Government of Sudan
Federal Ministry of Health

Interim Manual
Community-Based Management of Severe Acute Malnutrition
Version 1.0

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Foreword

Nutrition is a priority for Sudan. Nutrition issues are the focus of Millennium Development Goals (MDGs) four (to reduce child mortality) and five (to improve maternal health), and constitute a considerable factor in the MDGs' achievement. Nutrition is by its nature a cross-cutting issue with many sectors involved in improving health, infant and young child feeding and care, and food security. These sectors are therefore involved in planning and implementing services and programmes that have an impact on nutrition. Nutrition is the subject of interest for many actors and donors who respond to frequent nutrition crises in the country. These crises compelled the development of the community-based management of acute malnutrition (CMAM) manual, which place more emphasis on protocols to treat acute malnutrition at the community level. Community-based treatment protocols will result in more effective and efficient health services delivery and in the overall reduction of severe acute malnutrition (SAM) among children in Sudan.

I commend this document to all stakeholders in the health sectors in particular and the Sudanese public and nutritional health community in general.

---Signature---

Name and Title

Place and Date

Acronyms and Abbreviations

AIDS	Acquired immune deficiency syndrome
ACT	Artemisinin-based combination therapy
ART	Antiretroviral therapy
AWG	Average daily weight gain
BCC	Behaviour change communication
BMI	Body mass index
C-IMCI	Community-Integrated Management of Childhood Illness
CBI	Community-Based Initiative
CBO	Community-based organisation
CCP	Critical care pathway
CFCI	Child Friendly Community-Based Initiative
cm	Centimetre(s)
CMAM	Community-Based Management of Acute Malnutrition
CMI	Community Malaria Initiative
CMV	Combined mineral and vitamin mix
dl	Decilitre(s)
ENP	Essential Nutrition Package
EPI	Expanded programme of immunisations
F75	Formula 75 therapeutic milk
F100	Formula 100 therapeutic milk
FBF	Fortified-blended food
FGD	Focus group discussion
FMOH	Federal Ministry of Health
g	Gram(s)
GAM	Global acute malnutrition
GM	Growth monitoring
Hb	Haemoglobin
HFA	Height-for-age
HIV	Human immunodeficiency virus
HMIS	Health Management Information System
IDP	Internally displaced person
IM	Intramuscular
IMCI	Integrated Management of Childhood Illnesses
IU	International unit
IV	Intravenous
IYCF	Infant and young child feeding
kcal	Kilocalorie(s)
kg	Kilogram(s)
KII	Key information interview
L	Litre(s)
LOS	Length of stay
M&R	Monitoring and reporting
MAM	Moderate acute malnutrition
MDG	Millennium Development Goal
mg	Milligram(s)
ml	Millilitre(s)
mm	Millimetre(s)
mmol	Millimole(s)
MOH	Ministry of Health
MOV	Means of verification
MUAC	Mid-upper arm circumference
NAC	National advisory committee
NCHS	National Centre for Health Statistics
NGO	Nongovernmental organisation
NGT	Nasogastric tube
NIS	Nutrition Information System
NNP	Sudanese National Nutrition Policy

ORS	Oral rehydration solution
PLHIV	People living with HIV
PLW	Pregnant and lactating women
ReSoMal	Rehydration Solution for Malnutrition
RUTF	Ready-to-use therapeutic food
SABA	Sudanese Association for Breastfeeding Action
SAM	Severe acute malnutrition
SD	Standard deviation(s)
SFP	Supplementary feeding programme
SMOH	State Ministry of Health
SS	Supplementary suckling
SWOT	Strengths, weaknesses, opportunities and threats
TB	Tuberculosis
TFC	Therapeutic feeding centre
TWG	Technical Working Group
UN	United Nations
UN/SCN	United Nations Standing Committee on Nutrition
UNICEF	United Nations Children's Fund
US	United States
RDA	Recommended Daily Allowance
WFA	Weight-for-age
WFH	Weight-for-height
WFL	Weight-for-length
WFP	World Food Programme
WHO	World Health Organisation
µg	Microgram(s)

1. Introduction

The CMAM manual for Sudan addresses the *community-based management of severe acute malnutrition (SAM) in children 6-59 months* and includes community outreach, outpatient care and inpatient care for the management of SAM. Community outreach is an essential part of the community-based approach since the success of the service relies on early detection and referral of cases with SAM through community participation, with an aim to reach children early in the development of the acute malnutrition condition. In a next stage, community-based management of moderate acute malnutrition (MAM) will be added to the manual to complete the overall CMAM approach. For the time being, the manual will use the acronym CMAM while only community-based management of SAM is covered.

The CMAM manual for Sudan evolved from the Sudan manual on the *Management of Acute Severe Malnutrition*, reflecting new evidence and the transition to the World Health Organisation (WHO) 2006 Child Growth Standards (WHO standards).

The manual seeks to improve the management of SAM in children 6-59 months with medical complications in inpatient care and without medical complications in outpatient care, as children without medical complications do not require hospitalization but can be treated at the community level.

The manual provides practical and easy-to-follow guidance based on evidence and best practices in community-based management of SAM in children 6-59 months. However, the manual also describes the management of SAM in infants under 6 months, and children above five, adolescents and adults in chapters five and six that are not based on evidence and are subject to further research. Both chapters provide guidance based on current practices and will need to be reviewed whenever new evidence is made available.

The CMAM manual will serve as a basis for the development of national operational guidelines and job aids. Adherence to this manual—and hence the national operational guidelines—will contribute significantly towards improving the performance of the management of SAM as measured in terms of increases in recovery rates, reductions in case fatality and defaulting rates, and increases in service access and utilization (coverage). It will also contribute towards ensuring the standardised treatment, and monitoring and reporting (M&R). The manual can also be used as a mobilising force for addressing SAM and strengthening capacities. The manual will facilitate the integration of the management of SAM into the primary health care system, while compliance will contribute in the overall reduction of child mortality in Sudan.

The CMAM manual is intended to be used by health and nutrition managers and health care providers working at different levels of health and nutrition service provision in Sudan, as well as national training institutions and implementing partners involved in pre- and/or in-service training.

It is recommended that the CMAM manual will be reviewed after one year in-use and be subject to regular updates to reflect evidence and current best practices.

1.1 Acute Malnutrition as a Form of Undernutrition

1.1.1 WHAT IS UNDERNUTRITION?

Undernutrition is a composite form of a deficiency in nutrient intake and/or absorption in the body. There are four forms of undernutrition: acute malnutrition, stunting, underweight and micronutrient deficiencies. The four forms can appear isolated or in combination, but most often overlap in one child or in a population.

Undernutrition is identified through anthropometric indicators and clinical signs. There are four common anthropometric nutrition indices: mid-upper arm circumference (MUAC) and weight-for-height (WFH) which are used to assess wasting, height-for-age (HFA) which is used to assess

stunting, and weight-for-age (WFA) which is used to assess underweight. The presence of bilateral pitting oedema is a clinical sign indicating SAM.

Nutrition indicators[1] are the classification of specific measures of nutrition indices based on cutoff points. They measure the clinical phenomena of undernutrition and are used for making a judgment or assessment.

1.1.2 WHAT IS ACUTE MALNUTRITION?

Acute malnutrition is caused by a decrease in food consumption and/or illness resulting in bilateral pitting oedema or sudden weight loss. It is defined by the *presence of bilateral pitting oedema* or by *wasting*. Anorexia, or poor appetite, and medical complications are clinical signs indicating or aggravating the severity of acute malnutrition.

There are two forms of acute malnutrition:

- SAM, or severe acute malnutrition, **is defined by the presence of bilateral pitting oedema or severe wasting**. A child with SAM is highly vulnerable and has a high risk of death.
- MAM, or moderate acute malnutrition, **is defined by moderate wasting**.

The following terms are used to describe the clinical manifestations of SAM:

- Marasmus, or severe wasting
- Kwashiorkor, or bilateral pitting oedema
- Marasmic kwashiorkor, or bilateral pitting oedema occurring in children that are otherwise marasmic[2]

1.1.3 ASSESSING ACUTE MALNUTRITION

Bilateral pitting oedema is a clinical manifestation of acute malnutrition caused by an abnormal infiltration and excess accumulation of serous fluid in connective tissue or in a serious cavity. Bilateral pitting oedema is verified when thumb pressure applied on top of both feet for three seconds leaves a pit (indentation) in the foot after the thumb is lifted.

Wasting in children 6-59 months is assessed by a low MUAC measurement and/or a low WFH index using the WHO standards.

- MUAC involves measuring the circumference of a child's left mid-upper arm. MUAC < 115 millimetres (mm) for children 6-59 months indicates SAM. MUAC ≥ 115 mm and < 125 mm for children 6-59 months indicates MAM. MUAC is a better indicator of mortality risk associated with acute malnutrition than WFH z-score (WHO standards).[3] MUAC is used for children 6 months and older. A child's date of birth is assessed based on the mother's or caregiver's proof or recall, and no proxy of height to assess age is used for infants and young children.

- The WFH index shows how a child's weight compares to the weight of a child of the same height and sex in the WHO standards.[4] A WFH standard deviation (SD) below -2 z-score of the median (WFH < -2 z-score) of the WHO standards indicates wasting. Severe wasting is indicated by a WFH < -3 z-score. Moderate wasting is indicated by a WFH ≥ -3 and < -2 z-score.

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[1] A good nutrition indicator detects as many people at risk as possible (sensitivity) without including too many people who are not at risk (specificity). A good nutrition indicator should also be functionally meaningful (i.e., related to the risk of morbidity and mortality) and be sensitive to change.

[2] 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. Definition of marasmic kwashiorkor, page 15.

[3] WHO, WFP, UN/SCN and UNICEF. 2007. *Community-Based Management of Severe Acute Malnutrition: A Joint*: WHO; WHO and UNICEF. 2009. *WHO child growth standards and the identification of severe acute malnutrition in infants and children: A Joint Statement by the World Health Organization and the United Nations Children's Fund*. Geneva: WHO.

[4] The WHO 2006 Child Growth Standards were developed from a multi-centre growth reference study that followed optimal child growth of a cohort of children in Oman, Norway, Ghana, India and the United States.

Acute malnutrition in infants under 6 months is identified by the presence of bilateral pitting oedema and/or visible wasting. In addition, infants at high risk of wasting will receive community-based care to support infant and young child feeding (IYCF) and maternal care practices to address the related inadequate feeding or care of the infant or lactating mother.

In most cases, anthropometric measurements or presence of bilateral pitting oedema, alone, can confirm the clinical diagnoses of SAM (see **Table 1**). Nevertheless, clinical signs are essential to assess because they will indicate the severity of illness. **Table 2** provides the case definitions of the medical complications of importance in the presence of SAM.

In the presence of anthropometric confirmation of SAM, it is essential to assess the following clinical signs:

- Anorexia, poor appetite
- Intractable vomiting
- Convulsions
- Lethargy, not alert
- Unconsciousness
- Hypoglycaemia
- High fever
- Hypothermia
- Severe dehydration
- Lower respiratory tract infection
- Severe anaemia
- Eye signs of vitamin A deficiency
- Skin lesion

Table 1. Independent Indicators and Clinical Sign of Acute Malnutrition with Cutoff for SAM and MAM for Children 6-59 Months

	Bilateral pitting oedema	MUAC	WFH z-score
SAM:	Present	< 115 mm	< -3
MAM:	Not present	≥ 115 mm and < 125 mm	≥ -3 and < -2

Table 2. Case Definitions of Medical Complications with SAM

Medical Complication	Case Definition
Anorexia, poor appetite*	Child is unable to drink or breastfeed. Child failed ready-to-use therapeutic food (RUTF) appetite test.
Intractable vomiting*	Child is vomiting after every oral intake
Convulsions*	During a convulsion, the child has uncontrollable movements of limbs and/or face, and/or rolling eyes and/or loss of consciousness. Ask the mother if the child had convulsions during this current illness.
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 her face when talking, or is unusually sleepy.
Unconsciousness*	Child does not respond to painful stimuli (e.g., injection)
Hypoglycaemia	There are often no clinical signs for hypoglycaemia. One sign that does occur in a child with SAM is eye-lid retraction: child sleeps with eyes slightly open Blood glucose < 3 mmol/L, < 54 mg/dl
High fever	Child has a high body temperature, or axillary temperature ≥ 38.5° C, rectal temperature ≥ 39° C, taking into consideration the ambient temperature
Hypothermia	Child has a low body temperature, or axillary temperature < 35° C, rectal temperature < 35.5° C, taking into consideration the ambient temperature
Severe dehydration	For children with SAM, diagnosis of severe dehydration is based on recent history of diarrhoea, vomiting, high fever or sweating, and on recent appearance of clinical signs of dehydration as reported by the caregiver

Medical Complication	Case Definition
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 anaemia	Child has palmer 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); Hb < 6 mg/dl
Eye signs of vitamin A deficiency	Stages of xerophthalmia are: conjunctival xerosis – dry, opaque and dull conjunctiva with or without Bitot's spots (foamy material on conjunctiva); corneal xerosis – dry and dull cornea; keratomalacia – ulceration, necrosis, perforation of cornea, leading to total blindness
Skin lesion	Broken skin, fissures, flaking of skin

* denotes IMCI danger signs

1.1.4 PATHOPHYSIOLOGY OF SAM

There are approximately 40 known essential nutrients which, when not available in the right balance, result in undernutrition and increase the risk of severe illness and likelihood of death in young children. The nature and consequences of deficiencies of these essential nutrients is determined by the body's physiological response to their deprivation. The essential nutrients have been classified into Type 1 (functional) nutrients and Type 2 (growth) nutrients.

Examples of Type 1 nutrients are iron, iodine, vitamin C and vitamin A. In response to Type 1 nutrient deficiency, children's bodies continue to grow using up the stored nutrient, eventually leading to tissue depletion, metabolic dysfunction and consequent ill health. Examples of Type 1 nutrient deficiency include iron deficiency anaemia and scurvy. Even though the illness resulting from Type 1 nutrient deficiency has characteristic signs and symptoms, the deficiency is not identified through anthropometric measurements.

Examples of Type 2 nutrients are potassium, magnesium, zinc, selenium and amino-acids. In response to a Type 2 nutrient deficiency, the body stops growing and repairing tissue to conserve nutrients, and the body breaks down its own tissue to make the nutrients available. While Type 2 nutrient deficiency can be identified through anthropometric measurements (wasting and stunting), identifying the deficit nutrients is complex because deficiency in one Type 2 nutrient is often accompanied by deficiency in other Type 2 nutrients. Undernutrition accompanied by infection can operate in a self-reinforcing downward cycle of tissue depletion and lowered resistance to disease.

The pathophysiological responses to nutrient depletion place children with SAM at increased risk of life-threatening complications that lead to increased risk of death. Therefore successful management of SAM in children requires systematic medical treatment of underlying infections and a dietary treatment or rehabilitation with specially formulated therapeutic foods, such as F75 and F100 milk, or a ready-to-use therapeutic food (RUTF). Therapeutic foods have the correct balance of Type 1 and Type 2 nutrients, and a high nutrient density and bioavailability. The treatment aims to restore the metabolism, through correction of electrolyte balance, reversal of metabolic abnormalities, restoring the organ functions and provision of nutrients for catch-up of growth.

Because of the pathophysiological changes that accompany SAM, these children often do not present typical clinical signs of infection (e.g., fever) that sick children without SAM have when they are ill. Consequently, severely malnourished children need to be provided with systematic medical treatment for underlying infections. Treatment protocols for children with SAM for some medical complications, such as dehydration or diarrhoea, differ from the classical treatment protocols for ill children without SAM. Misdiagnosis of medical complications, inappropriate treatment and feeding of severely malnourished children contributes to slow convalescence and increased risk of death; thus, adherence to these guidelines in their entirety is critical.

1.2 The Burden of Acute Malnutrition

1.2.1 BURDEN OF ACUTE MALNUTRITION AT THE GLOBAL LEVEL

Childhood undernutrition is an underlying cause of 35 percent of deaths among children under five years old in the developing world. According to the 2008 Lancet Series on Maternal and Child Undernutrition, SAM is one of the most important contributing causes of childhood mortality. An estimated 19 million children under five suffer from SAM, with half a million dying directly because of SAM each year. These numbers do not include children suffering from bilateral pitting oedema, which is the most lethal form of acute malnutrition.[5]

Undernutrition also has a lasting effect on its survivors, reducing their income potential by leaving them less able to learn or perform physical labour and trapping them in a generational cycle of poverty. Undernutrition is responsible for 11 percent of disability adjusted life years among young children worldwide. Severe wasting during the first 24 months of life leads to a loss of up to 18 points of an individual's expected intelligence quotient score. The negative impact of undernutrition on the physical and mental potential of the population diminishes national productivity, costing countries as much as three percent of their gross domestic products.

The international aid community has traditionally considered high rates of acute malnutrition the result of crises such as drought and conflict rather than a chronic problem with developmental causes. As a public health concern, acute malnutrition has therefore mainly been the target of stand alone, emergency nutrition interventions. While humanitarian emergencies do cause widespread undernutrition, in reality, the majority of acutely malnourished children live in stable countries not currently experiencing a crisis. They are undernourished because of complex behavioural and environmental factors rather than a temporary loss of access to food due to an emergency. Addressing the majority of the global burden of undernutrition requires that nutrition programmes be integrated into health systems in sustainable ways.[6]

In 2000, United Nations member states adopted the Millennium Declaration, committing themselves to reducing poverty and improving the lives of the world's poorest citizens by 2015. A series of eight goals, known as the Millennium Development Goals (MDGs), lay out an action plan to reduce poverty, disease and hunger worldwide. MDG One is to eradicate extreme poverty and hunger by 2015. MDG Four is to reduce child mortality by two thirds by 2015. As this deadline fast approaches, achieving these goals is further threatened by global food price increases, inadequate mother and child feeding and care practices, civil strife, and environmental disasters. Investments by the international community and national governments in evidence-based, high impact nutrition interventions to prevent and treat acute malnutrition are therefore critical.

1.2.2 BURDEN OF ACUTE MALNUTRITION IN SUDAN[7]

Sudan has persistent elevated levels of undernutrition. Poor health conditions, suboptimal maternal and child feeding and care practices, and food insecurity, compounded by high rates of poverty and illiteracy, play a complex and interrelated role as contributing factors to the widespread undernutrition. Although rates vary significantly between states, nationally the global acute malnutrition (GAM) is 14.8 percent (< -2 WFH z-score), just below internationally recognized thresholds for a nutrition emergency. Underscoring pervasive, long-term undernutrition and morbidity throughout the country, other nutrition indicators are also poor: 31 percent of children under age five are underweight (< -2 WFA z-score) and 32.5 percent are stunted (< -2 HFA z-score). While data are limited, available information from localised surveys suggests that micronutrient deficiencies are also prevalent. According to the majority of nutrition surveys, the greatest risk of undernutrition is among children 6-

[5] Black, R.E., L.H. Allen, Z.A. Bhutta, L.E. Caulfield , M. de Onis, M. Ezzati, C. Mathers, and J. Rivera. January 2008. "Maternal and child undernutrition: Global and regional exposures and health consequences." *The Lancet* 371 (9608): 243-260.

[6] Gross, R., and P. Webb. 2006. "Wasted time for wasted children: Severe child undernutrition must be resolved in non-emergency settings." *The Lancet* 367: 1209-1211.

[7] Sudan Household Health Survey, 2006; Review of the Millennium Development Goals for Health; Nutrition and Population, Republic of Sudan, 2003; Sudan Health Strategy 2007-2011; FAO/WFP Crop and Food Supply Assessment Mission to Sudan, February 2007.

29 months, indicating that sustained efforts to address the nutrition needs in this age group are critical.

Among children under five, Sudan has a heavy burden of communicable diseases most associated with undernutrition, such as malaria, acute respiratory infection and diarrhoea. At the same time, Sudan has low basic health service coverage—between 45-60 percent—and 22 percent of existing primary health care facilities are able to provide the full minimum health care package. Only 41.4 percent of children 12-23 months currently receive the full expanded programme of immunisations (EPI). Facilities are typically understaffed and under-equipped, drug supplies are limited, and quality of services is variable. Many existing facilities are not functional.

IYCF and care practices are highly inadequate. Inappropriate breastfeeding practices and low dietary quality of complementary foods are recognised as the major causes of undernutrition in the infant and young child. In Sudan, one third or 33.7 percent of infants are exclusively breastfed and 55.8 percent of children 6-12 months receive complementary foods. Dietary diversity is limited and cultural food proscriptions prevent pregnant and lactating mothers and young children from consuming accessible nutritious foods. Health seeking behaviour for mothers and children remains inadequate. Environmental health and hygiene are also problematic with only 56.1 percent of households having access to improved sources of drinking water and 31.4 percent of households using improved sanitation facilities.

A large proportion of the population is chronically food insecure in terms of access, availability and use of nutritious food. Recurrent natural and man-made disasters have led to mass displacement and crippled the economy and livelihoods of both urban and rural populations. While 80 percent of the population depends on agriculture, crop production and livestock conditions face challenges from frequent drought, flooding, pest infestation and disease.

The nutrition situation in Sudan calls for action and the Government of Sudan's commitment to reach the MDGs.

1.3 Principles of the Community-Based Management of SAM

For a number of years, the main intervention for the treatment of SAM globally has been inpatient care provided either in paediatric wards or specialized therapeutic feeding centres (TFCs), following the WHO 1999 protocol for the management of SAM.[8] However, a new approach was developed following the invention and use of RUTF, whereby children with SAM without medical complications can start treatment for SAM in outpatient care (rather than inpatient care) and continue drug and dietary treatment in the home. Meanwhile, children with SAM with poor appetite and/or with medical complications are admitted to inpatient care but are referred to outpatient care as soon as their medical complication is resolving, and continue treatment until full recovery in the home. **Table 3** shows the classification of SAM that is used in the new community-based management of SAM approach. The use of MUAC as an independent criterion for SAM for children was also approved and makes detection of SAM in the community and at the health facility simple and effective.[9]

Evidence accumulated from early studies and field practice in Malawi, Ethiopia and Sudan, followed by more evidence from other countries, has led to the decentralised community-based approach that makes a distinction in severity of the condition of the child with SAM. The majority of children with SAM over 6 months who have appetite and no medical complications can be treated in outpatient care without needing to receive residential treatment. Small numbers of children with SAM who have lost appetite or developed medical complications need inpatient care. The approach is built upon a strong community outreach element for community participation and outreach for early case-finding

[8] WHO. 1999. *Management of severe malnutrition: A manual for physicians and other senior health workers.* Geneva: WHO.

[9] WHO. 1999. *Management of severe malnutrition: A manual for physicians and other senior health workers.* Geneva: WHO; WHO, WFP, UN/SCN and UNICEF. 2007. *Community-Based Management of Severe Acute Malnutrition: A Joint Statement by the World Health Organization, the World Food Programme, the United Nations System Standing Committee on Nutrition and the United Nations Children's Fund.* Geneva: WHO; WHO and UNICEF. 2009. *WHO child growth standards and the identification of severe acute malnutrition in infants and children: A Joint Statement by the World Health Organization and the United Nations Children's Fund*. Geneva: WHO.

and referral, which in turn increases service access and utilisation (coverage), and decreases the risk of children developing medical complications. As evidence shows, the impact of this intervention contributes considerably to reducing mortality associated with SAM.

The following is a brief overview of the community-based management of SAM approach based on a few key principles.

Table 3. Admission and Discharge Criteria to CMAM for Children Under 5 Based on Anthropometric and Clinical Status

Inpatient Care	Outpatient Care
Admission Criteria	
Children 6-59 months Bilateral pitting oedema +++ Or Any grade of bilateral pitting oedema with severe wasting Or SAM with any of the following medical complications: • Anorexia, poor appetite • Intractable vomiting • Convulsions • Lethargy, not alert • Unconsciousness • Hypoglycaemia • High fever • Hypothermia • Severe dehydration • Lower respiratory tract infection • Severe anaemia • Eye signs of vitamin A deficiency • Skin lesion Or • Referred from outpatient care according to action protocol Infants < 6 months Bilateral pitting oedema or Visible wasting - Includes infants with SAM ≥ 6 months and < 4 kg	Children 6-59 months Bilateral pitting oedema + and ++ Or Severe wasting (MUAC < 115 mm or WFH < -3 z-score) And Appetite test passed No medical complication Child clinically well and alert
Discharge Criteria	
Children 6-59 months *Referred to outpatient care:* Appetite returned (passed appetite test) Medical complication resolving Bilateral pitting oedema decreasing Child clinically well and alert (If admitted due to bilateral pitting oedema and severe wasting: criterion for referral is bilateral pitting oedema resolved) *Discharged cured (special cases):* 15 percent weight gain for two consecutive days Oedema free for two consecutive weeks Child clinically well and alert Infants < 6 months *Discharged cured:* If successful re-lactation and appropriate weight gain (minimum 20 g per day on breastfeeding alone for 5 days) and infant clinically well and alert – (if infant has no access to breastfeeding, see other guidance for non-breastfed children on replacement feeding)	Children 6-59 months *Discharged cured:* 15 percent weight gain for two consecutive visits Oedema free for two consecutive visits Child clinically well and alert *Children are referred to Supplementary Feeding if available*

1.3.1 COMMUNITY OUTREACH

Good community outreach is essential to make sure that undernourished children are detected early and referred for treatment. The aim is to detect and start the treatment of SAM before the onset of life threatening complications.

Community outreach also mobilises communities; it raises awareness of the aims of services and builds support for them. Moreover, it strengthens the community's awareness of causes, signs and treatment of SAM, and promotes health and nutrition behaviour change. Through community outreach, health care providers can better understand the needs of the local community and the factors that may act as barriers to accessing care, while promoting and supporting infant and child nutrition and care practices in the community to prevent malnutrition.

It is important to link community outreach for SAM with existing community health and nutrition outreach systems or initiatives, and further strengthen the outreach system.

