give tablets | Give tablets | 500 mg or 2 tablets, 3x a day |

Before prescribing/administering Amoxicillin it is important to:

- Check standard dosages with National (or WHO) guidelines for SAM
- Check label on bottles for dosages and dilution of syrups as this can change between different manufacturers.

Anti-malaria treatment

Systematically screen all children for **malaria** in *endemic* areas on admission regardless of their body temperature. A child with SAM cannot auto-regulate his/her body temperature well and tends to adopt the temperature of the environment. If in clinical doubt, repeat the malaria test in the following weeks of the initial test.

Treat malaria according to the national treatment protocol with first line Artemisinin Combination Therapy (ACT) and in compliance with IMCI protocol. In cases of severe malaria the child is referred to inpatient care for treatment with a second line anti-malarial drug (Coartem or Quinine).

In malaria endemic areas, children with SAM should be provided with insecticide impregnated bed nets to prevent malaria.

De-worming

Give a single dose of **Mebendazole** (or **Albendazole**) on the second visit to outpatient therapeutic care.

Table 7: De-worming drugs dosage

| Age (Weight) of the child | Albendazole 400 mg tablet | Mebendazole 100 mg or 500 mg tablet |
|---------------------------|---------------------------|-------------------------------------|
| <1 year | NO | NO |
| 1-2 years (or <10 kg) | 200 mg or 1/2 tablet | 250 mg or 1/2 tablet |
| ≥ 2 years (or ≥10 kg) | 400 mg or 1 tablet | 500 mg or 1 tablet |

Vitamin A

Because of its toxicity and the considerable amounts available in the RUTF, vitamin A is only given in a single mega dose on the day of discharge unless a dose has already been received within the previous four months (except in cases of recent measles).

Table 8: Vitamin A dosages

| Age of the child | Vitamin A |
|------------------|------------|
| 6-11 months | 100 000 IU |
| ≥ 12 months | 200 000 IU |

Immunisations

Infections have a negative effect on child growth and in some cases can precipitate the occurrence of SAM or provoke relapse in children during their recovery phase. Two preventable infections have a particularly negative impact on growth; measles and whooping cough. The IMCI booklet recommends checking the immunisation status of the child at each visit according to the standard immunisation schedule.

Other medical treatments

Most of the medical conditions that affect the child with SAM without medical complications can be treated following the IMCI protocols.

Anaemia

Children with SAM often have low iron stores as they have a reduced haemoglobin synthesis and have lost iron rich muscle. Iron supplementation however may be harmful to them as this may promote infections, severity of malaria in highly endemic areas, and lead to oxidative stress. Therefore, if the child doesn't present with any signs of anaemia there is no need to provide supplements as RUTF already contains the daily required doses.

All cases with anaemia are referred to inpatient care according to IMCI protocols where laboratory testing can be done and transfusion given where indicated (Haemoglobin <40 g/l or packed cell volume <12%).

Vitamin A deficiency

Children with eye signs of vitamin A deficiency should be referred to inpatient care, as the condition of the eyes can deteriorate very rapidly and the risk of blindness is high. Check for specific symptoms (e.g. corneal ulceration, xerophthalmia, corneal xerosis, cloudiness, keratomalacia) at every visit and more intensively when there is a high risk of deficiency (e.g. during an outbreak of measles).

Diarrhoea

Diarrhoea is often a precipitating cause leading to SAM. Whereas the use of oral rehydration therapy (ORT) (and zinc supplementation) is effective to prevent dehydration, it is not recommended to use ORT in children with SAM. The effect of diarrhoea on the nutrition status of children can be minimised by continued feeding, breastfeeding and administration of RUTF (note that RUTF provides a daily supplementation of Zinc) during the diarrhoea episode. Health staff should provide caregivers with information on feeding and hygiene, but also explain the danger signs of diarrhoea and advise when to return to the health facility in case the child's condition deteriorates. In case of diarrhoea (note that most children with SAM have diarrhoea) the dehydration status of the child with SAM will be carefully assessed. A recent history of diarrhoea, vomiting, fever or sweating with a recent appearance of clinical signs (sunken eyes) indicate dehydration in which case the child should be referred to inpatient care for further assessment and treatment.

Infections

Treating common childhood infections and advising continuous feeding during illnesses following IMCI guidelines also contributes to the prevention of SAM and relapse after treatment. First-line antibiotic is provided in outpatient care at admission. If a second-line antibiotic is needed, the child with SAM is referred to inpatient care.

Nutrition management in outpatient care

The dietary management of cases in outpatient care is based on RUTF feeds. RUTF is provided at between 150 and 220 kcal/kg/day. Commonly practiced dosing is 200 Kcal/kg/day. The following table shows the amounts of RUTF to give based on the weight of the child.

RUTF presented in biscuit form (BP100(r)) is not recommended by the manufacturer for children under 2 years (less than 7kg) as it is crumbly and the child is at risk of swallowing incorrectly. For these younger children, 6-24 months, the biscuits can be mixed with clean water to make porridge. Special orientation will be required for the caregiver on how to do this. However if the caregiver prepares porridge, anything not eaten should be immediately discarded after the meal to avoid contamination.

To ensure proper use of RUTF at home, it is important to provide detailed and clear information to the caregiver, and check that it has been understood. Box 7 presents basic messages for the caregiver of a child in outpatient care.

Follow up during treatment in outpatient therapeutic care

During outpatient therapeutic care, the patient visits the health facility every week. Only for specific reasons (harvesting time, distances etc) and when the child is recovering well and the mother is compliant, can biweekly visits be envisaged later on during the treatment.

During the weekly visits the health worker assesses progress; monitors weight gain, and checks for associated medical complications that may require referral to inpatient care. The patient receives drugs and RUTF supplies for the week. Individual counselling and health and nutrition education in groups will also be provided during these visits.

The following table indicates the activities that should be carried out during the follow up at outpatient care.

It is important to organise a smooth flow of patients which limits waiting time and ensures that all patients are seen and properly looked after. Health and nutrition education is usually provided for all patients and caregivers while they are waiting to be seen.

Table 9: RUTF rations* according to the weight of the child

| Weight (in kg) | PlumpyNut® (92 gm per sachet) | | BP100® | |
|----------------|-------------------------------|------------------|-------------|---------------|
| | Packets/day | Packets per week | Bars/day | Bars per week |
| 3.5-3.9 | 1 ½ | 11 | Do not give | Do not give |
| 4.0-5.4 | 2 | 14 | Do not give | Do not give |
| 5.5-6.9 | 2 ½ | 18 | Do not give | Do not give |
| 7.0-8.4 | 3 | 21 | 5 | 35 |
| 8.5-9.4 | 3 ½ | 25 | 6 | 42 |
| 9.5-10.4 | 4 | 28 | 7 | 49 |
| 10.5-11.9 | 4 ½ | 32 | 8 | 56 |
| > = 12 | 5 | 35 | 9 | 63 |

* The most widely used RUTF (as lipid-based paste) is PlumpyNut®. If imported it comes in packets of 92 gr. totalling about 500kcal per packet. Locally manufactured RUTF can be in pots containing a greater amount of the product, thus ration tables must be adapted.

Box 7: Taking RUTF at home: Messages for the caregiver

- RUTF is a food and a medicine for very thin or swollen children only. It should not be shared.
- RUTF is the only food the child needs in order to recover.
- Sick children often don't like to eat. Give small regular meals of RUTF and encourage the child to eat often (if possible, eight meals per day). Leave time for the child to eat. RUTF can be left for later if not finished, and be eaten during the course of the day.
- Always offer the child plenty of clean water to drink while he or she is eating the RUTF. Children will need to drink more water than normal.
- For young children, continue to put the child to the breast regularly. Offer breast milk first before every RUTF feed.
- Wash children's hands and face with soap before feeding if possible.
- Keep food clean and covered.
- Sick children get cold quickly. Always keep the child covered and warm.
- When a child has diarrhoea, never stop feeding. Give extra food and extra clean water.
- Return to the health facility whenever the child's condition deteriorates or if the child is not eating sufficiently.
- Once the child is recovering well and showing appetite for other foods, after a few weeks, other foods can be given at home after the RUTF feeds.

According to the outcomes of each visit, the health worker will need to decide whether the child is making good progress or has deteriorated to such a degree that inpatient referral is required or if deterioration is less severe but requires a home visit. The action protocol below (Table 11) indicates the different criteria to assist the health worker to decide what actions to take for the beneficiary during weekly follow up.

If the beneficiary is not within the criteria of the action protocol and is making good progress i.e. gaining weight, MUAC increasing, decreasing oedema, he/she has good appetite, no severe medical complications, is regularly attending weekly follow up visits, then the child continues as normal in outpatient care until (s)he reaches the criteria for discharge.

In areas with high HIV prevalence, the health worker should refer any child not making progress for HIV testing and treat accordingly, where possible (Refer to section 9: Management of SAM in areas with high HIV prevalence).

Table 10: Summary of activities during weekly visits to outpatient therapeutic care.

| Activity | Frequency |
|---|--|
| Weight | Each week |
| MUAC | Each week |
| Check for oedema | Each week |
| Height/length | Once a month |
| Medical history | Each week |
| Physical examination (Including temperature and respiratory rate) | Each week |
| Appetite test | Each week |
| Routine medical treatment | According to treatment protocol |
| Home visit | As needed according to action protocol |
| Vaccinations | As needed according to immunization schedule |
| Evaluation of health and nutrition status progress and counselling | Each week |
| Health/Nutrition education | Each week |
| Evaluation of RUTF consumption | Each week |
| Provision of RUTF | Each week |

Home visits (See action protocol)

Home visits are carried out by CHW or CV (or health workers in some cases) and the following aspects should be assessed and recorded:

- Caregiver's understanding of the messages received in the centre
- Compliance with the treatment (RUTF and medications)
- Reasons for non-compliance with treatment, absence or defaulting
- Availability of water and sanitation facilities, hygiene practices
- Health and hygiene and food safety practices and general household food security

The community health worker should:

- Where possible provide support for any problem identified
- Encourage the continuation of the treatment
- Give health and nutrition education and recommend good infant feeding practices

Tools for individual follow up

In order to ensure quality and continuity of care during the management of SAM cases, two documents (forms) should be used:

- **Individual treatment and follow up card:** Stays with the health staff and contains all information regarding the child's condition at admission and discharge and his/her evolution during treatment
- **Transfer slips:** Sent with the caregiver to allow tracking of information about the child's condition and evolution during movements between services (outpatient care to inpatient care and vice versa)

Some agencies recommend the use of a **ration card** which is kept by the caregiver and which records admission and discharge date and basic outcome for each visit. It promotes links with other health activities in the facility and helps to avoid double registration of the child in various centres. In emergency situations where the population is moving and centres are opened sequentially a small ration card is useful for the caregiver to help facilitate continuity of care if she moves area.

Examples of all forms can be found in Annexes 1, 2 and 3.

Table 11: Action protocol during follow up

| Sign | Referral to Inpatient Care | Home Visit |
|--------------------------|---|--|
| GENERAL CONDITION | Deteriorating | Child is absent or defaulting |
| BILATERAL PITTING OEDEMA | Grade +++ | Child is not gaining weight or losing weight on 2 consecutive follow-up visits |
| | Any grade of bilateral pitting oedema with severe wasting (marasmic kwashiorkor) | |
| | Increase in bilateral pitting oedema | Child is not losing oedema |
| | Bilateral pitting oedema not reducing by week 3 | |
| ANOREXIA* | Poor appetite or unable to eat – Failed appetite test | Child has returned from inpatient care or refuses referral to inpatient care |
| VOMITING* | Intractable vomiting | |
| CONVULSIONS* | Ask mother if the child had convulsions since the previous visit | |
| LETHARGY, NOT ALERT* | Child is difficult to wake | |
| UNCONSCIOUSNESS* | Child does not respond to painful stimuli | |
| HYPOGLYCAEMIA | A clinical sign in a child with SAM is eye-lid retraction: Child sleeps with eyes slightly open. | |
| DEHYDRATION | Dehydration based primarily on recent history of diarrhoea, vomiting, fever or sweating and on recent appearance of clinical signs of dehydration as reported by the mother/caregiver | |
| HIGH FEVER | Axillary temperature $\geq 38.5^{\circ}\text{C}$, rectal temperature $\geq 39^{\circ}\text{C}$ | |
| HYPOTHERMIA | Axillary temperature $< 35^{\circ}\text{C}$, rectal temperature $< 35.5^{\circ}\text{C}$ | |
| RESPIRATION RATE | ≥ 60 respirations/minute for children under 2 months | |
| | ≥ 50 respirations/minute from 2-12 months | |
| | ≥ 40 respirations/minute from 1-5 years | |
| | ≥ 30 respirations/minute for children over 5 years | |
| | Any chest in-drawing | |
| ANAEMIA | Palmar pallor or unusual paleness of skin | |
| SKIN LESION | Broken skin, fissures, flaking of skin | |
| SUPERFICIAL INFECTION | Any infection requiring intramuscular antibiotic treatment | |
| WEIGHT CHANGES | Below admission weight on week 3 | |
| | Weight loss for three consecutive visits | |
| | Static weight for three consecutive visits | |
| REQUEST | Mother/caregiver requests treatment of child in inpatient care for social reasons (decided by supervisor) | |
| NOT RESPONDING | Child that is not responding to treatment is referred to inpatient care or hospital for further medical investigation. | |

* Integrated Management of Childhood Illness (IMCI) danger signs

Box 8: Failure to respond to treatment at outpatient care

For children with SAM that are not responding to treatment, several steps should be taken. Some of the actions that can be taken (home visits and/or referral to inpatient care) have already been described and specific criteria for them have been listed. Only when all those actions have been exhausted, including referral to inpatient care, and a treatable cause has not been found, can the beneficiary after 4 months in treatment be discharged as 'non-recovered'.

Some of the causes for non response are due to the functioning and the performance of the service where the child is receiving the treatment; others are related to the individual child.

Causes related to quality of program

- Inappropriate selection of children with SAM to go directly to outpatient care
- Poor assessment of appetite
- Inadequate instructions given to caregivers
- Wrong amounts of RUTF dispensed
- Excessive time between distributions

Causes related to socioeconomic and health status of child:

- Sharing with the family: insufficient food given or food taken by siblings or caregivers, sibling rivalry (Other children taking the diet), all eating from the same plate
- Unwilling caregiver or overwhelmed with other work and responsibilities.
- HIV infection or TB
- Vitamin or mineral deficiency
- Physio-pathological reasons: malabsorption of nutrients, rumination, infections, specifically: diarrhoea, dysentery, pneumonia, tuberculosis, urinary infection, otitis media, malaria, schistosomiasis/leishmaniasis, hepatitis/cirrhosis
- Other serious underlying disease: congenital abnormalities, neurological damage, inborn errors of metabolism
- Psychological trauma

Individual treatment and follow up card

The health worker fills in this card when the child is identified as a SAM case.

- If the child remains in the outpatient care service, the card is completed and filed in the "active" file of the centre
- If the child requires referral to inpatient care, a transfer slip (see below) should be filled and the individual follow up card is kept to be filled in when they return to outpatient care.

The first page contains information regarding child's identification, medical history and treatment on admission; while the back has a series of columns each one summarizing the physical condition on admission and on the weekly follow-up visits until the child reaches discharge criteria.

Transfer slip

This is a format that facilitates the transmission of information between services when the child needs referral. The same form can be used for transfer from outpatient to inpatient (and vice versa), movements between two outpatient sites or when discharged to a management of MAM site if it exists. The caregiver is given the transfer slip together with instructions on how and where to go. In development settings the child's Road to Health card can be used.

Ration card

During emergencies, a 'ration card' is usually filled out with basic information about the child and updated on each visit. This card should stay with the caregivers as a record of the child's progress. Caregivers should bring the card with them to the site each week. A non-removable wristband is also sometimes given to the child marked with his or her registration number and/or name.

It is important that the child retains the same registration number throughout treatment (unique identification number), regardless of changes of facility and type of treatment.

Discharge from outpatient care

Discharge criteria and categories

Current WHO recommendations¹² for discharge (as cured) are as follows:

Table 12: Criteria for discharge from outpatient care (Children 6-59 months)

| | |
|------------------------------|--|
| Criteria of admission | MUAC <11.5cm and/or WFH <-3 z-scores OR bilateral oedema |
| Criteria of discharge | |
| Cured | 15% weight gain (from admission weight when free of oedema)‡ |
| | No oedema for 2 consecutive weeks |
| | Clinically well and alert |
| Defaulted | Absent for three consecutive visits |
| Died | Died during treatment in outpatient care |
| Non recovered* | Did not meet the discharge criteria after four months in treatment |

* Note that a non responder is a person whose condition is not responding to treatment, is referred for further investigation and additional treatment for infections or underlying pathologies, or referred to inpatient care for closer monitoring.

‡ For admissions on low MUAC as the evidence on % weight gain is still being collected, some agencies¹³ also promote:

- Minimum length of stay of 2 months, MUAC ≥11.5cm,
- Sustained weight gain and
- Clinically well

And others, alternatively, use MUAC ≥12.5cm for two consecutive weeks regardless of the total length of stay.

See Annex 4 for simple look-up table for % weight gain.

Movements between services include children leaving a specific health facility or level of treatment but not the treatment. They are not counted as discharged as children are still continuing their treatment for SAM. They should be recorded as follows:

| | |
|--|---|
| Transfer to inpatient | The child fulfils criteria for referral to inpatient care according to admission criteria or action protocol. |
| Transfer to another outpatient service | Child with SAM in treatment in one site moves to another outpatient site to continue treatment |

For these transfers a transfer slip (as detailed in the above section) should be completed and explanations given to the caregiver about the reasons for the transfer and if being transferred to inpatient care, how the child is going to be treated there.