1.3.2 OUTPATIENT CARE FOR CHILDREN 6-59 MONTHS

A nutrition and medical assessment carried out by a qualified health care provider should determine if a child 6-59 months with SAM has good appetite (passed the appetite test) and no medical complications, and can be admitted to outpatient care. The child should receive routine medication according to the treatment protocol as well as a home ration of RUTF equivalent to about 200 kilocalories per kilogram (kcal/kg) of bodyweight per day to last until the next health visit (usually weekly). Treatment is managed at the health facility, mobile clinic or decentralised health outreach points, and continued at home. The child returns to the health facility or outreach point for follow up of the health and nutrition progress and for replenishing RUTF supplies until full recovery.

Outpatient care is provided to the majority of children with SAM, those without medical complications and who have appetite. Outpatient care is also provided to children after stabilisation and referral from inpatient care to continue treatment and nutrition rehabilitation.

1.3.3 INPATIENT CARE

Anorexia, severity of illness and presence of medical complications are the main determinants for providing inpatient care to children 6-59 months with SAM.

A small proportion of children with SAM have poor appetite[10] or will develop medical complications that require intensive medical and nutrition care until their medical condition has stabilised, the medical complication is resolving and their appetite has returned. Children requiring inpatient care for stabilisation will be treated in paediatric wards or health facilities with bed capacity where skilled health care providers take care of children with SAM with poor appetite and/or with medical complications in inpatient care.

CMAM inpatient care treatment protocols[11] are adapted from the WHO 1999 protocol for the management SAM,[12] and refers the child 6-59 months with SAM to outpatient care as soon as the child's oedema is reducing, medical condition is resolving and/or appetite has returned. The child will then continue treatment in his/her home and receive monitoring and RUTF in outpatient care on a weekly basis until full recovery. In rare situations, children 6-59 months remain in inpatient care until full recovery.

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[10] Infection leads to loss of appetite in the acute phase. In addition, liver and metabolic disturbances that accompany type 2-nutrient deficiency also lead to loss of appetite in children with SAM.

[11] WHO, WFP, UN/SCN and UNICEF. 2007. *Community-Based Management of Severe Acute Malnutrition: A Joint Statement by the World Health Organization, the World Food Programme, the United Nations System Standing Committee on Nutrition and the United Nations Children's Fund.* Geneva: WHO; WHO and UNICEF. 2009. *WHO child growth standards and the identification of severe acute malnutrition in infants and children: A Joint Statement by the World Health Organization and the United Nations Children's Fund*. Geneva: WHO.

[12] WHO. 1999. *Management of severe malnutrition: A manual for physicians and other senior health workers.* Geneva: WHO.

All infants under 6 months with SAM as well as other age groups with SAM are treated in inpatient care until full recovery.

1.3.4 SUPPLEMENTARY FEEDING FOR CHILDREN 6-59 MONTHS AND PREGNANT AND LACTATING WOMEN (PLW) WITH MAM

Supplementary feeding programmes or services treat MAM in children 6-59 months and in other vulnerable groups, such as MAM in pregnant women, mothers with an infant under 6 months, individuals with special needs such as people living with HIV (PLHIV), people with tuberculosis (TB), and the elderly. A commonly known supplementary feeding approach in food insecure environments or emergencies is targeted supplementary feeding where a supplementary food ration is provided to individuals with MAM. Specific anthropometric criteria for entry and discharge are usually used.

The dietary requirements and programmatic evidence for the management of MAM are under revision at the global level, and improved guidance is expected shortly.

Note: No guidance, evidence or good practices on individual care or population-based strategies for MAM are provided in this manual. Nevertheless, the treatment of MAM with a dietary supplement appropriate for the children's condition is important.

Also, children with SAM would benefit after recovery from a dietary supplement and regular monitoring.

1.4 The Management of SAM in the Context of Sudan

1.4.1 OPERATIONAL PRACTICES ON COMMUNITY-BASED MANAGEMENT OF SAM

Until recently, the international recommendation was to refer children with SAM to hospital facilities for treatment. In the absence of a standard protocol, mortality of children suffering from SAM admitted to hospitals range 20-30 percent, with even higher levels of 50-60 percent among those with bilateral pitting oedema. In the absence of associated severe complications, this mortality can be reduced to levels as low as 5 percent or lower. Across most states in northern Sudan, SAM is treated in inpatient care, where malnourished children are admitted and given medical and nutrition care and are discharged upon full recovery.

Outpatient care was first piloted in North Darfur in 2001. Since 2004, the three Darfur states have operationalised CMAM with support from the United Nations Children's Fund (UNICEF) and international nongovernmental organisations (NGOs). These CMAM services are generally situated in camps for internally displaced persons (IDPs) or in residential areas where large numbers of IDPs have settled. Centralised inpatient care sites for stabilisation have been established. TFCs, often managed by State Ministries of Health (SMOHs), have continued to operate alongside the community-based approach in the Darfur states.

Currently, eight states provide treatment for MAM, with limited coverage, through supplementary feeding programmes (SFPs). Children visit health facilities every two weeks for anthropometric and clinical monitoring and collection of a dry supplementary ration based on a fortified-blended food (FBF) to be prepared and consumed at home. In areas where supplementary feeding is not available, caregivers of children with MAM only receive nutrition counselling.

1.4.2 POLICY FRAMEWORK FOR COMMUNITY-BASED MANAGEMENT OF SAM

Under the auspice of Primary Health Care, the *Health Sector Strategy (HSS) 2007-2011* refers to the needs to expand integrated management of childhood illness (IMCI) services in a phased manner and for concerted efforts to integrate nutrition services in areas where IMCI services have been established. However, the nutrition services listed in the strategy are preventative rather than therapeutic, which remains an urgent concern in the country. The document also only discusses the treatment of SAM under hospital care, even while Sudan moves toward a community-based model.

The *National Nutrition Policy (NNP) Strategies 2008-2012* lay out the policy framework for the treatment of SAM using the CMAM approach. Relevant sub-strategies are outlined under Strategy 1b, including to:

- Ensure adequate services are established to prevent and treat moderate and acute malnutrition within the public health system; based on evidence and prevalence of malnutrition in the catchment areas and using an integrated approach.
- Expand/scale up CMAM using a phased approach.
- Strengthen the system of screening and referral within the public health system.

Established under the framework of the NNP and Key Strategies, the *Essential Nutrition Package (ENP) to Prevent Malnutrition in Women of Reproductive Age and Infants and Young Children* is a package of priority interventions and practices proven to have a high public health and nutrition impact.

Implementation of the ENP is the responsibility of all front line primary health workers and nutrition staff at health facilities and the community level. Community volunteers also play an important role in implementing the ENP. The components of the ENP are:

- Promotion of maternal nutrition and child spacing
- Promotion of IYCF, including optimal breastfeeding and complimentary feeding practices
- Growth monitoring and promotion with referral to services for treatment of severe and moderate acute malnutrition where services are available
- Control of micronutrient deficiencies (promote and provide supplementation, promote dietary diversification and fortification)
- Promotion of immunization
- Promotion of family nutrition and dietary diversification
- Promotion of optimal hygiene and sanitation

The ENP will be a key tool for screening and referral to services that treat SAM. The infant and young child nutrition-related interventions included in the ENP should be routinely implemented at well baby and sick child consultation clinics, and during community health promotion sessions, home visits, various health campaigns and child health days.

1.4.3 NATIONAL STRATEGY FOR COMMUNITY-BASED MANAGEMENT OF SAM

The overall objective of scaling up CMAM services in Sudan is to reduce under-five morbidity and mortality rates through increased access to quality services for the management of acute malnutrition. To increase access, CMAM services will be integrated into routine child health services at an operational level and institutionalised through routine Federal Ministry of Health (FMOH) and SMOH support systems at an organisational level (e.g., logistics, supplies, staff, training, reporting).

Through the national advisory committee for CMAM and technical working groups (TWGs), the FMOH and SMOHs will collaborate with UNICEF, WHO, the World Food Programme (WFP), national training institutions, operational NGOs and other relevant partners to coordinate, technically lead and support CMAM integration into the national health system. The CMAM support team based at the FMOH will provide continuous technical support for strengthening capacities throughout the country.

National operational interim guidelines for CMAM will be developed and endorsed, based on the Sudan manual for the community-based management of SAM which provides standardised protocols and M&R tools. A national and state CMAM data repository informed by a minimum reporting package will be established and linked to the national health management information system and the national nutrition surveillance system.

A capacity development strategy will target different audiences. Health managers and health care providers involved in CMAM will benefit from in-service training and mentoring support. National training institutions for health professions will be encouraged to include sustainable pre-service training for CMAM. Facilitator's training will be established to broaden the base of trainers on CMAM. Learning sites and centres of excellence for inpatient care, outpatient care and community outreach will be established at the national and state levels, supported by skilled mentors and accommodating trainees to gain practical experience. National training materials will be developed, adapted from internationally developed generic sources. Context-specific job aids will be available to health care

providers and managers. Other opportunities for continuous learning and information sharing will be explored and include technical review meetings and workshops. National research institutions will be encouraged to become involved in research on acute malnutrition.

CMAM phased integration and scale-up includes establishing outpatient care, inpatient care and community outreach services for CMAM in the non-Darfur states and consolidating standardised CMAM services in the Darfur states. In the early implementation phase, state scale-up is expected to start with establishing one learning site in one locality per state. After consolidating quality CMAM services, gradual expansion to all health facilities of the inpatient care site catchment area will occur. This phased integration process will inform the planning for expanding services across priority states.

A national system to access and supply therapeutic food, equipment and medicines for the management of acute malnutrition will be explored and strengthened, including the national production of RUTF.

Essential quality assurance tools for planning, implementing, M&R on CMAM will be adapted from generic tools and considered for use in Sudan.

2. Community Outreach

Community outreach covers the community participation and outreach activities in the community, and is critical for successful CMAM implementation.

Box 1. Community Outreach for CMAM Terminology

Community Participation for CMAM is the active involvement of the community in the planning, management and implementation of CMAM services.

Community Outreach for CMAM is the community screening for early case-finding and referral of children with SAM, home visits to follow problem cases, and health and nutrition education and behaviour change communication (BCC). Community Outreach is also used as an umbrella term for community participation and outreach.

Community Outreach Worker is used as an umbrella term for various MOH and NGO staff involved in extension work (e.g., community health workers), and volunteers who will be identified to be involved in community participation and outreach activities.

The aims of community outreach for CMAM include:

- Strengthening community health committees and encouraging sustainability and ownership of services through involving the community in planning, management and implementation of the services
- Empowering the community through increasing knowledge of causes, types, identification and treatment of SAM
- Strengthening early case-finding and referral of new SAM cases and follow-up of problem cases (e.g., absentees, defaulters, non-responders to treatment)
- Promoting health and nutrition education and behaviour change
- Increasing service access and utilisation (coverage) for the management of SAM

Community outreach is a continuous process that involves ongoing community engagement in the planning and management of CMAM activities, and in supporting community outreach activity. Community engagement provides a feedback loop that enables nutrition and health care providers to understand the constraints that might hinder effective provision of care in both outpatient and inpatient care settings.

CMAM managers, coordinators and focal persons at the state and locality levels should proactively work to engage the many relevant health and nutrition initiatives and networks already existing in Sudan in the planning and implementation of CMAM (see **Box 2**).

The steps of Community Outreach for CMAM are:

- Step 1: Conduct a Community Assessment
- Step 2: Formulate a Community Participation and Outreach Strategy
- Step 3: Conduct Training on Community Participation and Outreach for CMAM
- Step 4: Implement Community Outreach Activity
- Step 5: Conduct Supervision M&R

Box 2. Community Health Initiatives

There are many community-based health and nutrition initiatives in operation across Sudan supported by a wide variety of agencies (e.g., government, United Nations [UN], national NGOs, international NGOs). Many of these initiatives work through committees and volunteers at the community level. Also, certain health and nutrition staff employed at the health facility level have clearly defined roles at the community level as part of their routine job descriptions.

FMOH-supported community health initiatives include:

- Community-Based Initiative (CBI): 12 states, 27 localities and 104 communities
- Community Integrated Management of Childhood Illnesses (C-IMCI): 15 states, 55 localities and 126 communities
- Community Malaria Initiative (CMI): four states, four localities, 150 community members trained
- Community-Based Maternal and New Born Care project (to be piloted in two states)

Health facility staff cadres with a clearly defined role in the community include nutrition educators, midwives, health visitors, assistant health visitors, nurses, community health workers (reinvigoration of Cadre to be piloted in five states), vaccinators and Integrated Primary Health Care Cadres.

Major Community Health Initiatives supported by international agencies (in more than one state) include the UNICEF Child Friendly Community-based Initiative (CFCI) (nine states, 41 localities and 700 communities) and the World Bank Community Development Fund (four states).

Major national NGOs involved at the community level and working across a number of states include the Sudanese Red Crescent Society (15 states) and the Sudanese Association for Breastfeeding Actions (SABA) (15 states).

2.1 Step One: Conduct a Community Assessment

An assessment of the community is essential to determine factors that are likely to impact the delivery of services and the demand for CMAM services, and to plan a strategy for community outreach. The assessment should be conducted at the locality and sub-locality community levels.

2.1.1 OBJECTIVES OF THE COMMUNITY ASSESSMENT

The objectives of the community assessment are to:

- Explore the various community actors and initiatives that already exist in the community, including formal and informal initiatives, networks and practices
- Analyse identified strengths and weaknesses of current community initiatives and practices, and opportunities for and threats to future CMAM collaboration
- Identify the best community actors and strategy for community outreach

The outcomes of the community assessment will address factors within the community that are likely to affect the demand for the CMAM services and propose strategies that effectively meet the demand.

2.1.2 THE ASSESSMENT TEAM

The assessment should be conducted by a team of selected staff from the state and locality levels. The team should include nutrition staff, focal persons or coordinators for community level activities, and other health care providers (e.g., health visitor, medical assistant, public health officers (see **Box 2**). The team will be trained on how to conduct a community assessment prior to undertaking the activity (see **Step Three**).

A Team Leader with an understanding of CMAM and experience in undertaking community assessments will be required to train, guide and mentor the team. It is anticipated that as states are establishing CMAM, external technical support will be required to initially take the position of Team Leader until state-level capacity for conducting community assessments has been developed.

2.1.3 AT THE STATE AND COMMUNITY LEVELS

At the State Level

A state-level review should be initially conducted to analyse the situation and to select the locality or communities.

Methods of the state-level review include*:*

- Meeting with representatives from the SMOH, NGOs and community-based organisations (CBOs) to understand and analyse the local context in terms of patterns of malnutrition and health seeking behaviours, community coherence, and the existence of community networks and potential partners/allies in supporting CMAM activities
- Revising key reference documents for the state, localities and communities, e.g., Knowledge, Attitudes and Practice or other health and nutrition surveys; food security reports
- Selecting the locality and communities for the assessment; a map of the locality that may be hand-drawn should be available before starting the assessment with key communities (urban areas or villages), populated areas and health facilities plotted on it.
- Not all communities in a locality will be assessed. Where a locality is homogenous, a representative sample of communities will be selected for assessment. The findings will then be generalised. Where a locality is heterogeneous, a purposive sample of communities from each group should be selected. The findings from each group can be generalised for that group. Specific differences between the groups should be highlighted.

At the Community Level

The community assessment will identify community structures and systems including:

- Key community figures and their respective roles and responsibilities
- Various community groups and organisations, and if/how these groups link together to coordinate activities
- Formal and informal channels of communication and the relative effectiveness of these channels
- Existing health, nutrition and livelihood initiatives
- Various ethnic groups and specific vulnerable groups

The community assessment will also identify health and nutrition and acute malnutrition knowledge, attitudes and practices, specifically:

- Understanding acute malnutrition, its causes and the magnitude of the problem
- The various local terms used for malnutrition
- Common treatments currently for acute malnutrition
- Health and nutrition care and feeding practices, and health seeking behaviours

The community assessment should build on information from the state-level review and the secondary data that has been made available. The time required will vary depending on the size of the catchment area and its homogeneity, and the size of the team. At least two days should be allocated for a catchment area with one inpatient care site and few outpatient care sites to allow adequate time to meet with the relevant groups and individuals.

The community assessment will be conducted using qualitative research methods and tools including:

- **Focus group discussions (FGDs):** FGDs are used to get an understanding of community perceptions about various issues. Small groups of individuals are brought together to discuss specific topics. The interaction between participants is analysed and a record is made of individual opinions and collective ideas.

  FGDs should have five to 15 participants selected on the basis of age, gender, ethnicity, religion, and political or group affiliation to form either a group with a similar set of experiences or one with different experiences. FGDs may be conducted with, for example, caregivers of small children with SAM in therapeutic care or using health services at the health facility, a mixture of community members either utilising health services or not, existing

volunteers, representatives of various CBOs, groups of community leaders, community committees.

- **Key Informant Interviews (KIIs):** KIIs can provide a more comprehensive picture of the situation specific or issue/topic. They would be conducted, e.g., with health care providers at the health facility, traditional healers, community leaders, volunteer supervisors, community health committee members. KIIs are usually held with individual informants; however, in some situations it is appropriate to hold an interview with two informants together (e.g., interview two members of health committee together).

  A series of semi-structured interviews may be held with key individuals from the health facility and the community. Semi-structured interviews will use a pre-determined interview guide outlining a list of topics to address and questions to ask. The interviewer(s) may use this guide flexibly: the order and wording of questions may be different from informant to informant, and the interviewer(s) may follow topics and new leads as they arise in the discussion, allowing the informant(s) to raise (related) issues of concern. However, all the topics and questions should be covered in each interview.

- **Observation:** Observation of caregivers and children brought into the health facility and also at the community level may be carried out for signs of traditional practice as well as care and feeding practices.

- **Questionnaire**: A questionnaire for the community assessment should be developed that reflects key questions in a harmonized way (see **Annex 19. Community Assessment Questionnaire and Tools**).

Box 3. Women's Participation

Ensuring the engagement of women in the community assessment is important. They may participate as part of the general group discussion or separately in areas where this is culturally more appropriate.

A general request and/or invitation for women to attend meetings and participate in the community assessment should be discussed with community leaders and members.

Especially involve women's groups, such as locality and community committees, many of which have women's sub-committees though their activity may be limited, and Women's Union Groups, where they exist.

Other established Women's Groups may be used where they exist.

2.1.4 ORGANISATION OF THE COMMUNITY ASSESSMENT

It is important to allow time for the SMOH to contact the relevant persons at the locality and community levels, schedule appointments with the relevant resource groups and individuals, and give adequate notice so that the required informants will be present the day(s) the community assessment is conducted.

In consultation with SMOH and locality representatives, the Team Leader will be responsible for determining the number of FDGs to conduct and with which groups, and selecting the key informants for semi-structured interviews. The Team Leader will also appropriately allocate team members to undertake the specific aspects of work.

2.1.5 VALIDATING INFORMATION

It is important to validate the information collection on completion of the community assessment. The information has been collected from a number of different sources and should be cross checked. The best process for this is called triangulation. Information from one source is confirmed by information from another source; the information can then be considered accurate. Triangulation may be carried out by source (e.g., community leader and health facility staff member), by various methods, such as

semi-structured interviews and FGDs. When possible, information should be triangulated by both source and method.

2.1.6 REPORTING AND PRESENTING THE INFORMATION FROM THE COMMUNITY ASSESSMENT

It is important to consolidate and clearly present the information that is gathered during the community assessment to facilitate ease of understanding and utilisation. A variety of tools will be used to simplify this process (see **Box 4**). This information may be consolidated by the assessment team and then used as the basis for stakeholder discussion and formulation of the community participation strategy for the catchment area and/or at the locality. The information may also be consolidated as part of a consultative process with stakeholders at the catchment area and/or locality level and will be later used in methods to assess service access and utilisation (coverage).

Box 4. Summary of Community Assessment Tools

1. Geographic community map

Plot the presence of NGOs, CBOs, community health committees and community volunteer networks on a geographic representation of the catchment area. Add geographic and demographic information and community structures (e.g., road, river, canyon, marketplace, mosque, health facility, water source). Represent the information on a hand drawn map on, for example, a flip chart.

2. Matrix of community actors and their initiatives, target population and coverage

List NGOs, CBOS, community committees and community volunteer networks by community and/or assessment area in a matrix. List the various community actors with their initiatives and/or activities, target population and coverage.

3. SWOT analysis for community participation and outreach for CMAM

Conduct a strengths, weaknesses, opportunities and threats (SWOT) analysis consisting of the identified strengths and weaknesses of the current situation and the identified opportunities and threats for future community participation and outreach strategies and activities for CMAM. Plot the analysis on a matrix.

4. Matrix of key perceptions and practices on health and nutrition

List key perceptions and practices impacting health and nutritional status and implications for community outreach strategies and activities for CMAM. Identify potential ways to appropriately address the identified key issues.

5. Matrix of potential community outreach workers for CMAM

List community outreach workers, including various extension workers and volunteers with potential for involvement in community outreach for CMAM. Identify the strengths and weaknesses of involving these actors for community outreach for CMAM.

6. Matrix of community actors selected for community participation and outreach for CMAM

List the various community actors that are identified to be used for community outreach activities and coordination/supervision, outlining respective responsibilities at start up and during the implementation phase.

2.2 Step Two: Formulate a Community Participation and Outreach Strategy

2.2.1 CMAM COMMUNITY FOCAL PERSONS

CMAM community focal persons will be identified at SMOH and locality levels. These individuals will be responsible for supporting CMAM community level activity along with their other duties. The selection of focal persons will depend on ongoing activities and human resources in place at state and locality levels. It will be important to appoint a senior staff member at the state level with experience in working with and supporting community-level activities to provide the required professional guidance to the locality level focal persons. At the locality level, it may be appropriate to appoint the Community Integrated Management of Acute Malnutrition (C-IMCI) coordinator as the CMAM community focal person.

The SMOH and locality health management team will decide the strategy for community participation and outreach in CMAM in consultation with community representatives, based on the national CMAM manual and with reference to the community assessment findings. Development of the strategy will be lead by the identified CMAM focal persons at the state and locality levels, who will also be responsible for supporting implementation of the strategy.

2.2.2 LINKING WITH COMMUNITY MECHANISMS

CMAM activities should be planned, monitored and managed in consultation with and through locality and sub-locality committees if they exist. This includes the locality- and community-level health committees and development committees which function under the auspice of the local administration. One may also consider other established committees which support the various health and development initiatives in the area, including the Community-Based Initiative (supported by FMOH) and the Child Friendly Community-Based Initiative (CFCI) (supported by UNICEF).

While such committees exist in some localities and sub-localities, they may not be very active or may not function at all. In such situations, CMAM may be used to reinvigorate and strengthen these committees, with CMAM coordinators or focal persons proactively seeking to work through and support these existing committees, initially to undertake CMAM-related work and then to take on responsibility for broader health and nutrition activities. Where such committees are not in existence, CMAM coordinators or focal persons should work towards establishing health committees. This would involve supporting the selection of committee members according to clearly-defined criteria and then training and mentoring the committee.

It will be important to clarify the respective roles and responsibilities of the various committees in relation to CMAM, such as orientation, support of community outreach work (i.e., active case finding, follow up, health and nutrition education and BCC), M&R. It is also essential to develop mechanisms for linkages between the various committees in the catchment area, and to facilitate and support appropriate linkages and communication between the village committees, locality health committee and neighbouring village committee(s).

Links with other community outreach services, programs and initiatives needs to be considered. Children with acute malnutrition are often from very poor families and/or live in a very vulnerable environment exposed to food insecurity, poor mother and child feeding and caring practices, and a poor public health environment. It is recommended that families with children with acute malnutrition are targeted by wider community initiatives that improve their home environment and promote access to an improved quality diet. These initiatives are likely to be linked with the various committees that are operating in the catchment area(s); the committees can therefore facilitate the linkages and referrals.

Through the mapping exercise (see **Step One**), community health, nutrition or livelihoods services or initiatives that exist in the area and may be complementary to CMAM should be identified. It is recommended that community outreach coordinators/focal persons establish links with such services and develop mechanisms for referring mothers, caregivers or households with children with acute malnutrition to these initiatives.

2.2.3 PLANNING FOR COMMUNITY PARTICIPATION

Community participation is an on-going activity, starting from the early stages of planning for the establishment of services, to inform the community about malnutrition, its causes and treatment; the CMAM components (community outreach, inpatient care, outpatient care and supplementary feeding); sites; and admission and discharge criteria.

As CMAM implementation gets underway, a process of ongoing dialogue between the community and CMAM service managers/providers should be established where activity can be reviewed, stories of success can be shared, positive behaviour change can be encouraged, problems and concerns can be addressed, and the community can be involved in decision making on operational strategies. As part of this process, meetings should be scheduled regularly to maintain contact with the community and address CMAM-related issues. The local media (radio and television) may be used to inform the community about CMAM services to compliment and support other community participation activities (see next section on standardised messages).

Community participation involves dialogue between health managers and key community representatives (refer to **Step One**) who will then engage with and inform the wider community. It will be important to ensure that the key community representatives with standing and power in the community are identified and fully involved in the participation activity. It is also important to ensure the involvement of women in the participation activity. This may be organised through the locality and village committees women's sub-committees, through the Women's Union or through alternative women's groups that may have been identified during the community assessment.

Ultimately, community participation raises awareness about malnutrition and CMAM; promotes understanding of the various CMAM components, admission and discharge criteria, and sites where services are available; and lays the foundation for ownership. It also prevents misunderstandings that can arise around CMAM, which can subsequently cause barriers to access, such as the following:

- CMAM may attract many children who are not eligible for admission, and turning these people away can create ill feelings within a community and subsequently generate negative perceptions about the service, reducing service uptake
- Large numbers of children arriving for admission during service start up may overwhelm the health care providers and cause negative feedback within the community as caregivers of those eligible for admission waste time waiting for treatment.

2.2.4 DEVELOPING STANDARDISED INFORMATION MESSAGES ON CMAM

The use of standardised messages, adapted to different audiences, will facilitate uniform and accurate information sharing on malnutrition and its causes and treatment; the various components of CMAM (inpatient care, outpatient care, supplementary feeding and community outreach); the sites; and admission and discharge criteria.

Specific messages on CMAM have been developed for different audiences in Sudan (see **Annex 1. Messages for Community Outreach**). These standard messages will need to be adapted for each state/locality by inserting relevant location and health facility names and other amendments that may be deemed necessary for the various population groups in an area, such as use of simple language and the local terms for malnutrition.

2.2.5 PLANNING FOR COMMUNITY PARTICIPATION AND OUTREACH ACTIVITIES

Community outreach for CMAM encompasses:

a. Early and active case-finding (screening) and referral of children with SAM for treatment
b. Follow up home visits for problem cases
c. Health and nutrition education and BCC

It is essential to tailor community outreach activities to the local context in which they are being implemented (e.g., cultural norms on gender roles), and ensure that activities take full advantage of existing systems and structures and available human resources to facilitate establishment of a sustainable system providing maximum coverage of outreach services across the catchment area.

Early and Active Case-Finding (Screening) and Referral of Children with SAM for Treatment in the Community

Early and active case-finding and referral of children with SAM is essential to initiate treatment before the onset of medical complications or increased risk of death. It is recommended that all children under 5 be periodically screened for SAM.

Active case-finding and referral is carried out by a variety of health facility staff, extension workers and volunteers, to be determined locally based on available human resources. All staff and volunteers who are involved in screening activities have been trained to identify children with SAM using a standard screening procedure.

Screening Tools

There are a variety of screening options that will cover different population groups in space and time, for example:

- House-to-house visits
- Screening organised at a central point in the community on a regular basis
- Screening organised at point activities or during cultural and socio-economic events, such as community meetings, markets, funerals or any other available opportunity
- Screening linked with other health and nutrition outreach interventions, such as during national campaigns, growth monitoring (GM) or reproductive health clinics
- Screening at any contact point with the health care system
- Self referrals, where caregivers bring children to the services on their own initiative

There are advantages and disadvantages to each screening option. A combination of screening options should be used depending on the operational context and should change as the operational context changes. The training of community outreach workers should elaborate on the strengths and weaknesses of the different screening options.

Box 5. Use of Traditional Practitioners for Case-Finding and Referral

In Sudan, Traditional Practitioners are very often used for the treatment of malnourished children. In isolated rural areas this may be the only treatment locally available. However, even where treatment for acute malnutrition exists, whether a centre-based or community-based approach, many children undergo months of traditional treatment before starting therapeutic treatment, and sometimes continue with traditional treatment while undergoing therapeutic treatment. Some of these traditional practices are very harmful for the child.

The cooperation of Traditional Practitioners in the detection and referral of acutely malnourished children can have major impact on the service access, uptake and outcome; however, it may not be easy to achieve. Health care providers from health facilities may not have a good relationship with Traditional Practitioners, making it difficult to secure the practitioners' trust. In addition, the establishment of CMAM services may be seen as a threat to the Traditional Practitioners' livelihood. Sensitivity and perseverance are necessary to establish links, and develop trust and ultimately the cooperation of Traditional Practitioners in the detection and referral of acutely malnourished children for therapeutic treatment. Traditional Practitioners should receive training and a MUAC tape, and be informed on how both practices could coexist and strengthen each other.

Screening Procedure

The children are assessed for the presence of bilateral pitting oedema, and MUAC is measured. Those children identified with SAM are then referred for treatment. (See **Annex 3. Anthropometric Measurements**.)

Criteria for Referral

- Presence of bilateral pitting oedema
- MUAC less than 115 mm for children 6-59 months

- Infants under 6 months with bilateral pitting oedema and/or visible wasting are not measured but are referred to the health facility where they are further investigated

Referral Process

When children meet the criteria for referral, they are instructed to go to the nearest CMAM site and are given a referral slip to present at the site (see Annex 20**. Referral Slip Community Screening**).

Home Visits for Problem Cases

Children admitted to outpatient care are monitored to ensure sustained improvement in their condition, and where appropriate the **health care provider** will request that follow up home visits be conducted.

Home visits for children with SAM are essential in the following cases:

- Where a child is absent from treatment (missed one or two visits) or has defaulted (missed three consecutive visits), home visits will be requested to gain understanding of the reason for the absence or defaulting and to encourage return to treatment. While the caregiver must be made aware of the importance of bringing the child back for treatment, it is important not to reprimand the caregiver, as this can discourage return to treatment.
- Where a child has static weight, is losing weight, is not losing oedema or has a deteriorating medical condition, the health care provider will discuss the situation with the caregiver and request a home visit to provide support to the caregiver and investigate the home environment.
- Children can still be fragile after treatment in inpatient care. The health care provider can request a home visit to strengthen support to the caregiver.
- In exceptional cases where caregivers refuse referral of children with SAM with medical complications to be treated in inpatient care, these children may be treated in outpatient care. In these cases, follow-up home visits are essential to strengthen support to the caregiver.

The community outreach worker will fill home visit records and checklist for home visits, which are useful tools for M&R home visits (see **Annex 21. Community Outreach Reports, Annex 22 Checklist home visits).**

The Role of Community Outreach Workers

Home visits for children who are absent or have defaulted from treatment may be carried out by all community outreach workers; however, it is essential that they have been appropriately trained to identify problems and danger signs and provide the required support to the caregivers. Ideally the active case finders will follow up on the defaulting of children they have referred. If a child does not return, another home visit may be made by a more experienced community outreach worker to investigate the home situation and provide necessary advice and support to the parents/caregivers.

Where health facility-based community outreach workers will make a home visit the health care provider will liaise directly with the staff member to inform on the need for a home visit. Where volunteers are being used as community outreach workers for home visits, the health care provider will liaise with the outreach supervisor to convey a message to the relevant volunteer(s) to arrange a home visit for a problem case at risk of developing medical complications.

The locality level CMAM focal person will have overall responsibility for supportive supervision of CMAM community outreach activities; however, day to day supervision of outreach activities will be the responsibility of the existing supervisors of the various community outreach workers, including staff and volunteers.

Health and Nutrition Education and BCC

IMCI and Essential Nutrition Package (ENP) have developed health and nutrition education materials and visual aids, and they should be made available for use in community outreach behaviour change both for wider general health and nutrition promotion and specifically in relation to understanding causes of malnutrition, CMAM services and key messages in relation to prevention and treatment of

malnutrition and optimal feeding practices for malnourished children (see also **Annex 16. Health and Nutrition Education Messages**).

The Role of Community Outreach Workers and Others in the Community

Health and nutrition education and BCC should be conducted at household and community levels by nutrition educators as part of their routine work, and by the various health and nutrition extension workers and community outreach workers (staff or volunteers identified for CMAM) operating in the catchment area.

In many communities, existing community outreach workers, including volunteer networks, already hold community health education sessions. In these cases, the CMAM-related health and nutrition education and BCC should be conducted through these mechanisms. However, where such systems or mechanisms are not in place, the relevant supervisors (of the community outreach workers including volunteers) should liaise with the community leaders and relevant committees to organise these sessions on a regular basis across the catchment area.

At the Household and Community Levels

At the household level, health and nutrition education and BCC should be conducted during routine home visits. Issues for discussion are determined based on the local context, and the individual households' environment and specific care and feeding practices.

At the community level, groups of mothers should be periodically gathered to discuss relevant health and nutrition issues. The issues for discussion are determined based on topical local health and nutrition priorities. It is essential, however, that the health and nutrition education and BCC pays particular attention to the local context and provides an adequate focus on causes and prevention of malnutrition, and optimal care and feeding practices for malnourished children.

Note: The behaviour change approach requires health care providers and community outreach workers to:

1. Listen, understand and then negotiate with individuals and communities to make positive behaviour change
2. Focus on the promotion of positive, sustainable practices or actions since creating awareness and building knowledge are not enough

2.3 Step Three: Conducting Training on Community Participation and Outreach for CMAM

2.3.1 THE CMAM SUPPORT TEAM AND TRAINERS

The CMAM Support Team provides initial training to the CMAM focal person and community participation and outreach coordinator at the state level. A core team of trainers for CMAM should then be selected and trained within each state. This core team should be made up of staff from the state and locality levels who are responsible for CMAM management, and will also include community outreach coordinators or focal persons from the state and locality levels.

With UNICEF support, the SMOH and FMOH will maintain a database with information on the core team of CMAM trainers and their specific expertise (community outreach, inpatient care, outpatient care and/or supplementary feeding).

2.3.2 TRAINING AT VARIOUS LEVELS

Training for community participation in CMAM will be conducted at various levels on the following topics:

For state- and locality-level CMAM mangers, coordinators or focal persons, and health facility-level CMAM community outreach supervisors:

- CMAM orientation: basic information on the causes, types, identification and treatment of malnutrition using CMAM approach
- How to conduct a community assessment
- How to engage with the communities for community participation and awareness raising
- Community outreach strategies
- Practice in identifying bilateral pitting oedema and using MUAC
- Health and nutrition education and BCC
- Roles and responsibilities of CMAM health managers, community outreach coordinators, health care practitioners at outpatient care, various extension workers and volunteers responsible for outreach activity, and village committees/community representatives
- Supervising community outreach
- M&R of performance and the effectiveness of community participation and outreach
- Training for community outreach

For community-level outreach workers:

- Basic information on the causes, types, identification and treatment of malnutrition
- Objectives and target population for the management of SAM
- Practice in identifying bilateral pitting oedema and using MUAC
- Orientation on CMAM services, sites and referral for treatment
- Community outreach strategies and issues
- Health and nutrition education and BCC, with a particular focus on the causes of and preventing malnutrition and optimal feeding practices for malnourished children
- Community participation and how to engage with the communities and share information
- Roles and responsibilities of community outreach workers

For community representatives:

- Basic information on the causes, types, identification and treatment of malnutrition
- Objectives and target population for the management of SAM
- Orientation on CMAM services, sites and referral for treatment
- Community outreach strategies and issues
- Community sensitisation and awareness raising
- Roles and responsibilities of community outreach workers
- Roles and responsibilities of community health committees and community representatives

2.3.3 METHODS

Training will be carried out in a participatory fashion and will include in-service training and practical experience at the health facilities and in the communities. It is recommended that at least two facilitators should lead the training of 15-25 participants.

Training methods include, e.g., talks with visual aids, participatory lectures, plenary and group discussion, role plays, review of case studies, observation during practicals.

Country-specific training materials will be adapted from national and international documents. Training materials will also include visual aids (including these guidelines), IMCI guidelines and ENP training materials.

2.4 Step Four: Implementing Community Participation and Outreach Activities

While **Step Two** discusses strategies in depth, this section only provides a brief overview of implementation.

Following training of relevant staff, volunteers and community representatives as community outreach workers, community participation and outreach activities will be implemented in line with the strategies and plans that have been developed prior to starting CMAM services. Based on findings from supervision and M&R, the strategies and activities may be adapted as deemed appropriate in discussion with the various stakeholders.

2.4.1 COMMUNITY PARTICIPATION AND OUTREACH ACTIVITIES AND RESPONSIBLE PERSONS

Community participation activities include:

- Community orientation and discussion meetings, including feedback
- Radio messages and other multi-media or cultural strategies

Community outreach activities include:

- Early case-finding (screening) and referral of children with SAM for treatment
- Follow-up home visits for problem cases
- Health and nutrition education and BCC

Table 4. Community Participation and Outreach Activities and Responsible Persons

Activity	Responsibility
Developing a community participation and outreach strategy at the state and locality levels	State and locality CMAM focal persons in consultation with community representatives
Supervising community participation and outreach activities	Locality CMAM focal person with support from the state CMAM focal person
Convening community participation activities, i.e., holding community meetings to plan community outreach and discuss issues and progress with the various stakeholders	Locality CMAM focal person with support from the state CMAM focal person; community outreach workers; the locality council; the locality development committee; community leaders; community committees
Screening for active case-finding and referral	Community outreach workers
Following up of problem cases	Community outreach workers
Providing health and nutrition education and BCC	Community outreach workers

2.5 Step Five: Supervision and M&R on Community Participation and Outreach Activities

Supervision and M&R of community participation and outreach activities are essential components for CMAM quality assurance. M&R tools for community outreach are the home visit record, the community outreach report and the checklist for home visits (See **Annex 21. Community Outreach Reports, Annex 22. Checklist home visits).**

2.5.1 SUPPORTIVE SUPERVISION OF CMAM

Supportive supervision of the CMAM community-level component should be conducted at the state, locality and sub-locality levels and/or at outpatient care site catchment area levels.

The Role of the CMAM Community Outreach Focal Person

At the state level, the identified CMAM community outreach focal person is responsible for supportive supervision of the locality level CMAM community outreach focal persons. This requires:

- Regular supervisory visits to the locality to review the implementation of strategy/activities; discuss progress, problems and issues; and provide support and direction to the CMAM community focal person
- Participating in key locality-level meetings
- Conducting periodic state level supervisory meetings in which locality CMAM community focal persons are brought together to review activities and share experiences across localities (this may be conducted as part of wider CMAM supervisory activity)

At the locality level, the CMAM community outreach focal person(s) will have overall responsibility for supportive supervision of CMAM community level activities, including the activities of the various community committees and the outreach activities. However, the day-to-day supportive supervision of the community outreach activities (i.e., case finding, follow up visits, health and nutrition promotion and BCC) will be the responsibility of the existing supervisors of the various categories of heath staff and volunteers undertaking these tasks.

Where 10 or more full-time community outreach workers are responsible for CMAM-related work (as in a camp situation), a full-time community outreach supervisor should be appointed to support these staff (and volunteers).

Supportive Supervision of Community Committees

Locality CMAM community outreach focal persons should already be meeting periodically with the community committees as part of the community participation strategy. Supportive supervision of community committee activities may be carried out as part of this process, and involves:

- Reviewing the activities undertaken
- Identifying problems or weaknesses in implementation and putting forward pragmatic solutions/recommendations to improve such activity in the future, e.g., ineligible children arriving for admission after community participation sessions can be addressed by using clear standardised messages for participation purposes

Supportive Supervision of Supervisors

Locality CMAM community outreach focal persons are responsible for supporting the various supervisors (e.g., under C-IMCI, CBI, CFCI) who are responsible for supporting CMAM-related outreach work. This support involves:

- Regular supervisory visits to the catchment areas to review strategy/activities implementation; discuss progress, problems and issues; and provide support and direction to the various supervisors for CMAM outreach work
- Regular locality-level supervisory meetings, which bring the various supervisors together to review activities and share experiences across the catchment areas (this may be conducted as part of wider CMAM supervisory activity)

Supportive Supervision of Community Participation and Outreach Activities

Where supervisors of various categories of staff and volunteers involved in community outreach activities already meet with their staff for supervisory purposes, supervision for CMAM-related community outreach can be incorporated into routine supervision. Where this is not the case (i.e., supervision is not conducted routinely), the CMAM community outreach focal person will support the relevant supervisors to conduct CMAM-related supervision. Supervision includes:

a. Observing the community outreach activities of individual staff and/or volunteers
b. Reviewing community outreach activity records

Observing the Community Outreach Activities of Individual Staff and/or Volunteers

This includes:

- Making home visits with staff/volunteers to observe how they interact with caregivers, the accuracy of screening procedures, whether referral is according to protocol, and the quality of health and nutrition education and BCC
- Making community-level visits with staff/volunteers to observe how they interact with the community and the quality of health and nutrition education and BCC

Such observation will be conducted periodically. It is likely that this may be undertaken more frequently when services are newly established and when new staff/volunteers are appointed.

Reviewing Community Outreach Activity Records

All staff/volunteers responsible for CMAM-related community outreach activities should have a notebook (or notebook section) for recording CMAM-related activities, including:

- Each home visit made: geographical area, family name, purpose, action recommended and outcome of visit
- Each community-level health and nutrition education and BCC session conducted: geographical area, topic covered and number of beneficiaries who attended

When community-level screening is conducted, registration should be conducted, including recording the geographical area, number of children screened and number of children referred for CMAM services. CMAM outreach activity registration should be reviewed by the various supervisors weekly or fortnightly to identify and address concerns (e.g., number of visits being carried out on daily basis, children wrongly referred).

Sub-Locality and Outpatient Care Site Catchment Area Supervisory Feedback Meetings

Additional supervisory meetings should be held periodically, which all staff involved in CMAM-related community outreach activities would be expected to attend (i.e., locality CMAM community outreach focal person, all supervisors, all staff/volunteers involved in community outreach, any relevant committee members and health facility staff). These meetings will provide an opportunity for the outreach work in the catchment area to be reviewed, the coverage of outreach activities to be monitored (see **3. Assessing Coverage,** below), success stories and positive experiences to be shared, and problems and concerns to be raised and addressed.

2.5.2 M&R OF CMAM COMMUNITY PARTICIPATION AND OUTREACH ACTIVITIES

Monitoring of community participation and outreach activities will be conducted at the locality, sub-locality and/or catchment area.

If capacity for intensive M&R of community outreach is not available, the minimum indicators to report on monthly or periodically are:

- Number of communities involved in community participation and outreach
- Number of community outreach workers trained and active

If capacity for M&R of community outreach is available, the indicators to report on monthly are:

- Training
    - Number of community outreach workers, including volunteers, trained and active
    - Number of community representatives oriented in CMAM
- Community participation
    - Number of communities involved in community participation and outreach
    - Number of community orientation meetings conducted
- Community outreach
    - Number of community-level screening sessions conducted
    - Number of children with SAM referred for treatment
    - Number of community home visits for problem cases
    - Number of community health and nutrition education sessions held
    - Number of caregivers received health and nutrition education
    - Coverage of CMAM

Monthly reports on all CMAM-related outreach activities should be submitted to the various supervisors within the normal reporting system. The various supervisors are then responsible for collating and analysing CMAM-related activity and submitting reports to the locality or sub-locality level CMAM community outreach focal person (see **Annex 21. Community Outreach Reports**).

The indicators and means of verification (MOV) listed in **Table 5** will be used.

Table 5. Indicators and MOV for CMAM Community Participation and Outreach

Activity	Indicator	MOV
Training	# Community outreach workers, including volunteers, trained	Supervisor Report
	# Community representatives oriented	Supervisor Report
Participation	# Communities involved	Supervisor Report
	# Community orientation meetings held	Supervisor Report
Outreach	# Children with SAM referred	Referral Slip
	# Home visits for problem cases	Home visit record
	# Community health and nutrition education sessions	Supervisor Report
	# Caregivers received health and nutrition education	Supervisor Report
	Coverage of CMAM	Mapping

2.5.3 ASSESSING COVERAGE

Coverage of community participation and outreach activities will be monitored by plotting outreach activities against a map or a list of communities/populated areas. This method helps indicate “actual” coverage of outreach activities, and identify communities and/or areas that have been overlooked. If areas are found to have high levels of referrals and requests for follow up due to default, a problem is indicated which requires investigating.

Periodic evaluations of community participation and outreach for CMAM may be carried out and would include investigating:

- The severity of acute malnutrition: demand for and offer of services
- Uptake of CMAM services, which is a good indicator of the effectiveness of community outreach activity
- Actual geographic coverage of community outreach activity
- The level of community engagement in the planning and support of community participation and outreach activities for CMAM
- The impact of health and nutrition education and BCC

3. Outpatient Care for Children 6-59 Months

Outpatient care is aimed at providing community-based treatment for children 6-59 months with SAM who have an appetite and are without medical complications. CMAM achieves this objective through timely detection, referral and early treatment before the health condition is severe or before the onset of a medical complication. Effective community outreach for community participation and active case-finding, referral and follow-up are essential inputs to successful outpatient care. The treatment protocol for SAM for children 6-59 months treated in outpatient care is similar to that for inpatient care. If the condition of a child in outpatient care deteriorates or if a complication develops, the child is referred to inpatient care for stabilisation and returns to outpatient care as soon as the medical complication is resolving.

Outpatient care services should be carried out on a weekly basis, however, sessions can be conducted every two weeks under certain circumstances, namely:

- Poor access or long distance to the health facility which increases the opportunity cost for the caregivers and may prevent weekly participation
- Weekly sessions and high case loads which overburden health facility schedules or staff at smaller health facilities: In this case, biweekly sessions could allow for splitting the group of children in two and alternating by week
- Seasonal factors or events that involve caregivers, such as harvest or planting season, which may prevent caregivers from participating weekly
- Decision on a case-by-case basis, as determined by nutrition or health staff

3.1 Screening of Children for SAM

Successful management of SAM in the community requires that an efficient active case-finding and referral system is established to ensure that children receive appropriate care in a timely manner. The planning phase of the community outreach component for CMAM identified strategies for comprehensive community screening and referral that will be achieved in a number of ways:

- Referral by a trained community outreach worker
- Self referral (i.e., child brought for treatment by a caregiver)
- “Ripple effect” of caregiver to caregiver referral within the community
- Referral by health or nutrition programmes or initiatives (e.g., growth monitoring, health extension campaigns) or through any contact with the primary or secondary health care system

Children are screened for SAM at the health facility. This could be a second-level screening for some of these children. It is essential that the strategy for community screening is compatible with the screening upon admission to CMAM services at the health facility. The quality of the community screening is good to avoid referrals being refused at the health facility, which could be damaging for the appreciation and uptake of the service. If referred children are consistently inaccurately assessed, action should be taken to retrain the outreach worker.

3.2 Admission Criteria for Outpatient Care

Usually the first point of contact with the primary health care system for a child under five with SAM will be the health facility providing outpatient care. The trained health care provider will conduct a medical and nutrition assessment to guide the decision for admitting the child 6-59 months to outpatient care or for referring the child to inpatient care based on certain admission criteria (see **Table 6**). The outpatient care site is usually the entry point for admission to CMAM.

Criteria for admission are based on anthropometric assessment of severe wasting and clinical presence of bilateral pitting oedema. In addition, clinical signs such as poor appetite and medical complications in children 6-59 months with SAM are assessed because they indicate the severity of illness and determine whether the child is treated in inpatient care or outpatient care. Moreover, other clinical signs of wasting may be present without anthropometric confirmation, such as skin on the buttocks has a “baggy pants” look.

In very exceptional cases, a child 6-59 months with SAM with medical complications but who has appetite and is refusing inpatient care can be admitted to outpatient care. Or, a child 6-59 months with SAM eligible for outpatient care can be admitted to inpatient care for social reasons.

Table 6. Admission Criteria for CMAM for Children Under 5

Inpatient Care	Outpatient Care
Children 6-59 months Bilateral pitting oedema +++ Or Any grade of bilateral pitting oedema with severe wasting Or SAM with any of the following medical complications: • Anorexia, poor appetite • Intractable vomiting • Convulsions • Lethargy, not alert • Unconsciousness • Hypoglycaemia • High fever • Hypothermia • Severe dehydration • Lower respiratory tract infection • Severe anaemia • Eye signs of vitamin A deficiency • Skin lesion Or • Referred from outpatient care according to action protocol Infants < 6 months Infants < 6 months with bilateral pitting oedema or visible wasting -Includes infants with SAM ≥ 6 months and < 4 kg	Children 6-59 months Bilateral pitting oedema + and ++ Or Severe wasting (MUAC < 115 mm or WFH < -3 z-score) And • Appetite test passed • No medical complication • Child clinically well and alert

3.3 Admission Procedure at the Health Facility

Upon arrival at the health facility with CMAM services, the child and caregiver are welcomed and informed about the admission procedure. Critically ill children are triaged and receive priority treatment. Sugar water is made available to prevent hypoglycaemia (see **Box 7** and **Annex 8. Drug Dosages for SAM Treatment of Children Under 5**).

First, the child's nutrition status is defined based on standardised measurements and checks (see **Annex 3. Anthropometric Measurements**). The nutrition assessment involves:

- Clinical check for the presence of bilateral pitting oedema
- MUAC anthropometric measurement for children 6-59 months
- Weight measurement
- The target weight for discharge at 15 percent weight gain is identified and indicated on the treatment card (see **Annex 5. Guidance Table to Identify Target Discharge Weight**)

If equipment and skills are available:

- Length or height measurement
- The WFH category is identified and indicated on the treatment card (see **Annex 4. Anthropometry Look-up Tables**)

Children who meet the admission criteria for CMAM receive a medical assessment consisting of a medical history and physical examination including an appetite test (see **Box 6**).

Medical history:

- 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 stools
- Time when urine was last passed
- Contact with people with measles or TB
- Any deaths of siblings
- Birth weight
- Milestones reached (e.g., sitting up, standing)
- Immunisation status
- Place of origin

Physical examination:

- MUAC, weight, length or height, and weight for height
- Bilateral pitting oedema
- Appetite test: anorexia
- Enlargement or tenderness of the liver, jaundice
- Abdominal distension, bowel sounds, “abdominal splash” (splashing sound in abdomen)
- Palmer pallor
- Signs of circulatory collapse: cold hands and feet, weak radial pulse, diminished consciousness
- Temperature: hypothermia or fever
- Thirst
- Eyes: lesions indicative of vitamin A deficiency
- Ears, mouth, throat: evidence of infection
- Skin: evidence of lesion, infection or purpura
- Respiratory rate and type of respiration: signs of pneumonia or heart failure
- Appearance of stool

Box 6. Appetite Test

For children meeting the anthropometric criteria for admission for treatment of SAM, the appetite test, in addition to the presence or absence of severe medical complications, forms one of the most important criteria for deciding whether to treat a child with SAM in outpatient care or in inpatient care.

The pathophysiological responses to nutrient depletion in children with SAM are such that liver and metabolic functions are disturbed and dysfunctional, leading to poor appetite. In addition, children with a significant infection also lose appetite, especially in the acute phase. This puts children with SAM with poor appetite at higher risk of death.