Discharge procedures

When a child fulfils the criteria for discharge, the health worker should:

1. Fill in the Individual treatment and follow-up card with the required discharge information
2. For cured: Refer, if available, to a service for the management of MAM for further nutrition support to help avoid relapse.
 - a. Give explanations to the caregiver about the functioning of the MAM service and the expected evolution of the child while in there, including length of stay in treatment.
 - b. Appoint the caregiver for the first visit and fill in the reference slip
3. Give vitamin A according to protocol
4. Update immunisation schedule, if needed
5. Complete health/nutrition education (i.e. IYCF messages)

¹² WHO (2009). *Growth Standards and the Identification of Severe Acute Malnutrition in Infants and Children: A Joint Statement by the World Health Organisation and the United Nations Children's Fund*

¹³ Valid International (2006) *Community-based Therapeutic Care: A Field Manual*

6. Inpatient therapeutic care for children 6-59 months with SAM

For all admissions to and treatment in Inpatient Therapeutic Care refer to national guidelines if they are in place.

This chapter describes inpatient therapeutic care of children 6-59 months with SAM and medical complications. Inpatient therapeutic care for the management of SAM in infants less than 6 months is described in a separate section of this module.

Children 6-59 months admitted into inpatient therapeutic care for stabilization of their condition will be referred to outpatient care as soon as their medical complications are resolving, their appetite has returned and any oedema is reducing. Average length of stay before referring to outpatient care is 7 to 10 days. Exceptionally, children will complete the full treatment in inpatient care when:

- Outpatient care is not available or too far from the family's home,
- The child is continually unable or refuses to eat RUTF
- Family refuses referral to outpatient therapeutic care

Organisation of management of SAM in inpatient services

According to current WHO recommendations,^{14,15} hospital-based care for SAM is organised into phases:

- **Stabilisation phase:** Treatment or prevention of hypoglycaemia, hypothermia, dehydration, treatment of infections, correction of hydro-electrolytic balance, correction of micronutrient deficiencies, commencement of cautious feeding with F75 and stimulation of emotional and sensorial development

- **Transition phase:** Appetite has returned, medical complications are under control and resolving, oedema starts reducing, the child is prepared for outpatient care. RUTF is introduced gradually, together with feeds of F100 or F75 to foster child's weight gain*.
- **Rehabilitation phase:** Or catch up growth phase. In most cases this phase is now replaced by outpatient therapeutic care and only exceptionally children will remain as inpatients until full recovery

* RUTF is introduced after 2-3 days in stabilisation with the aim of slowly replacing the formula feeds during transition. Once the child is able to eat at least 75% of their RUTF ration at each meal in a day, nutrition support can continue with RUTF (200kcal/kg/day) according to the RUTF protocol and if other criteria are fulfilled the child can move onto outpatient therapeutic care. If the child refuses the RUTF, the caregiver is encouraged to try to get the child to start eating. In the meantime, F100 or F75 is continued until the appetite fully returns and the child can move to outpatient therapeutic care.

Box 9: Feeding with RUTF during inpatient care

A child 6-59 months in inpatient care who is alert should undergo the appetite test with RUTF. If he/she passes the test but needs admission to inpatient care for medical complications, then he/she should continue treatment with RUTF.

Information on F75 and F100 composition and alternative recipes for local production can be found in Annexes 5 and 6.

Admission to inpatient therapeutic care

Admission criteria (see Figure 2 and Box 5)

Admission categories

Table 13: Categories of admission for inpatient care (Children 6-59 months)

| | |
|-----------|--|
| New cases | Children 6-59 months with SAM meeting the admission criteria |
| Old cases | Children Referred from Outpatient Care: Children with SAM referred from outpatient care meeting inpatient care admission criteria or having a deteriorating condition (See action protocol) |
| | Children with SAM under treatment in inpatient care in another site moving into this site to continue treatment |
| | Returned Defaulters: Children who defaulted from treatment before recovery return to continue treatment |

Note: **Relapsed cases** are considered new cases: the child was successfully treated (Discharged as Cured) before and now has a new episode of acute malnutrition.

¹⁴ WHO (1999) *Management of severe malnutrition: a manual for physicians and other senior health workers* Geneva: WHO

¹⁵ WHO (2003) *Guidelines for the inpatient treatment of severely malnourished children* Geneva: WHO

Admission procedures

At the outpatient department level:

Screening with MUAC and testing for bilateral pitting oedema, as described in section 4, should be carried out for all children waiting at hospital or health centre outpatient departments where inpatient therapeutic care is offered. Cases identified can then be referred to the inpatient/paediatric unit for further triage and assessment. For children already identified and referred from Outpatient therapeutic sites details on transfer slips should be checked and the children moved on to triage.

Critically ill children are triaged and receive priority treatment. Sugar water (50 ml of 10% glucose solution) is made available to prevent hypoglycaemia

At paediatric ward level:

The decision to treat on an inpatient or outpatient basis according to the criteria in Figure 2 will be made based on the same procedures outlined in section 4.

When a child fulfils the criteria for enrolment in inpatient care, the health worker has to:

1. Start life-saving treatment as soon as possible including treatment of medical complications and begin feeding with F75 when the child becomes/is conscious
2. Fill in the Inpatient Multi-chart with the medical and nutrition information required

3. Assign an admission number if it is a new case. If the child has been transferred from outpatient care, keep the same number that appears on the transfer slip
4. Give explanations to the caregiver about the functioning of the inpatient care service and the expected evolution of the child while in treatment until he/she meets criteria for transfer to outpatient care, including expected length of stay
5. Provide routine treatment protocols for the management of SAM according to the national (or WHO) guidelines.
6. Give counselling to the caregiver including on the medical and dietary treatment the child will receive, the danger signs to watch out for during the child's treatment so that they can inform health staff, and on breastfeeding and good hygiene practices.
7. The caregiver should be given soap for hand-washing and general hygiene and food during his/her stay in inpatient care.

The WHO 10-steps treatment summarizes the different life saving steps that need to be considered in the treatment of SAM (box 10).

Ideally, place children and their caregivers in the stabilization phase physically separated from those children in the transition and rehabilitation phases, or from children with other diseases.

Box 10: The 10-steps for the treatment of severe acute malnutrition with medical complications¹⁶

1. Treat and prevent hypoglycaemia
2. Treat and prevent hypothermia
3. Treat and prevent dehydration
4. Correct electrolyte imbalance
5. Treat and prevent infection
6. Correct micronutrient deficiencies
7. Start cautious feeding
8. Achieve transition to catch-up diet
9. Provide sensory stimulation and emotional support
10. Prepare for follow up after stabilisation and transition

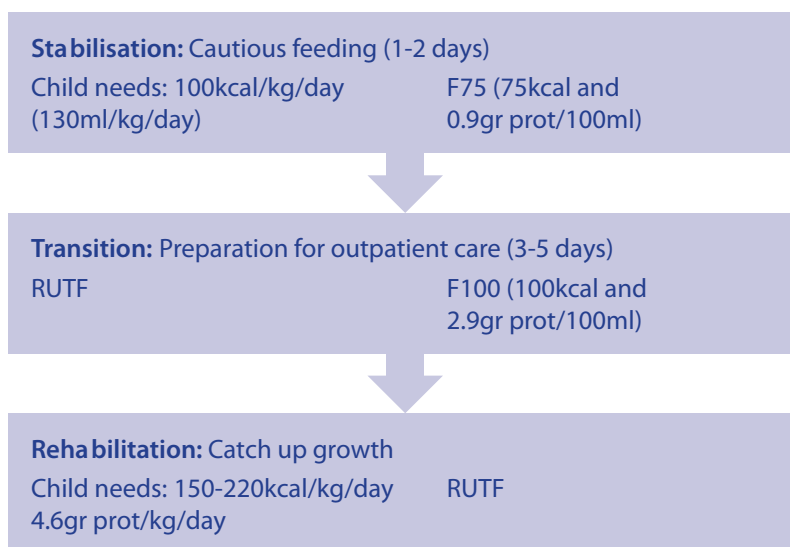
¹⁶ Adapted from WHO (1999) *Management of severe malnutrition: a manual for physicians and other senior health workers* Geneva: WHO.

Figure 3: Schedule for the WHO 10- steps¹⁷

| | Stabilisation | | Rehabilitation (if no referral to outpatient care available) |
|---------------------------|---------------|----------|--|
| | Days 1-2 | Days 3-7 | Weeks 2-6 |
| 1. Hypoglycaemia | → | | |
| 2. Hypothermia | → | | |
| 3. Dehydration | → | | |
| 4. Electrolytes | | | → |
| 5. Infection | | | → |
| 6. Micronutrients | | No iron | With iron if on F100 → |
| 7. Cautious feeding | | | → |
| 8. Catch-up growth | | | → |
| 9. Sensory stimulation | | | → |
| 10. Prepare for follow-up | | | → |

Case management and follow up in inpatient therapeutic care

Figure 4: Organisation of care for inpatient



Inpatient stabilisation phase

Feeding should begin as soon as possible, at admission, with a starter diet of F75. F75 is designed to meet the child’s needs without overwhelming the body’s metabolism at this early stage of treatment. F75 formula promotes rapid recovery of normal metabolic function and nutrition-electrolyte balance. F75 is not designed to promote weight gain, as this would be dangerous for the child at this stage of treatment. Rapid weight gain during stabilisation should be considered a sign of danger (probably fluid accumulation), and rapid action should be taken (Refer to section 12: Management of medical complications for SAM).

F75 feeding in stabilisation

Tables can be found in Annex 7 for the volume of F75 to give to the individual child per feed according to the child’s body-weight

- For children with low WFH or low MUAC: give 130ml of F75 (100 Kcal) per kg bodyweight per day
- For children with oedema (+++): give 100ml per kg bodyweight per day until oedema is clearly reducing and is (++)

Tables for the preparation of small quantities of F75 can also be found in Annex 7.

¹⁷ Adapted from Ashworth, A, S Khanum, A Jackson, and C Schofield. 2003. *Guidelines for the inpatient treatment of severely malnourished children*. Geneva: WHO.

Although WHO recommendations are to gradually increase the volume given per feed (see table 14), in emergency situations and settings where resources or staff capacities are scarce, the use of a standard 3-hour feeding is recommended. The

larger volume of F75 that is required with a reduced number of feeds can on rare occasions provoke osmotic diarrhoea. That is why ideally 8 or more feeds should be given daily.

Table 14: WHO schedule for increasing F75 volume

| Days | Frequency of feeding | Volume per feed | Total daily volume |
|----------------|----------------------|-----------------|--------------------|
| Days 1 and 2 | 2-hourly feeding | 11ml/kg/feed | 130ml/kg/day |
| Days 3 to 5 | 3-hourly feeding | 16ml/kg/feed | 130ml/kg/day |
| From the Day 6 | 4-hourly feeding | 22ml/kg/day | 130ml/kg/day |

All feeds should be controlled by a feeding assistant. The mother or caregiver must be actively involved in the feeding and the daily care of the child. They should be informed and sensitized to the importance of not introducing other foods until the child is stabilised. Breastfed children should be offered breast milk on demand before being fed F75.

to the signs of acute danger so that they can call a nurse when necessary (see section on medical complications).

Feeding is carried out with a cup (never from a bottle or with a spoon or syringe). Feeding assistants should alert caregivers

Never force-feed a malnourished child and also ensure that the mothers do not force-feed their children. This could cause distress to the child and can lead to aspiration pneumonia. Teach the mother how to sit the child in her lap, with an arm behind the child's back and the child sitting straight (vertical), and how to offer the cup with the other hand.

Box 11: Use of Naso-Gastric tube (NGT)

NGT should ONLY be used when:

- Child takes less than 75% of the prescribed F75 diet per 24-hours during stabilization
- Child has pneumonia (rapid respiration rate) and has difficulties swallowing
- Child has painful lesions of the mouth
- Child has cleft palate or other physical deformity
- Child shows disturbances of conscience

Try to give F75 by mouth every time before using the NGT. The use of NGT should not last more than 3 days, and should only be used in the stabilisation phase.

Monitoring of the child in stabilisation

Monitor and write down on the Inpatient Multi-chart daily:

- Weight
- Degree of oedema (0 to +++)
- Body temperature (twice per day, 4 times for hypothermic or febrile children)
- Key clinical signs (consciousness, colour of conjunctiva, urine, stools, vomiting, dehydration, cough, respiration, pulse, capillary refill, and liver size, skin, eyes, ear, mouth and throat).
- Feeds: volume taken at each feed, refusal, vomiting etc.

The child should be medically assessed daily or even twice a day during the first days.

Criteria for progressing to transition

When:

- The child has regained appetite (as demonstrated by appetite test),
- Medical complications and infections are under control and
- Oedema starts reducing

The child is ready for the transition phase.

Inpatient transition phase

During the transition phase, the child receives an increased amount of energy to allow catch-up growth.

Feeding in transition phase

The transition between F75 and catch up diets (RUTF or F100) and from milk diet to solid therapeutic foods, should be progressive, but happens for most children within one day. Energy intake is increased gradually until the target minimum intake is reached (150-220 kcal/kg/day). The frequency of the feeds remains the same as in stabilisation phase.

RUTF and F100 have a similar nutrition composition per 100 kcal, with the exception of iron which is present in RUTF but not in F100. As a rule, preference is given to RUTF over F100 during the transition if the child accepts it. RUTF is offered first at every feed and is complemented with F100 or continued F75 feeds where needed.

If the child passes the appetite test, give the same quantities of RUTF as that recommended for outpatient care (refer to table 9) and explain to the caregiver the messages in box 7.

Tables can be found in Annex 8 for the volume of F100 to give to individual child per feed according to child's bodyweight. Tables for the preparation of small quantities of F100 can also be found in Annex 8.

Monitoring of the child in transition

Monitor and write down on the Inpatient Multi-chart daily:

- Weight
- Degree of oedema (0 to +++)
- Body temperature (twice per day, 4 times for hypothermic or febrile children)
- Key clinical signs (consciousness, colour of conjunctiva, urine, stools, vomiting, dehydration, cough, respiration, pulse, capillary refill, and liver size, skin, eyes, ear, mouth and throat).
- Feeds: Volume taken at each feed, refusal, vomiting etc

The child should be medically assessed daily.

Criteria for progressing to outpatient or to rehabilitation phase

Children can be referred to outpatient care when:

- They eat at least 75% of the daily amount of RUTF according to their bodyweight
- Oedema is back to mild or moderate (1 or 2 +).
- Medical complications are under control

This can take as little as two days, and should not take more than four.

If these conditions are not met after four days, a thorough medical examination should explore the reasons (e.g. an undetected medical complication, the child not taking meals correctly, etc.) and corrections made. If the child's condition doesn't improve during the transition phase he/she should return to the stabilisation phase.

If outpatient care is not available or there are difficulties for the child swallowing solid foods or the family refuses transfer, the child stays in inpatient care until complete recovery.

Criteria for referral back to stabilisation

The child should be referred back to the stabilisation phase if they present any of the following warning signs:

- Too rapid gain weight (> 10 g/kg/day), indicating excessive fluid retention
- Increase of oedema, or oedema appears in a child that was admitted without
- There are other signs of fluid retention, like a rapid increase in liver size, or other signs of cardiovascular overload
- Abdominal distension or significant re-feeding diarrhoea with weight loss¹⁸
- If a complication arises that necessitates an intravenous infusion
- If a complication arises that necessitates use of a NGT

Inpatient rehabilitation phase

Only children admitted that exceptionally need to complete the full treatment in inpatient care should go through this phase.

Children are fed preferably with RUTF and with F100 if RUTF is not available. Normal meals should be gradually introduced in addition to the therapeutic food products.

Tools for individual follow up at inpatient care

In order to ensure quality and continuity of care during the management of SAM cases, three documents (forms) should be used:

- Inpatient Multi-chart: Contains all information regarding the child's condition at admission and discharge and his/her evolution during treatment
- Registration book: Can facilitate data collection and quick evaluation of workload
- Transfer slip: allows tracking information about the child's condition and evolution during movements between services (outpatient to inpatient and vice versa)

¹⁸ When the diet is changed it is normal for the frequency and characteristics of stools to also change. This is not a problem unless it is associated with weight loss.

Table 15: Volume of F100 in rehabilitation (+/- 200 kcal/kg bodyweight/day) when no RUTF is taken

| Weight of the Child (kg) | F100 ml per feed if 6 feeds per day | F100 ml per feed if 5 feeds per day |
|--------------------------|-------------------------------------|-------------------------------------|
| 3.0-3.4 | 110 | 130 |
| 3.5-3.9 | 120 | 150 |
| 4.0-4.9 | 150 | 180 |
| 5.0-5.9 | 180 | 200 |
| 6.0-6.9 | 210 | 250 |
| 7.0-7.9 | 240 | 300 |
| 8.0-8.9 | 270 | 330 |
| 9.0-9.9 | 300 | 360 |
| 10.0-11.9 | 350 | 420 |
| 12.0-14.9 | 450 | 520 |
| 15.0-19.9 | 550 | 650 |
| 20.0-24.9 | 650 | 780 |
| 25.0-29.9 | 750 | 900 |
| 30.0-39.9 | 850 | 1,000 |
| 40.0-60.0 | 1,000 | 1,200 |

Only the individual follow up card (Inpatient Multi-chart) differs from the forms already described in the Outpatient section.

Inpatient multi-chart

See the example in Annex 9.

Medical management in inpatient care

Box 12: Giving medications to children with SAM and medical complications

The use of IV lines is strictly avoided except in case of septic shock or septicaemia. Special care with intramuscular injections is taken as children with SAM have reduced muscle mass and the risk of nerve damage is high.

Before prescribing/administering any drug it is important to:

- Check standard dosages with national (WHO) guidelines for SAM
- Check labels on bottles for dosages and dilution of syrups as this can change between different manufacturers

Routine medicines for inpatient care

On admission, routine medicines should be given to the child.

Table 16: Summary of routine medication during inpatient care for SAM

| Medication | When |
|---|--|
| Amoxicillin | At admission |
| Anti malaria (According to national protocol) | Test at admission if clinical signs |
| Mebendazole or Albendazole | When the child progresses from transition to rehabilitation phase OR on arrival at the outpatient service |
| Iron | During transition and rehabilitation phases WHEN THE CHILD IS NOT CONSUMING RUTF: One crushed tablet of Ferrous Sulphate 200 mg to each 2 litres of F100 |
| Vitamin A | Single dose at discharge |
| Measles vaccination | During treatment |

Note: Children who have been transferred from outpatient care should not receive routine medications that have already been administered before

Antibiotics

Routine antibiotics are given upon admission (stabilisation) and continued for between 7 to 10 days depending on the child's clinical condition. **Amoxicillin** is generally used but if the child has a severe infection or continues to present symptoms a second line antibiotic should be added (usually **Chloramphenicol** or **Gentamycin + Ampicillin**) (see summary in table 17 below).

Table 17: Summary of antibiotics for inpatient management of SAM¹⁹

| IF: | GIVE: | |
|--|---|---|
| NO COMPLICATIONS | Cotrimoxazole oral (250mg sulfamethoxazole + 5mg trimethoprim / kg) every 12 hours for 5 days | |
| COMPLICATIONS (shock, hypoglycaemia, hypothermia, dermatosis with raw skin/fissures, respiratory or urinary tract infections, or lethargic/sickly appearance) | Gentamicin IV or IM (7.5mg/kg) once daily, PLUS: | |
| | <table border="1"> <tr> <td>Ampicillin IV or IM (50mg/kg) every 6 hours for 2 days</td> <td>Followed by Amoxicillin oral (15mg/kg) every 8 hours for 5 days</td> </tr> </table> | Ampicillin IV or IM (50mg/kg) every 6 hours for 2 days |
| Ampicillin IV or IM (50mg/kg) every 6 hours for 2 days | Followed by Amoxicillin oral (15mg/kg) every 8 hours for 5 days | |
| If child fails to improve within 48 hours, ADD: | Chloramphenicol IV or IM (25mg/kg) every 8 hours for 5 days (give every 6 hours if meningitis is suspected) | |
| If a specific infection requires additional antibiotic | Refer to the WHO manual (1999) <i>Management of Severe Malnutrition</i> | |

Anti-malaria treatment

This is the same as for Outpatient care, please see p.23-24.

De-worming

Give a single dose of **Mebendazole** (or **Albendazole**) when the child progresses from transition to rehabilitation phase. If the child is referred earlier to outpatient care, de-worming drugs should be given on arrival. Refer for dosages to table 7.

Iron

Only for children that DO NOT receive RUTF during the transition and rehabilitation phases. Iron needs to be added to the F100 milk (1 crushed tablet of **Ferrous Sulphate 200 mg** to each 2 litres of F100).

¹⁹ WHO (1999) *Management of severe malnutrition: a manual for physicians and other senior health workers* Geneva: WHO

Vitamin A

Because of its toxicity and the considerable amount available in RUTF, routine vitamin A is only given in a single dose on the day of discharge from the full therapeutic treatment. This usually happens in outpatient care, thus in inpatient care only children completing their full rehabilitation in inpatient care should receive **vitamin A** (unless treatment is indicated due to clinical signs of deficiency). Vitamin A should not be given if the child has already received a dose within the previous 4 months, except in case of recent measles. Refer for dosages to table 8.

Immunisations

Check immunisation status of the child upon admission according to the standard immunisation schedule, especially immunisation for measles.

Treatment of medical complications

Medical complications related to SAM such as shock, severe anaemia, severe dehydration should also be urgently treated. Section 12 and Annex 18 of this module provide an introduction to the main principles of the management of these medical complications. For more complete reference see existing detailed WHO guidelines.^{20,21}

Box 13: Failure to respond to treatment at inpatient care

Definition of failure to respond to treatment for children treated as inpatients includes the following criteria:

- Failure to regain appetite after day 4
- Failure to start to lose oedema after day 4
- Oedema still present at day 10
- Failure to fulfil the criteria for progressing to rehabilitation
- In transition or rehabilitation phase: weight gain less than 5 g/kg/day by day 10 or for 3 successive days

Some of the causes for non response are due to the functioning and the performance of the service where the child is receiving the treatment, others relate to the individual child.

Causes related to quality of program

- Poor environment for treatment of children
- Failure to treat the children in separate area
- Failure to complete the child's Multi chart correctly
- Insufficient staff, inadequately trained staff
- Inaccurate weighing scales or missing drugs and equipment
- Food prepared or given incorrectly

Causes related to health status of the child

- Therapeutic food taken by siblings or caregivers or sharing of caregiver's food
- Vitamin or mineral deficiency
- Physio-pathological reasons: Malabsorption of nutrients, rumination, infections, specifically: Diarrhoea, dysentery, pneumonia, tuberculosis, urinary infection, otitis media, malaria, schistosomiasis/giardia, leishmaniasis, hepatitis/cirrhosis, HIV, TB
- Other serious underlying disease: congenital abnormalities, neurological damage, inborn errors of metabolism
- Psychological trauma

Emotional and physical stimulation

Children with SAM have delayed mental and behavioural development. To address this, sensory stimulation should be provided to the children throughout the period they are in inpatient care.

As an integral part of the treatment, it is essential that the staff understand the emotional needs of these children and create a friendly supportive atmosphere. It is essential that the mother be with her child in hospital, and that she be encouraged to feed, hold, comfort and play with her child as much as possible. Caregivers must never be chastised and the staff should never shout or become angry.

²⁰ ibid

²¹ WHO (2000) *Management of the child with a serious infection or severe malnutrition: Guidelines for care at the first-referral level in developing countries* Geneva: WHO

Inexpensive and safe toys should be available, made from cardboard boxes, plastic bottles, tin cans, old clothes and blocks of wood and similar materials.

Discharge from inpatient care

Most of the children admitted as inpatients will be transferred to outpatient care for completing their rehabilitation. Only exceptionally will children complete the full treatment in inpatient care.

Discharge criteria

Current recommendations²² for discharge (as cured) if a child completes their rehabilitation in inpatient care are the same as for outpatient care (see table 12).

Discharge categories

Table 18: Discharge categories from inpatient care

| Category | Definition |
|---------------|---|
| Cured | Meet the discharge criteria |
| Defaulted | Absent for three consecutive days, |
| Died | Died during treatment at inpatient care |
| Non recovered | Did not recover or did not meet the discharge criteria after two months in treatment |

Movements between services relate to children leaving a specific health facility but continuing their treatment. They are not counted as discharged since they have not yet reached the discharge criteria, but recorded as follows:

| | |
|---|---|
| Transfer to outpatient care | The child fulfils criteria for referral to outpatient care |
| Transfer to another inpatient care site | Child with SAM under treatment that moves to another inpatient care site while being in treatment |

For these transfers a transfer slip (as detailed in the above section) should be completed and explanations given to the caregiver about the reasons for the transfer and if being transferred to outpatient care, how the child is going to be treated there.

Discharge procedures

When a child fulfils the criteria for discharge upon full recovery, the health worker should:

1. Fill in the Inpatient Multi-chart with the required discharge information
2. Refer, if available, to a service for the management of MAM for further nutrition support and to help avoid relapse, keeping the same admission number
3. Give explanations to the caregiver about the functioning of the MAM service and the expected evolution of the child while there, including length of stay. Give appointment to the caregiver for the first visit and fill in the reference slip
4. Give vitamin A according to protocol
5. Update immunisation schedule, if needed
6. Complete health/nutrition education (i.e. IYCF messages)

²² WHO Growth Standards and the Identification of Severe Acute Malnutrition in Infants and Children: A Joint Statement by the World Health Organisation and the United Nations Children's Fund, 2009.

7. Inpatient care for infants under 6 months

This is an area where there are various evidence gaps. For assessment and treatment of infants less than 6 months refer to latest information on consensus and debates for the management of SAM in infants²³, National Guidelines where in place, and Core Group Infant Feeding in Emergencies training modules.²⁴

Children under 6 months should be treated as inpatients when malnourished. There are two categories:

- Infants 0-6 months with a lactating caregiver (mother, wet-nurse etc)
- Infants 0-6 months without the prospect of being breastfed

In both cases, treatment should be provided within the context of IYCF recommendations, including protection and support for early, exclusive and continued breastfeeding when possible, and reducing the risks of *artificial feeding* for those non-breastfed infants.

Admission criteria

Although standard anthropometric criteria (weight-for-length (WFL) <-3 z-score) also apply to infants, in most cases infants would be admitted according to their clinical condition:

- Presence of bilateral oedema.
- Too weak to suckle effectively (regardless of weight-for-length), or
- Not gaining weight at home
- Visible wasting

Table 19: Criteria for admission at inpatient care for infants less than 6 months

| | |
|---|---|
| If there is a possibility of breastfeeding | Too weak to suckle effectively, or Not satisfactory weight gain at home, or Visible wasting (regardless of WFL), or WFL < -3 z-score, or Presence of bilateral oedema |
| If there is no possibility of breastfeeding | Presence of bilateral oedema, or WFL < -3 z-score, or Visible wasting (regardless of WFL) |

In the absence of national guidelines, at the field level, the interpretation and application of the clinical criteria varies depending on agencies, with a general lack of standardisation and uncertainty around the clinical identification of infants at highest risk.

Challenge 2: Clinical identification of high risk infants

Clinical identification of high risk infants is lacking. Improved clinical assessment strategies are needed to diagnose and address underlying infant or maternal disease (e.g. HIV, TB), breast-feeding problems that are primarily infant related (e.g. oro-motor dysfunction, prematurity, cleft palate), or breastfeeding problems which are primarily mother related (e.g. poor technique, depression). A number of different problems may co-exist in the same infant-caregiver dyad, or one may be dominant.

To date, tools aiding clinical identification have been mainly focused on older age groups. An "appetite test" equivalent - as used in CMAM triage - is needed for infants <6m. A validated breastfeeding assessment tool would help enable this. A priority is to identify very high risk infants with immediate risk of death and definite need for inpatient admission and intensive care/monitoring.

Source: Management of Acute Malnutrition in Infants (MAMI) Project (2009): Summary Report

²³ Kerac et al. *Management of acute malnutrition in infants (MAMI) project*. Technical Review: Current evidence, policies, practices & programme outcomes. January 2010. available at: <http://www.enonline.net/research/mami>

²⁴ WHO/UNICEF/Linkages/IBFAN/ENN Infant Feeding in Emergencies. Modules 1 & 2. Available at: <http://www.enonline.net/resources/tag.aspx?tagid=131>

Medical management

Antibiotics

Unlike for children 6-59m, do not give antibiotics routinely. Only give where there are signs of infections.

First line: Amoxycillin (from 2kg): 30mg/kg two (2) times a day (60mg/day).

Second line if required: Add Gentamicin for severe infections or prescribe the appropriate combination for the diagnosed infection (do not use Chloramphenicol on infants under two months of age).

Vitamin A

Do not give vitamin A unless eye examinations show signs of vitamin A deficiency or if there has been a recent measles episode. In that case give 50,000IU single dose on admission (or at exit if oedema present).

Folic Acid

Give 2.5 mg (1/2 tablet) in a single dose on admission.

Ferrous Sulphate

When the child suckles well and starts to gain weight add iron to the *therapeutic milk*. The easiest way is to add iron to normal F100, as per instructions for older children, and then dilute it with 1/3 water to obtain the correct dilution. Alternatively, provide daily doses of iron syrup orally.

Nutrition management and follow up

Breastfed infants

Infants who are malnourished are weak and do not suckle strongly enough to stimulate adequate production of breast milk. The mother often thinks that she herself has insufficient milk and is apprehensive about her ability to adequately feed her child. The objective of treatment of these infants is to return them to full exclusive breastfeeding. This is achieved through the *Supplementary Suckling Technique* (SST)

The child receives 130 ml/kg/day, distributed in 8 meals:

- For marasmic children: diluted F100²⁵
- Infants presenting oedema: F75, changing to diluted F100 when oedema has disappeared.

Table 20: Amounts of Diluted F100 (for severe wasting) or F75 (for bilateral pitting oedema until the oedema is resolved) to give to an individual infant per feed

| Weight of the child (In kg) | Diluted F100 or F75 ml per feed (8 feeds per day) |
|-----------------------------|---|
| ≥1.2 Kg | 25 |
| 1.3-1.5 | 30 |
| 1.6-1.7 | 35 |
| 1.8-2.1 | 40 |
| 2.2-2.4 | 45 |
| 2.5-2.7 | 50 |
| 2.8-2.9 | 55 |
| 3.0-3.4 | 60 |
| 3.5-3.9 | 65 |
| 4.0-4.4 | 70 |

For preparation of small quantities of diluted F100 see Annex 10.

Breastfeed every three hours for at least 20 minutes (more if the child cries or demands more)

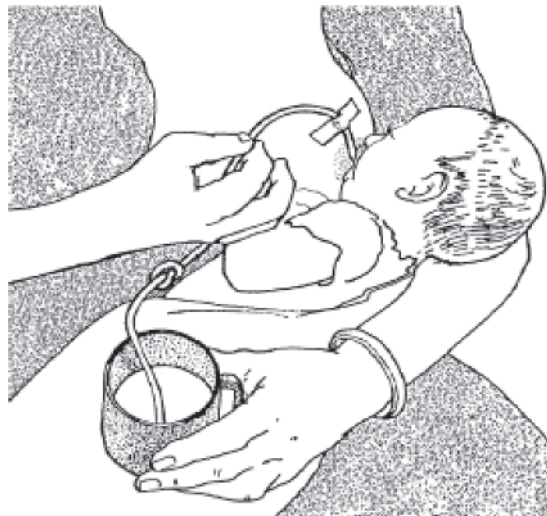
Between one and a half hours after a normal breastfeed give maintenance amounts of F100-diluted (or F75) using the SST.

Supplementary suckling technique

The mother holds a cup with the therapeutic milk (diluted F100 or F75). The end of a NG tube (size n°8) is put in the cup, and the tip of the tube on the breast, at the nipple. The infant is offered the breast in the normal way. The cup is placed 5-10 cm below the level of the nipple for easy suckling. When the child suckles more strongly it can be lowered to up to 30 cm.

²⁵ Diluted F100 is prepared by adding a sachet of F100 to 2.7 litres of water, instead of the standard 2 litres (see preparation tables in Annex 10)

Figure 5: Supplementary Suckling Technique (SST)



The child is weighed every day with a scale graduated to 10 or 20g precision:

- When the child is gaining weight at 20 g/day the quantity of milk in the cup is reduced so that the child gets more breast milk. If after this, weight gain is maintained then stop the supplementary suckling completely.
- If the child is not gaining weight then continue with the SST, but increase the quantity of milk in the cup by 5 ml for each feed.

Care for the mother (Or wetnurse)

Check nutrition status of the mother (MUAC and oedema). Explain the treatment and discourage self-criticism for the lack of milk. She should drink at least 2 litres of water per day, and eat about 2500 kcal/day. She should also receive Vitamin A (200 000 IU unless there is a risk of pregnancy). Micronutrient supplementation must also be given to the mother.

Case example 1: Infants and the need for maternal psychological support: Afghanistan 2001

In several areas of Afghanistan the admissions of children under-6 months to therapeutic care represented between 25-50 per cent of all admissions following the reopening of programmes in 2001. It appeared that poor maternal milk production was the primary cause for most of these cases of infant malnutrition.

Dedicated work by psychologists focused on providing emotional stimulation for children and strengthening the mother-child relationship giving specific attention to problems affecting the mother which were often a form of post-traumatic stress complicated by pressures from other family members. Training of all therapeutic care staff in these areas and the implementation of special programmes to support mother's breastfeeding and encourage mother-to-child bonds resulted in improved recovery rates and reduced malnutrition rates.

Source: Action Contre la Faim. Afghanistan (2002)

Infants with no prospect of being breastfed

Standard SAM inpatient protocols are followed except that F100 is given diluted in the stabilisation phase (instead of F75) for children with wasting (marasmus). Children with oedema are fed with F75.

In transition and rehabilitation phase use F100 as these children cannot take RUTF. When the child reaches WFL equal or $>-1z$ -score, switch to a breastmilk substitute before discharge, but avoid bottle feeding.

Discharge criteria

Table 21: Criteria for discharge from inpatient care for children less than 6 months

| | |
|--|---|
| If the child is breastfed (there are no anthropometric criteria for discharge) | Successful <i>relactation</i> Child is gaining weight on breastmilk alone after the SST has been stopped (e.g. 20 g daily weight gain on breastmilk alone for 5 days) and There is no medical problem, and The mother has been adequately supplemented with vitamins and minerals. |
| If the child is not breastfed | 15% weight gain AND Breastmilk substitute for the child is defined within the family's possibilities and is sustainable AND Child is used to milk substitute, gaining weight and caregiver education on preparing and dispensing the milk substitute is completed Ensure proper follow up of these children, as formula feeding is associated with higher risk of diarrhoea and other infections, and higher mortality |

8. Management of SAM in children above 5 years, adolescents and adults

In some situations older children and adults with SAM may be identified for treatment. In these situations, though documentation of evidence is limited particularly for treatment in outpatient care, cases can potentially be managed either on an outpatient or inpatient basis. Criteria for admission for these groups and treatment protocols should be based on WHO treatment guidelines²⁶ and national protocols²⁷.

Admission criteria

There are three potential age groups to be admitted, each with different criteria for admission (bear in mind that evidence for these criteria is lacking):

- Children between 5 and 10 years are usually admitted based on MUAC or WFH or the presence of bilateral pitting oedema
- Adolescents between 10 and 18 years are usually admitted based on MUAC or *Body Mass Index (BMI)* for age or presence of bilateral pitting oedema.
- Adults (Over 19 years): Are usually admitted based on severe pitting oedema or severe wasting (acute weight loss) after secondary malnutrition has been excluded through medical history and clinical examination

- **± MUAC:** There is no international agreement on the MUAC cutoff for adolescents and adults. Available published data for adults (Collins et al 2000) suggests <160mm, but this is currently considered too low in non-famine contexts (including in the context of HIV/AIDS) and cut-offs of <180/<185mm are in use. Values presented in this module are those most widely used by agencies.
- **BMI for Age:** Based on the WHO 2007 growth reference for school age children and adolescents 5 to 18 years, but to be used carefully in older girls (in case of pregnancy)
- **BMI:** For adults but to be used carefully in women (In case of **pregnancy**)
- **Bilateral pitting oedema:** Non-nutritional causes of oedema in adults are common, including pre-eclampsia in pregnant women, and have to be identified by history and clinical examination before establishing a definitive diagnosis.