The appetite is tested upon admission and is repeated at each follow-up visit to the health facility.

Points to consider when conducting an appetite test:

- Conduct the appetite test in a quiet separate area.
- Provide an explanation regarding the purpose of the test to the caregiver and describe the procedure.
- Observe the child eating the RUTF during 30 minutes, and decide if the child passes or fails the test.
- Advise the caregiver to:
    - Wash hands before giving the RUTF
    - Sit with the child in lap and gently offer the RUTF
    - Encourage the child to eat the RUTF without force-feeding
    - Offer plenty of clean water to drink from a cup when child is eating the RUTF

Appetite Test:

Pass Appetite Test	Fail Appetite Test
The child eats at least one third of a packet of RUTF (92 g) or three teaspoons from a pot.	The child does NOT eat one third of a packet of RUTF (92 g) or three teaspoons from a pot.

Note: If necessary, arrange a quiet corner where the child and caregiver can take their time to get accustomed to eat the RUTF. Usually the child eats the RUTF in 30 minutes.

A child who fails the appetite test should be admitted to inpatient care.

The outcome of both the nutrition and medical assessment determines if the child will be admitted and receive treatment in outpatient care or is to be referred to inpatient care. If the child is admitted, he or she receives medical and dietary treatment that will be continued at home.

All infants under 6 months with bilateral pitting oedema or visible wasting and children older than five are referred to inpatient care immediately. The choice of the caregiver to enrol the child in inpatient or outpatient care will be considered, and options and consequences will be discussed with the caregiver.

If the child is admitted to outpatient care, he or she receives medical and dietary treatment that will be continued at home.

The caregiver receives advice on the treatment, and progress and duration of the illness, the intake of antibiotics and RUTF, and care practices, and is asked to return to the health facility for follow on monitoring sessions or whenever a problem arises until the child has recovered (see **Annex 15. Key Messages upon Admission to Outpatient Care**).

Key Messages upon Admission:

1. RUTF is a food and medicine for very thin and swollen children only. Do not share it. 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 a day). Your child should have _____ packets a day.
2. For young children, continue to breastfeed. Offer breast milk first before every RUTF feed.
3. RUTF is the only food sick and thin/swollen children need to recover during their time in Outpatient Care. Always give RUTF before other foods, such as porridge "(use local name)."
4. Always offer plenty of clean water to drink while eating RUTF. Children will need to drink more water than normal.
5. Use soap to clean the child's hands and face before feeding. Keep food clean and covered.
6. Sick children get cold quickly. Always keep the child covered and warm.
7. For children with diarrhoea, continue feeding. Give them extra food and water.
8. Return to the health facility whenever the child's condition deteriorates or if the child is not eating sufficiently.

Note: Ask the caregiver to repeat the messages back to check that they have been correctly understood.

Upon the next visits to the health facility, the health and nutrition messages are expanded (see **Annex 16. Health and Nutrition Education Messages**).

The caregiver will be linked to the community outreach worker that covers his/her community. The caregiver will also be linked with other services or initiatives as appropriate (specify if possible and as identified in the strategy).

Additional points to consider during the admission procedure:

- Explain the outcome of the assessment and the treatment to the caregiver, and decide with him/her whether the child will be treated in outpatient or inpatient care. The social condition of the caregiver must be taken into consideration.
- Children who fail the appetite test should always be referred to inpatient care. If, for some reason, the appetite test is inconclusive, the child should always be referred to inpatient care until the appetite has been restored.

Note: Children in the community and at all points of contact with the primary health care system are checked for signs of acute malnutrition.

Children with SAM who are referred by a community outreach worker during community screening are re-assessed at the health facility to cross check the accuracy of the referral decision. The referral criteria at community screenings and admission criteria have to be compatible. If the referred child fails to fulfil the admission criteria, he or she should not be admitted, but the caregiver can be linked with other primary health services or initiatives as appropriate (e.g., supplementary feeding, EPI). During referral, the outreach worker's skills

are indirectly verified (i.e., how many were referred that did not fulfil the admission criteria), and the need for improved supervision or retraining can be identified.

Box 7. Admission and Initial Treatment Procedures

Welcome the child and caregiver, and provide initial care:

- Triage and check critically ill children first.
- Provide sugar water to all children awaiting screening or examination to avoid hypoglycaemia. Sugar-water solution should contain approximately 10 percent sugar solution or 10 g of sugar per 100 ml of water.

Define nutrition status:

- Check for bilateral pitting oedema, take MUAC, measure weight and height.
- Use admission criteria (**Table 6**) to guide decision making for admission.
- Indicate target weight for discharge at 15 percent weight gain (see **Annex 5. Guidance Table to Identify Target Discharge Weight**).
- Register the child and record measurements on the treatment card.

Medical assessment:

- Take the child's medical history, conduct a physical examination, and determine if the child has a minor health problem or a medical complication, and record on the treatment card.
- Fast-track children with SAM and medical complications in need of inpatient care and start treatment (no need for appetite test, administer first dose antibiotic).
- Test the appetite (see **Box 6**). The appetite test is a critical criterion for deciding whether a child with SAM without medical complications is treated in outpatient care or in inpatient care.
- Decide whether to treat the child with SAM in outpatient care or refer him/her to inpatient care.

Treatment:

- Provide treatment for underlying infections, and decide if treatment for additional health conditions is needed.
- Provide weekly (or bi-weekly) amount of RUTF, based on +/- daily ration of 200 kcal of RUTF per kg bodyweight (see **Table 10**).
- Counsel the caregiver on key messages for treatment, the intake of antibiotics and RUTF, and care practices, and to return to the health facility for monitoring sessions or whenever a problem arises (see **Annex 15. Key Messages upon Admission**).
- Link the caregiver with the community outreach worker.
- Link the caregiver with other services or initiatives as appropriate.

3.3.1 ADMISSION CATEGORIES

New cases: Children 6-59 months with SAM meeting the criteria for outpatient care and directly admitted for treatment in outpatient care

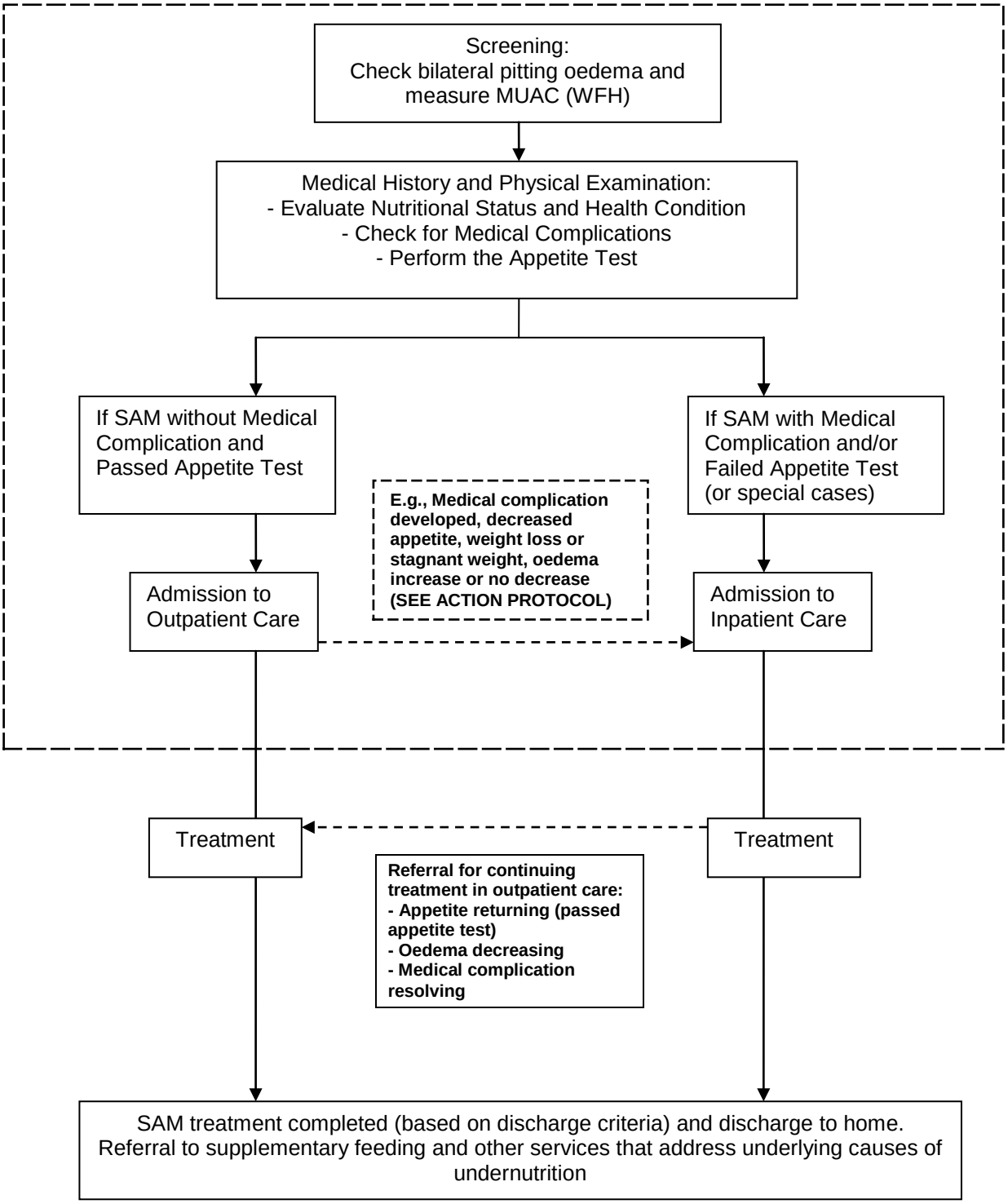
> **Note:** Relapsed cases are considered new cases as the children have a new episode of acute malnutrition as they were treated successfully before.

Children referred from inpatient care (old cases):

- Children with SAM referred from inpatient care after stabilisation to continue treatment as outpatients
- Children transferred from another outpatient care site

Returned defaulters (old cases): Children defaulted before recovery but returned within three months to continue treatment

Figure 1. Admission and Treatment Flow-Chart, Children 6-59 Months with SAM



3.4 Routine Medication

3.4.1 CHILDREN ADMITTED DIRECTLY INTO OUTPATIENT CARE

Children admitted directly into outpatient care receive routine medication. Children with SAM do not show the usual signs of infection, such as fever, and infections are hidden. Therefore, routine medication is provided upon admission. The health care provider will decide if additional medication is needed for apparent medical conditions. (See **Annex 6. Routine Medicines Protocols**, **Annex 7.**

Supplemental Medicines Protocols and **Annex 8. Drug Dosages for SAM Treatment of Children Under 5**).

Antibiotic Treatment with Amoxicillin

- Give oral antibiotic treatment for a period of 7 days to be taken at home (give 10 days if needed), based on a dosage of 50-100 mg/kg/day.
- The first dose 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.
- If a second line antibiotic drug is needed, the child will be referred to inpatient care.

Table 7. First Line Antibiotic Treatment: Amoxicillin, 3 Times a Day for 7 Days (50-100 mg/kg/day)

Age (or weight) of the child	Syrup 125 mg/5 ml 7 days	Syrup 250 mg/5 ml 7 days	Tablets 250 mg 7 days
< 12 months (or < 10 kg)	125 mg or 5 ml 3x a day	125 mg or 2.5 ml 3x a day	125 mg or ½ Tablet 3x a day
1 - < 10 years (or 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
10 years+ (or > 30 kg)	Give tablets	Give tablets	500 mg or 2 Tablets 3x a day

Malaria Treatment

- Systematically screen all children for malaria in endemic areas on admission, regardless of their body temperature if diagnostic tests are available. A child with SAM cannot auto-regulate his or her body temperature well and tends to adopt the temperature of the environment, thus the child will feel hot on a hot day and cool on a cool day.
- If in clinical doubt, repeat the malaria test in the weeks following the initial test.
- If no diagnostic test is available, but malaria symptoms are diagnosed, treat the child.
- In malaria endemic areas, children with SAM should be provided with insecticide impregnated bed nets to prevent malaria.

First line Antimalarial: Artesunate and Sulfadoxine Pyrimethamine:

- Treat malaria according to the national treatment protocol with first line artemisinin-based combination therapy (ACT) in compliance with IMCI treatment.

Table 8. Malaria Treatment based on the First Line Antimalarial: Artesunate [AS 50 mg Tablet] and Sulfadoxine Pyrimethamine [S 500 mg P 25 mg Tablet]

Age in years (or weight) of the child	DAY 1 Initially	DAY 1 8 hours	DAY 2	Day 3
< 1 (or < 10 kg)	½ AS and ½ SP	½ AS and ½ SP	½ AS	½ AS
1 - < 7 (or 10 -< 20 kg)	1 AS and 1 SP	1 AS and 1 SP	1 AS	1 AS
7 – 13 (or 20-40 kg)	2 AS and 2 SP	2 AS and 2 SP	2 AS	2 AS
14+ (or 40+ kg)	3 AS and 3 SP	4 AS and 4 SP	4 AS	4 AS

Second Line Antimalarial: Quinine

- Treat severe malaria with second line antimalarial drugs in inpatient care only.
- Quinine, 10 mg/kg/day [300 mg/ml, in 2 ml ampoules]: Give first dose intramuscular (IM) and refer child urgently to hospital. If referral is not possible, repeat the Quinine injection every 8 hours until the child is able to take Quinine orally. Then, continue Quinine orally to complete 10 days of treatment. The child should remain lying down for one hour (see **Annex 8. Drug Dosages for SAM Treatment of Children Under 5**).

Measles Vaccination

- For children 6-59 months, give a single vaccine on week four or upon discharge if they do not have a record of previous vaccination.

- Infants who received a measles vaccination while they were 6 to 9 months, still will need a repeat vaccination when they are 12 months or older.
- In case of a measles epidemic in the area, provide measles vaccination upon admission to outpatient care and repeat the vaccination on week four or upon discharge.

Deworming Treatment

- Give a single dose of Albendazole or Mebendazole at the second week, in compliance with IMCI treatment protocol and/or adapt according to national protocol.
- Do not give to children under 1 year.

Table 9. Antihelminthic Drug Dosage, Single Dose

Age (Weight) of the child	Albendazole 400 mg Tablet	Mebendazole 500 mg Tablet
< 1 year	NO	NO
1-2 years (or < 10 kg)	200 mg or ½ Tablet	250 mg or ½ Tablet
≥ 2 years (or ≥ 10 kg)	400 mg or 1 Tablet	500 mg or 1 Tablet

Vitamin A

- Give a single dose on the fourth week or upon discharge: for infants 6-11 months give 100,000 international units (IU), and children 12 months and older give 200,000 IU.
- Cases with bilateral pitting oedema should only receive vitamin A when the oedema has resolved.
- Refer any child with eye signs of vitamin A deficiency to inpatient care, as the condition of the eyes can deteriorate very rapidly and the risk of blindness is high.

Iron and Folic Acid

- Iron and folic acid are NOT to be given. Small amounts are available in the RUTF.
- Where anaemia is identified according to IMCI, children are referred to inpatient care and receive treatment in compliance with the IMCI treatment protocol.
- Never give iron and folic acid together with a malaria treatment.

Vaccination Schedule Update

Good collaboration is required between the EPI and outpatient care for updating the vaccination status of the child. Also, it is important to know the schedule of the child health weeks/national immunisation campaigns and if the child participated to avoid double administration of vitamin A. Vaccinators in general should be made aware that vitamin A should not be provided to children with bilateral pitting oedema. They also should be trained to identify and refer children with SAM during regular vaccination sessions or campaigns.

Note: Children identified with SAM commonly have diarrhoea, but should not be referred to the ORT corner to receive oral rehydration solution (ORS). Children with SAM and severe dehydration – diagnosed based on a recent history of profuse watery diarrhoea and recent change in child's appearance – are referred to inpatient care where they will receive **ReSoMal** (Rehydration Solution for Malnutrition; less sodium, more potassium) instead of the ORS in controlled amounts. ORS given to a child with severe wasting will invoke sodium overload and enhance bilateral pitting oedema.

3.4.2 CHILDREN REFERRED FROM INPATIENT CARE

Children who have been referred from inpatient care or another outpatient care site are not given routine medicines that have already been administered to them, but will continue treatment that was started earlier.

The child's records and documentation should be checked for details of medications already given and, where applicable, the remaining schedule of medications and supplements should be continued according to this protocol.

3.5 Dietary Treatment

Children receive RUTF based on a dosage of 200 kcal/kg bodyweight/day, given as a take home ration. A weekly supply of RUTF is provided depending on the child's bodyweight (see **Table 10**). The dietary treatment is managed in the home, with the children attending outpatient care sessions on a weekly basis to monitor health and nutrition status, and replenish stocks of RUTF.

3.5.1 PROVISION OF RUTF

Provide 200 kcal/kg bodyweight/day of RUTF. Use the RUTF look-up tables for the amounts of RUTF to give in each weekly session, based on the child's weight. One sachet containing 92 g of RUTF provides 500 kcal.

Explain the daily amount the child will need to consume to the caregiver and give him/her the required RUTF ration.

Table 10. Look-Up Table for Amounts of 92 g Packets of RUTF Containing 500 kcal to Give to a Child per Day or Week Based on a Dosage of 200 kcal/kg bodyweight/day

Weight of the Child (kg)	Packets per Week	Packets per Day
3.5 - 3.9	11	1.5
4.0 - 4.9	14	2
5.0 - 6.9	18	2.5
7.0 - 8.4	21	3
8.5 - 9.4	25	3.5
9.5 - 10.4	28	4
10.5 - 11.9	32	4.5
≥ 12	35	5

3.5.2 FEEDING PROCEDURE

The caregiver is advised to feed the child with small amounts of RUTF, to encourage the child to finish the allocated daily ration before giving any other foods (except for breastfeeding) and to encourage the child to eat as often as possible (every 3-4 hours). The RUTF ration is a full food ration for the child, and the child should not eat anything else during the first week except breast milk.

The breastfed child should be offered breast milk on demand and before being fed RUTF.

Safe drinking water should be given after feeding the child RUTF to keep the child hydrated. Caregivers should be advised not to mix RUTF with liquids as this may foster bacteria growth.

Key messages are provided upon admission to outpatient care and are also repeated upon every visit. They follow the sequence of: wash hands before feeding, breastfeed first, offer small amounts of RUTF spread over the day and offer safe drinking water during the feeding (see **Annex 15. Key Messages upon Admission to Outpatient Care**).

Caregivers could be asked to return empty RUTF packets (or pots) at each follow-up visit.

3.6 Individual Monitoring During Follow-Up Visits

Individual monitoring of the child's progress should be carried out by the health care provider upon weekly (or if circumstances dictate, biweekly) return visits to the health facility or outreach point. The following parameters are monitored and recorded on the treatment card during the follow-up visit:

3.6.1. ANTHROPOMETRY

- MUAC
- Weight

3.6.2. PHYSICAL EXAMINATION

- Degree of bilateral pitting oedema
- Weight gain:
  - The weight is compared with the target weight for discharge.
  - Children who have no weight gain or lose weight on follow-up receive special attention during the medical examination
- Body temperature
- Standard clinical signs: stool, vomiting, dehydration, cough, respiration rate
- Appetite test
- Any illness suffered by the child since the last visit
- Any action taken or medication given in response to a health condition

At each follow-up visit, the caregiver should be informed of the child's progress, and individual and/or group counselling is provided on standardised health and education messages. Special attention should be paid to the gradual introduction of quality complementary foods to prepare the child for gradual weaning off the RUTF (see **Annex 16. Health and Nutrition Education Messages**).

Follow-up action is based on the action protocol (see **Annex 14. Action Protocol in Outpatient Care**). The action protocol describes when to refer the child to inpatient care, to conduct a home visit, or to refer for medical investigation. Children who were absent for one or more visits or defaulted are traced in the community.

3.7 Home Visits

The outreach worker covering the geographical area of a child's place of origin of the children should be assigned to make home visits for children requiring special attention during the treatment process. Home visits should include assessing the nutrition and health condition of the child, compliance with feeding practices for RUTF and home caring practices. The outreach worker provides individual counselling to the caregiver and feeds back the information to the health care provider.

Home visits for children with SAM are essential in the following cases (see **Annex 14. Action Protocol in Outpatient Care**):

- Absent or defaulting
- Static weight, losing weight, not losing oedema or deteriorating medical condition
- Returned from inpatient care or caregiver has refused inpatient care

A system to monitor home visits should be kept at the outpatient care site (see **Annex 21. Community Participation and Outreach Reports**). Special attention should be given to children returning from inpatient care to make sure they return to outpatient care to continue treatment.

3.8 Criteria to Refer Child from Outpatient Care to Inpatient Care or for Medical Investigation

Children with SAM in outpatient care who develop medical complications or who are not responding well to treatment are referred to inpatient care, according to the action protocol (see **Annex 14. Action Protocol in Outpatient Care**).

The following medical complications and deterioration of nutrition status require referral to inpatient care or for medical investigation:

- Poor appetite (failed appetite test)
- Other IMCI danger signs: intractable vomiting, convulsions, lethargy/not alert, unconsciousness
- Deteriorating general condition
- Increase in or newly developed bilateral pitting oedema
- Below admission weight on week three
- Weight loss for two consecutive visits
- Static weight (no weight gain) for three consecutive weeks

- Hypoglycaemia, dehydration, high fever, hypothermia, high respiratory rate or chest indrawing, anaemia, skin lesion, superficial infection, or any other none response to treatment

The absence or death of the caregiver can lead the new caregiver to request inpatient care. Referral to inpatient care must also be granted upon request from the caregiver at any time.

If a child is referred to inpatient care, it is essential that the IMCI referral form is used to provide basic health and nutrition information, including a description of the treatment, reasons for referral and vaccination status It is important is that the nutrition and medical information is recorded and shared with the health care provider at the next level. (See **Annex 25. Referral Form Inpatient Care/Outpatient Care**)

3.9 Discharge Criteria

The child is fully recovered if the following discharge criteria are met:

- Fifteen percent weight gain for two consecutive visits (see **Annex 5. Guidance Table to Identify Target Discharge Weight**)
- Sustained weight gain; child has been gaining weight during the last three visits
- No bilateral pitting oedema for two consecutive visits
- Child is clinically well and alert

Other children that are discharged but did not meet the discharged cured criteria (thus did not recover) are children who:

- Died while in treatment
- Defaulted, or were absent for three consecutive visits
- Did not recover, or did not meet the discharge criteria after four months in treatment; during the treatment, these children would have shown signs of non-response to treatment and been referred to inpatient care or for medical investigation based on the action protocol

It is recommended that at discharge the following elements are considered:

- Health and nutrition education scheme is completed
- Appropriate weaning off of RUTF is reached
- Immunisation schedule is updated
- Adequate arrangements for linking the caregiver and child with appropriate community initiatives (e.g., supplementary feeding) and for follow-up are made

3.10 Discharge Procedures

The following elements should be addressed before the child is discharged:

- Provide feedback to the caregiver on the final outcome of treatment
- Counsel caregiver on good feeding and care practices, including on providing and preparing appropriate complementary food
- Ensure caregiver understands importance of follow-up care to prevent relapse, such as, enrolment in supplementary feeding and other child health and nutrition programmes
- Note discharge outcome in register and on treatment card
- Advise the caregiver to immediately go to the nearest health facility if child refuses to eat or has any of the following signs:
    - High fever
    - Frequent watery stools or stools with blood, diarrhoea lasting more than 4 days
    - Difficult or fast breathing
    - Vomiting
    - Not alert, very weak, unconscious, convulsions
    - Bilateral pitting oedema
- Give final ration of RUTF (one week supply)

Ideally, children discharged from outpatient care should be referred to supplementary feeding where available for a minimum of four months, regardless of their nutrition status.

3.11 Failure to Respond to Treatment in Outpatient Care

Some children in outpatient care will fail to respond to treatment, or their condition can deteriorate despite the treatment. A child in outpatient care who meets any of the criteria as described in **Table 11** and in the action protocol (see **Annex 14. Action Protocol in Outpatient Care**) are diagnosed as failing to respond to treatment. The child should be referred to a health facility with expertise in inpatient care for SAM with poor appetite and/or with medical complications for medical investigation and treatment.

Table 11. Criteria for Defining Failure to Respond to Treatment in Outpatient Care

Primary failure* to respond to treatment	**Time since admission**
Failure to gain weight (non-oedematous child)	21 days
Failure to start to lose oedema	14 days
Oedema still present	21 days
Weight loss since admission (non-oedematous child)	14 days
Secondary failure* to respond to treatment	**Time or duration**
Failure of appetite test	At any visit
Weight loss	For 2 consecutive visits
Static weight	For 3 consecutive visits
Below admission weight	After 21 days in treatment

* Primary failure to respond means when the criteria has been noticed since admission. Secondary failure to respond means when the child has shown improvement and then later deteriorates as described by the criteria.

Actions to be considered:

- Community health workers or volunteers conduct home visits to check whether a child should be referred back to the health facility between follow-up visits
- Health care provider discusses with caregiver aspects of the home environment that may affect the child's progress
- If these actions are not immediately successful, an external evaluation could be conducted to verify the organisation of the services and the application of the treatment protocols. Examples of common causes of failure to respond to treatment (see **Box 8**) should be systematically examined to determine and rectify the problem.

Box 8. Examples of Frequent Causes of Failure to Respond to Treatment in Outpatient Care

Problems related to the quality of the treatment:

- Inappropriate evaluation of child's health condition or missed medical complication
- Inappropriate evaluation of appetite test
- Non-adherence to RUTF protocol
- Non-adherence to routine medication protocol
- Inadequate guidance provided for home care

Problems related to home environment:

- Inappropriate frequency of visits and reception of RUTF
- Inadequate intake or sharing of RUTF and/or medicines

4. Inpatient Care for the Management of SAM with Medical Complications in Children 6-59 Months

Inpatient care for the management of SAM with poor appetite and/or with medical complications can be provided in a special section of the paediatric ward or health facility with 24-hour care. Staff at these health facilities should have been specifically trained in the management of SAM with medical complications.

Children 6-59 months with SAM with poor appetite or with medical complications and children being referred from outpatient care following the action protocol are admitted to inpatient care. Children with SAM with appetite or without medical complications may exceptionally be admitted to inpatient care for social reasons, for example, no caregiver, security problem, to be decided by the supervisor of the health facility. (See **Annex 14. Action Protocol in Outpatient Care**)

Children 6-59 months admitted into inpatient care for stabilisation will be referred to outpatient care as soon as the medical complication is resolving, the appetite has returned and the bilateral pitting oedema is reducing. Exceptionally, children will complete the full treatment in inpatient care, because, for example, there is no outpatient care, child cannot eat RUTF, RUTF is not available.

All infants under 6 months with SAM are admitted in inpatient care until full recovery (see **Section 5**).

Older children, adolescents and adults with SAM will be admitted to inpatient care until full recovery (see **Section 6**).

4.1 Admission Criteria

Box 9. Admission Criteria for Inpatient Care for Children 6-59 Months

Bilateral pitting oedema +++ , or

Any grade of bilateral pitting oedema with severe wasting, or

SAM (bilateral pitting oedema + or ++ or severe wasting) with any of the following medical complications:

- Anorexia, poor appetite
- Intractable vomiting
- Convulsions
- Lethargy, not alert
- Unconsciousness
- Hypoglycaemia
- High fever
- Hypothermia
- Severe dehydration
- Lower respiratory tract infection
- Severe anaemia
- Eye signs of vitamin A deficiency
- Skin lesion

Or

- Referred from outpatient care according to action protocol
- Admitted for social reason

Note: Infants with SAM ≥ 6 months and < 4 kg will follow the treatment protocol as infants with SAM < 6 months (see **Section 5**)

4.2 Admission Procedure

- Upon arrival at the health facility, the child and caregiver are welcomed and informed about the admission procedure. Critically ill children are triaged and receive priority treatment. Sugar water is made available to prevent hypoglycaemia (see **Box 6** and **Annex 8. Drug Dosages for SAM Treatment of Children Under 5**).
- Children, upon admission, should directly be assigned to the specific ward for inpatient care. They are not treated or kept in an emergency ward unless the clinical staff in the emergency ward has specific training in the management of SAM with medical complications. Critical care of children with SAM differs from the standard protocols, and trained medical staff needs to be involved to provide quality care for SAM to reduce the risk of death.
- The child's medical condition is assessed and life-saving treatment is started as soon as possible, followed by routine WHO treatment protocols for SAM. The WHO 10-step treatment summarises the different life saving steps that need to be considered in the treatment of SAM (see **Figure 2**).
- The medical and nutrition assessment information is recorded on the inpatient care treatment card (see **Annex 23. Inpatient Care Treatment Card**): child information, medical history and the results of the physical examination.
- Admission registration is completed using the existing registration system.
- The caregiver should receive counselling, including on the medical and dietary treatment the child will receive, and on breastfeeding and good hygiene practices. The caregiver should be given soap for hand-washing and general hygiene, and food during his or her stay in inpatient care.
- Ideally, children and their caregivers in the stabilisation phase should be physically separated from those children in the transition and rehabilitation phases or from children with other diseases.
- A child 6-59 months in inpatient care who is alert should undergo the appetite test with RUTF (see **Box 7**). If he or she passes the appetite test but needs admission to inpatient care for medical complications, then he or she should take RUTF. A child who fails the appetite test will be put on the milk diet and will be tested again as soon as the appetite has returned. As soon as the appetite returns, the child moves to the transition phase and is offered RUTF. The transition from a milk diet to RUTF is gradual, but happens for most children within one day. RUTF is always offered first and complemented with F100 if necessary.
- A child 6-59 months with SAM without medical complications and appetite will be admitted to inpatient care only in case of an exceptional social or medical reason. This is decided by the supervisor of the health facility in discussion with the caregiver.

4.3 Stabilization Phase

Medical treatment and nutrition rehabilitation of children with SAM with poor appetite and/or with medical complications in inpatient care follow the adapted WHO 1999 protocol for CMAM. As soon as the medical condition is stabilised, the bilateral pitting oedema is reducing and/or the medical complication is resolving, the child is referred to outpatient care to continue nutrition rehabilitation. It is expected that the child will be in the stabilisation phase for one to seven days.

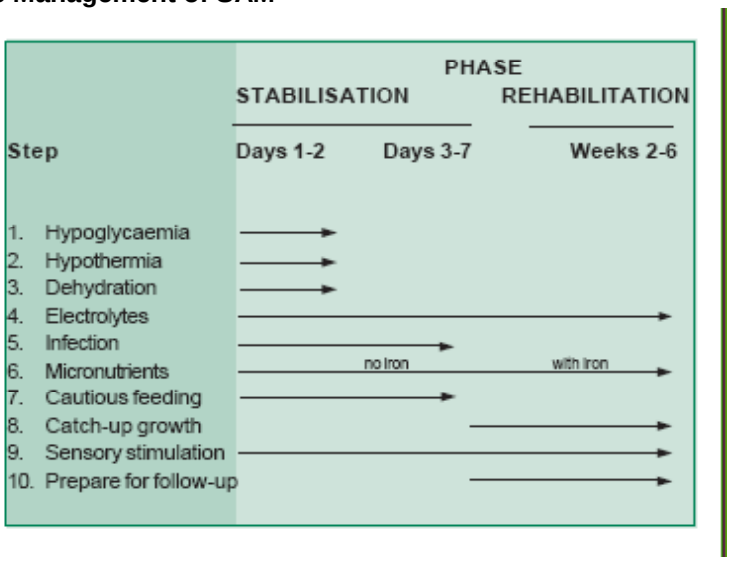
The general principles of the WHO SAM treatment protocol are:

- Treat and prevent hypoglycaemia
- Treat and prevent hypothermia
- Treat and prevent dehydration
- Correct electrolyte imbalance
- Treat and prevent infection
- Provide micronutrient supplementation
- Start cautious feeding
- Achieve transition to catch-up diet
- Provide sensory stimulation and emotional support
- Prepare for follow-up after stabilisation and transition

Also consider:

- Treat incipient or developed septic shock, if present
- Identify and treat any other problems, including vitamin deficiency, severe anaemia and heart failure

Figure 2. Overview Treatment of Children with SAM: WHO 10-Steps According to the WHO 1999 Protocol for the Management of SAM[13]



4.3.1 MEDICAL TREATMENT

Routine medicines and supplements should follow the schedule as described in outpatient care (see also **Annex 6. Routine Medicines Protocols**, **Annex 7. Supplemental Medicines Protocols** and **Annex 8. Drug Dosages for SAM Treatment of Children Under 5**).

Also, because children with SAM in inpatient care have a severe form of illness with medical complications, they will need high level care by very skilled clinicians. The **Appendix** provides detailed guidance on the management of medical complications in the presence of SAM.

Note: The use of intravenous (IV) lines is strictly avoided except in case of shock or circulatory collapse. Special care with IM injections is taken as children with SAM have reduced muscle mass and the risk of nerve damage is high.

4.3.2 DIETARY TREATMENT

The F75 therapeutic milk is designed to restore hydration, electrolyte and metabolic balance providing the necessary calories and nutrients for maintenance needs. Weight gain is not obtained during this phase.

Quantities of F75

- Give 130 ml of F75 (100 kcal) per kg bodyweight per day
- Give six-to-eight feeds a day (every three-to-four hours)
- Use the look-up tables for the volume of F75 to give to individual child per feed according to the child's bodyweight (see **Tables 12** and **13**)

Notes:

- Breastfed children should be offered breast milk on demand before being fed F75.
- Where night feeds are problematic, give five to six feeds during the daytime. Hypoglycaemia becomes a risk if the daytime intake is low.

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

- 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 each 8 or more feeds should be given daily.

Feed Preparation F75

For a large number of children: Add one packet of F75 to 2 L of water. The water needs to be boiled and cooled prior to mixing.

For few children: Smaller volumes can be prepared by measuring small amounts of F75 using the red scoop. Add 20 ml boiled and cooled water per 1 red scoop of F75 powder.

If pre-packaged F75 is not available, use one of the recipes to prepare F75 using locally available ingredients and (imported) combined mineral and vitamin mix (CMV) (see **Annex 11. Alternative Recipes for F75, F100 and ReSoMal using CMV**).

Feeding Procedure F75

- Feed by cup and saucer.
- ONLY feed with a nasogastric tube (NGT) when the child is unable to take sufficient F75 by mouth. Sufficient amount is defined as intake of 75 percent of the milk.
- The use of a NGT should not exceed three days and should only be used in the stabilisation phase.

Box 10. Summary of Reasons for the Use of NGT to Feed the Child during Stabilisation

NGT should be used if:

- Child takes less than 75 percent of the prescribed diet per 24-hours during stabilisation
- 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 disturbed level of consciousness

Feeding Technique F75

Aspiration pneumonia is very common in severely malnourished children due to muscle weakness and slow swallowing. Therefore, applying the correct feeding technique is important to ensure the child has an adequate milk intake.

The child should be on the caregiver's lap against her chest, with one arm behind her back. The caregiver's arm encircles the child and holds the *cup and saucer* under the child's chin. The child should be sitting straight (vertical). The F75 is given by cup, and any dribbles that fall into the saucer are returned to the cup. The child should never be force fed, have his or her nose pinched, or lie back and have the milk poured into the mouth.

Meal times should be sociable. The caregivers should sit together in a semi-circle around an assistant who talks to the caregivers, encourages them, corrects any faulty feeding technique and observes how the child takes the milk.

Caregivers' meals should be organized by the health facility. They should never be taken beside the child. Sharing of the meal with the child can be dangerous given their delicate pathophysiology. If the caregiver's meal has added salt or condiment it can be sufficient to provoke heart failure in children with SAM.

Table 12. Stabilisation Phase Look-Up Tables for Volume of F75 for Persons with *Severe Wasting*

Weight of the Child (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 kg	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 – 10.9	170	200	275
11 – 11.9	190	230	275
12 – 12.9	205	250	300
13 – 13.9	230	275	350
14 – 14.9	250	290	375
15 – 19.9	260	300	400
20 – 24.9	290	320	450
25 – 29.9	300	350	450
30 – 39.9	320	370	500
40 – 60	350	400	500

Table 13. Stabilisation Phase Look-Up Tables for Volume of F75 for Persons with *Bilateral Pitting Oedema*

Weight of the Child (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 to 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 – 6.9	90 – 110	110 – 140	140 - 175
7 – 7.9	100 – 125	130 – 160	160 - 200
8 – 8.9	110 – 140	145 – 180	180 - 225
9 – 9.9	125 – 155	150 – 190	200 - 250
10 – 10.9	135 – 170	160 - 200	220 - 275
11 – 11.9	150 – 190	185 - 230	220 - 275
12 – 12.9	165 – 205	200 - 250	240 - 300
13 – 13.9	185 – 230	220 - 275	280 - 350
14 – 14.9	200 – 250	230 - 290	300 - 375
15 – 19.9	210 – 260	240 - 300	320 - 400
20 – 24.9	230 – 290	255 - 320	360 - 450
25 – 29.9	240 – 300	280 - 350	360 - 450
30 – 39.9	255 – 320	295 - 370	400 - 500
40 – 60	280 – 350	320 - 400	400 - 500

4.3.3 INDIVIDUAL MONITORING

Individual monitoring of children with SAM in the stabilisation phase should be done continuously. Based on improvement in the child's condition, a decision can be made on progression to the transition phase of the treatment.

The following parameters should be monitored daily:

- Weight is measured at the same time (before or after feeds), entered and plotted on the individual treatment card
- Degree of bilateral pitting oedema (0 to +++) is assessed
- Body temperature is measured (twice per day)
- Standard clinical signs: stool, vomiting, dehydration, cough, respiration and liver size; skin condition and peri-anal lesions are assessed and noted
- MUAC is taken upon admission and thereafter on each seventh day
- Length or height is taken after 21 days (when a new treatment card is used)
- A record is taken (on the intake part of the treatment card) if the patient is absent, vomits or refuses a feed, and whether the patient is fed by NGT or is given an IV infusion or transfusion; there are appropriate places for these to be recorded each day

4.3.4 PROGRESSION FROM THE STABILISATION TO TRANSITION PHASE

The criteria to progress from the stabilisation phase to the transition phase are:

- Return of appetite, and
- Resolving medical complication, or
- Reduction of bilateral pitting oedema (checked by appropriate and proportionate weight loss as the oedema starts to subside)

Children with severe bilateral pitting oedema (+++) should remain in the stabilisation phase on F75 diet at least until their oedema has reduced to moderate (++); these children are particularly vulnerable.

4.4 Transition Phase

When children with SAM complete the stabilisation phase, they start treatment in the transition phase.

In the transition phase, medical treatment is continued and the dietary treatment changes for children 6-59 months: RUTF is progressively introduced and F100 therapeutic milk is used to complement the RUTF feed if the child did not successfully complete the RUTF amount per feed.

The quantities of the milk diet provided remain the same as in the stabilisation phase, but the calorie intake changes. The duration of treatment in the transition phase is on average two-to-three days.

Children 6-59 months are gradually prepared for referral to outpatient care. As soon as the child eats 75 percent of his or her daily RUTF ration, the child will be referred to outpatient care to continue treatment.

Older children, adolescents and adults remain on the F100 therapeutic milk diet until full recovery.

4.4.1 MEDICAL TREATMENT

Routine medicines and supplements should follow the schedule as described in outpatient care (see **Section 3.4**). Routine antibiotic therapy should be continued for four more days after stabilisation.

The child can be referred to outpatient care and continue the drug regimen. If a child has to complete the antibiotic schedule while in outpatient care, it should be noted on the child's referral card (see **Annex 25. Referral Form Inpatient Care/Outpatient Care**). The information can also be provided on outpatient care treatment cards if they are made available at inpatient care sites or on the road to health card.

4.4.2 DIETARY TREATMENT

Because of the return of appetite during the transition phase, RUTF is introduced. RUTF is offered at every feed and complimented by F100 if needed. Few children might initially refuse the RUTF but should be encouraged to eat it at every meal. If the child takes RUTF voluntarily, stop providing F100.

If both F100 and RUTF are being given, they can be substituted on the basis that about 100 ml of F100 equals 20 g of RUTF.[14]

The diet provides an average increase in energy intake of about one third daily over the amount given during the stabilisation phase, i.e.,150 kcal/kg bodyweight/day.

Average expected daily weight gain is 5 g per kg bodyweight. Excess weight gain is NOT a good sign in the transition phase.

For children over 6 months with a weight less than 4 kg, only F100-Diluted should be given. Full strength F100 should not be used. (See **Section 5**.)

Number of Feeds

- Eight feeds per day should be provided in 24-hour care, if sufficient staff are present to prepare and distribute the feeds at night
- Five-to-six feeds per day in day-only care, ensuring that the feeds are completed during the day
- Breastfed children should be offered breast milk on demand before being fed RUTF or F100

Quantities of RUTF

- Use the RUTF look-up table and provide quantities of RUTF based on the 150 kcal/kg bodyweight/day (see **Table 14**).
- A full day's amount of RUTF is given to the caregiver, and the amount taken should be checked five times per day.
- Children that are not taking sufficient RUTF as inpatients are given F100 to make up any deficit in intake.
- When the child is taking 75 percent of the daily prescribed amount of RUTF, the child is ready for referral to outpatient care to continue the treatment at home.

Quantities of F100 for Children Who Do Not Take RUTF

- The volume of feeds remains the same as in the stabilisation phase.
- Give 130 ml of F100 or 150 kcal/kg bodyweight/day.
- Use the transition phase look-up table for the volume of F100 to give per feed according to the child's bodyweight (see **Table 15** and **Annex 10. Dietary Treatment**).

Feed Preparation F100

For a large number of children*:* Add one packet of F100 to 2 L of water (the water needs to be boiled and cooled prior to mixing).

For few children: Smaller volumes can be prepared by measuring small amounts of F100 using the red scoop (add 18 ml water per 1 red scoop of F100 powder).

If pre-packaged F100 is not available, use one of the recipes given (see **Annex 11. Alternative Recipes for F75, F100 and ReSoMal using CMV**) to prepare F100 using locally available ingredients and CMV.

[14] This is an acceptable approximation. If tables are to be constructed, then 100 ml of F100 = 18.5 g of RUTF. 10 g of RUTF = 54 ml of F100 should be used and the resulting values rounded to the nearest 5 or 10 ml.

Table 14. Look-Up Table for Amounts of 92 g Packets of RUTF Containing 500 kcal to Give to a Child per Day Based on a Dosage of 150 kcal/kg bodyweight/day

Weight of the Child (kg)	Packets per Day
3.5 – 3.9	1.2
4.0 – 4.9	1.5
5.0 – 6.9	2.1
7.0 – 8.4	2.5
8.5 – 9.4	2.8
9.5 – 10.4	3.1
10.5 – 11.9	3.6
≥12	4

Table 15. Transition Phase Look-Up Table for Quantity of F100 to Give to an Individual Child per Feed for Those Not Taking the RUTF (150 kcal/kg bodyweight/day)

	F100	F100	F100
Weight of the Child (kg)	ml per feed if 8 feeds per day	ml per feed if 6 feeds per day	ml per feed if 5 feeds per day
3.0 - 3.4	60 ml per feed	75 ml per feed	85 ml per feed
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 - 10.9	170	200	275
11 - 11.9	190	230	275
12 - 12.9	205	250	300
13 - 13.9	230	275	350
14 - 14.9	250	290	375
15 - 19.9	260	300	400
20 - 24.9	290	320	450
25 - 29.9	300	350	450
30 - 39.9	320	370	500
40 - 60	350	400	500

Feeding Procedure RUTF

- Provide the RUTF to the caregiver to feed the child. The caregiver should be encouraged to provide RUTF feeds at the same time as feeds provided during the stabilisation (five-to-eight feeds per day).
- Breastfed children should be offered breast milk on demand before being fed RUTF.
- Children should be offered as much water to drink as they will take during and after they have taken some of the RUTF.
- Some children initially refuse the RUTF. If this is the case, they should be given the F100 diet for one or two days and then re-introduced to RUTF when their appetite is fully established.

Feeding Procedure F100

- Feeding and timing of F100 feeds in the transition phase are the same as in the stabilisation phase.
- Breastfed children should be offered breast milk on demand before being fed F100.
- Never force feed the child.

Feeding Technique RUTF

RUTF should be given to the caregiver to feed the child. Children should be offered as much clean water to drink as they demand during and after RUTF intake.

Feeding Technique F100

The feeding technique for F100 is the same as for F75 in the stabilisation phase.

4.4.3 INDIVIDUAL MONITORING

Individual monitoring of a severely malnourished child in the transition phase is done daily. Average expected daily weight gain is 5 g per kg bodyweight. Excess weight gain is NOT a good sign in the transition phase and needs further investigation.

Patients with bilateral pitting oedema (kwashiorkor) should remain in the transition phase until there is a definite and steady reduction in oedema to the + level.

The following parameters should be monitored daily and entered on the individual treatment card:

- Weight
- Degree of bilateral pitting oedema (0 to +++)
- Body temperature
- Standard clinical signs: stool, vomiting, dehydration, cough, respiration and liver size
- MUAC taken each week
- Length or height taken every three weeks
- Other record: e.g., absent, vomits, refuses a feed

4.4.4 PROGRESSION FROM THE TRANSITION PHASE TO OUTPATIENT CARE

Based on improvements in the child's condition, a decision should be made on progression to the next phase:

- For children 6-59 months: referral to outpatient care to continue rehabilitation
- For older age groups: transition to rehabilitation phase and remain in inpatient care until full recovery

Recovering children 6-59 months can progress to outpatient care; very few who cannot take RUTF (or for other reasons) remain in inpatient care until referral to outpatient care is possible or until full recovery. Older age groups will remain in inpatient care until full recovery.

Criteria to Progress to Outpatient Care

- Good appetite: if the child passes the appetite test and takes at least 75 percent of the daily ration of RUTF
- Bilateral pitting oedema reducing to moderate (+ +) or mild (+)
- Resolving medical complication
- Clinically well and alert

Criteria to Progress to the Rehabilitation Phase in Inpatient Care

From the transition phase to the rehabilitation phase in inpatient care (for the few exceptions, i.e., children who will not be able to return to their community or who cannot eat the RUTF):

- Good appetite: taking at least 90 percent of the F100 prescribed in the transition phase
- Bilateral pitting oedema reducing to moderate (+ +) or mild (+)
- Resolving medical complication
- Clinically well and alert

Criteria to Move Back from the Transition Phase to the Stabilisation Phase

The child should be moved back to the stabilisation phase if there is:

- Weight gain of more than 10 g/kg/day in association with an increase in respiratory rate: this is indicative of excess fluid retention
- Increasing or developing bilateral pitting oedema
- Rapid increase in liver size
- Any signs of fluid overload
- Tense abdominal distension
- Significant re-feeding diarrhoea so that there is weight loss
  Note: It is common for the child to get some change in stool frequency when they change diet. This does not need to be treated unless the child loses weight. Several loose stools without weight loss are not a criterion to move back to the stabilisation phase.
- A complication that necessitates an intravenous infusion
- A need for feeding by NGT

4.5 Rehabilitation Phase

Some children 6-59 months progressing from the transition phase will still require inpatient care and should be moved to the inpatient rehabilitation phase. This phase is associated with full recovery and rapid catch-up of lost weight.

A child progressing to the rehabilitation phase and who is on a RUTF diet can be referred to the outpatient department of the health facility and monitored weekly if there is no outpatient care site close to his or her community. They should not occupy a bed and become exposed to nosocomial infections. Accommodations for the child and caregiver should be organised outside of the ward in case this is needed.

Older children, adolescents and adults remain on the F100 therapeutic milk diet until full recovery.

4.5.1 MEDICAL TREATMENT

The medical part of the treatment for SAM is likely to be completed at this stage. There should be no serious medical complications and the child should have a good appetite. The child is expected to be eating large amounts of their diet and gaining weight rapidly.

Routine Medicines Added in the Rehabilitation Phase

(See **Section 3.4** and **Annex 6. Routine Medicines Protocols**.)

- Deworming: antihelminthic drug as a single dose
- Vitamin A supplementation and measles vaccination on week 4 or at discharge
- If the child is on F100, iron sulphate is added: 1 crushed tablet = 200 mg of iron sulphate added to 2-2.4 L of F100 (if the child is on RUTF no additional iron is given as it already contains the necessary iron)

4.5.2 DIETARY TREATMENT

This is the phase that the child's body function is restoring and the child will catch up weight. The diet based on 200 kcal/bodyweight/day will be RUTF --or for those that cannot take sufficient RUTF, F100 is given to make up any deficit in intake.

The mother/caregiver should be encouraged and informed on appropriate care and feeding practices and on how to prevent malnutrition in the child (e.g., separate feeds, good hygiene, return to the health facility if the child's condition deteriorates). (See also **Annex 16. Health and Nutrition Education Messages**.)

If both F100 and RUTF are being given, they can be substituted on the basis that about 100 ml of F100 equals 20 g of RUTF.[15]

Number of Feeds

- Give 5-6 feeds of RUTF and/or F100 per day.
- Breastfed children should be offered breast milk on demand before being fed RUTF and/or F100.
- Porridge can be added once a day as an extra feed to prepare the child for weaning off the therapeutic food.

Note: Children weighing less than 4 kg must be given F100-Diluted. They should never be given full strength F100. (See regimen in **Section 5**.)

Quantities of Feeds RUTF

Use the RUTF look-up table (**Table 16**) to calculate proper provision of RUTF. RUTF is provided on the basis of 200 kcal/kg bodyweight/day, just as in outpatient care.

Quantities of Feeds F100 for Children Not Taking RUTF

- Give 200 ml of F100, which provides 200 kcal/kg bodyweight/day.
- Use the look-up table (**Table 17**) for the volume of F100 in the inpatient rehabilitation phase and give per feed according to child's bodyweight.

Table 16. Look-Up Table for Amounts of 92 g Packets of RUTF Containing 500 kcal to Give to a Child per Day Based on a Dosage of +/- 200 kcal/kg bodyweight/day

Weight of the Child (kg)	Packets per Day
3.5 – 3.9	1.5
4.0 – 4.9	2
5.0 – 6.9	2.5
7.0 – 8.4	3
8.5 – 9.4	3.5
9.5 – 10.4	4
10.5 – 11.9	4.5
≥ 12	5

Table 17. Inpatient Rehabilitation Phase Look-Up Table for Quantity of F100 to Give to an Individual Child per Feed if No RUTF is Taken, Based on +/- 200 kcal/kg bodyweight/day

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

[15] This is an acceptable approximation. If tables are to be constructed then 100 ml of F100 equals 18.5 g of RUTF or 10 g of RUTF equals 54 ml of F100 should be used, and the resulting values rounded to the nearest 5 or 10 ml.

20.0 - 24.9	650	780
25.0 - 29.9	750	900
30.0 - 39.9	850	1000
40 - 60	1000	1200

Feed Preparation F100

For large number of children: Add one packet of F100 to 2 L of water (the water needs to be boiled and cooled prior to mixing).

For few children: Smaller volumes can be prepared by measuring small amounts of F100 using the red scoop (add 18 ml water per 1 red scoop of F100 powder).

Feeding Procedure RUTF

- Provide the RUTF to the caregiver to feed the child.
- Breastfed children should be offered breast milk on demand before being fed RUTF.
- Children should be offered as much water to drink as they will take during and after they have taken some of the RUTF.

Feeding Procedure F100

- Feed by cup and saucer
- Breastfed children should be offered breast milk on demand before being fed F100.
- After the feed, always offer an additional quantity to the child if he or she takes all the feed that is given quickly and easily. The child should be able to take as much F100 as he or she wants.
- Gradually replace one feed a day with a porridge.