Management of SAM for children between 5 and 10 years

SAM in children between 5 and 10 years is treated using the same basic protocols as described in sections 5 and 6 (inpatient and outpatient care) of this module, with close monitoring. Give drugs dosages and amounts of therapeutic milk and RUTF according to the weight of the patient.

²⁶ WHO (1999), *Management of severe malnutrition: a manual for physicians and other senior health workers*.

²⁷ E.g. Ethiopia – Federal Ministry of Health. March 2007 *Protocol for the Management of Severe Acute Malnutrition*. Available for download at: <http://motherchildnutrition.org/resources/pdf/mcn-protocol-for-the-management-of-severe-acute-malnutrition.pdf>

Table 22: Summary of suggested criteria for admission for SAM used in children 5 years or older, adolescents and adults^{28, 29, 30, 31}

| Age group | Criteria for admission |
|-----------------------------|--|
| Children > = 5-9 years | MUAC <129mm, and/or BMI for age <-3 z-score, and/or Bilateral pitting oedema |
| Adolescents > = 10-18 years | MUAC <160mm and/or BMI for age <-3 z-score, and/or Bilateral pitting oedema |
| Adults >18 years | BMI <16 (kg/m) and/or MUAC <185mm‡ and/or Bilateral pitting oedema |

Management of SAM for adolescents and adults

SAM in adolescents and adults is treated in a similar way to that described in sections 5 and 6 (inpatient and outpatient care) of this module with close monitoring. Give drugs dosages and amounts of therapeutic milk and RUTF according to the weight of the person using the kcal recommendation outlined by WHO and Collins et al. for required kcals/kg bodyweight/day^{32,33}. Note that kcals per kg body weight at least for initial stabilisation treatment are considerably lower for these age groups than for children.

Medical management

For routine antibiotics adapt dosages according to weight

Vitamin A: Single dose of 200 000 UI at discharge (or week 4 of the treatment), except for pregnant women.

Adults and adolescents are also susceptible to hypothermia and hypoglycaemia. The latter condition is managed as described for children. Primary illnesses or medical complications are treated according to national or WHO protocols.

Nutrition management and follow up

Stabilisation phase

If possible, adolescents and adults should be given therapeutic formula feeds as for children. The initial goal of treatment is to prevent further loss of tissue. The amount of therapeutic formula feed given per kg of body weight is much less than for children and decreases with increasing age, reflecting the lower energy requirements of adults. RUTF should be considered as a possibility where there is appetite.

Rehabilitation phase or Outpatient treatment

An improving appetite indicates the beginning of rehabilitation. During rehabilitation it is usual for adolescents and adults to become very hungry, often refusing the formula feed and demanding enormous amounts of solid food. When this happens, a diet should be given that is based on traditional foods, but with added oil, and a multiple mineral and vitamin tablet or powder, RUTF or other lipid-based nutrient supplement. Provide a wide variety of foods and allow the patients to eat as much as they want. If possible, continue to give the therapeutic milk feed with the vitamin and mineral mix between meals and at night. If necessary, present the therapeutic milk feed as a medicine. They can also be treated on an outpatient basis at this stage using RUTF.

Discharge criteria

Adolescents and adults can be discharged when they are eating well and gaining weight (weight gain 15% is recommended), have no bilateral pitting oedema, and do not have any other health problems.

²⁸ WHO (2009), *Guidelines for an integrated approach to the nutritional care of HIV-infected children (6 months -14 years)*. Geneva, WHO.

²⁹ Collins, S., A. Duffield, and M. Myatt (2000), *Assessment of nutritional status in emergency afflicted populations- Adults*, R.s. ACC/SCN, Editor.

³⁰ WHO 2008. *New BMI tables for older children and adolescents and BMI for age standardized tools*. WHO http://www.who.int/growthref/who2007_bmi_for_age/en/

³¹ Woodruff et al. (2000) *Assessment of nutritional status in emergency-affected populations. Adolescents*. RNIS supplement. July.

³² Management of severe malnutrition: a manual for physicians and other senior health workers, WHO 1999

³³ Collins et al. Dietary treatment of severe malnutrition in adults. *Am J Clin Nutr* July 1998 vol. 68 no. 1 193-199

9. Management of SAM in areas with high HIV prevalence

Provider-Initiated Counselling and Testing (PICT) for HIV in children with SAM and their parents is advised in areas with high HIV prevalence (See table 11 Action protocol).

HIV positive individuals are at higher risk of acute malnutrition and take longer to recover when they become acutely malnourished.

It is important that nutrition support is given earlier in the onset of acute malnutrition than for HIV negative individuals in order to give these individuals the best chance of recovery. In general, nutrition activities in areas with high HIV prevalence must provide a wide and comprehensive approach if they are to prevent acute malnutrition and/or improve nutrition status of infected individuals.³⁴

Management of SAM in HIV-Infected Children

Protocols for the management of SAM in children that are HIV-infected are similar to those for that are non HIV-infected. HIV-infected children with SAM with medical complications should be referred to inpatient care whereas those without medical complications can be managed as outpatients if they still have a good appetite, are clinically well and alert.

Admission criteria

As for those of non HIV-infected children with SAM. However more experience and evidence is being collected on the inclusion of HIV-infected children with MAM into therapeutic programmes as a group requiring this additional nutritional support.

Dietary management

Nutrition treatment with RUTF uses rations based on the weight of the child. Quantities are the same as for non-infected children.

Medical management

Cotrimoxazole should be given to children when HIV is suspected, and indefinitely where Antiretroviral Therapy (ART) is not yet available. This antibiotic is added to other systematic antibiotics given at the start of treatment, and does not replace them.

Diagnosis of tuberculosis in HIV-infected children should always be considered. The signs are the same as for those in children without HIV infection.

HIV-infected children should also be assessed for other opportunistic infections such as thrush or cryptosporidiosis and considered for ART when available. Because ART is potentially toxic for a child with SAM it is safer to wait until recovery of nutrition status to start the ART.

Discharge criteria and referral to HIV services

Children should be treated until nutrition recovery is achieved and be discharged according to the same criteria as for non HIV-infected children. HIV-infected children will present more associated infections, and therefore rates of weight gain and recovery may be lower than in non HIV-infected children.

Those not receiving nutrition support prior to the treatment for SAM should be referred to the available services or community support groups where appropriate.

Challenge 3: Acute malnutrition and HIV

Although standard protocols are considered appropriate for HIV-infected individuals with the minor adaptations described above, extensive research is currently under way to further adapt protocols for these individuals. This research includes:

- Comparison of recovery rates of HIV-infected and non HIV-infected children with SAM treated in therapeutic care
- Efficacy studies of new nutrition products specifically designed for rehabilitation of HIV-infected individuals with SAM
- Use of micronutrient supplementation for HIV-infected individuals
- Integration of nutrition support into HIV and AIDS treatment
- Studies of the interaction between ART and nutrition status
- Assessment of severe malnutrition in HIV-infected adults
- Impact of nutrition support on HIV-infected individuals
- Integration of HIV nutrition support and care programmes with CMAM

³⁴ Refer to HTP Module 18 for further information

10. Monitoring and reporting of activities/programmes for the management of SAM

Routine monitoring of CMAM activities is essential for:

- Monitoring the performance of the CMAM services
- Taking decisions for quality improvement (staffing, training, resources, site locations)
- Assessing the nutrition trends in the area

It also enables health workers, supervisors and managers to ensure that appropriate treatment is given to individuals and that the services provided are effective.

Routine monitoring is done through the reporting of key indicators on a monthly basis. Supervisory support visits and meetings with key members of communities and health workers provide a broader scope of performance and effectiveness of CMAM services.

Standardized key indicators (quantitative data) collected in monthly statistical reporting, triangulated with qualitative information collected in consultation with the community, stakeholders and through supervisory visits, will identify strengths and weaknesses, and provide a basis for informed decision making for timely quality improvement. The key indicators should be plotted against time (months) to provide a picture of how the performance of the services and of the situation has evolved.

Box 14: Periodicity of reporting of the activities

Routine monitoring of a programme is usually done on a monthly basis though data on admissions and exits is usually recorded by sites weekly. However, during emergencies and when resources allow, weekly monitoring of CMAM activities may be carried out.

Reporting is based on calendar months. Therefore one month will usually cover four weeks and occasionally five weeks. This has to be taken into consideration when interpreting changes in trends (follow epidemiological weeks as per national *standards*).

Monthly reporting

Quantitative data are collected on the outcome of activities and allow the calculation of standard key indicators. Key indicators should only be calculated for the age-group 6-59 months and compared to international standards (Sphere Standards). If management of SAM interventions address other age-groups, they should be reported on separately. Routine data are collected on:

- Number of new admissions,
- Number of discharges by category: cured, died, defaulted, non-recovered
- Number of children in treatment (beneficiaries registered)

These three basic elements allow calculation of key indicators:

- Cure rate
- Death rate
- Default rate
- Non recovery rate

This information also allows monitoring of trends over time; helps to inform program design and a better allocation of resources.

Other additional information that may be relevant that can be derived from routine monitoring is:

- Relapse rate (number of new admissions that have relapsed among total new admissions)
- Admission per typology (proportion of marasmus, kwashiorkor and marasmic kwashiorkor)
- Average length of stay
- Average weight gain
- Causes of death
- Data on admissions disaggregated by gender

Other essential information derived from different sources and methods:

- Reasons for death and/or defaulting
- Investigation of non-recovery
- Coverage of treatment (those that need treatment against those actually receiving treatment) and barriers to access.

Quantitative data should be accompanied by some narrative description or explanation of the main events that may have influenced attendance and performance (e.g. opening or closing of facilities, outbreaks of infectious diseases, insecurity, seasonal trends in agriculture and weather, etc.).

Box 15: Monitoring of CMAM activities when integrated into national health systems

Monitoring should be integrated as much as possible with existing information systems; it is important to take into account that data collection will be carried out by health facility staff ideally as part of the routine health information system, and that it should not overburden their existing workload.

Reporting systems and tools need to be designed to minimise the demands placed on staff whilst providing sufficient information for essential monitoring.

There are two levels of reporting:

- Individual reporting of outpatient or inpatient care sites
- Compiled reporting from outpatient and inpatient care sites combined representing an accountable unit or area (geographical, administrative or programmatic).

Monthly site report

The monthly site report is completed by the responsible health worker at each CMAM site with inputs from a tally sheet that is filled on a weekly basis (see Annex 12). Outpatient care and inpatient care sites use the same tally sheet and monthly site report.

The report provides a monthly summary of quantitative information at the health facility level or CMAM site:

- Total number in treatment at the beginning of the month
- Admissions of new cases (by age-group and gender if required) for the month
- Admissions of old cases (incoming referrals and returned defaulters)
- Total admissions
- Number of children that are discharged cured, died, defaulted or non-recovered,
- Total discharges
- Total referrals (outgoing referrals)
- Total exits
- Total number in treatment at the end of the month

Some agencies and Ministries of Health add information on therapeutic food products stock management (consumption) to the same form.

Monthly consolidated report (compilation by area or programme)

The reports from the outpatient or inpatient sites operating within an area are examined and collated to produce a compilation report that is accountable for the unit as a whole, combining inpatient care and outpatient care outcomes.

Information on movement between sites is not captured in the consolidated report, as these individuals have remained in treatment within the specified area.

The monthly consolidated report provides a summary of quantitative information to assess performance and monitor trends at that level:

- Total number in treatment at the beginning of the month
- Admissions of new cases (by age-group and gender if required)
- Total admissions
- Total discharges (denominator for discharge rates)
- Number and proportion of children that are discharged cured, died, defaulted or non-recovered (discharge rates; used to calculate key indicators of performance)
- Total number in treatment at the end of the month

Examples for tally sheets, monthly site and consolidated reports can be found in Annexes 11, 12 and 13.

Key Indicators (Sphere standards, 2011)

These indicators are primarily applicable to the 6-59 month age group, although others may be part of the programme.

- More than 90% of the target population is within <1 day's return walk of the treatment site (including time for treatment)
- Coverage is >50% in rural areas, >70% in urban areas and >90% in camp situations
- The proportion of discharges from therapeutic care who have died is <10%, recovered is >75% and defaulted is <15%.

Reporting of community mobilisation activities

Mobilisation and outreach activities should also be reported at health facility level and consolidated by the specified accountable unit.

TECHNICAL NOTES

Monitoring of activities (active community screening and referral for treatment and home visits) include a combination of quantitative and qualitative data provided by:

- Monthly outreach report form (in Annex 14)
- Outcomes of meetings with key community figures, caregivers and beneficiaries
- Supportive supervision visits (see below), including the revision of Individual follow up cards and Registration books, seeking information on e.g. origin of admissions, type of arrival (referral from CHW or CV, self-referral), reasons for defaulting.

Analysis of monthly routine monitoring data can also provide information on community awareness, understanding, acceptance and use of the case management activities, and allow for corrective or adaptive actions on the community mobilisation strategy.

Supervision

Supportive supervision visits to sites are designed to improve the quality of care offered in:

- Identifying weaknesses in the performance of activities, taking immediate action and apply shared corrective solutions
- Strengthening the technical capacity of health workers and motivating staff through encouragement of good practices

Supervisors and managers ensure that the performance of activities and organisation meet quality standards.

When CMAM activities are integrated into existing services, supervisions should be carried out by MoH teams supported, when it applies, by agencies' staff and local partners. Supervisions should be carried out at least once a month for each particular facility. Supervision for CMAM activities, when integrated, should be done at the same time as the visits for other programmes and by the same personnel.

Supervision visits are carried out through direct observation of the performance at the health facilities while having structured discussions with health workers using a "supervision checklist" (see example of supervision checklist in Annex 15).

Other documents that should be periodically reviewed by supervisors are:

- Individual Follow up cards/Inpatient care Multi chart
- Registration book
- Data collection sheets (tally sheets and monthly reports)
- Stock cards

Supervision checklists should facilitate the evaluation of logistics-management and technical aspects related to the provision of services (outpatient or inpatient) in a structured manner:

- Organisation of the activities
- Structural condition and hygiene of the health facility
- Storage of products and equipment
- Reference documents and job aids
- Filling of forms
- Filing system
- Respect of criteria, protocols and procedures
- Performance of tasks: anthropometric measurements, medical examination, appetite test, medicinal treatment and provision of RUTF
- Individual counselling, health and nutrition education, and prevention activities

Prior to each visit, supervisors should examine all the available documentation for each health facility, the records of previous supervision and routine monitoring outcomes. That will allow identification of the priority areas requiring observation thus making the supervision more efficient.

During the visit gaps and discrepancies should be identified in consultation with the health workers and, as much as possible, with representatives of the community. Immediate feedback should be given to the health workers and the communities, jointly searching for solutions to the problems identified. Supervisions are also essential for improving staff capacities through the organisation of formal or informal refresher training and mentoring (on-the-job training) during the visits, mainly in less accessible areas where staff movement is difficult.

Programme evaluations

More in-depth evaluations add elements of lesson-learning and *accountability*. For further detail see Module 20, *Monitoring and Evaluation*.

Coverage studies

One of the most important elements behind the success of the CMAM approach is its proven capacity for achieving and sustaining high levels of treatment coverage. In the past, two-stage cluster sampled prevalence of acute malnutrition surveys were used to estimate coverage of interventions but this method suffers from important (statistical) limitations and offers little information on reasons for low coverage or barriers for service uptake.

The Centric Systematic Area Sampling³⁵ (CSAS) was specially developed to estimate coverage of CMAM interventions, providing an overall estimate and a spatial distribution map of programme coverage and a ranked list of programme-specific barriers to service access and uptake. This survey method uses a combination of stratified and systematic area sampling and active and adaptive case-finding.

However, CSAS is resource intensive and tends to be used in programme evaluation rather than in planning. The results of CSAS surveys have often been able to explain why a particular program has failed to achieve a satisfactory level of coverage but this information often arrives late in the programme cycle to provide effective corrective actions.

A new method, currently under development, is called Semi-Quantitative Evaluation of Access and Coverage³⁶ (SQUEAC). SQUEAC uses a mixture of *quantitative* (numerical) data collected from routine programme monitoring activities and small area surveys and *qualitative* (anecdotal) data collected using informal group discussions and interviews with a variety of informants to identify boosters and barriers to access and coverage and arrive at a prior estimate of coverage. This *prior* estimate is then further refined through conducting simple stratified area surveys to look for cases of SAM and determine whether they are accessing programme services or not. Using Bayesian statistical analysis, the prior and the results of the wide area survey are combined resulting in the final estimate of programme coverage.

As with CSAS, SQUEAC is able to provide an overall estimate and a spatial mapping of programme coverage and a ranked list of boosters and barriers to service access and uptake. More importantly, however, SQUEAC achieves these results more rapidly and with fewer resources as compared to CSAS, thereby allowing for its use on a more regular and frequent basis to monitor programme performance and aid in programme planning.

11. Implementation and management of CMAM activities

In the past treatment of acute malnutrition was almost exclusively implemented as an emergency response programme and criteria were set to orientate agencies on when to start and close nutrition interventions. Nowadays, with new, simpler, effective and more affordable protocols available, many countries are in the process of integrating CMAM into routine health care services.

Most of the current emergency response interventions led by NGOs and agencies, while seeking to make treatment immediately available for the greatest number of individuals, also aim at building or reinforcing national MoH and local partners' capacities.

This section describes some useful aspects for planning, implementation and handover of CMAM activities.

Agencies' decision-making for setup and closing (or handover) of CMAM activities

Setup

The decision about whether to implement activities/programmes for the management of acute malnutrition in emergencies should be based on four main considerations:

1. A *global acute malnutrition rate* above 10% or between 5% and 9% plus the presence of aggravating factors (see table 23 below) could be considered as threshold for starting or strengthening CMAM. Some agencies consider opening outpatient therapeutic care programmes with a rate of severe acute malnutrition above 1 per cent. However, there is no international consensus for this threshold at the moment.
2. *Contextual factors* including the causes of malnutrition, the socio-economic situation, the food security situation, general ration quantity and allocation, the presence of other interventions and projected future needs that will need to be addressed.
3. *Public health priorities* or whether other priority needs are already being met (e.g., access to food, shelter, safe water, sanitation) and if there are plans for integration of management of SAM into national routine health care services.
4. Availability of qualified human, material and financial *resources*.