4.5.3 INDIVIDUAL MONITORING

Individual monitoring of the recovering child in the inpatient care rehabilitation phase is done daily. The following parameters should be monitored daily and recorded on the treatment card:

- Weight
- Degree of bilateral pitting oedema (0 to +++)
- Body temperature
- Standard clinical signs: stool, vomiting, dehydration, cough, respiration
- MUAC each week
- Length or height taken after 21 days
- Other records: e.g., absent, vomits, refuses a feed
- A full medical examination conducted every two days

Criteria to Move Back from the Rehabilitation Phase to the Stabilisation Phase in Inpatient Care

If a child develops any signs of a medical complication, he or she should be referred back to the stabilisation phase. Routine drugs are individually prescribed depending on what has already been given and the cause of the referral (see **Annex 14. Action Protocol in Outpatient Care**).

Based on the child fulfilling the discharge criteria, a decision can be made to discharge the child to his or her home or for referral to supplementary feeding or other health, nutrition and livelihood services that seek to address some of the underlying causes of malnutrition at the household level.

4.6 Criteria for Discharge from Inpatient Care After Full Recovery

Children that are meeting the discharge criteria are discharged as cured from the inpatient care rehabilitation phase.

- Fifteen percent weight gain for two consecutive days (see **Annex 5. Guidance Table to Identify Target Discharge Weight**)
- Sustained weight gain
- No bilateral pitting oedema for two weeks
- Clinically well and alert

It is recommended that the following elements are considered at discharge:

- Health and nutrition education scheme is completed
- Appropriate weaning of RUTF is reached
- Immunisation schedule is updated
- Adequate arrangements for linking the caregiver and child with appropriate community initiatives and for follow-up are made

Other children that are discharged but did not meet the discharge criteria (thus did not recover) are children who:

- Died while in treatment
- Defaulted, or were absent for two days
- Did not recover, or did not meet the discharge criteria after two months in treatment

4.7 Discharge Procedures

The following elements should be addressed before the child is discharged:

- Provide feedback to the caregiver on the final outcome of treatment
- Counsel caregiver on good feeding and care practices, including on providing and preparing appropriate complementary food
- Ensure caregiver understands importance of follow-up care to prevent relapse, e.g., enrolment in supplementary feeding and other child health and nutrition programmes
- Note discharge outcome in register and on treatment card
- Advise the caregiver to immediately go to the nearest health facility if child refuses to eat or has any of the following signs:
    - High fever
    - Frequent watery stools or stools with blood, diarrhoea lasting more than four days
    - Difficult or fast breathing
    - Vomiting
    - Not alert, very weak, unconscious, convulsions
    - Bilateral pitting oedema

Ideally, children discharged from inpatient care after full recovery should be referred to supplementary feeding where available, regardless of their nutrition status.

4.8 Failure to Respond to Treatment in Inpatient Care

Some children undergoing inpatient care for the management of SAM may show failure to respond to treatment or exhibit deterioration of the health and nutrition condition at different stages of the treatment. Criteria for defining failure to respond to treatment are listed in **Table 18**.

Failure to achieve initial improvement at the expected rate is termed *primary failure to respond to treatment*. This can be attributed to unrecognised infection or drug-resistant infections such as bacterial (TB), viral (measles, hepatitis B, HIV) or parasitic (malaria) infections. Deterioration in a child's condition after a satisfactory response has been established is termed *secondary failure to respond to treatment*. This secondary failure may be due to acute infection contracted during inpatient care, reactivation of infection as immune and inflammatory responses recover, or insufficiency in essential nutrients in the diet provided to the child.

Table 18. Criteria for Defining Failure to Respond to Treatment in Inpatient Care

Primary failure* to respond to treatment	**Time after admission**
Failure to regain appetite	4 – 7 days
Failure to start loosing oedema	4 - 7 days
Bilateral pitting oedema still present	10 days
Failure to enter rehabilitation phase or outpatient care	10 days
Secondary failure* to respond to treatment	**During rehabilitation phase**
Failure to gain more than 5g/kg/day	for 2 successive days
Static weight	for 3 successive days

* Primary failure to respond means when the criteria has been noticed since admission. Secondary failure to respond means when the child has shown improvement and then later deteriorates as described by the criteria.

A child who is undergoing treatment for SAM meeting any of the above criteria should be diagnosed as failing to respond to treatment. When such a diagnosis is made an extensive medical evaluation of the child must be carried out (i.e., medical history, physical examination, laboratory investigations of urine and stool samples). The overall management of these cases should be reviewed, e.g., evaluation of adherence to treatment protocol, availability of trained staff.

Failure to respond to treatment should be recorded on the individual treatment chart and the child should be scheduled to be seen by more senior and experienced staff. Furthermore, corrective measures should be taken to strengthen specific areas that need improvement in the practice of managing SAM while ensuring that treatment protocols are adhered to and that staff receives adequate supervision.

4.8.1 CARE FOR CHILDREN FAILING TO RESPOND TO TREATMENT IN INPATIENT CARE

When a child shows signs of failure to respond to treatment, the causal factors contributing to this situation should be thoroughly investigated and the child should be treated appropriately according to the recommendations in these guidelines.

The child that fails to respond should receive a thorough medical examination. The following laboratory investigations are recommended:

- Urine analysis for pus cells and culture
- Blood screening and culture
- Screening for tuberculosis
- Stool test for trophozoites and cysts of Giardia
- HIV test according to the national guidance
- Malaria screening
- Hepatitis screening

Primary Failure to Respond to Treatment

Every child with unexplained primary failure to respond should have a detailed medical history and examination performed. In particular, the child should be assessed carefully for infection as follows:

- Examine the child carefully. Measure the temperature, pulse rate and respiration rate.
- Where appropriate, examine urine for pus cells and culture blood. Examine and culture sputum or tracheal aspirate for TB, examine the fundi for retinal TB and do a chest x-ray.[16] Examine stool for blood and look for trophozoites or cysts of Giardia. Culture stool for bacterial pathogens. Test for HIV, hepatitis and malaria. Culture and examine the cerebrospinal fluid.

[16] Gastric aspirates are very rarely positive in the malnourished child with active TB – particularly if there is overnight feeding; this test should not be relied on, is difficult to perform well and is traumatic for the child. If it is used, overnight feeds should not be given.

Secondary Failure to Respond to Treatment

Secondary failure to respond to treatment is a deterioration/regression in condition after having progressed satisfactorily to the rehabilitation phase with a good appetite and weight gain. It is usually due to:

- Inhalation of diet into the lungs: Severely malnourished children often have poor neuromuscular coordination between the muscles of the throat and the oesophagus. It is quite common for children to inhale food into their lungs during recovery if they are: 1) force-fed, particularly with a spoon or pinching of the nose; 2) laid down on their back to eat; and 3) given liquid diets. Inhalation of part of the diet is a common cause of pneumonia in all malnourished patients. Patients should be closely observed while being fed by the caregiver to ensure that the correct feeding technique is being used. One of the advantages of RUTF is that it is much less likely to be force-fed and inhaled.
- An acute infection that has been contracted in the health facility from another patient (called a nosocomial infection) or at home from a visitor/sibling/household member: At times, as the immune and inflammatory system recovers, there appears to be a “reactivation” of infection during recovery. Acute onset of malaria and TB (for example sudden enlargement of a cervical abscess or development of a sinus) may arise several days or weeks after starting a therapeutic diet.
- A limiting nutrient in the body that has been “consumed” by the rapid growth and is not being supplied in adequate amounts by the diet: This is very uncommon with modern diets (F100 and RUTF), but could occur with home-made diets or with the introduction of other foods. Frequently, introduction of the family diet slows the recovery rate of a severely malnourished child. The same can occur at home when the child is given family food or traditional weaning foods that are inadequate in Type 1 and Type 2 nutrients.

The most frequent causes of failure to respond to inpatient treatment are listed in **Box 11**.

4.8.2 ACTION REQUIRED WHEN A CHILD FAILS TO RESPOND TO TREATMENT IN INPATIENT CARE

- Keep accurate records of all children who fail to respond to the treatment and of those who died. These records should include, at a minimum, detail of the child’s age, sex, date of admission, MUAC, WFH, weight on admission, principal diagnosis, treatment and where appropriate, date and time of death, and apparent cause of death.
- Always systematically examine the common causes of failure to respond and death, and identify areas where case management practices should be improved in order to rectify the problems.
- If these actions are not immediately successful, then an external evaluation by someone experienced with the inpatient care of SAM should be conducted. An investigation into the organisation and application of the protocol for treatment should be carried out as part of the evaluation.
- Review the supervision of staff with refresher training, if necessary.
- Recalibrate scales (and length-boards).

Box 11. Examples of Frequent Causes of Failure to Respond to Treatment in Inpatient Care

Problems related to the health facility:

- Poor environment for malnourished children
- Lack of adherence to treatment protocols for SAM
- Failure to treat malnourished children in a separate area
- Failure to complete the individual treatment card correctly resulting in gaps in data for monitoring the child's progress
- Insufficient staff
- Inadequately trained staff
- Inadequate supervision and constant rotation of staff in treatment facility
- Inaccurate weighing machines
- Food prepared or given incorrectly

Problems related to the caregiver:

- Inappropriate care and feeding practices
- Uncooperative caregiver
- Caregiver overwhelmed with other work and responsibilities

Problems related to the individual child:

- Insufficient feeds taken
- Sharing within family
- Vitamin and mineral deficiencies
- Malabsorption
- Psychological trauma (particularly in refugee situations and families living with HIV/AIDS)
- Rumination
- Infection, especially diarrhoea (amaebiasis, giardiasis, dysentery), pneumonia, TB, urinary infection/otitis media, malaria, HIV/AIDS, schistosomiasis, Kalazar/Leishmaniasis, hepatitis/cirrhosis
- Other serious underlying disease: congenital abnormalities (e.g., Down's syndrome), neurological damage (e.g., cerebral palsy), inborn errors of metabolism

5. Inpatient Care for the Management of SAM of Infants Under 6 Months

Infants under 6 months with SAM should be treated within the context of IYCF recommendations.[17] Breastfeeding support is an integral component of therapeutic care for severely malnourished infants. This support includes protection and support for early, exclusive and continued breastfeeding. Hence support to the mother on maternal feeding and care practices is crucial in the management of acute malnutrition in infants.

Infants under 6 months with SAM are admitted to inpatient care. Infants under 6 months with SAM need special care and ideally should be separated from older infants and children with SAM. The main objective in treating these infants is to improve or re-establish breastfeeding, provide temporary or longer-term appropriate medical and dietary treatment, as well as provide nutrition, psychological and medical care to their caregivers. They are not offered RUTF, as this is not suitable for infants under 6 months because the reflex of swallowing is not yet present.

Infants under 6 months with SAM who are not breastfed are particularly at risk, and will need protection and support to reduce the risks of *artificial feeding*. For these infants and their caregivers, the potential for restoring or establishing breastfeeding should always be explored to the maximum.

Problems related to feeding that lead to SAM in infants that will need to be addressed include:

- Lack of breastfeeding
- Partial breastfeeding
- Inadequate, unsafe artificial feeds
- Mother dead or absent
- Mother malnourished, traumatised, ill, and/or unable to respond normally to her infant's needs
- Disability that affects the infant's ability to suckle or swallow, and/or a developmental problem affecting infant feeding

In this section, guidance is provided on treating the two categories of children under 6 months:

1. Breastfed infants or infants under 6 months with SAM with a lactating female caregiver
2. Non-breastfed infants: infants under 6 months with SAM without the prospect of being breastfed

Infants with SAM, identified by presence of bilateral pitting oedema, low MUAC (< 115 mm) or low WFH (< -3 z-score), who are over 6 months with a weight below 4 kg will fall in one of the categories for the management of SAM for infants under 6 months depending on their prospect of being breastfed.

The treatment of infants with SAM of HIV-positive mothers are treated for SAM according to the international guidance on the prevention of mother-to-child transmission of HIV (PMTCT).

5.1 Breastfed Infants Under 6 Months With a (Potential) Lactating Mother (or Caregiver for Wet Nursing)

5.1.1 ADMISSION CRITERIA

Infants under 6 months being breastfed, if the infant:

- Presents with bilateral pitting oedema
- Has visible wasting
- Is at a high risk of SAM because of inadequate feeding of the infant or lactating mother

Note: High risk of SAM for infants or lactating mothers (or wet nurses) will include:

[17] WHO and UNICEF. 2003. *Global Strategy for Infant and Young Child Feeding*. Geneva: WHO; IFE Core Group. February 2007. *Infant and Young Child Feeding in Emergencies: Operational Guidance for Emergency Relief Staff and Programme Managers.* Version 2.1. Oxford, UK: ENN.

- The infant is too weak or otherwise unable to suckle well or effectively.
- The infant is not satisfactory gaining weight at home despite breastfeeding counselling.
- The lactating mother has insufficient breast milk or is malnourished.
- The lactating mother is absent.

5.1.2 ROUTINE MEDICINES AND SUPPLEMENTS

Antibiotics

- No antibiotic treatment is provided unless there are signs of infection.
- If there is any sign of infection:
    - For infants weighing a minimum of 2 kg, give Amoxicillin dose of 30 mg/kg 2 times per day (60 mg/kg bodyweight/day) in association with Gentamycin (7.5 mg/kg bodyweight/day IM or IV for 7 days).
    - Do not use Chloramphenicol in young infants.

Vitamin A

Give 5,000 IU daily for 10 days (total of 50,000 IU) or as a single dose on week four or upon discharge.

Folic Acid

Give 1 crushed tablet of 2.5 mg in a single dose.

Ferrous Sulphate

F100 has been enriched with ferrous sulphate. Give F100-Diluted (F100 diluted with 1/3 water), as it is easier and safer than calculating and adding ferrous sulphate to very small amounts of feeds. (See Feed Preparation in **Section 5.1.3**).

The **Appendix** provides detailed guidance on the management of medical complications in the presence of SAM.

5.1.3 DIETARY TREATMENT

The main objective of managing SAM in infants under 6 months in inpatient care is to *restore exclusive breastfeeding*. Therefore, stimulate and support breastfeeding, and supplement the child's breastfeeding with therapeutic milk while stimulating production of breast milk.

- Breastfeed on demand, or offer breastfeeding for at least 20 minutes every three hours. The infant should be breastfed as frequently as possible.
- Between breastfeeding sessions, give maintenance amounts of therapeutic milk.
- Provide F100-Diluted for children without bilateral pitting oedema.
- Provide F75 for infants with bilateral pitting oedema and change to F100-Diluted when the oedema is resolved.
- Supplement the milk diet with sips of water or 10 percent sugar-water solution until the thirst of the child is satisfied to prevent hypernatraemia.

Quantities of F100-Diluted

- F100-Diluted is given at 130 ml/kg bodyweight/day, distributed across 8 feeds per day.
- Use the look-up table (**Table 19**) for maintenance amounts of F100-Diluted to give to infants during feeding using the **supplementary suckling (SS) technique**. The quantity of F100-Diluted is not increased as the child starts to gain weight.
- F100-Diluted should be given using 130 kcal/kg bodyweight/day.

Table 19. Look-up Table for Maintenance Amounts of F100-Diluted (Severe Wasting) or F75 (Bilateral Pitting Oedema Until the Oedema is Resolved) to Give to an Individual Infant per Feed

Weight of the Child (kg)	F100-Diluted or F75 in case of oedema ml per feed if 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

Regulation of Amount of F100-Diluted Given

The progress of the infant is monitored by daily weight.

- If the infant loses weight or has a static weight over three consecutive days but continues to be hungry and is taking all his F100-Diluted, add 5 ml extra to each feed.18
- In general, supplementation is not increased during the stay in the health facility. If the infant grows regularly with the same quantity of milk, it means the quantity of breast milk is increasing.
- If, after some days, the child does not finish all the supplemental feed but continues to gain weight, it means the intake from breast milk is increasing and that the infant is taking adequate quantities to meet his or her requirements.
- The infant should be weighed daily with a scale graduated to within 10 g (or 20 g).

When an Infant is Gaining Weight at a Rate of 20 g per Day (Absolute Weight Gain):

- Gradually decrease the quantity of F100-Diluted with one third of the maintenance intake so the baby gets more breast milk.
- If the weight gain of 20 g per day is maintained for two to three days (after gradual decrease of F100-Diluted), then stop F100-Diluted completely.
- If the weight gain is not maintained, increase the amount of F100-Diluted given to 75 percent of the maintenance amount for two to three days, then reduce it again if weight gain is maintained.

When an Infant is Gaining Weight at a Rate of 20 g per Day on Breastfeeding alone, the Child is Ready for Discharge:

- If the caregiver is agreeable, it is advisable to keep the infant in the health facility for an additional three to five days feeding on breast milk alone to make sure that he or she continues to gain weight. If the caregiver wishes to go home as soon as the infant is taking the breast milk with increased demand, then they should be discharged.
- When it is certain that the child is gaining weight on breast milk alone, he or she should be discharged, no matter what his current weight or weight-for-length (WFL).

[18] Maintenance amounts of F100-Diluted are given using the SS technique. If the volume of F100-Diluted being taken results in weight loss, either the maintenance requirement is higher than calculated or there is significant malabsorption.

Feed Preparation

For a large number of children: Add a packet of F100 to 2.7 L of water, instead of 2 L. This is referred to as F100-Diluted.

For a small number of children:

- Add 35 ml of water to 100 ml of F100 already prepared, and that will give 135 ml of F100-Diluted. Discard any excess milk after use. Do not make smaller quantities.
- If you need more than 135 ml, use 200 ml of F100 and add 70 ml of water, to make 270 ml of F100-Diluted. Discard any excess milk after use.
- If F100 is not readily available, infants can be fed with the same quantities of commercial infant formula diluted according to the instructions on the tin. If there is a range of milk formulas to chose from, use a formula designed for *premature infants*. However, infant formula is not designed to promote rapid catch-up growth. Unmodified powdered whole milk should not be used.

Feeding Procedure

- Ensure good breastfeeding through good attachment and effective suckling. Avoid distractions and let the infant suckle the breast at his or her own speed.
- Build the mother's confidence to help milk flow.
- Encourage more frequent and longer breastfeeding sessions to increase milk production and remove any interference that might disrupt breastfeeding.
- Use the SS technique to provide maintenance amounts of F100-Diluted.
- ONLY feed with a NGT when the infant is not taking sufficient milk by mouth.
- The use of NGT should not exceed three days and should be used in the stabilisation phase ONLY.

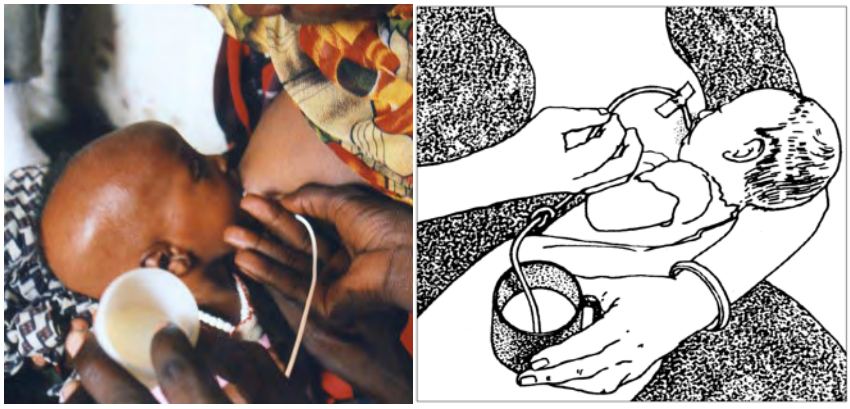
SS Feeding Technique

Use the SS technique to re-establish or commence breastfeeding, and also for providing maintenance amounts of F100-Diluted to severely malnourished infants. This technique entails the infant sucking at the breast while also taking supplementary F100-Diluted from a cup through a fine tube that runs alongside the nipple. The infant is nourished by the supplementary F100-Diluted while suckling stimulates the breast to produce more milk.

The steps required in using the SS technique are simple. The caregiver holds a cup with the F100-Diluted. The end of a NGT (size nº8) is put in the cup and the tip of the tube on the breast, at the nipple. The infant is offered the breast with the right attachment. The cup is placed 5-10 centimetres (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.

After feeding is completed the NGT is flushed through with clean water using a syringe. It is then spun (twirled) rapidly to remove the water in the lumen of the tube by centrifugal force. If convenient, the NGT is then left exposed to direct sunlight.

Figure 3. Supplementary Suckling Technique[19]



5.1.4 INDIVIDUAL MONITORING

The following parameters should be monitored daily and entered on the individual treatment card:

- Weight
- Degree of bilateral pitting oedema (0 to +++)
- Body temperature twice per day
- Standard clinical signs: stool, vomiting, dehydration, cough, respiration, liver size
- MUAC every seven days
- Length or height taken after 21 days (when a new treatment card is used)
- Any other record: e.g., absent, vomits, refuses a feed, whether the patient is fed by NGT or is given IV infusion or transfusion

As soon as the infant is 6 months and greater than 4 kg, the infant falls into the management criteria for the age group of 6-59 months. If the infant still has SAM (fulfilling the admission criteria), then introduce RUTF and refer to outpatient care.

5.1.5 SUPPORTIVE CARE FOR MOTHERS

Supportive Care for Breastfeeding Mothers

Supportive care should be provided to breastfeeding mothers, especially in very stressful situations. Focus needs to be directed on creating conditions that will facilitate and increase breastfeeding, such as establishing safe “breastfeeding corners” for mothers and infants, one-on-one counselling, and mother-to-mother support. Traumatised and depressed women may have difficulty responding to their infants and require mental and emotional support which should also support an increase in breastfeeding. It is also important to assess the nutrition status of the mother through MUAC and checking for bilateral pitting oedema).

Explain to the mother the different steps of treatment that her child will go through. Efforts should be made to strengthen the mother’s confidence and discourage self-criticism for perceived inability to provide adequate breast milk. Always alert the mother about the risk of pregnancy during breastfeeding amenorrhea.

Adequate Nutrition and Supplementation for Breastfeeding Mothers

Breastfeeding women need about 450 kcal per day of extra energy. Essential micronutrients in breast milk are derived from the mother’s food or micronutrient supplement. Therefore, it is important that the mother’s nutrient and energy needs are met. The mother should consume at least 2,500 kcal/day. It is suggested that the health facility should provide nutritious food for the mother. The mother should also receive vitamin A (200,000 IU, unless there is a risk of pregnancy) if the infant is under 2 months. Dehydration may also interfere with breast milk production. It is therefore important to ensure that the mother drinks at least 2 L of water per day.

Psychosocial Care of the Mother

Psychosocial care of the mother is a very essential component of the care of an infant with SAM, as the mother may have many problems of physical or psychological origin. These problems could affect her ability to care for her infant or lead to defaulting. **Table 20** lists some of the mother’s difficulties.

The mother should receive a thorough explanation of her child’s problem and how to manage it. She should be guided through a breastfeeding sessions and the SS technique. The mother should also be counselled on social problems and receive a medical check if necessary. Advice on hygiene and the correct way to breast feed should be provided to the mother in a supportive, participatory way through individual counselling or group discussions to relieve her stress and fears.

Table 20. Possible Difficulties Encountered by Mothers of Infants with SAM

Mother Difficulties	Action Points
Nutrition and fluid intake	Provide enough fluid and balanced food. Screen the mother for malnutrition.
Physical and mental health	Provide medical advice whenever requested.
Physical difficulties related to breastfeeding	Treat sore nipples, cracked nipples and mastitis with breastfeeding counselling.
Misinformation and misconception	Establish good communication with the mother.

5.1.6 DISCHARGE CRITERIA

Infants under 6 months or less than 4 kg being breastfed:

- Successful relactation with effective suckling equates a minimum 20 g weight-gain per day on breast milk alone for five days
- No bilateral pitting oedema for two weeks
- Clinically well and alert and has no other medical problem

Note: Upon discharge, confirm that the mother has been adequately counselled and has received the required amounts of micronutrient supplements during the stay at the health facility and for use at home.

5.1.7 FOLLOW-UP AFTER DISCHARGE

Follow-up for infants with SAM is very important. In areas where services are available, the mother should be included in the SFP and receive high-quality food with the right balance of nutrients in order to improve the quantity and quality of breast milk. It is also important to monitor the infant's progress, and support breastfeeding and the introduction of complementary food at the appropriate age of 6 months.

5.2 Infants Under 6 Months Without the Prospect of Breastfeeding[20]

The aim of the treatment of infants under 6 months with SAM and a caregiver with the potential to breastfeed is to decrease F100-Diluted gradually until they are gaining sufficient weight on breast milk alone.

In the case of infants under 6 months or less than 4 kg with SAM without the prospect of being breastfed, the aim of SAM treatment in Sudan is to receive F100-Diluted or infant formula until they are old and strong enough to take semisolid complementary food in addition to adapted cow milk (see **Annex 12. Use of Home-Modified Cow Milk for Replacement Feeding in Case of No Access to Infant Formula**). If infants under treatment still have signs of SAM at the age of 6 months and are greater than 4 kg, these infants will move to the 6-59 months age group and continue the treatment accordingly (see **Section 3**).

5.2.1 ADMISSION CRITERIA

Infants under 6 months not being breastfed, if the infant has:

- Presence of bilateral pitting oedema
- Visible wasting

5.2.2 STABILISATION PHASE

Routine Medicines and Supplements

See **Section 5.1.2**.

[20] Inpatient care is not appropriate for treating premature and low-birth-weight non-breast-fed infants under 6 months. These infants should be referred to the nursery and given infant formula.

Dietary Treatment

- Infants under 6 months or less than 4 kg with wasting (marasmus) should be given F100-Diluted in the stabilisation phase with cup and saucer. Never provide F100 full-strength or RUTF.
- Infants under 6 months or less than 4 kg with bilateral pitting oedema (kwashiorkor) should always be given F75 until the oedema has resolved and then F100-Diluted.
- Supplement the milk diet with sips of water or 10 percent sugar-water solution until the thirst of the child is satisfied to prevent hypernatraemia.

Quantities of F100-Diluted or F75 to Give

- Use the look-up table (**Table 21**) for the amounts of F100-Diluted or F75 to give non-breastfed infants in the stabilisation phase.
- Amount given should be calculated based on 130 kcal/kg bodyweight/day.

Table 21. Look-Up Table for Amounts of F100-Diluted (Severe Wasting) or F75 (Bilateral Pitting Oedema) to Give to Non-Breastfed Infants in the Stabilization Phase

Weight of the Child (kg)	F100-Diluted or F75 in Stabilisation Phase ml per feed if 8 feeds per day in the absence of breastfeeding
≤ 1.5	30
1.6 – 1.8	35
1.9 – 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

Feed Preparation

For a large number of children: Add a packet of F100 to 2.7 L of water, instead of 2 L as with F100-Diluted.

For a small number of children:

- Add 35 ml of water to 100 ml of F100 already prepared to make 135 ml of F100-Diluted. Discard any excess milk after use. Do not make smaller quantities.
- If you need more than 135 ml, use 200 ml of F100 and add 70 ml of water to make 270 ml of F100-Diluted. Discard any excess milk after use.

Feeding Procedure

- Feed by cup and saucer or NGT by drip (using gravity not pumping).
- ONLY feed with a NGT when the infant is not taking sufficient milk by mouth.
- The use of a NGT should not exceed three days and should be used in the stabilisation phase ONLY.

Feeding Technique

Apply the correct feeding technique (see Feeding Technique in Section 4.3.2). It is important to ensure the infant has adequate intake.

Individual Monitoring

The following parameters should be monitored daily and entered on the individual treatment card:

- Weight
- Degree of bilateral pitting oedema (0 to +++)
- Body temperature (twice per day)
- Standard clinical signs: stool, vomiting, dehydration, cough, respiration, liver size
- MUAC (upon admission and thereafter every seventh day)
- Length or height after 21 days
- Any other record: e.g., absent, vomits, refuses a feed, whether the patient is fed by NGT or is given IV infusion or transfusion

Criteria to Progress from the Stabilisation Phase to the Transition Phase

The criteria to progress from the stabilisation phase to the transition phase are both the return of appetite and beginning to lose oedema, which is normally judged by an appropriate and proportionate weight loss as the oedema starts to subside. Children with severe bilateral pitting oedema (+++) should remain in the stabilisation phase until their oedema has reduced to moderate (++). These children are particularly vulnerable.

5.2.3 TRANSITION PHASE

Routine Medicines and Supplements

Routine antibiotic therapy should be continued for four more days after the stabilisation phase or until the child is transferred to the rehabilitation phase.

Dietary Treatment

Use the standard protocol for older children in the transition phase with the following modifications:

- Only F100-Diluted should be used.
- The volume of the F100-Diluted feeds is increased by one-third in comparison to the 11stabilisation phase.
- The amount of F100-Diluted given is calculated based on 130 kcal/kg bodyweight/day.
- Use **Table 22** for the amounts of F100-Diluted to give to non-breastfed infants in the transition phase.

Table 22. Look-Up Table for Amounts of F100-Diluted to Give to Non-Breastfed Infants Under 6 Months or Less Than 4 kg in the Transition Phase

Weight of the child (kg)	F100-Diluted in Transition Phase ml per feed if 8 feeds per day in the absence of breastfeeding
≤ 1.5	45
1.6 – 1.8	53
1.9 – 2.1	60
2.2 – 2.4	68
2.5 – 2.7	75
2.8 – 2.9	83
3.0 – 3.4	90
3.5 – 3.9	96
4.0 – 4.4	105

Individual Monitoring

Continue surveillance as outlined in the stabilisation phase.

Criteria to Progress from the Transition Phase to the Rehabilitation Phase

- A good appetite: taking at least 90 percent of the F100-Diluted prescribed for the transition phase and
- Complete loss of bilateral pitting oedema or
- Minimum stay of two days in the transition phase for wasted patients
- No other medical problem

5.2.4 REHABILITATION PHASE

Dietary Treatment

Use the standard protocol for older children in the rehabilitation phase with the following modifications:

- Only F100-Diluted should be used.
- During the rehabilitation phase, infants receive twice the volume per feed of F100-Diluted than was given during the stabilisation phase.
- The amount of F100-Diluted given is calculated based on 130 kcal/kg bodyweight/day.
- Use **Table 23** for the amounts of F100-Diluted to give to non-breastfed infants in the rehabilitation phase.

Table 23. Look-Up Table for Amounts of F100-Diluted to Give to Non-Breastfed Infants Under 6 Months or Less Than 4 kg in the Rehabilitation Phase

Weight of the child (kg)	F100-Diluted in Rehabilitation Phase ml per feed if 6-8 feeds per day in the absence of breastfeeding
≤ 1.5	60
1.6 – 1.8	70
1.9 – 2.1	80
2.2 – 2.4	90
2.5 – 2.7	100
2.8 – 2.9	110
3.0 – 3.4	120
3.5 – 3.9	130
4.0 – 4.4	140

Individual Monitoring

Continue with rehabilitation phase surveillance as outlined in the standard protocol for older children.

Discharge Criteria

Box 12. Discharge Criteria from the Inpatient Rehabilitation Phase for Non-Breastfed Infants

Infants under 6 months or less than 4 kg with no prospect of being breastfed:

- 15 percent weight gain
- No bilateral pitting oedema for two weeks
- Clinically well and alert, no medical problem

Other considerations:

- At discharge, infant can be switched to infant formula
- Caregiver has been adequately counselled

Follow-Up

Continuity of care after discharge is important. Follow-up with these infants is needed to supervise the quality of recovery and progress, and to educate the caregivers. It is also important to support introduction of complementary food at the appropriate age of 6 months.

6. Inpatient Care for the Management of SAM in Older Age Groups

In exceptional cases, school-aged children, adolescents and adults with SAM will also be admitted to inpatient care until full recovery.

The physiological changes in school-aged children, adolescents and adults with SAM and the principles of the treatment of SAM are similar to those in children 6-59 months. However, there are differences in indicator use and cutoffs. Moreover, for adolescents and adults, there are differences in the diagnosis of bilateral pitting oedema and of acute weight loss resulting in severe wasting. The amount of therapeutic food,drug dosages and discharge of treatment is also adapted.

In adolescents and adults, SAM occurs as a primary disorder in extreme conditions of privation and famine or in association with other illnesses. In the latter case, both the primary illness and the acute malnutrition must be treated. It is also important to assess if the person has been losing weight in the past four weeks to determine if the wasted condition is a result of an acute weight loss or catabolic state, as this condition is more associated with increased risk of death. Moreover, adolescents and adults do not always associate wasting or bilateral pitting oedema with their diets. As a consequence, they do not necessarily understand that altering their diets will help them. Even in famine conditions, they are often very reluctant to eat anything except traditional foods, which they view as perfectly satisfactory. Moreover, pregnant and lactating women often have food restrictions based on cultural and religious beliefs.[21]

6.1 Admission Criteria in Older Age Groups

Box 13. Admission Criteria for the Management of SAM in Older Age Groups in Inpatient Care

Children 5 to 9 Years
Bilateral pitting oedema or severe wasting; follow the treatment protocol for children 6-59 months in inpatient care (see **Section 4)**

Adolescents 10 to 18 Years
Bilateral pitting oedema or severe wasting (acute weight loss) depending on history and thorough examination to exclude secondary malnutrition

Adults
Bilateral pitting oedema or severe wasting (acute weight loss) depending on history and thorough examination to exclude secondary malnutrition

6.1.1 CHILDREN 5-9 YEARS

Bilateral Pitting Oedema

The ankles and lower legs are examined for presence of bilateral pitting oedema.

Severe Wasting

The preferred indicator for severe wasting in children 5-9 years is MUAC < 135 mm. Also, body mass index (BMI)-for-Age < -3 z-score could be used to indicate severe wasting (see **Annex 3. Anthropometric Measurements** and **Annex 4. Anthropometry Look-Up Tables**).

Note: Children 5-9 years with SAM will follow the same SAM treatment protocol and discharge criteria from treatment based on 15 percent weight gain as children 6-59 months with SAM who are treated in inpatient care until full recovery (see **Section 4**).

[21] WHO. 1998. *Management of severe malnutrition, manual for physicians and other senior health workers*. Pages 37-39.

6.1.2 ADOLESCENTS 10-18 YEARS

Bilateral Pitting Oedema

The ankles and lower legs are examined for presence of bilateral pitting oedema. Non-nutrition causes of oedema can readily be identified by the history, physical examination and urine analysis.

Severe Wasting (Acute Weight Loss)

The preferred indicator for severe wasting with acute weight loss in adolescents 10-18 years is MUAC < 160 mm[22]. Also, BMI-for-Age < -3 z-score could be used to indicate severe wasting in adolescents (see **Annex 3. Anthropometric Measurements** and **Annex 4. Anthropometry Look-Up Tables).**

6.1.3 ADULTS

Bilateral Pitting Oedema

The ankles and lower legs are examined for presence of bilateral pitting oedema. If symmetrical oedema is present, its cause must be determined. In addition to malnutrition, causes in adults include preeclampsia in pregnant women, severe proteinuria (nephritic syndrome), nephritis, acute filariasis (the limb is hot and painful), heart failure and wet beriberi. Non-nutrition causes of oedema can readily be identified by the history, physical examination and urine analysis.

Severe Wasting (Acute Weight Loss)

The preferred indicator for severe wasting with acute weight loss in adults is MUAC < 185 mm[23]. Also, BMI < 16.0 kg m2 could be used to indicate severe wasting in adults, excluding pregnant women and postpartum mothers (see **Annex 3. Anthropometric Measurements** and **Annex 4. Anthropometry Look-Up Tables)**.

6.2 Stabilisation Phase for Adolescents and Adults

- A thorough examination should be conducted to exclude conditions that give rise to secondary malnutrition. A careful dietary history should be taken. Blood sugar should be tested to exclude diabetes mellitus.
- Older age groups should also be given routine antibiotics and, except for pregnant women, a single dose of 200,000 IU of vitamin A orally after week four or upon discharge.
- If possible, adolescents and adults should be given the same dietary treatment as children 6-59 months with F75 and F100. The initial goal of treatment is to prevent further loss of tissue.
- The amount of 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. Recommended amounts for different ages are given in **Table 24**. These amounts will meet all nutrient requirements of adolescents and adults.
- As most severely malnourished adults are anorexic, the formula is usually given by NGT during the first few days.
- Adults and adolescents are also susceptible to hypothermia and hypoglycaemia. The latter condition is managed as described for children. The Appendix provides detailed guidance on the management of medical complications in the presence of SAM.

[22] There is neither evidence nor international agreement on the use of this cutoff
[23] Idem

Table 24. Dietary Requirements in Stabilisation Phase of Adolescents and Adults

Age	Daily energy requirement*	Volume of diet required			
In years	In kcal/kg	F75 (ml/kg/hour)	F75 (ml/kg if 8 feeds a day)	F100 (ml/kg/hour)	F100 (ml/kg if 8 feeds a day)
7-10	75	4.2	33.6	3.0	24
11-14	60	3.5	28,0	2.5	20
15-18	50	2.8	22.4	2.0	16
19-75	40	2.2	17.6	1.7	13.6
>75	35	2.0	16	1.5	12

* Individual needs may vary by up to 30 percent from these figures.

6.3 Rehabilitation Phase for Adolescents and Adults

- 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 mineral and vitamin mix.
- A wide variety of foods is provided and the patients are allowed to eat as much as they want. If possible, continue to give the formula feed with the vitamin and mineral mixes between meals and at night. If necessary, present the formula feed as a medicine.

6.4 Discharge Criteria for Adolescents and Adults

Adolescents and adults can be discharged from the SAM treatment if they are eating well, have sustained weight gain and have a reliable source of nutritious food outside the health facility. They should have been referred for treatment of any other health problem that has been diagnosed prior to discharge.

6.5 Failure to Respond to Treatment in Adolescents and Adults

Failure to respond to treatment in adults and adolescents is usually due to an unrecognised underlying illness, a nutrient deficiency or refusal to follow the treatment regimen.

7. Monitoring and Reporting

A well-designed M&R system is an essential component in the management of SAM for children under five. With well-informed monitoring data, aspects of the management of SAM that need improvement can be identified in a timely manner. Appropriate action can then be taken to improve individual care, organisation of care and overall quality of care.

The CMAM M&R system encompasses individual monitoring of admission, treatment process and outcome. Service M&R of community outreach, inpatient and outpatient care sites individually and of CMAM services combined involves timely collection of relevant information, aggregating and disaggregating at various levels of the system, and subsequent analysis and reporting.

Monitoring is used to measure the monthly performance and report on effectiveness. Performance indicators of interest are related to recovery (cure rate), case fatality (death rate), defaulting (default rate) and non-recovery (non-recovery rate). Barriers to access for care and the degree of service uptake (coverage rate) indicate how well the service or programme is reaching the target population and meeting the service needs. Service performance is compared against a set of objectives and to make adjustments to the service based on an analysis of routine data that is collected on a monthly basis. It is also important to interpret the findings in the broader health and nutrition information context obtained from secondary sources.

This section on the CMAM M&R system presents the specific M&R tools, describes the key indicators and provides guidance on support and supervision and minimal reporting. The organisational structure for the CMAM M&R system follows the National Nutrition Information System (NIS).

7.1 M&R Tools

Standardised M&R forms and tools are used for collection and aggregation of community outreach, outpatient care and inpatient care monitoring data. This will facilitate comparability of data across different sites as well as aggregation of data at the various administrative levels.

7.1.1 REGISTRATION

Registration Number

All new admissions should receive a **SAM Number**. The SAM Number consists of the date of admission (first contact with health facility) and the serial registration number of the health facility and should be used on all monitoring and referral forms pertaining to the child.

The standard numbering system for SAM Numbers uses the following format:

> Day Month Year/serial registration number
> E.g., 12 October 2009/7
>
> Or, if a code for the health facility is retained:
>
> Two letter code Health Facility/Day Month Year/serial registration number
> E.g., KH/12 October 2009/7

A system of coding all health facilities per state providing CMAM services along with their unique two letter code could exist or be put into place, and is updated quarterly by the CMAM and/or NIS focal person at locality, state and federal levels to reflect new services.

The SAM Number is indicated on the **Growth Monitoring (GM) card** that is provided to all children upon admission for treatment of SAM. If a caregiver loses the card, the card should be replaced and all efforts made to find the original SAM Number from the registration book on date of admission.

Registration Book

All children with SAM that present themselves for services are registered in the regular registration book of the health facility. As such, the heath facility records admissions for inpatient care and outpatient care, and each weekly visit for outpatient care in their regular **registration book**. The registration book is not used for monitoring the condition of the child, but only for recording admission and discharge.

The following basic information is recorded:

- Serial number
- Date of admission
- Name, Age, Sex
- Place of residence

7.1.2 INDIVIDUAL MONITORING

Individual monitoring information of the child's health and nutrition condition is recorded on **treatment cards**. This individual monitoring is important in determining the progress of the treatment, and, in case of a sudden deterioration, responding with a life-saving intervention. Intensive daily monitoring is needed for the child with SAM in inpatient care. In outpatient care, the child with SAM is in a better condition and does not need the same level of health monitoring, and is therefore monitored weekly.

Analysis of the individual treatment cards helps in identifying and highlighting problems which might contribute to failure to respond to treatment. It is also important to systematically review the individual treatment cards during supervision visits to ensure that proper treatment is given and that protocols are being adhered to (see **Section 4**).

Inpatient Care Treatment Card

(See **Annex 23. Inpatient Care Treatment Card**)

- The child's information is entered on the **inpatient care treatment card**. Medical history, physical assessment at admission and daily surveillance information is recorded. This helps monitor the child's progress and inform decision-making during treatment on a daily basis.
- The outcome of the treatment is marked on the card.

Outpatient Care Treatment Card

(See **Annex 23. Outpatient Care Treatment Card**)

- The child's information is entered on the **outpatient care treatment card** upon admission and is updated during the weekly follow-on visits for monitoring. Medical history, anthropometric and physical assessment at each visit is recorded. This helps monitor the child's progress and inform decision-making during treatment on a weekly basis.
- The outcome of the treatment is marked on the card.

Referral Form

(See **Annex 20. Referral Slip Community Screening**)

- If the child is referred from inpatient care to outpatient care or vice versa, the caregiver is given a referral form together with instructions on how, when and where to go. The existing IMCI referral form is used.
- If outpatient care treatment cards are made available at the inpatient care site, these can be filled at the inpatient care site and used as a referral form when the child moves from inpatient care to outpatient care.

Filing System

A filing system for individual treatment cards is kept at the health facility or site. A first file is for treatment cards of all those currently in treatment; a separate section should be included for the cards of children referred for investigation. A second file is for treatment cards of those children who have

been discharged, with separate sections for the cards of children who have been cured, died, defaulted or were non-recovered.

Individual cards should be stored at the site level for a period of one year. Site statistical reports are stored at the site for three years. Site and narrative reports are stored at the locality level for five years, at the state level for 10 years, and at the federal level for 20 years.

7.1.3 SERVICE MONITORING

Site Tally Sheet

(See **Annex 26. Site Tally Sheet**)

Site tally sheets are completed by the responsible health care provider at the end of each weekly session in outpatient care, or weekly at inpatient care sites. The same tally sheet is used in inpatient care or outpatient care. One tally sheet is used per service per month. On the tally sheet, the name of the health facility and type of CMAM service is indicated.

Per each age group, children who are admitted, discharged or referred are accounted for on the tally sheet. One sheet covers one calendar month (either four or five weeks), is filled out per week and provides a summary at the end of the month. The tally sheet is then used to fill in the monthly statistical site reporting sheet. Each health facility with a CMAM site should send the monthly statistical report to the CMAM and/or NIS focal person at the locality level on a monthly basis, who then compiles the reports and sends them to the state level, which are then sent to the federal level.

Tally and monthly statistical reporting sheets are regularly checked by a supervisor for accuracy. The tally information can help identify differences in affected gender groups, age groups, types of SAM and other trends.

Tally sheets should be stored at the site level for a period of three years. They provide information on *weekly new* a*dmissions*, *old cases admitted*, *discharges*, *internal movements* and *total under treatment*.

There are three age groups that will be classified and tallied separately:

Children Under 6 Months (Inpatient Care Only)

- *Total at start of the week*
  - Total number in treatment in the past week
- *Admissions – new cases*
  - Infants who meet the admission criteria
- *Admissions – old cases*
  - Returned defaulter: Infants who leave the service before ending the treatment and return to continue treatment of the same episode of SAM
- *Discharges*
  - Discharged Cured: Infants who meet the discharge criteria
  - Discharged Died: Infants who died during treatment
  - Discharged Defaulted: Infants who defaulted during treatment; were absent for two or more days in inpatient care
  - Discharged Non-Recovered – Not Applicable
- *Total discharges*
  - All infants that leave the site as cured, died, defaulted or non-recovered
  - Used as a denominator to calculate performance indicators for the cured, death, defaulter and non-recovery rates
- *Referral*
  - Infants who could not reach the discharge criteria as cured when reaching 6 months of age and are referred to inpatient care or outpatient care for children 6-59 months with SAM and continue or end their treatment depending on the medical evaluation.

  - A number that indicates all infants that exit the site that week

    - Includes all infants who are discharged as cured, died, defaulted and non-recovered, and who are leaving the site as referrals at the age of 6 months
    - Provides the total number in treatment at the respective site and is used for site planning
- *Total number in treatment at the end of the week*
    - For each respective site, calculated and used for site planning
    - Provides the start number for the next week's tally column for infants

Children 6-59 Months (Inpatient Care and/or Outpatient Care)

- *Total at start of the week*
    - Total number in treatment in the past week
- *Admissions – new cases*
    - Children who meet the admission criteria
- *Admissions – old cases*
    - Children referred from inpatient or outpatient care or from another other site, or incoming referrals. They are not counted as new admission as they were already in treatment elsewhere in the state.
    - Returned defaulter: children who left the service before ending the treatment and return to continue their treatment during the same episode of illness
- *Discharges*
    - Discharged Cured: Children who meet the discharge criteria
    - Discharged Died: Children who died during treatment
    - Discharged Defaulted: Children who defaulted during treatment, were absent for two days or more in inpatient care or for the third consecutive visit in outpatient care
    - Discharged Non-Recovered: Children who could not reach the discharge criteria as cured after two months treatment in inpatient care and four months treatment in outpatient care; during the period in treatment they were referred for further investigation based on the action protocol
- *Total discharges*
    - All children that leave the site as cured, died, defaulted or non-recovered
    - Provides the total number of children ending the treatment for SAM
    - Used as a denominator to calculate performance indicators for the cure, death, defaulter and non-recovery rates
- *Referrals to other* inpatient or outpatient care site
    - Children leaving the health facility's site of treatment, or outgoing referrals. They are not counted as discharged from the service as they are still under treatment since they have not yet reached the discharge criteria. They exit the current heath facility to be referred to another health facility for continued treatment. Upon return, they re-enter the health facility site as a referral.
- *Total exits*
    - All children that exit the site that week
    - Includes all children who are discharged as cured, died, defaulted and non-recovered, and who are leaving the site as referrals
    - Provides the total number in treatment at the respective site and is used for site planning
- *Total number in treatment at the end of the week*
    - For each respective site, is calculated and used for site planning
    - Provides the start number for the next week's tally column
- *Gender*
    - Tallied for all new admissions only

Children Over 5, Adolescents and Adults (Inpatient Care Only)

- *Total at start of the week*
    - Total number in treatment in the past week
- *Admissions – new cases*
    - Children over 5 who meet the admission criteria

- *Admissions – old cases*
    - Children over 5 who are returned defaulters; left the service before ending the treatment and return to continue their treatment during the same episode of illness
- *Discharges*
    - Discharged Cured: Children over 5 who meet the discharge criteria
    - Discharged Died: Children over 5 who died during treatment
    - Discharged Defaulted: Children over 5 who defaulted during treatment; they were absent for two or more days
    - Discharged Non-Recovered: Children over 5 who could not reach the discharge criteria as cured after two months treatment in inpatient care; during the period in treatment they were referred for further investigation
- *Total discharges*
    - All children over 5 that leave the site as cured, died, defaulted or non-recovered
    - Used as a denominator to calculate performance indicators for the cured, death, defaulter and non-recovery rates
    - Provides the total number in treatment at the respective site and is used for site planning
- *Total number in treatment at the end of the week*
    - For each respective site, calculated and used for site planning
    - Provides the start number for the next week's tally column for children over 5

Note: This section presents a comprehensive tally and reporting of the different admission and discharge categories per age group. After one year of use at each implementation level, a review of the manual and/or operational guidelines could lead to simplifying the categories, retaining admission and discharge numbers only for those age groups under and over children 6-59 months.

Monthly Statistical Site Report

(See **Annex 27. Monthly Statistical Site Report**)

The **Monthly Statistical Site Report** is completed monthly by the responsible health or nutrition staff with inputs from the site tally sheet. It is a disaggregated statistical report that provides a summary of quantitative information to assess performance, monitor trends and identify areas that require investigation at the health facility level. The Monthly Statistical Site Report captures the following information per age group:

- Total number in treatment at the beginning of the month
- Admissions as new cases
- Admissions as old cases
- Total admissions of the month
- The number and proportion of cases that are discharged cured, died, defaulted or non-recovered
- Total discharges (denominator for discharge rates)
- Total referrals
- Total exits
- Total number in treatment at the end of the month
- Performance indicators children 6-59 months
- Gender distribution for all new admissions children 6-59 months
- Therapeutic supplies information

Note: Reporting is based on calendar months. Therefore, one month will usually cover four weeks and occasionally five weeks. The eventual reporting of a five-week month has to be taken into consideration when interpreting changes in trends.

A copy of the reports are to be kept at the site level for a period of three years, and copies sent to the locality level CMAM and/or NIS focal person on a monthly basis. Copies will be kept at the locality level for the period of five years, at the state level for 10 years and at the federal level for 20 years.

Monthly Statistical Locality and State Report
(See **Annex 28. Monthly Statistical Locality and State Report**)

The **monthly statistical locality and state report** is completed monthly with inputs from all the site reports combining inpatient care and outpatient care by the CMAM and/or NIS focal person. It is an aggregated report that provides a summary of quantitative information to assess performance and monitor trends at the locality and state levels.

Note:

- Information on referrals is not captured in the aggregated monthly locality and state report, as referrals have remained in treatment within the locality or state.
- 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.

Monthly/Quarterly Narrative Locality and State Report
(See **Annex 29. CMAM Narrative Reporting Template**)

Information for the narrative report is obtained through the statistical and community outreach reports, completed with information from secondary sources and is triangulated. Quantitative and qualitative data are summarized in the narrative report using the narrative reporting template enhancing the quality of the information and standardised reporting.

The narrative report provides a summary of key information on:

- Scale of the service
- Key performance indicators
- Discussion on performance, including analysis of high and/or low performing sites
- Contextual information as appropriate, including context changes in relevant sectors such as food security, water and sanitation, health, insecurity that may have an influence on service operation or performance
- Success stories
- Action plan for next month and support needed/planned to be given
- Quantitative information can be presented in figures if the capacity exists

Some information may be collected monthly or periodically if considered useful:

- From community outreach (reports based on routine monitoring or from point activities at the community level; see **Section 2** and **Annex 21. Community Participation and Outreach Reports)**
    - Reasons for absentees, default, and non-response to treatment, and relapse
    - Common causes of death
- From sites, calculated on all or a sample of treatment cards from discharged cured beneficiaries[24] in a particular month
    - Average length of stay (LOS) (expressed in days)
    - Average daily weight gain (expressed in g/kg bodyweight/day)
    - Categories of admission, e.g., bilateral pitting oedema, severe wasting based on MUAC or WFH z-score

A copy of the narrative report is to be kept at the locality level for a period of five years, and copies sent to the state level CMAM and/or NIS focal person on a monthly basis. Copies will be kept at the state level for 10 years and the federal level for 20 years.