³⁵ Myatt Mark, Feleke Teshome, Sadler Kate, Collins Steve (2005). *A field trial of a survey method for estimating the coverage of selective feeding programmes*. Bull World Health Organ 83(1): 20-26. Available from: http://www.scielosp.org/scielo.php?script=sci_arttext&pid=S0042-96862005000100010&lng=en.

³⁶ Mark Myatt (2008). *SQUEAC: Low resource method to evaluate access and coverage of programmes*. Field Exchange, Issue No 33, June 2008. p3. <http://fex.enonline.net/33/low.aspx>

WHO recommends the following table for decision making for the setup of activities for the management of acute malnutrition (SAM and MAM). However the use of such a system is questioned by many as too narrow and not sensitive enough to diverse contexts. Therefore the below is given only as a very rough guide and in the absence of an agreed alternative.

Table 23: Decision-making chart for the implementation of selective feeding programmes³⁷

| Finding | Action required |
|--|--|
| Food availability at household level <2100 kcal/person/day | Unsatisfactory situation: <ul style="list-style-type: none"> – Improve general rations until local food availability and access can be made adequate |
| Global Acute malnutrition rate (GAM) ≥15% or 10-14% with aggravating factors | Serious situation: <ul style="list-style-type: none"> – General rations (unless situation is limited to vulnerable groups); plus – <i>Supplementary feeding</i> for all members of vulnerable groups. – Therapeutic feeding for severely acutely malnourished individuals |
| GAM 10-14% or 5-9% plus aggravating factors | Risky situation: <ul style="list-style-type: none"> – No general rations, but – Supplementary feeding targeted to individuals identified as malnourished in vulnerable groups – Therapeutic feeding for severely acutely malnourished individuals |
| Malnutrition rate (GAM) under 10% with no aggravating factors | Acceptable situation: <ul style="list-style-type: none"> – No need for population interventions – Attention to malnourished individuals through regular community services |

Notes:

1. This decision chart gives general indications. They should be adapted according to local circumstances.
2. Global acute malnutrition rate (GAM) is defined as the percentage of the child population (6 months to 5 years) that is wasted (weight for height below -2 z-score of the median of the WHO standards) and/or with nutritional oedema.
3. Aggravating factors:
 - Food availability at household level less than the mean energy requirement of 2100 kcal/person/day
 - *Crude mortality rate* more than 1 per 10 000 per day
 - Presence of *epidemics* or outbreaks (measles, whooping cough, diarrhoeal diseases, malaria etc.)

Closing or exit strategy

Some criteria used by NGOs to end CMAM activities and hand-over to national or local structures include:

- Global acute malnutrition rate is below 5%
- Low number of cases in treatment in individual treatment site
- Local structures can cope with the current case load, and/or would be able to cope with the influx of new cases

Other criteria that can be considered are:

- General ration should be reliable and adequate
- Crude mortality rate should be low
- Effective health and disease control measures are in place (e.g. no disease outbreaks)
- The population is stable, and no population influx is expected

Although an exit strategy should be planned from the beginning of the project and steps taken during the whole project timeline, the final decision should always be made in coordination with the other actors involved in the emergency response, mainly local authorities and community representatives.

When possible and appropriate, a gradual process of handover and integration into local primary health care services should be undertaken. Different strategies to facilitate this transition from emergency to post-emergency and development are being implemented by agencies.

Location and organisation of services

Deciding where to set up outpatient and inpatient care sites is critically important as this will largely determine accessibility and coverage. It is very important not to locate sites simply on the basis of ease of management, but on the basis of need. In planning it is also vital to consider the need for referrals between services and whether transport will be needed and if so, how this will be provided.

³⁷ WHO (2000) *The Management of Nutrition in Major Emergencies*, Geneva: WHO

Setup of outpatient care

Outpatient care can be set up at health facilities or in specially designated sites. If new sites are opened, all support systems (supply, referrals, supervisions etc) must be carefully planned and in place before starting case management activities to prevent staff and the population from getting discouraged and having a negative impact on the uptake of the services.

In emergencies, outpatient care services are often organised at the same health facilities or sites as for the management of MAM cases. Where there are problems of access, or insufficient staff, mobile outpatient clinics may be planned for a limited period of time. One mobile team can visit up to five sites in a week (implementing weekly outpatient care once a week in each site).

Although little infrastructure is needed, it is always advisable to have a safe storage place, a covered waiting area and a separate area for consultations. In some cultural contexts, a naked (thin) child can't be shown to others thus if children are weighed/consulted in an open space it could generate negative feelings within the target population: it is sensible to prepare a separate space for measurements and consultations.

Outpatients attend the services once a week. The number of patients attending an outpatient care service may vary from 10-20 per session to several hundreds. When too many children are attending services on the same day a decision should be taken as to whether it would be more appropriate to open new facilities or increase the number of service days for existing facilities. More and more where CMAM is integrated into routine primary health care, children with SAM are received on a daily basis, with weekly follow-on visits at the start of the treatment, and bi-weekly visits towards the end of the treatment.

Setup of inpatient care

Inpatient care can be established integrated into the paediatric ward, as an attachment to an existing hospital or health centre, or as an independent structure. In the latter case it is often set up as a semi-permanent structure (e.g., in refugee or displacement camps). In all cases, the inpatient care site should have a good permanent supply of clean potable water (for preparing the milk, washing and for cleaning the wards) and offer appropriate shelter.

It is usually organised as residential care (24h/24h), with the patients staying overnight.

Ideally children with SAM with medical complications are kept in a separate ward, away from other ill children. On average, children in inpatient care stay for about 5-10 days and are then referred to outpatient care to continue rehabilitation until full recovery. The few exceptional cases that need to complete treatment in inpatient care stay an average of 30 days in the facility.

Experience shows that, on average, around 15% of all children with SAM will need stabilisation at inpatient care. This figure may be much higher at the beginning of an emergency intervention, if the set up of outpatient care sites is not covering all the area of origin of beneficiaries or if early detection of cases is not yet optimal/established (late presentation).

Staff needs and training

Outpatient care

A trained nurse or other qualified clinical health worker (or several, depending on workload) is sufficient to carry out the admission and follow-on consultations. It is advisable to add a trained assistant or volunteer for assisting with measurements and provision of RUTF and group sessions on health and nutrition education. Health workers need to be well trained and thus able to identify danger signs applying standard protocols (IMCI) and take decisions on when and whether referral for inpatient care is necessary during admission and follow-up.

When outpatient care is delivered in existing health facilities, MOH staff may need to be reorganised, and their job descriptions amended to fulfil the new routines. To help with conducting measurements, and distributing RUTF and key messages, community health workers or other trained assistants may be used to support the health workers.

Inpatient care

Clinical care staff: Includes nurses and/or physicians who have received specific training on the management of SAM with medical complications. Danger signs and treatment protocols of medical complications in children with a good nutrition status are not the same as for children with SAM. A clinician should be available at night.

Feeding assistants: Nutrition or health assistants are in charge of weighing the child, preparation and/or supervision of the preparation of the feeds, supervising the meals, interacting with the mothers, monitoring clinical warning signs and filling in most of the information on the patient's card. A ratio of 1 staff per 10 patients is considered appropriate. They may be in charge of the emotional and physical stimulation programme. Feeding assistants have rotating duties and cover the 3-hourly feeds day and night.

Support staff: Cleaners and kitchen staff play a key role in maintaining a tidy environment and preparing therapeutic milks and food for caregivers. In large inpatient care sites, a person in charge of the logistics and transport will be necessary. Guardians, store keepers and other ancillary staff may be needed depending on the context and size of the facility.

Staff training

Training is an essential part of the setup and the roll out of CMAM activities for managers and supervisors as well as for health workers and should respect national guidelines and strategies.

Formal (initial training, refreshers etc) and informal (on-the-job training, supervisory visits etc) in-service training sessions should be organised and support materials prepared (job aids, training aids, training materials, guidelines, manuals etc).

Supply of therapeutic food, medicines and equipment

Annexes 16 and 17 give examples of checklists of kits and supplies (equipment, medicines and RUTF) for setting up outpatient and inpatient services.

Needs of RUTF for an outpatient care site³⁸

Each child in outpatient care consumes about twenty packets of RUTF a week. Monthly consumption in an individual site can be calculated as follows

| | | |
|---|---|---------------|
| Number of OTP beneficiaries | A | A |
| Monthly consumption per child (@20 packets /child/week) | B | 80 |
| Monthly packet consumption for a site | C | A x B |
| Monthly carton consumption for a site | D | C/150 |
| Monthly net weight (MT) (@13.8kg/carton) | E | D x 13.8/1000 |
| Monthly gross weight (MT) (@14.9kg/carton) | F | D x 14.9/1000 |

Needs for therapeutic food products at inpatient care

Assuming an average duration of treatment of 10 days, 2 kg of F75 per child can be used for planning figure. Usually less than 5 per cent of children admitted for complicated malnutrition will not be able to eat RUTF during rehabilitation phase and will require F100. For these children, a planning figure of 12 kg of F100 per child for the whole rehabilitation phase can be used.

12. Management of medical complications in the presence of severe acute malnutrition

The metabolism of children with SAM with medical complications is seriously disturbed, and the immune system seriously impaired. This involves large movements of electrolytes and water between the various compartments of the body. Such temporary electrolyte disequilibrium makes the patient more vulnerable to misdiagnosis and mismanagement of conditions like dehydration or severe anaemia which can in turn lead to death from heart failure. Hypoglycaemia, hypothermia, electrolyte imbalance, micronutrient deficiencies and severe infections are commonly associated with SAM, sometimes without obvious clinical manifestations. The standard treatment for conditions like dehydration and severe anaemia given to non-malnourished children can lead to death if applied to children with SAM.

Case management of children with SAM and medical complications should only be conducted by clinical staff who has received the appropriate training. See Annex 18 for an introduction to the main principles of the management of complications.

³⁸ More complex tools for forecasting needs in RUTF at national level are being developed by some agencies and will soon be available

Annex 1: Outpatient individual follow up card

ADMISSION AT OUTPATIENT CARE FOR SEVERE ACUTE MALNUTRITION

| | | | | | | | | |
|--|-----------------|-----------------------|------------------|-----------------|------------------------------|------------------------------|---------|--|
| Name | | | | | Reg. No. | | | |
| Caretaker | | | | | Health Centre | | | |
| Physical address | Locality | | | | Commune | | | |
| Age (months) | 19 | Sex | M | F | Date of admission | 03/09/2010 | | |
| Information about admission | Referred by CHW | Self-reference | | Relapse | Readmission after defaulting | Referral from Inpatient care | | |
| Admission Anthropometry | | | | | | | | |
| Weight (kg) | | Height (cm) | | WFH (or BMI) | | MUAC (mm) | 108 | |
| Oedema (0), (+) or (++) | | Criteria of admission | | Oedema | WFH <-3ZS (BMI <16) | MUAC <115cm | | |
| Physical Examination at admission | | | | | | | | |
| Cough | | | Respiration Rate | 6-12m | <50 >50 | 12-59m | <40 >40 | |
| | | | | Chest indrawing | | Yes | No | |
| Diarrhoea (>3 liquid stools) | Yes | No | | Dehydration | | Yes | No | |
| Vomiting | Yes | No | | | | Mid/Moderate | Severe | |
| Passing Urine | Yes | No | | | | | | |
| Thirsty | Yes | No | | | | | | |
| Extremities | Normal | Cold | | | | | | |
| State of conscienceness | Normal | Agitated | Irritated | Passive | | | | |
| Ears | Normal | Dry | Pain | Discharge | | | | |
| Mouth | Normal | Sores | Candida | | | | | |
| Skin changes | None | Scabies | Ulcers | Abscess | Peeling | | | |
| Lymph nodes | None | Axilla | Neck | Groin | | | | |
| Other problems (specify): Mother explains that the child has been caughing for several (unknown) weeks | | | | | | | | |
| Malaria rapid test at admission (-) or (+) | | | | | HIV test result (if known) | | | |
| Routine medicines (Note date and dose) | | | | | | | | |
| Sugared water | at admission | | | Mebendazole | second visit | | | |
| Amoxycillin | at admission | | | Measles vac. | | | | |
| Anti-malaria | | | | Vitamin A | at discharge | | | |
| Other treatments | | | | | | | | |
| Drug | Date | Dose | | Drug | Date | Dose | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Circle the right answer

Annex 2: Transfer slip

| TRANSFER SLIP | | | | |
|---------------|---|---|---|--|
| FROM | | OTP | SC | SFP |
| TO | | OTP | SC | SFP |
| | REFERRAL DATE | | | |
| | NAME OF THE CHILD | | | |
| | CARETAKER'S NAME | | | |
| | DATE OF ADMISSION | | | |
| AGE | <input style="width: 100%;" type="text"/> | SEX | <input style="width: 100%;" type="text"/> | Reg Number <input style="width: 100%;" type="text"/> |
| | CONDITION AT REFERRAL | TREATMENT GIVEN | | |
| WEIGHT | <input style="width: 100%;" type="text"/> | <input style="width: 100%;" type="text"/> | | |
| HEIGHT | <input style="width: 100%;" type="text"/> | <input style="width: 100%;" type="text"/> | | |
| WFH | <input style="width: 100%;" type="text"/> | <input style="width: 100%;" type="text"/> | | |
| MUAC | <input style="width: 100%;" type="text"/> | <input style="width: 100%;" type="text"/> | | |
| OEDEMA | <input style="width: 100%;" type="text"/> | Name of the responsible for the referral | | |

| TRANSFER SLIP | | | | |
|---------------|---|---|---|--|
| FROM | | OTP | SC | SFP |
| TO | | OTP | SC | SFP |
| | REFERRAL DATE | | | |
| | NAME OF THE CHILD | | | |
| | CARETAKER'S NAME | | | |
| | DATE OF ADMISSION | | | |
| AGE | <input style="width: 100%;" type="text"/> | SEX | <input style="width: 100%;" type="text"/> | Reg Number <input style="width: 100%;" type="text"/> |
| | CONDITION AT REFERRAL | TREATMENT GIVEN | | |
| WEIGHT | <input style="width: 100%;" type="text"/> | <input style="width: 100%;" type="text"/> | | |
| HEIGHT | <input style="width: 100%;" type="text"/> | <input style="width: 100%;" type="text"/> | | |
| WFH | <input style="width: 100%;" type="text"/> | <input style="width: 100%;" type="text"/> | | |
| MUAC | <input style="width: 100%;" type="text"/> | <input style="width: 100%;" type="text"/> | | |
| OEDEMA | <input style="width: 100%;" type="text"/> | Name of the responsible for the referral | | |

Annex 4: Target weight for discharge at 15% of weight gain (Children 6-59m)

Guidance table to identify the target weight for children 6-59 months

| Weight on admission ^{a,b} | Target weight: 15% weight gain | Weight on admission ^{a,b} | Target weight: 15% weight gain |
|------------------------------------|--------------------------------|------------------------------------|--------------------------------|
| 4.1 | 4.7 | 11.1 | 12.8 |
| 4.3 | 4.9 | 11.3 | 13.0 |
| 4.5 | 5.2 | 11.5 | 13.2 |
| 4.7 | 5.4 | 11.7 | 13.5 |
| 4.9 | 5.6 | 11.9 | 13.7 |
| 5.1 | 5.9 | 12.1 | 13.9 |
| 5.3 | 6.1 | 12.3 | 14.1 |
| 5.5 | 6.3 | 12.5 | 14.4 |
| 5.7 | 6.6 | 12.7 | 14.6 |
| 5.9 | 6.8 | 12.9 | 14.8 |
| 6.1 | 7.0 | 13.1 | 15.1 |
| 6.3 | 7.2 | 13.3 | 15.3 |
| 6.5 | 7.5 | 13.5 | 15.5 |
| 6.7 | 7.7 | 13.7 | 15.8 |
| 6.9 | 7.9 | 13.9 | 16.0 |
| 7.1 | 8.2 | 14.1 | 16.2 |
| 7.3 | 8.4 | 14.3 | 16.4 |
| 7.5 | 8.6 | 14.5 | 16.7 |
| 7.7 | 8.9 | 14.7 | 16.9 |
| 7.9 | 9.1 | 14.9 | 17.1 |
| 8.1 | 9.3 | 15.1 | 17.4 |
| 8.3 | 9.5 | 15.3 | 17.6 |
| 8.5 | 9.8 | 15.5 | 17.8 |
| 8.7 | 10.0 | 15.7 | 18.1 |
| 8.9 | 10.2 | 15.9 | 18.3 |
| 9.1 | 10.5 | 16.1 | 18.5 |
| 9.3 | 10.7 | 16.3 | 18.7 |
| 9.5 | 10.9 | 16.5 | 19.0 |
| 9.7 | 11.2 | 16.7 | 19.2 |
| 9.9 | 11.4 | 16.9 | 19.4 |
| 10.1 | 11.6 | 17.1 | 19.7 |
| 10.3 | 11.8 | | |
| 10.5 | 12.1 | | |
| 10.7 | 12.3 | | |
| 10.9 | 12.5 | | |

^a Or weight free of oedema^b If weight on admission is pair, round the weight up with 0.1 kg. Example: Weight on admission is 9.2 kg. use 9.3 kg. as weight on admission.

Annex 5: Composition of F75 and F100 formulas

| | F75 (starter) | F100 (catch-up) |
|-----------------------------------|---------------|-----------------|
| Dried skimmed milk (gr) | 25 | 80 |
| Sugar (gr) | 100 | 50 |
| Vegetable oil (gr) | 30 (or 35ml) | 60 (or 70ml) |
| Electrolyte/mineral solution (ml) | 20 | 20 |
| Water, make up to | 1,000ml | 1,000ml |
| Contents per 100ml | | |
| Energy (kcal) | 75 | 100 |
| Protein (gr) | 0.9 | 2.9 |
| Lactose (g) | 1.3 | 4.2 |
| Potassium (mmol) | 4.0 | 6.3 |
| Sodium (mmol) | 0.6 | 1.9 |
| Magnesium (mmol) | 0.43 | 0.73 |
| Zinc (mg) | 2.0 | 2.3 |
| Copper (mg) | 0.25 | 0.25 |
| % of energy from proteins | 5 | 12 |
| % of energy from fats | 36 | 53 |
| Osmolarity (mmOsmol/l) | 413 | 419 |

Annex 6: Alternative recipes for starter and catch-up formulas

Alternative recipes for starter and catch-up formulas

F-75 starter formulas

- Full-cream dried milk 35 g, 100 g sugar, 20 g (Or ml) oil, 20 ml electrolyte/mineral solution, and make up to 1000 ml
- Full-cream cow's milk (Fresh or long life) 300 ml, 100 g sugar, 20 g (Or ml) oil, 20 ml electrolyte/mineral solution and make up to 1000 ml

F-100 catch-up formulas

- Full-cream dried milk 110 g, 50 g sugar, 30 g (Or ml) oil, 20 ml electrolyte/mineral solution, and make up to 1000 ml
- Full-cream cow's milk (Fresh or long life) 880 ml, 75 g sugar, 20 g (Or ml) oil, 20 ml electrolyte/mineral solution and make up to 1000 ml

F-135 catch-up formulas

This is for use in special circumstances (Poor weight gain) for children aged > 6 months

- Full-cream dried milk 130 g, 70 g sugar, 40 g (Or 45 ml) oil, 20 ml electrolyte/mineral solution, make up to 1000 ml
- Full-cream cow's milk (Fresh or long life) 880 ml, 50 g sugar, 60 g (Or 65ml) oil, 20 ml electrolyte/mineral solution (This makes 1000 ml)

Isotonic and cereal based F-75

- Cereal-based, low-osmolar F-75 (334 mOsmol/l). Replace 30 g of the sugar with 35 g cereal flour in F-75 recipes above. Cook for 4 minutes. This may be helpful for children with osmotic diarrhoea
- Isotonic versions of F-75 (280 mOsmol/l) are available commercially from Nutriset. In these, maltodextrins replace some of the sugar, and all the extra nutrients (K, Mg and micro-nutrients) are incorporated

Preparation:

- using an electric blender: place some of the warm boiled water in the blender, add the milk powder, sugar, oil and electrolyte/mineral solution. Make up to 1000 ml, and blend at high speed
- if no electric blender is available, mix the milk, sugar, oil and electrolyte/mineral solution to a paste, and then slowly add the rest of the warm boiled water and whisk vigorously with a manual whisk
- store made-up formula in refrigerator

Annex 7: Preparation of small quantities of F75

Volume of F75 for persons with severe wasting in stabilisation

| Weight (In kg) | F75 ml per feed if 8 feeds per day | F75 ml per feed if 6 feeds per day | F75 ml per feed if 5 feeds per day |
|----------------|---------------------------------------|---------------------------------------|---------------------------------------|
| 2.0-2.1 | 40 | 50 | 65 |
| 2.2-2.4 | 45 | 60 | 70 |
| 2.5-2.7 | 50 | 65 | 75 |
| 2.8-2.9 | 55 | 70 | 80 |
| 3.0-3.4 | 60 | 75 | 85 |
| 3.5-3.9 | 65 | 80 | 95 |
| 4.0-4.4 | 70 | 85 | 110 |
| 4.5-4.9 | 80 | 95 | 120 |
| 5.0-5.4 | 90 | 110 | 130 |
| 5.5-5.9 | 100 | 120 | 150 |
| 6.0-6.9 | 110 | 140 | 175 |
| 7.0-7.9 | 125 | 160 | 200 |
| 8.0-8.9 | 140 | 180 | 225 |
| 9.0-9.9 | 155 | 190 | 250 |
| 10.0-10.9 | 170 | 200 | 275 |
| 11.0-11.9 | 190 | 230 | 275 |
| 12.0-12.9 | 205 | 250 | 300 |
| 13.0-13.9 | 230 | 275 | 350 |
| 14.0-14.9 | 250 | 290 | 375 |
| 15.0-19.9 | 260 | 300 | 400 |
| 20.0-24.9 | 290 | 320 | 450 |
| 25.0-29.9 | 300 | 350 | 450 |
| 30.0-39.9 | 320 | 370 | 500 |
| 40.0-60.0 | 350 | 400 | 500 |

Volume of F75 for persons with bilateral pitting oedema (+++) in stabilisation

| Weight (In kg) | F75 ml per feed if 8 feeds per day | F75 ml per feed if 6 feeds per day | F75 ml per feed if 5 feeds per day |
|------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| 3.0-3.4 | 50-60 | 60-75 | 70-85 |
| 3.5-3.9 | 50-65 | 65-80 | 75-95 |
| 4.0-4.4 | 55-70 | 70-85 | 90-110 |
| 4.5-4.9 | 65-80 | 70-95 | 95-120 |
| 5.0-5.4 | 70-90 | 90-110 | 105-130 |
| 5.5-5.9 | 80-100 | 95-120 | 120-150 |
| 6.0-6.9 | 90-110 | 110-140 | 140-175 |
| 7.0-7.9 | 100-125 | 130-160 | 160-200 |
| 8.0-8.9 | 110-140 | 145-180 | 180-225 |
| 9.0-9.9 | 125-155 | 150-190 | 200-250 |
| 10.0-10.9 | 135-170 | 160-200 | 220-275 |
| 11.0-11.9 | 150-190 | 185-230 | 220-275 |
| 12.0-12.9 | 165-205 | 200-250 | 240-300 |
| 13.0-13.9 | 185-230 | 220-275 | 280-350 |
| 14.0-14.9 | 200-250 | 230-290 | 300-375 |
| 15.0-19.9 | 210-260 | 240-300 | 320-400 |
| 20.0-24.9 | 230-290 | 255-320 | 360-450 |
| 25.0-29.9 | 240-300 | 280-350 | 360-450 |
| 30.0-39.9 | 255-320 | 295-370 | 400-500 |
| 40.0-60.0 | 280-350 | 320-400 | 400-500 |

Preparation of small quantities of F75

| Small red spoon F75 | Water to add (In ml) | |
|---------------------|----------------------|---------------------|
| 1 | 20 | |
| 2 | 40 | |
| 3 | 60 | |
| 4 | 80 | |
| 5 | 100 | |
| 6 | 120 | |
| 7 | 140 | |
| 8 | 160 | |
| 9 | 180 | |
| 10 | 200 | |
| F75 sachets | Water to add (In ml) | Final volume of F75 |
| 1/4 = 103 g | 500 | 600 ml |
| 1/2 = 205 g | 1,000 | 1,200 ml |
| 1 sachet | 2,000 | 2,400 ml |
| 2 sachets | 4,000 | 4,800 ml |

1 small red spoon = 4.1g

Annex 8: Preparation of small quantities of F100

Volume of F100 in transition (150 kcal/kg bodyweight/day) when no RUTF is taken

| Weight (In kg) | F100 ml per feed if 8 feeds per day | F100 ml per feed if 6 feeds per day | F100 ml per feed if 5 feeds per day |
|----------------|--|--|--|
| 3.0-3.4 | 60 | 75 | 85 |
| 3.5-3.9 | 65 | 80 | 95 |
| 4.0-4.4 | 70 | 85 | 110 |
| 4.5-4.9 | 80 | 95 | 120 |
| 5.0-5.4 | 90 | 110 | 130 |
| 5.5-5.9 | 100 | 120 | 150 |
| 6.0-6.9 | 110 | 140 | 175 |
| 7.0-7.9 | 125 | 160 | 200 |
| 8.0-8.9 | 140 | 180 | 225 |
| 9.0-9.9 | 155 | 190 | 250 |
| 10.0-10.9 | 170 | 200 | 275 |
| 11.0-11.9 | 190 | 230 | 275 |
| 12.0-12.9 | 205 | 250 | 300 |
| 13.0-13.9 | 230 | 275 | 350 |
| 14.0-14.9 | 250 | 290 | 375 |
| 15.0-19.9 | 260 | 300 | 400 |
| 20.0-24.9 | 290 | 320 | 450 |
| 25.0-29.9 | 300 | 350 | 450 |
| 30.0-39.9 | 320 | 370 | 500 |
| 40.0-60.0 | 350 | 400 | 500 |

Preparation of small quantities of F100

| Small red spoon F100 | Water to add (In ml) | |
|----------------------|----------------------|----------------------|
| 1 | 18 | |
| 2 | 36 | |
| 3 | 54 | |
| 4 | 72 | |
| 5 | 90 | |
| 6 | 108 | |
| 7 | 126 | |
| 8 | 144 | |
| 9 | 162 | |
| 10 | 180 | |
| F100 sachets | Water to add (In ml) | Final volume of F100 |
| 1/4 = 115 g | 500 | 600 ml |
| 1/2 = 230 g | 1,000 | 1,200 ml |
| 1 sachet | 2,000 | 2,400 ml |
| 2 sachets | 4,000 | 4,800 ml |

1 small red spoon = 4.1g

TECHNICAL NOTES

Annex 9: Inpatient multi-chart

Therapeutic treatment multichart for severe malnutrition

Registration No. Referred from

Sheet No. Centre
(PW – NRC Hosp – NRC HC)

Child's name
Age (yy/mm/dd)

Father's name Sex

Mother's name Birth date ___/___/___

Address Breastfeeding Complementary feeding

Major problems
 1
 2
 3

Date of admission ___/___/___ am/pm
 Hour
 Readmission
 from
 Old Reg Nos
 Follow-up by

Date of discharge ___/___/___
 Cured Abandon
 Dead hour am/pm
 Med transfer To

Nut referral To

Cause

| Date | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | |
|--------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|--|
| Height (cm) | | | | | | | | | | | | | | | | | | | | | | |
| Weight (kg) | | | | | | | | | | | | | | | | | | | | | | |
| W/Ht (%) | | | | | | | | | | | | | | | | | | | | | | |
| MUAC (mm) | | | | | | | | | | | | | | | | | | | | | | |
| Oedema (0 to ++++) | | | | | | | | | | | | | | | | | | | | | | |

| Target weight (%) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | |
|-------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|--|
| Weight chart | | | | | | | | | | | | | | | | | | | | | | |

| Therapeutic diet | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | |
|------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Date | | | | | | | | | | | | | | | | | | | | | | | |
| Phase | | | | | | | | | | | | | | | | | | | | | | | |
| Diet name | | | | | | | | | | | | | | | | | | | | | | | |
| ml/feed | | | | | | | | | | | | | | | | | | | | | | | |
| No/feed/day | | | | | | | | | | | | | | | | | | | | | | | |
| ml/day | | | | | | | | | | | | | | | | | | | | | | | |
| Iron added | | | | | | | | | | | | | | | | | | | | | | | |
| Time | 1 | | | | | | | | | | | | | | | | | | | | | | |
| A = absent | | | | | | | | | | | | | | | | | | | | | | | |
| V = vomit | | | | | | | | | | | | | | | | | | | | | | | |
| R = refuse | | | | | | | | | | | | | | | | | | | | | | | |
| NG = tube | | | | | | | | | | | | | | | | | | | | | | | |
| IV = IV fluid | | | | | | | | | | | | | | | | | | | | | | | |
| Amount taken | | | | | | | | | | | | | | | | | | | | | | | |
| 100% | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3/4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1/2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1/4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| = ml = extra | | | | | | | | | | | | | | | | | | | | | | | |
| Porridge | | | | | | | | | | | | | | | | | | | | | | | |
| Family meal | | | | | | | | | | | | | | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | | | | | | | |

TECHNICAL NOTES

| Surveillance chart | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | |
|--------------------|--|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|--|
| Date | | | | | | | | | | | | | | | | | | | | | | | |
| Stool (III) | | | | | | | | | | | | | | | | | | | | | | | |
| Vomit (III) | | | | | | | | | | | | | | | | | | | | | | | |
| Dehydrated 0/+++ | | | | | | | | | | | | | | | | | | | | | | | |
| Cough 0/+++ | | | | | | | | | | | | | | | | | | | | | | | |
| Septic shock 0/+++ | | | | | | | | | | | | | | | | | | | | | | | |
| Resp rate | | | | | | | | | | | | | | | | | | | | | | | |
| Pale conjunctives | | | | | | | | | | | | | | | | | | | | | | | |
| Temp. AM ax/Rec | | | | | | | | | | | | | | | | | | | | | | | |
| Temp. PM ax/Rec | | | | | | | | | | | | | | | | | | | | | | | |
| Scabies 0/+++ | | | | | | | | | | | | | | | | | | | | | | | |
| Liver size (cm) | | | | | | | | | | | | | | | | | | | | | | | |

| Routine medicines | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | |
|---------------------|--|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|--|
| Date | | | | | | | | | | | | | | | | | | | | | | | |
| Vit A iu | | | | | | | | | | | | | | | | | | | | | | | |
| Folicacid 5 mg (po) | | | | | | | | | | | | | | | | | | | | | | | |
| Antibiotic 1 | | | | | | | | | | | | | | | | | | | | | | | |
| Time | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| Malaria rx | | | | | | | | | | | | | | | | | | | | | | | |
| Worm rx in phase II | | | | | | | | | | | | | | | | | | | | | | | |

Annex 10: Preparation of small quantities of diluted F100

| Small red spoon F100 | Water to add (In ml) | |
|----------------------|----------------------|----------------------|
| 1 | 24 | |
| 2 | 48 | |
| 3 | 72 | |
| 4 | 96 | |
| 5 | 120 | |
| 6 | 144 | |
| 7 | 168 | |
| 8 | 192 | |
| 9 | 216 | |
| 10 | 240 | |
| F100 sachets | Water to add (In ml) | Final volume of F100 |
| 1/4 = 115 g | 670 | 750 ml |
| 1/2 = 230 g | 1,350 | 1,500 ml |
| 1 sachet | 2,700 | 3,150 ml |
| 2 sachets | 5,400 | 6,300 ml |

1 small red spoon = 4.1g

Annex 11: Tally sheet for sites

Outpatient/inpatient tally sheet

| | | | | | |
|---|------|--|--|--|-------|
| | Site | | | | |
| | Wk | | | | TOTAL |
| | Date | | | | |
| (A) Total start of week | | | | | |
| New 6-59m SAM | | | | | |
| Other (Adults, adolescents, infants) | | | | | |
| From outpatient/inpatient care (Or returned defaulters) | | | | | |
| (D) Total admissions | | | | | |
| Cured | | | | | |
| Death | | | | | |
| Defaulter | | | | | |
| Non-recovered | | | | | |
| To outpatient/inpatient care | | | | | |
| (G) Total discharges | | | | | |
| Total end of week (A+D+G) | | | | | |

Annex 12: Monthly site report

| | | | | |
|----------|--|---|--------------|---------------|
| Site | | Implemented by | | |
| Region | | Month/year | | |
| | | Type of management (Circle) | Inpatient | Outpatient |
| District | | Estimated maximum capacity | | |
| | | Estimated target malnourished <5's (Based on latest survey data and admission criteria) | | |
| | | RUTF Consumption | Packets/pots | kg equivalent |
| | | | | |

| Total beginning of the month (A) | New cases (B) | | Old cases (C) | Total admission (D) (B+C=D) | Discharges (E) | | | | Transfer (F) | Total discharge (G) (E+F=G) | Total end of the month (H) (A+D-G=H) |
|----------------------------------|--|---|--|-----------------------------|---------------------------|------------|----------------|--------------------|---------------------------------|-----------------------------|--------------------------------------|
| | 6-59m (According to admission criteria) (B1) | Other (Adults, infants, adolescents) (B2) | From outpatient or inpatient care, or returned defaulter | | Cured (E1) | Death (E2) | Defaulter (E3) | Non-recovered (E4) | To inpatient or outpatient care | | |
| | | | | | | | | | | | |
| | | | | | % | % | % | % | | | |
| | | | | | Target (Sphere standards) | | | | | | |
| | | | | | >75% | <10% | <15% | | | | |

E1: Cured = reaches discharge criteria

E3: Defaulter = absent for 3 consecutive visits

E4: Non recovered = does not reach the discharge criteria after 4 months in OTP

H: Total end of the month (H) = total beginning of the month (A) + total admissions (D) - Total discharges (G)

Annex 13: Consolidated monthly report

| | | | | |
|---|----------------------|----------------------|--------------------------|----------------------|
| Country | <input type="text"/> | | Implementing partner (s) | <input type="text"/> |
| Number of treatment sites | Outpatient | <input type="text"/> | Reporting period | <input type="text"/> |
| | Inpatient | <input type="text"/> | | |
| Estimated maximum capacity | <input type="text"/> | | | |
| Estimated target malnourished <5's (Based on latest survey data and admission criteria) | <input type="text"/> | | | |
| Estimated coverage (From coverage survey or estimated from target and admission) | <input type="text"/> | | | |
| RUTF Consumption | <input type="text"/> | kg | | |

| Total beginning of the month (A) | New cases (B) | | Discharges (E) | | | | Total discharge (E) (E1+E2+E3+E4=E) | Total end of the month (A+B-E=H) |
|----------------------------------|--|---|---------------------------|------------|----------------|--------------------|-------------------------------------|----------------------------------|
| | 6-59m (According to admission criteria) (B1) | Other (Adults, infants, adolescents) (B2) | Cured (E1) | Death (E2) | Defaulter (E3) | Non-recovered (E4) | | |
| | | | | | | | | |
| | | | % | % | % | % | | |
| | | | Target (Sphere standards) | >75% | <10% | <15% | | |

NB: Old cases and transfers are excluded from nation/programme reporting as they are movements within the programme rather than entries and exits

E1: Cured = reaches discharge criteria

E3: Defaulter = absent for 3 consecutive visits

E4: Non recovered = does not reach the discharge criteria after 4 months in OTP

Annex 15: Supervision check list

SUPERVISION CHECKLIST FOR OUTPATIENT CARE

Health Centre:

Date:

| | Quality 1 – Done correctly 2 – Done, but needs work 3 – Not done or done incorrectly | Discussed Nurse/Health Extension Worker Supervisor (Y/N) | Comments |
|---|---|---|-------------|
| Number of staff present | | | Staff: |
| Staff greet the mothers/caregivers and are friendly and helpful | | | |
| Registration numbers assigned correctly | | | |
| Registration numbers written on all documentation | | | |
| Grade of bilateral pitting oedema measured accurately | | | |
| MUAC measured accurately | | | |
| Weight measured accurately | | | |
| Admission is done according to correct criteria (Check WITH Individual follow up cards) | | | |
| Medical history recorded accurately | | | |
| Physical examination performed accurately | | | |
| Child's appetite assessed using RUTF (On admission and at all follow-on visits) | | | |
| Routine medications given according to protocol and recorded accurately | | | |
| Amount of RUTF needed is correctly calculated | | | |
| Appropriate education given to mothers of outpatient care beneficiaries | | | Note topic: |
| Other medical treatments are given according to protocol and recorded accurately | | | |
| Non-responders are identified according to the definition for follow-up | | | |

SUPERVISION CHECKLIST FOR OUTPATIENT CARE (continued)

Health Centre:

Date:

| | Quality 1 – Done correctly 2 – Done, but needs work 3 – Not done or done incorrectly | Discussed Nurse/Health Extension Worker Supervisor (Y/N) | Comments |
|--|---|---|----------|
| Priorities for follow-up home visits are discussed with a outreach worker if needed | | | |
| Beneficiaries discharged according to protocol | | | |
| Correct number of absentees/ defaulters passed to outreach worker for follow-up | | | |
| Outpatient care tally sheets, register and RUTF stock cards correctly completed (Spot check) | | | |
| All absentees/defaulters from previous week followed up | | | |
| Outreach follow-up form filled in correctly and information noted on ration card | | | |
| Appropriate education (According to education message sheet) given to mothers/caregivers at home | | | |
| Mother/caregiver referred for additional care or services if appropriate | | | |
| Timely and appropriate referral to the clinician made for non-responders | | | |
| Volunteer/outreach worker returns follow-up visit checklists or observations to health centre | | | |
| Volunteer/outreach worker feedback provided on a timely basis (Before the next outpatient session) | | | |
| Volunteer/outreach worker has a helpful, positive attitude with caregivers | | | |

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SUPERVISION CHECKLIST FOR OUTPATIENT CARE (continued)

Health Centre:

Date:

| | Quality 1 – Done correctly 2 – Done, but needs work 3 – Not done or done incorrectly | Discussed Supervisor (Y/N) | Comments |
|--|--|-----------------------------------|-----------------|
| All absentees/defaulters from previous week followed up | | | |
| Outreach follow-up conducted and information noted on ration card | | | |
| Appropriate education (According to education message sheet) given to mothers/caregivers at home | | | |
| Mother/caregiver referred for additional care or services if appropriate | | | |
| Timely and appropriate referral to the clinician made for non-responders | | | |
| Outreach worker returns follow-up home visit checklists or observations to health centre | | | |
| Outreach worker feedback provided on a timely basis (Before the next outpatient care session) | | | |
| Outreach worker has a helpful, positive attitude with mothers/caregivers | | | |

SUPERVISION CHECKLISTS FOR INPATIENT CARE

| Checklist for Monitoring Food Preparation OBSERVE | Yes | No | Comments |
|--|-----|----|----------|
| Are ingredients for the recipe available? | | | |
| Is the correct recipe used for the ingredients that are available? | | | |
| Are ingredients stored appropriately and discarded at appropriate times? | | | |
| Are containers and utensils kept clean? | | | |
| Do kitchen staff (Or those preparing feeds) wash hands with soap before preparing food? | | | |
| Are the recipes for F75 and F100 followed exactly? (If changes are made due to lack of ingredients, are these changes appropriate?) | | | |
| Are measurements made exactly with proper measuring utensils (E.g., correct scoops)? | | | |
| Are ingredients thoroughly mixed (And cooked, if necessary)? | | | |
| Is the appropriate amount of oil remixed in (i.e., not left stuck in the measuring container)? | | | |
| Is CMV added correctly? | | | |
| Is the correct amount of water added to make up a litre of formula? (Staff should not add a litre of water, but just enough to make a litre of formula.) | | | |
| Is food served at an appropriate temperature? | | | |
| Is the food consistently mixed when served (i.e., oil is mixed in, not separated)? | | | |
| Are correct amounts put in the dish for each child? | | | |
| Is leftover prepared food discarded promptly? | | | |
| Other | | | |

SUPERVISION CHECKLISTS FOR INPATIENT CARE (continued)

| Checklist for Monitoring Ward Procedures OBSERVE | Yes | No | Comments |
|---|-----|----|----------|
| Feeding | | | |
| Are correct feeds served in correct amounts? | | | |
| Are feeds given at the prescribed times, even on nights and weekends? | | | |
| Are children held and encouraged to eat (Never left alone to feed)? | | | |
| Are children fed with a cup (Never a bottle)? | | | |
| Is food intake (And any vomiting/diarrhoea) recorded correctly after each feed? | | | |
| Are leftovers recorded accurately? | | | |
| Are amounts of F75 kept the same throughout the initial phase, even if weight is loss? | | | |
| After transition, are amounts of F100 given freely and increased as the child gains weight? | | | |
| Warming | | | |
| Is the room kept between 25 and 30 degrees C (To the extent possible)? | | | |
| Are blankets provided and children kept covered at night? | | | |
| Are safe measures used for rewarming children? | | | |
| Are temperatures taken and recorded correctly? | | | |
| Weighing | | | |
| Are scales functioning correctly? | | | |
| Are scales standardised weekly? | | | |
| Are children weighed at about the same time each day? | | | |
| Are children weighed about one hour before a feed (To the extent possible)? | | | |
| Do staff adjust the scale to zero before weighing? | | | |
| Are children consistently weighed without clothes? | | | |
| Do staff correctly read weight to the nearest division of the scale? | | | |
| Do staff immediately record weights to the nearest division of the scale? | | | |
| Do staff immediately record weights on the child's Individual follow up card? | | | |

SUPERVISION CHECKLISTS FOR INPATIENT CARE (continued)

| Checklist for Monitoring Ward Procedures OBSERVE | Yes | No | Comments |
|---|-----|----|----------|
| Giving antibiotics, medications, supplements | | | |
| Are antibiotics given as prescribed (Correct dose at correct time)? | | | |
| When antibiotics are given, do staff immediately make a notation on the Individual follow up card? | | | |
| Measles | | | |
| Is vitamin A given according to schedule? | | | |
| After children are on F100 for two days, is the correct dose of iron given twice daily and recorded on the CCP? | | | |
| Ward environment | | | |
| Are surroundings welcoming and cheerful? | | | |
| Are mothers offered a place to sit and sleep? | | | |
| Are mothers taught/encouraged to be involved in care? | | | |
| Are staff consistently courteous? | | | |
| As children recover, are they stimulated and encouraged to move and play? | | | |

SUPERVISION CHECKLISTS FOR INPATIENT CARE (continued)

| Checklist for Monitoring Hygiene OBSERVE | Yes | No | Comments |
|---|-----|----|----------|
| Handwashing | | | |
| Are there working handwashing facilities in the ward? | | | |
| Do staff consistently wash hands thoroughly with soap? | | | |
| Are their nails clean? | | | |
| Do they wash hands before handling food? | | | |
| Do they wash hands between each patient? | | | |
| Mothers' cleanliness | | | |
| Do mothers have a place to bathe, and do they use it? | | | |
| Do mothers wash hands with soap after using the toilet or changing diapers? | | | |
| Do mothers wash hands before feeding children? | | | |
| Bedding and laundry | | | |
| Is bedding changed every day or when soiled/wet? | | | |
| Are diapers, soiled towels and rags, etc. stored in a bag, then washed or disposed of properly? | | | |
| Is there a place for mothers to do laundry? | | | |
| Is laundry done in hot water? | | | |
| General maintenance | | | |
| Are floors swept? | | | |
| Is trash disposed of properly? | | | |
| Is the ward kept as free as possible of insects and rodents? | | | |
| Food storage | | | |
| Are ingredients and food kept covered and stored at the proper temperature? | | | |
| Are leftovers discarded? | | | |
| Dishwashing | | | |
| Are dishes washed after each meal? | | | |
| Are they washed in hot water with soap? | | | |
| Toys | | | |
| Are toys washable? | | | |
| Are toys washed regularly, and after each child uses them? | | | |

Annex 16: Check lists for setup of outpatient care services, one site³⁹

Equipment

| Item | Amount |
|--------------------------------|--------------|
| OTP file for admission cards | 1 per clinic |
| Marker pens (Permanent ink) | 2 |
| Clipboards | 2 |
| Stapler and box of staples | 1 |
| Pens | 3 |
| Scissors | 1 pair |
| Notebook | 1 |
| Calculator | 1 |
| Small clock with second hand | 1 |
| Bucket with lid | 2 |
| Soap for hand washing | 1 bar |
| Small bowl | 1 |
| Small jug | 1 |
| Hand towels/paper towels | 2 |
| Water jug (with lid) | 2 |
| Plastic cups | 10 |
| Metal spoons | 2 |
| Teaspoons or medicine cups | 6 |
| Thermometer | 3 |
| Salter scale (25kg) plus pants | 1 |
| Height board | 1 |
| MUAC tape | 2 |
| Weight for Height % table | 1 |
| Nail clippers | 1 |

³⁹ Valid International (2006) *Community-based Therapeutic Care: A Field Manual*

TECHNICAL NOTES

Equipment (continued)

| Minimum Stock to Keep Topped Up | Amount |
|---|---------------------|
| OTP cards for new admissions | 100 |
| OTP ration cards for new admissions | 100 |
| ID bracelets (optional) | 100 |
| Clear plastic envelopes (For filing OTP cards) | 100 |
| Bags for carrying RUTF (If required) | 100 |
| Drinking water | 1 jerry can |
| Sugar to make 10% sugar water solution | 500g |
| Soap. For OTP children plus extra for children referred from the community but not fulfilling admission criteria. | 500 bars |
| RUTF | (See separate list) |
| Medicines and dressings | (See separate list) |

Medicines

| Routine Medicines: Per 500 children | Amount |
|--|-------------|
| Mebendazole 100mg | 4 tins |
| Paracheck (Malaria rapid test) | 200 |
| Artesunate tablets* | 600 tablets |
| Vitamin A capsules | 1 tin |
| Measles vaccine (Where not possible to refer to an existing EPI programme) | 100 doses |

Medicines (continued)

| Additional Medicines: Per 500 children | Amount |
|---|----------------------|
| Chloramphenicol syrup or tablets | 100 bottles or 1 tin |
| Tetracycline eye ointment | 50 tubes |
| Nystatin suspension | 20 bottles |
| Paracetamol syrup or 100mg tablets | 2 bottles or 1 tin |
| Benzyl benzoate 200ml | 100 bottles |
| Whitfields ointment | 50 tubes |
| Gentian violet – powder | 1 tin |
| Betadine solution | 2 bottles |
| Quinine (Or suitable 2nd line anti-malarial) | 1 tin |
| Ferrous Folate (Or iron sulphate and folic acid) – for treatment of anaemia | 1 tin |
| Cotton wool | 5 rolls |
| Examination gloves – non-sterile | 1 box |
| Medicine bags | 100 bags |
| ReSoMal | 2 packets |

Notes: All medicines must be clearly labelled.

Daily stocks carried should be reviewed after the first month as requirements will vary depending on number of admissions.

Amounts carried should be kept as low as possible to facilitate storage.

| Dressing Materials (Where needed): | Amount |
|---|------------|
| Gauze 10x10 | 20 packets |
| Small bandage | 10 pieces |
| Tape | 2 rolls |
| Zinc ointment | 10 tubes |
| Normal saline for wounds 100ml or 200ml | 10 pieces |
| Dressing scissors | 2 pairs |

Annex 17: MSF/UNICEF kits for outpatient and inpatient care for management of SAM

MSF/UNICEF kits for outpatient and inpatient care for management of SAM

1. Nutrition Kit for Inpatient Therapeutic Feeding Centre

The Nutrition Kit for Inpatient Therapeutic Feeding Centre consists of one (1) **Anthropometric Nutrition Kit (S0114050)** plus four (4) additional modules containing consumables that can be ordered separately:

Module 1: S0114051 Nut.kit,inpatient,module-registration – stationary

Module 2: S0114052 Nut.kit,inpatient,module-equipment – cooking and feeding materials

Module 3: S0114053 Nut.kit,inpatient,module-med.supplies – medical consumables

Module 4: S0114054 Nut.kit,inpatient,module-med.devices – optional medical devices

This kit is sufficient for one (1) inpatient therapeutic feeding centres intended for 50 severely acute malnourished children for a period of 3 months.

2. Nutrition Kit for Outpatient Therapeutic Feeding Centre

The Nutrition Kit for Outpatient Therapeutic Feeding Centre consists of three (3) **Anthropometric Nutrition Kits (S0114050)** plus two (2) additional modules containing consumables that can be ordered separately:

Module 1: S0114055 Nut.kit,outpatient,module-registration – stationary

Module 2: S0114056 Nut.kit,outpatient,module-equipment – feeding and medical equipment

This kit is sufficient for five (5) outpatient therapeutic feeding centres intended for 500 severely acute malnourished children for a period of three (3) months. If more than five (5) sites are to be covered, supplementary anthropometric equipment should be ordered separately.

Contents of modules:

S0114050 Nutrition kit, anthropometric

2 x COUNTER, manual

2 x CALCULATOR, solar or battery-powered

1 x CHALK, box of 100

100 x FOLDER, A4, plastic, transparent, open on 2 sides

4 x ERASER, rubber, white

4 x CLIPBOARD, fold over, A4

10 x PEN, BALL POINT, black

12 x PENCIL, lead, HB

10 x MARKER, permanent, large, chisel point, black

4 x PENCIL SHARPENER, 2 sizes

4 x RULER, 30 cm, plastic, transparent

2 x SCISSORS, 17 cm, blunt ends

10 x ROPE, Ø 5 mm, POLYPROPYLENE, twisted (per meter)

50 x MUAC, child, polypropylene, red 110 cm and below, orange 112-124 cm, yellow 126-134 cm

6 x MUAC, adult, polypropylene, white, no cut-off point

2 x LENGTH-HEIGHT MEASURING SYSTEM, baby/infant, horizontal/vertical, 130cm, wood

4 x SPRING SCALE, SALTER TYPE, 0-25 kg, no trousers, graduation 100 g

10 x 1 x TROUSER for Spring scale, Salter type

1 x Rapid Nutritional & Mortality Surveys Manual. Step by step + CD-Rom

2 x BAG, RUCKSACK, nylon, light

4 x CARD, RANDOM NUMBER, A4 recto

4 x CARD, WEIGHT/LENGTH, NCHS %, English, untear/plast, A4 r/v.

4 x CARD, WEIGHT/LENGTH, NCHS %, French, untear/plast, A4 r/v.

3 x CARD, WEIGHT/LENGTH, WHO 2006 Z-score, boys/girls, plasticised, English.

3 x CARD, WEIGHT/LENGTH, WHO 2006 Z-score, boys/girls, plasticised, French.

S0114051 Nutrition kit, inpatient, module-registration

- 1 x CALCULATOR, solar or battery-powered
- 1 x ACCOUNT BOOK (Balzac), ref. 58-04
- 4 x NOTEBOOK, A4, squared, 180 pages, hardback
- 1 x BOX, FOR INDEX CARD, A4 size, plastic + cover
- 1 x DIVIDER, for A4 index box, A-Z, set
- 2 x ERASER, rubber, white
- 5 x PEN, BALL POINT, black
- 5 x PENCIL, lead, HB
- 2 x MARKER, permanent, large, chisel point, black
- 2 x MARKER, permanent, large, chisel point, red
- 2 x PENCIL SHARPENER, 2 sizes
- 2 x RULER, 30 cm, plastic, transparent
- 1 x SCISSOR, 17 cm, blunt ends
- 1 x STAPLER, small, with staples
- 1 x STAPLE (for small stapler), box of 1000
- 1 x MSF Clinical guidelines. English version: http://www.refbooks.msf.org/msf_docs/en/Clinical_Guide/CG_en.pdf
- 1 x MSF Clinical guidelines. French version: http://www.refbooks.msf.org/msf_docs/fr/Clinical_Guide/CG_fr.pdf
- 1 x Pocket book of hospital care for children. Guidelines for the management of common illnesses with limited resources. English version: <http://whqlibdoc.who.int/publications/2005/9241546700.pdf>
- 1 x Pocket book of hospital care for children. Guidelines for the management of common illnesses with limited resources. French version: http://whqlibdoc.who.int/publications/2007/9789242546705_fre.pdf
- 1 x Guideline for the inpatient treatment of severely malnourished children (with CD). English version: <http://apps.who.int/bookorders/anglais/detart1.jsp?sesslan=1&codlan=1&codcol=15&codcch=545>
- 1 x Mental health and psychosocial well-being among children. WHO/MSD/ER/06.1 English version: http://www.who.int/mental_health/mental_health_food_shortage_children2.pdf
- 1 x Mental health and psychosocial well-being among children. WHO/MSD/ER/06.1 French version: http://www.who.int/mental_health/emergencies/mental_health_food_shortage_french.pdf
- 1 x Modern stove for all
- 150 x CARD, IN-PATIENT THER. FEEDING, English, A3 recto/verso
- 150 x CARD, IN-PATIENT THER. FEEDING, French, A3 recto/verso
- 150 x CARD, MILK, therapeutic feeding, Engl., A5 recto/vers
- 2 x CARD, WEIGHT/LENGTH, WHO 2006 Z-score, boys/girls,plast. English
- 2 x CARD, WEIGHT/LENGTH, WHO 2006 Z-score, boys/girls,plast. French
- 400 x BRACELET, IDENTIFICATION,(Ident-A-Band), feeding cent, red

S0114052 Nutrition kit, inpatient, module-equipment

- 10 x JERRYCAN, collapsible, 20 l, food grade plastic, screw cap
- 10 x TAP (collapsible jerrycan 20 l), screw type 5 cm
- 24 x SOAP, 200 g, bar
- 1 x SCALE (Seca 725), beam mechanical, baby, 0-15 kg, grad. 10 g
- 1 x SCALE, SALTER TYPE, 0-50 kg, no trousers, grad. 200 g
- 2 x COAT, MEDICAL, white, large
- 2 x COAT, MEDICAL, white, medium
- 2 x COAT, MEDICAL, white, small
- 6 x POTTY, pediatric, plastique, stakable
- 1 x STETHOSCOPE, one cup, nurse
- 5 x TIMER, respiratory, ARI
- 1 x THERMOMETER, MINI-MAXI, alcohol -40°C to +50°C
- 100 x BOWL, 0.5 l, plastic
- 3 x BUCKET, food proof plastic, 10l, grad, stackable + lid white
- 3 x BUCKET, food proof plastic, 10l, grad,stacking shape+lid red

TECHNICAL NOTES

1 x COOKING POT, 10 l, alu (lathe work) + handles and lid
 1 x COOKING POT, 20 l, alu (lathe work) + handles and lid
 1 x COOKING POT, 50 l, alu (lathe work) + handles and lid
 100 x CUP, 20/30 ml, plastic, for medicines
 100 x CUP, 500 ml, plastic, graduated
 2 x LADLE, 250 ml, aluminium
 2 x MEASURING JUG, 1 l, graduated, non rigid, transparent
 2 x MEASURING JUG, 2 l, graduated, non rigid, transparent
 2 x PADDLE, SPOON, wooden, 90 cm
 1 x SCALE, kitchen type, 0 to 5 kg, 10 g graduations
 1 x SCOOP, aluminium, Ø 10/12 cm, 30 cm long
 3 x SCOOP, RED (Nutriset), pack of 5
 120 x SPOON, coffee, plastic, 5 ml
 10 x SPOON, coffee, stainless steel, 5 ml
 3 x WHISK, stainless steel, 78 cm
 1 x LAMP, TORCH, manual recharge, small model
 2 x BOWL, WASHING-UP, 10 litres, plastic
 2 x BOWL, WASHING-UP, 20 litres, plastic
 2 x BRUSH, SCRUBBING, for washing-up
 2 x LAMP, KEROSENE, hurricane
 1 x LAMP, TORCH, manual recharge, large model

S0114053 Nutrition kit, inpatient, module-med. supplies

100 x TEST, URINE, glucose, proteins, 1 strip
 400 x LANCET, s.u., sterile, standard point
 1 x SPHYGMOMANOMETER, one-hand manometer, Velcro, pediatric
 2 x STETHOSCOPE, double cup, clinician
 2 x TABLET CUTTER, stainless steel blade
 30 x TUBE, GASTRIC, Luer tip, s.u., 40 cm, CH06
 50 x TUBE, GASTRIC, Luer tip, s.u., 40 cm, CH08
 50 x TUBE, GASTRIC, Luer tip, s.u., 60 cm, CH10
 1 x COTTON WOOL, hydrophilic, roll, 500 g
 4 x TAPE, ADHESIVE, ROLL, 2 cm x 5 m
 25 x CONTAINER, needles/syringes, 5 l, cardboard for incineration
 100 x IV CATHETER, injection port, s.u. 22 G (0.8 x 25 mm), blue
 150 x IV CATHETER, injection port, s.u. 24 G (0.7 x 19 mm) yellow
 300 x NEEDLE, s.u., Luer, 19 G (1.1 x 40 mm) cream, IV
 200 x NEEDLE, s.u., Luer, 21 G (0.8 x 40 mm) green, IM
 300 x NEEDLE, s.u., Luer, 23 G (0.6 x 30mm) blue, SC, IM child
 100 x SCALP VEIN INFUSION SET, s.u. 25 G (0.5 x 19 mm), orange
 50 x SET, INFUSION, pediatric, precision, sterile, s.u.
 60 x SYRINGE, s.u., 60 ml, feeding, Luer
 100 x SYRINGE, s.u., Luer, 1 ml, graduated 1/100
 200 x SYRINGE, s.u., Luer, 2 ml
 200 x SYRINGE, s.u., Luer, 5 ml
 100 x SYRINGE, s.u., Luer, 10 ml
 1,000 x BAG, plastic, for drugs, 6 x 8 cm
 10 x BLANKET, SURVIVAL, 220 x 140 cm, thickness 12 microns
 200 x DEPRESSOR, TONGUE, wooden
 300 x GLOVES, EXAMINATION, latex, s.u. non sterile, large
 1,000 x GLOVES, EXAMINATION, latex, s.u. non sterile, medium
 10 x THERMOMETER, ELECTRONIC, accuracy 0.1°C + case

S0114054 Nutrition kit, inpatient, module-med. devices

- 1 x GLUCOMETER, blood glucose monitor + strips
- 1 x (glucometer) CONTROL SOLUTION
- 300 x (glucometer) STRIP
- 1 x HAEMOGLOBIN PHOTOMETER (HemoCue Hb 301) tropicalized
- 200 x (HemoCue Hb 301) MICROCUVETTES, s.u.
- S0114055 Nutrition kit, outpatient, module-registration
- 5 x CALCULATOR, solar or battery-powered
- 5 x FILE, LEVER-ARCH, 310 x 290 mm, 75 mm thick, black
- 10 x ACCOUNT BOOK (Balzac), ref. 58-04
- 5 x NOTEBOOK, A4, squared, 180 pages, hardback
- 5 x BOX, FOR INDEX CARD, A4 size, plastic + cover
- 5 x DIVIDER, for A4 index box, A-Z, set
- 1,000 FOLDER, A4, plastic, transparent, open on 2 sides
- 15 x PEN, BALL POINT, black
- 5 x MARKER, permanent, large, chisel point, black
- 5 x MARKER, permanent, large, chisel point, red
- 5 x RULER, 30 cm, plastic, transparent
- 5 x SCISSORS, 17 cm, blunt ends
- 5 x STAPLERS, small, with staples
- 5 x STAPLES (for small stapler), box of 1,000
- 5 x Community-based therapeutic care (CTC). A field manual. English version: http://www.fantaproject.org/downloads/pdfs/CTC_Manual_v1_Oct06.pdf
- 1000 x AMBULATORY THERAPEUTIC FEEDING, English A4 recto/verso.
- 1000 x CARD, AMBULATORY THERAPEUTIC FEEDING, French A4 recto/verso.
- 1000 x BRACELET, IDENTIFICATION, (Ident-A-Band), feeding cent, blue

S0114056 Nutrition kit, outpatient, module-equipment

- 5 x CLOCK, ALARM, mechanical
- 5 x JERRYCAN, collapsible, 20 l, food grade plastic, screw cap
- 5 x TAP (collapsible jerry can 20 l), screw type 5 cm
- 15 x SOAP, 200 g, bar
- 50 x MUAC, child, polypropylene, red 110 cm and below, orange 112-124 cm, yellow 126-134 cm.
- 2 x SPRING SCALE, SALTER TYPE, 0-25 kg, no trousers, grad. 100 g
- 10 x 1 x TROUSERS for Spring scale Salter type
- 2 x COAT, MEDICAL, white, large
- 2 x COAT, MEDICAL, white, medium
- 2 x COAT, MEDICAL, white, small
- 10 x POTTY, paediatric, plastic, stackable
- 10 x STETHOSCOPE, one cup, nurse
- 2 x STETHOSCOPE, double cup, clinician
- 2 x TABLET CUTTER, stainless steel blade
- 5 x TIMER, respiratory, ARI
- 5 x MSF Clinical guidelines. English version: http://www.refbooks.msf.org/msf_docs/en/Clinical_Guide/CG_en.pdf
- 5 x MSF Clinical guidelines. French version: http://www.refbooks.msf.org/msf_docs/fr/Clinical_Guide/CG_fr.pdf
- 5 x BOWL, 0.5 l, plastic
- 10 x BUCKET, food proof plastic, 10l, grad, stackable + lid white
- 100 x CUP, 250 ml, plastic, red
- 10 x MEASURING JUG + LID, 1 l, graduated, transparent
- 5 x MEASURING JUG + LID, 2 l, graduated, transparent
- 10 x SPOON, soup, stainless steel, 15 ml
- 25 x SPOON, coffee, stainless steel, 5 ml

TECHNICAL NOTES

10 x TOWEL, HAND, sponge
1 x COTTON WOOL, hydrophilic, roll, 500 g
10 x TAPE, ADHESIVE, ROLL, 2 cm x 5 m
1000 x BAG, plastic, for drugs, 6 x 8 cm
10 x BLANKET, SURVIVAL, 220 x 140 cm, thickness 12 microns
200 x DEPRESSOR, TONGUE, wooden
300 x GLOVES, EXAMINATION, latex, s.u. non sterile, large
1000 x GLOVES, EXAMINATION, latex, s.u. non sterile, medium
15 x THERMOMETER, ELECTRONIC, accuracy 0.1°C + case

Annex 18: Management of medical complications in the presence of severe acute malnutrition

This annex is intended for clinical health workers (Trained physicians and nurses) with responsibility for the clinical management of children with SAM with medical complications.

The metabolism of children with SAM with medical complications is seriously disturbed, and the immune system seriously impaired. This involves large movements of electrolytes and water between the various compartments of the body. Such temporary electrolyte disequilibrium makes the patient more vulnerable to misdiagnosis and mismanagement of conditions like dehydration or severe anaemia which can in turn lead to death from heart failure. Hypoglycaemia, hypothermia, electrolyte imbalance, micronutrient deficiencies and severe infections are commonly associated with SAM, sometimes without obvious clinical manifestations. The standard treatment for conditions like dehydration and severe anaemia given to non-malnourished children can lead to death if applied to children with SAM.

Case management of children with SAM and medical complications should only be conducted by clinical staff who has received the appropriate training. This section provides an introduction to the main principles of the management of complications and should not be taken as a reference guide. There are many detailed guidelines available^{40,41}.

Dehydration

Dehydration in marasmus

Misdiagnosis and mistreatment for dehydration is the commonest cause of death in the child with SAM under treatment. In marasmus, all classical signs of dehydration are unreliable and should not be used for diagnosis of dehydration. Skin pinch (tent sign), sunken eyes and dryness are all signs of marasmus as well as of dehydration. Diagnosis of dehydration should mainly be based on the recent *history* rather than on child's examination alone.

For a diagnosis of dehydration to be considered there needs to be:

- Definite history of significant recent fluid loss (Diarrhoea looking like water, not just 'loose' stools, appearing with sudden onset in the last hours or days)
- Clear history of a recent change in the child's appearance
- The child must not have any oedema.

If in addition to the above, the child presents a weak or absent radial or femoral pulse, and cool or cold hands and feet then the patient is going into shock. If there is also loss of consciousness the shock is severe⁴².

The dehydrated child with SAM should be rehydrated orally. Intravenous infusions are only used when there is severe shock or loss of consciousness.

Before starting treatment, register weight, respiratory rate, and level of the liver edge. In addition, heart sounds and pulse rate can be assessed. Initially, **5 ml/kg bodyweight of ReSoMal should be administered every 30 minutes**. Monitoring of rehydration should be carried out following weight change. Every hour, reassess weight and all the other constants (respiratory and pulse rate, level of liver edge, heart sounds). Adapt rehydration with care. If weight increases and the constants increase, stop rehydration and reconsider diagnosis. During rehydration breastfeeding should not be interrupted. All other sources of fluids should be stopped.

⁴⁰ WHO (1999) *Management of severe malnutrition: a manual for physicians and other senior health workers*. Geneva: WHO

⁴¹ Golden, M. And Grellety, Y. (2006) *Guidelines for the management of the severely malnourished* ACF International

⁴² It is also important to differentiate diagnosis from toxic shock (drugs, traditional medicines or infection), septic shock, liver failure and cardiogenic shock. Treatment of such conditions on the basis that they are 'dehydrated' can easily lead to cardiac overload and death of the patient.

TECHNICAL NOTES

In cases of dehydration shock the patient should be treated during the first hour with

- Half strength Darrow's solution, Ringer-Lactate with 5% Dextrose IV, or
- Half strength saline with 5 % Dextrose at 15 ml/kg IV

The child should then be reassessed and treatment continued if the child's weight is stable or decreasing until improvement of the child's condition.

Continue with oral rehydration (Or with a NGT) with 10 ml/kg/hour of ReSoMal when signs of shock are under control and the status of the patient improves. If the child's condition worsens during IV rehydration and weight increases, stop all fluids and reconsider diagnosis.

Box 16: Use of ReSoMal

There should never be free access to oral rehydration solution (ORS) or ReSoMal (Rehydration solution for the malnourished, adapted from ORS) for children in inpatient care.

The old practice of giving this product to children with loose stools or diarrhoea (In the absence of a proper diagnosis of dehydration) should be strongly discouraged. Children with persistent diarrhoea (Diarrhoea since more than 2 weeks) do not usually need rehydration. Their metabolism has adapted to the frequent diarrhoea and should not be rapidly rehydrated.

ReSoMal should never be used at outpatient care: children presenting dehydration should be referred to inpatient care.

Dehydration in kwashiorkor

Kwashiorkor patients are over-hydrated, but they are frequently hypovolemic due to dilation of blood vessels with low cardiac output.

If the child with kwashiorkor has definite watery diarrhoea and is deteriorating clinically, fluid loss can be replaced carefully at the rate of 30 ml of ReSoMal per watery stool.

The treatment of hypervolemia in kwashiorkor is the same as the treatment of septic shock. Monitor fluid replacement carefully in kwashiorkor, as there is a high risk of cardiac congestion.

Septic shock

Septic shock presents with signs of dehydration and cardiogenic shock. Differential diagnosis is difficult. Signs of hypovolemic shock are a fast weak pulse, cold peripheries, disturbed consciousness, absence of signs of heart failure.

Immediate treatment:

- Give broad-spectrum antibiotics (Second line added to first line if already in place)
- Keep warm to prevent hypothermia
- Give sugar-water by mouth or NG tube to prevent hypoglycaemia
- Avoid washing, excess examination or other investigations, to reduce stress to the child
- Do not transport if at all possible

Then:

- In patients with incipient septic shock: give standard F75 diet by NG tube
- In patients with developed septic shock (Unconscious due to poor brain perfusion): Give a slow IV infusion of one of the following: Whole blood of 10 ml/kg over at least 3 hours (no other liquids during this time) or any of the infusions recommended above for dehydration shock with 5 per cent glucose. Monitor every 10 minutes for signs of deterioration (over hydration or heart failure, expressed as an increased respiratory rate, development of grunting respiration, increasing liver size or vein engorgement). As soon as the patient improves stop all IV and continue with F75 diet.

Heart failure

Diagnosis: Physical deterioration with weight gain, sudden increase in liver size, tenderness in liver, increased respiratory rate, grunting respiration, crepitations in lungs, prominent superficial and neck veins, engorgement of the neck veins when the abdomen is pressed, increased oedema or reappearance of oedema, among other clinical signs and symptoms. It progresses to marked respiratory distress with rapid pulse, cold hands and feet, oedema and cyanosis and sudden death from cardiac shock.

Heart failure and pneumonia may be difficult to tell apart as they can be clinically similar. When weight gain precedes or is associated with the symptoms, heart failure should be the first diagnosis. If there is loss of weight, consider pneumonia instead.

Children with oedema do not necessarily present weight gain during heart failure if the expanded circulation is due to mobilisation of oedema fluid from the tissues to vascular space.

Treatment:

- Stop all intakes of oral or IV fluids. No fluid or food should be given until heart failure has improved (Even if this takes 24 to 48 hours). Small amounts of sugar-water can be given orally to prevent hypoglycaemia.
- Give Furosemide (1 mg/kg)
- Digoxin can be given in a single dose (5 micrograms/kg, lower than the normal dose)

If heart failure is associated with severe anaemia, treatment of the heart failure takes precedence over the treatment of anaemia.

Hypothermia

Rectal temperature below 35.5°C or under arm temperature below 35°C is usually a symptom of severe infection and needs to be treated as such. Use the kangaroo technique (place the child directly on the mother's skin and wrap mother and child together) to heat the child. Cover the head of the child.

- Give hot drinks to the mother, so her skin gets warmer
- Monitor body temperature
- Keep room warm (28°C to 32°C)
- Treat for hypoglycaemia and give second line antibiotic treatment

Severe anaemia

Symptoms of moderate and severe anaemia may appear between day two and day 14 of treatment of SAM, due to the movement of fluids from tissues (oedema and intracellular water) to vascular space both in marasmus and kwashiorkor. This temporary excess of fluids will produce dilution anaemia (i.e. pseudo-anaemia) that should never be treated with transfusions (this risks aggravating the problem and inducing cardiac overload and death).

Pseudo-anaemia normally resolves spontaneously after 2 or 3 days when kidney function recovers and excess fluids can be eliminated. For this reasons, it is always advised to measure haemoglobin concentration on admission. If anaemia is detected in the first 24 hours of treatment (haemoglobin concentration less than 40 g/l, or packed-cell volume less than 12 per cent) the child has severe anaemia.

If the child has true severe anaemia:

- Give 10 ml/kg of packed red cells or whole blood slowly over 3 hours
- No other liquids or food should be given until 3 hours after blood transfusion
- No child should be transfused between 48 hours after start of treatment with F75 and 14 days later
- Do not give Iron during the Stabilisation phase to children with SAM with medical complications

Hypoglycaemia

Hypoglycaemia presents most often in children that have travelled long distances to attend the site. As a preventive measure, these children should be given sugar-water as soon as they arrive. In addition, patients that develop hypothermia or have septic shock should be given extra sugar regardless of their blood glucose levels. Main signs of hypoglycaemia are sleepiness usually accompanied by eye lid retraction.

Treatment:

- If patient is conscious and able to drink, give 50 ml (5 to 10 ml/kg) of sugar-water (Approx. 10 per cent ordinary sugar in potable water), or F75 (or F100) diet by mouth
- If patient is losing consciousness give 50 ml of sugar-water via naso-gastric tube immediately
- If patient is already unconscious, give same amount via naso-gastric tube. Also administer glucose as a single intravenous injection (Approx. 5 ml/kg of sterile 10 per cent glucose solution)
- All malnourished patients with suspected hypoglycaemia should be treated with second line antibiotics as infection is a frequent cause of hypoglycaemia
- The response to treatment is very rapid. If a very lethargic or unconscious patient does not respond consider another cause for the symptoms