Table 25 provides an overview of summary information on entry and exit categories for individual and service monitoring of children 6-59 months treated in CMAM.

[24] Depending on the number of cured discharges during that month, one could calculate the above measures on all cards or on a sample of a minimum of 20 treatment cards.

Table 25. Entry and Exit Categories for Individual and Service Monitoring of CMAM for Children 6-59 Months

Entry Categories	
Inpatient Care	**Outpatient Care**
1. Admission, new cases: Child 6-59 months with CMAM with medical complications meeting admission criteria - Including *relapse* after cure *2. Admission, old cases:* *Referral from outpatient care:* Child's condition deteriorated in outpatient care (according to action protocol) *Or* *Returned* after defaulting (or *Moved* from other inpatient care site)*	*1. Admission, new cases:* Child 6-59 months with CMAM without medical complications meeting admission criteria - Including *relapse* after cure *2. Admission, old cases:* *Referral from inpatient care:* Child referred from inpatient care continues treatment in outpatient care *Or* *Returned* after defaulting (or *Moved* from other outpatient care site)*
Exit Categories	
Inpatient Care	**Outpatient Care**
1. Discharged cured: Child 6-59 months meeting discharge criteria, i.e., special case that was not referred to outpatient care earlier *2. Discharged died:* Child died while in inpatient care *3. Discharged defaulted:* Child is absent on third consecutive day *4. Discharged non-recovered:* Child that remained in inpatient care not reaching discharge criteria after two months in treatment (medical investigation conducted) *5. Referred to outpatient care:* Child's condition stabilised, child has returned appetite, the medical condition is resolving, and child is referred to outpatient care to continue treatment	*1. Discharged cured:* Child 6-59 months meeting discharge criteria *2. Discharged died:* Child died while in outpatient care *3. Discharged defaulted:* Child is absent on third consecutive visit (e.g., three weeks) *4. Discharged non-recovered:* Child not reaching discharge criteria after four months in treatment (medical investigation conducted) 5. *Referred to inpatient care:* Child's condition deteriorated and child is referred to inpatient care (according to action protocol)

*Movement between sites is possible in mobile population or during emergencies.

7.2 Performance Indicators

There are three basic sets of indicators described in the below sections for measuring performance or effectiveness of CMAM of children 6-59 months:

1. Output indicators measure whether a CMAM service has completed the planned activities needed to achieve the established objectives. They are measured as numbers.
2. Process indicators directly measure the performance of key processes, which in this case relates to the CMAM treatment process.
3. Outcome indicators measure whether a CMAM service has achieved its objectives and planned outcomes. They are measured as percentages.

7.2.1 INDICATORS MEASURING OUTPUT

Monthly output indicators include:

- Number of functioning inpatient care and outpatient care sites (or number of health facilities with inpatient care and outpatient care sites)

- Number of health care providers trained in outpatient care and referral based on action protocol (plus gender distribution)
- Number of community outreach workers trained in community outreach (plus gender distribution)
- Number of communities mobilised (number of meetings)
- Report on monthly use of F75, F100, RUTF, ReSoMal and CMV

7.2.2 INDICATORS MEASURING OUTCOME

Monthly outcome indicators:

- Total number of children 6-59 months with SAM newly admitted
- Total number of children 6-59 months with SAM under treatment
- % discharged cured (cure rate)
  = proportion of children discharged cured of total discharged*
- % discharged died (discharge rate)
  = proportion of children who died while in treatment of total discharged*
- % discharged defaulted (defaulter rate)
  = proportion of children recorded as absent for three consecutive days in inpatient care and three consecutive visits in outpatient care of total discharged*
- % discharged non-recovered (non-recovery rate)
  = proportion of children who do not meet the discharge criteria after two months in inpatient care or four months in outpatient care of total discharged*

Note: Children with SAM not responding to treatment (non-response to treatment based on the action protocol) have been referred for further medical investigation and care during the period under treatment.

*Total number of discharged = Cured + Died + Defaulted + Non-recovered

Periodic outcome indicator:

- **Coverage:** Coverage is an indicator expressing service availability, access and uptake. It indicates how well a service is accessed and utilised. Currently, different methods exist to measure coverage for CMAM. The methods are being refined and adapted for routine implementation for measuring coverage of CMAM as an integrated service into national health systems. If coverage information is available, it is important to specify the methods used for estimating the service coverage.

7.2.3 ADDITIONAL INDICATORS MEASURING PROCESS

The following are periodic process indicators.

Cause of Death

Assessing and compiling this information can help identify problems with treatment and use of action protocols, and determine where strengthened support, training and supervision might be needed.

Reasons for Absentees, Defaulting, and Non-Response to Treatment

Compilation of this information can help identify common reasons for default or non-response to treatment. Reasons for non-response might include a high prevalence of TB and/or HIV, sharing of food in the household, or poor water and sanitation. This information might indicate a need for stronger service linkages with other sectors. It is also important to understand the reasons for defaulting, barriers to accessing services and/or unrecorded death.

Readmissions After Discharge (or Relapse)

This can help service planners understand situations outside of the service. Interventions might be needed at the household level to avoid high readmission rates. High readmission rates might also

indicate children are discharged too soon. Relapse is recorded on the child's treatment card and can be tallied monthly or periodically from the treatment cards.

Average LOS of Discharged Cured

LOS is the period in number of days that a child spends in treatment for SAM from admission to discharge. LOS in outpatient care is normally long and can take up to 60 days, but is expected to be shorter in inpatient care. Also, one child can cover both services.

Average LOS reflects effectiveness of the CMAM services and is best disaggregated per use of service (i.e., outpatient care only, inpatient care only, both outpatient care and inpatient care). A long average LOS might be the result of, for example, a high proportion of children who do not respond to treatment (non-responders or non-recovered), frequent absence, default, sharing of RUTF and/or unresolved illness. A short average LOS might indicate that children are discharged too soon. If there is a high relapse rate, this might be a possible cause.

Average LOS is calculated on a sample of cured discharges for kwashiorkor and marasmus separately, as the sum of LOS divided by number of cards in the sample.

Calculation:

Average LOS
= sum of LOS divided by number of cards in sample[25]

Average Daily Weight Gain (AWG) of Discharged Cured

AWG in outpatient care is expected to be greater than 4 g/kg bodyweight/day, while in inpatient care this could be better (as feedings are monitored and there is decreased chance of sharing or eating other foods that may interfere with the dietary treatment). A low AWG may indicate, for example, high absence, default, ineffective treatment, sharing of RUTF and/or non-compliance to the treatment protocol.

AWG is calculated on a sample of cured discharges for kwashiorkor and marasmus separately, as the sum of weight gains divided by number of cards in the sample.

Calculation:

Daily weight gain (g/kg bodyweight/day)
= [discharge weight in g – minimum weight in g] divided by [minimum weight in kg x number of days between minimum weight and discharge day]

Average daily weight gain
= sum of weight gains (g/kg bodyweight/day) divided by number of cards in sample[25]

7.3 Support and Supervision

As part of the M&R system, it is important to have focused attention on support and supervision of health managers and health care providers in data collection, analysis and reporting to ensure accurate information at prescribed periods of time, and to ascertain both the quality of information and its usage for strengthening the quality of community outreach, inpatient care and outpatient care.

Health care providers have job aids available at the health facility to guide them to implement quality CMAM services. Some of the job aids will be laminated and exposed as wall charts, some will be in individual possession, and others will form part of the equipment at the health facility. (See **Annex 36. List of Job Aids and Monitoring and Reporting Tools**.)

Supervisors should perform regular support and supervision visits and use a checklist to systematically cover specific job functions address service performance (see **Annex 30. Checklists**

[25] A reasonable randomised sample of treatment cards of discharged cured cases is 20. If lower numbers have been discharged cured during the period of reporting, take all treatment cards.

for Supervision). At the same time, the supervisor is a mentor and he or she should support health care providers and community outreach workers with technical support based on identified needs. Supervision of the quality of protocol implementation entails monitoring admission and discharge trends and adherence to protocols. Accurate recording; compilation of information regarding admissions, readmissions and referrals; and discharges from outpatient or inpatient care sites is important. Analysis of data from the outpatient and inpatient care sites is essential for the supervisor to know and check, as it provides important information about the performance of individual sites and for ensuring actions will be taken to strengthen the quality.

7.3.1 QUALITY OF INDIVIDUAL TREATMENT

Support and supervisory visits should include the review of treatment cards, particularly of those children who have defaulted, died, did not respond to treatment or did not recover. This should ensure that weaknesses in the individual case management or service delivery are identified so that improvements can be made.

Supervisors should check that admissions and discharges are carried out according to the national guidelines; routine medicines and dietary treatments are administered correctly; and bilateral pitting oedema is properly assessed. They check if deterioration in the condition of the child is identified and acted upon according to the action protocol, and whether these children who are not thriving are referred for medical investigation before they are discharged as non-recovered. Deaths should also be reviewed, reasons for referral investigated and the system to verify absentees checked.

Review findings should be discussed with implementing health care providers so that necessary improvements can be made.

Supervisors should review the following (see **Annex 29. Checklists for Supervision**):

- Completion of the treatment cards and other health documents
- Adherence to medical and dietary treatment protocols
- Progress of individual children, checking for consistent weight gain
- Community screening
- Follow-up of problem cases
- Quality of health and nutrition counselling

7.3.2 ORGANISATION AND MANAGEMENT OF SERVICES

Supervisors should review the following (see **Annex 29. Checklists for Supervision**):

- Organisational structure of service delivery
- Crowd management
- Supply flow and stock management for medicines and therapeutic foods
- Organisation of human resources
- Quality of health and nutrition education group sessions at the health facility and in the communities
- Links with community outreach
- Links with other community services

7.3.3 QUALITY OF SERVICES

Supervisors should assess the performance of the services by reviewing the following (see **Annex 29. Checklists for Supervision**):

- Completion of tally and reporting sheets
- Performance indicators on monthly reports
- Narrative reporting system where quantitative and qualitative information is aggregated, summarised and triangulated

Indicators collected from inpatient and outpatient care need to be continuously and systematically reviewed to ensure quality information is collected. Quality checks should be conducted to identify whether indicator levels have fallen below the established standards. A level of action should be

determined based on the context, the specific indicator that is faltering and whether aggravating factors were present.

Minimum standards should not be taken as absolute, but as flexible levels for warning that vary depending on the aforementioned factors, and must be established as such (see **Table 26**).

Table 26. Cutoffs for CMAM Outcome Indicators as Per Sphere Minimum Standards[26]

	CMAM	Outpatient care	Inpatient care
Cure rate	> 75 %	> 75 %	> 75 %*
Defaulter rate	< 15 %	< 15 %	< 15 %*
Death rate	< 5 %	< 5 %	< 10 %*
Average length of stay	60 days	60 days	7 days in stabilisation phase
Coverage	> 70 %	> 70 %	Camp: > 90% Urban: > 70% Rural: > 50%

*if treatment until full recovery

7.3.4 Feedback System

Health care providers and supervisors at outpatient and inpatient care sites should hold regular meetings to discuss performance using the monitoring information. Aggregated information is also analysed and discussed at the locality, state and national levels. Experiences should be shared, feedback given, and action plans for improving performance developed and discussed.

It is also recommended that feedback be provided to the community on a regular basis to gain trust and confidence in the treatment and empower the communities to participate in the treatment of children with SAM. This may be done through regular FGDs (see **Section 2**).

7.4 CMAM M&R System

In the initial phase of CMAM implementation, it is recommended to maintain a standardised and comprehensive CMAM M&R system that links with the National NIS and enables health managers, health care providers and outreach workers, in collaboration with supervisors and the communities, to strengthen planning, monitoring, resource mobilisation and management of CMAM. **Box 14** provides an overview of the standardised M&R tools that will be used at the different levels of implementation.

The CMAM M&R system will help service planners see whether, for example:

- Services are reaching the target population
- Sites are performing well
- Overall locality and state services are performing well
- Changes in strategy are needed or are having an effect
- Supply and human resources need adaptation

7.4.1 Collation and Triangulation of CMAM Information

Statistical site reports summarise quantitative information, are aggregated at the locality and state levels, and forwarded to the national level to feed data into the state and national CMAM databases. Qualitative information is obtained from various sources, such as community outreach reports and other contextual information from secondary sources. Information from various sources is triangulated to strengthen the interpretation of the findings. Additional information will be added depending on available capacity, and more substantive reporting is indicated during periodical reviews.

CMAM data flow is as follows:

- At the sites, site tally sheets and statistical and community outreach reports are prepared and sent to the locality CMAM and/or NIS focal person on a monthly basis.
- At the locality, the site reports are aggregated into locality narrative and statistical reports which are sent to the state.

[26] The Sphere Project, 2004 and draft 2010.

- At the state, locality reports are aggregated into state narrative and statistical reports which are sent to the national level. CMAM data from localities are compiled into a state CMAM database.
- At the national level, CMAM data from the states are compiled into a national CMAM database and repository.

7.4.2 Roles and Responsibilities of CMAM Information

Roles and responsibilities for the management of CMAM M&R should be defined among staff at the sites of community outreach, inpatient care or outpatient care, and also at the locality MOH and SMOH levels. These roles should be integrated in the job descriptions (see **Annex 34. Staff Needs, and Roles and Job Descriptions**). Examples of the roles and responsibilities of CMAM and/or NIS focal persons include:

- Fill tally sheets
- Complete monthly statistical and community outreach reports
- Assess secondary contextual information
- Complete monthly or periodic narrative reports
- Analyse and discuss report results and provide feedback
- Forward reports to higher level
- Control quality of data
- Train on CMAM M&R system
- Provide support and supervision
- Advocate for and ensure actions based on findings
- Update and maintain database and repository

Box 14. Overview of CMAM M&R Tools

Community Outreach
Community assessment questionnaire
Community assessment tools
Referral slip
Home visit record
Checklist home visits
Community outreach report
Supervision checklist

Outpatient Care
Outpatient care treatment card
GM card
Site tally sheet
Statistical site report
Referral form
Home visit record form
Supervision checklist
Ordering forms for supplies

Inpatient Care
Inpatient care treatment card
GM card
Site tally sheet
Statistical site report
Referral form
Supervision checklist
Ordering forms for supplies

CMAM management at Locality and State
Statistical reporting sheet
CMAM narrative reporting template
Checklists for support and supervision of community outreach, outpatient care and/or inpatient care
Checklists and ordering forms for supplies
CMAM database

FMOH
National CMAM database and repository

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Appendix

Clinical Management of SAM with Medical Complications in Inpatient Care

Community Outreach Job Aids

Annex 1. Community Outreach Messages

TO COMMUNITY-BASED ORGANISATIONS

Dear Sir/Madam,

Re: Community-Based Management of Severe Acute Malnutrition

To improve the quality and accessibility of health services, the Ministry of Health has introduced a new treatment for children under 5 with severe acute malnutrition (SAM). These children may be very thin or have swelling.

The treatment is called Community-Based Management of Severe Acute Malnutrition (CMAM). It is free and brings the treatment of children with SAM much closer to the family, making it possible for children and their mothers and/or caregivers to avoid long stays in the hospital, as was done before.

In [NAME] Locality, [NAME] State. CMAM treatment is now available in the following health facilities: [INSERT NAMES of relevant health facilities].

Children who are very thin or have swelling need to be referred to a primary health care centre where they will receive an assessment. If a child has SAM but has good appetite and no medical complications, the child does not have to go to the hospital for treatment. Instead, the child will be given the required medicines and a weekly supply of the medical food, Plumpy'nut®, which is taken home and fed to the child as directed. The child should attend the services at the primary health care centre weekly for follow up and to receive the medical food.

If a child under 5 with SAM has poor appetite or has a medical complication, he or she will be admitted to the hospital for a short time until the appetite has returned or the medical complication has resolved. The child will then receive further treatment at the primary health care centre and at home. Children under 6 months who are very thin or have swelling will need specialised inpatient care in the hospital.

Health workers and volunteers within the communities have been trained to check if children need this treatment. They take an arm measurement of each child with a small tape and check if both feet are swollen. All children found to be thin or swollen are referred to the primary health care centre, where the arm measurement and swelling of feet are checked again. If the child has appetite and is clinically well, they are given treatment. Only the children who are very small or very ill will need referral to inpatient care.

If you know a child who appears to be very thin or whose feet are swollen, tell his/her parents or caregivers about this new treatment. They can ask around the neighbourhood for a health worker, volunteer or someone else trained to take the arm measurement, or they can go directly to a health facility to have their child measured any day.

Measurement of children and referral for treatment can be carried out at the following sites: [INSERT LIST]. CMAM treatment is available in the following health facilities: [INSERT LIST].

We are confident that this new treatment will significantly improve the Locality's ability to support the recovery of malnourished children, and we look forward to your cooperation. Please do not hesitate to contact me for more information or clarification.

Yours faithfully,
Director of Health, State Ministry of Health

TO HEALTH FACILITIES

Dear Sir/Madam,

Re: Community-Based Management of Severe Acute Malnutrition

To improve the quality and accessibility of health services in [NAME] Locality in [NAME] State, the Ministry of Health has introduced a new treatment for children under 5 with severe acute malnutrition (SAM) (bilateral pitting oedema or severe wasting). The service is called Community-Based Management of Severe Acute Malnutrition (CMAM).

This service, which is free, brings the treatment of children with SAM much closer to the family, making it possible for children and their mothers/caregivers to avoid the long stays in hospitals or therapeutic feeding centres, which customarily has been necessary for treating undernutrition. Children under 5 will be screened in the communities and at the health facilities; they will be checked for bilateral pitting oedema and for severe wasting based on a mid-upper arm circumference (MUAC) measurement with a specially marked tape (MUAC tape). Those that require treatment will be referred for admission to the CMAM service at the health facility. Early detection of cases and referral for treatment is essential to avoid medical complications.

At the health facility, the child with SAM receives a medical evaluation. If a child with SAM has good appetite and no medical complications, he or she can be treated as an outpatient. The treatment at the primary health care centre provides antibiotic, antihelminthic and malaria treatment; vitamin A supplementation; and a ready-to-use therapeutic food (RUTF) called Plumpy'nut®, which the caregiver of the child with SAM takes home and feeds to the child as directed. The child will attend the health facility weekly for follow up and to receive the therapeutic food.

If a child with SAM does not have appetite or has a medical complication, he or she will be admitted to specialised inpatient care at [NAME] hospital for a short time until the medical complication has resolved. The child will then continue treatment at home, attending the health facility weekly for follow up and to receive the therapeutic food. Children under 6 months who are very thin or have swelling will need specialised inpatient care at [NAME] Hospital.

The Ministry of Health would like to involve a variety of health care providers, including from private clinics, to help identify children with SAM so they can be treated at an early stage. The services are currently provided in [LIST NAMES OF HEALTH FACILITIES] sites under [NAME] Locality Health Directorate, but it is hoped that the services will be extended to other health facilities in the Locality. We are therefore writing to kindly request that your health facility brief all staff members, especially those in the Outpatient Department, and have them refer children with bilateral pitting oedema and severe wasting to any of the above-mentioned health facilities for treatment.

The [NAME] Locality Nutrition Team would be pleased to provide your health facility with MUAC tapes and train your staff in identifying and treating children with bilateral pitting oedema and severe wasting.

We are confident that the CMAM services will significantly improve the Locality's ability to support the recovery of malnourished children, and we look forward to your cooperation. Please do not hesitate to contact us for more information or clarification.

Yours faithfully,
Director of Health, State Ministry of Health

TO MOTHERS/CAREGIVERS WITH CHILDREN UNDER 5

A new treatment is now available for children under 5 with severe acute malnutrition (SAM). These children are very thin or have swelling, and need a specific treatment with medicines and a medical food that will be provided at the health facility after a medical check.

Health workers and volunteers within your communities have been trained to check if your child needs this treatment. They take an arm measurement with a small tape and check if both feet are swollen. All children found to be thin or swollen are referred to the health facility, where the arm measurement and swelling of feet are checked again.

If a child with SAM has good appetite and does not have any medical complications, he or she does not have to go to hospital for treatment. Instead the health centre will treat the child with the required medicines and will provide a week's supply of special medical food, called Plumpy'nut®, which the families of eligible children take home and feed to the child as directed. The child should attend the health facility weekly for follow up and to receive a further supply of the medical food.

If the child with SAM has poor appetite or has developed a medical complication, he or she will be admitted to the hospital for a short time until the child's medical condition is improving. The child will then continue treatment for SAM at the health facility and at home.

Children under 6 months who are very thin or have swelling will need specialised inpatient care in [NAME] Hospital.

If you know a child who appears to be very thin or whose feet are swollen, tell his/her parents or caregivers about this new treatment. They can ask around their neighbourhood for a health worker, volunteer or someone else trained to take the arm measurement, or they can go directly to a health facility to have their child measured any day.

Measurement of children and referral for treatment can be carried out at the following health facilities: [INSERT LIST]. CMAM treatment is available in the following health facilities: [INSERT LIST].

MESSAGE FOR USE ON THE RADIO AT THE STATE AND/OR LOCALITY LEVELS

Re: New Treatment for Children with Severe Acute Malnutrition

To improve the quality and accessibility of health services, the Ministry of Health has introduced a new treatment for children under 5 with severe acute malnutrition. These children may be very thin or have swelling and need a specific treatment with medicines and a medical food.

This treatment is free and provided on an outpatient basis from a health centre for most children, making it possible for children and their mothers or caregivers to avoid the long stays in therapeutic feeding centres, which customarily has been necessary for treating severe acute malnutrition.

In [NAME] State, this treatment, known as Community-Based Management of Acute Malnutrition or CMAM, will initially be started in [NAMES] Localities and then extended across the other localities.

Where the services have commenced, health workers and volunteers within the communities have been trained to check if children need this treatment. They take an arm measurement of each child with a small tape and check if both feet are swollen. All children found to be thin or swollen are referred to the health facility, where they will receive an assessment; the arm measurement and swelling of feet are checked again.

If a child has SAM but has good appetite and no medical complications, the child does not have to go to the hospital for treatment. Instead, the child will be given required medicines and a weekly supply of the medical food called Plumpy'nut®, which is taken home and fed to the child as directed. The child should attend the health facility weekly for follow up and to receive the medical food.

If a child with SAM has poor appetite or has a medical complication, he or she will be admitted to the hospital for a short time until the medical complication has improved. The child will then receive further treatment at the health facility and at home.

Children under 6 months who are very thin or have swelling will need specialised inpatient care in the hospital.

If you know a child who appears to be very thin or whose feet are swollen, tell his/her parents or caregivers about this new treatment. Where CMAM services are available in the Locality, the parents or caregivers can ask around the neighbourhood for a health worker, volunteer or someone else trained to take the arm measurement, or they can go directly to a health facility to have their child measured.

Outpatient and Inpatient Care Job Aids

Annex 2. Admission and Discharge Criteria for CMAM in Children Under 5

Inpatient Care	Outpatient Care
Admission Criteria	
Children 6-59 months Bilateral pitting oedema +++ Or Any grade of bilateral pitting oedema with severe wasting Or SAM with any of the following medical complications: • Anorexia, poor appetite • Intractable vomiting • Convulsions • Lethargy, not alert • Unconsciousness • Hypoglycaemia • High fever • Hypothermia • Severe dehydration • Lower respiratory tract infection • Severe anaemia • Eye signs of vitamin A deficiency • Skin lesion Or • Referred from outpatient care according to action protocol Infants < 6 months Bilateral pitting oedema or Visible wasting - Includes infants with SAM ≥ 6 months and < 4 kg	Children 6-59 months Bilateral pitting oedema + and ++ Or Severe wasting (MUAC < 115 mm or WFH < -3 z-score) And Appetite test passed No medical complication Child clinically well and alert
Discharge Criteria	
Children 6-59 months *Referred to outpatient care:* Appetite returned (passed appetite test) Medical complication resolving Bilateral pitting oedema decreasing Child clinically well and alert (If admitted due to bilateral pitting oedema and severe wasting: criterion for referral is bilateral pitting oedema resolved) *Discharged cured (special cases):* 15 percent weight gain for two consecutive days Oedema free for two consecutive weeks Child clinically well and alert Infants < 6 months *Discharged cured:* If successful re-lactation and appropriate weight gain (minimum 20 g per day on breastfeeding alone for five days) and infant clinically well and alert – (if infant has no access to breastfeeding, see other guidance for non-breastfed children on replacement feeding)	Children 6-59 months *Discharged cured:* 15 percent weight gain for two consecutive visits Oedema free for two consecutive visits Child clinically well and alert *Children are referred to Supplementary Feeding if available*

BILATERAL PITTING OEDEMA

Bilateral pitting oedema, or kwashiorkor, can be verified when thumb pressure applied on top of both feet for three seconds leaves a pit (indentation) in the foot after the thumb is lifted. The pit will remain in both feet for several seconds. Bilateral pitting oedema usually starts in the feet and ankles. It is important to test both feet; if the pitting is not bilateral, the oedema is not of nutrition origin. A second person repeats the test to confirm the presence of bilateral pitting oedema.

There are three grades of bilateral pitting oedema. When there is no bilateral pitting oedema, the grade is “absent.” Grades of bilateral pitting oedema are classified by plus signs.

Grades of bilateral pitting oedema	Definition
Absent or O	No bilateral pitting oedema
Grade +	Mild: Both feet/ankles
Grade ++	Moderate: Both feet, plus lower legs, hands or lower arms

Grade +++	Severe: Generalised bilateral pitting oedema, including both feet, legs, arms and face

MID-UPPER ARM CIRCUMFERENCE OR MUAC

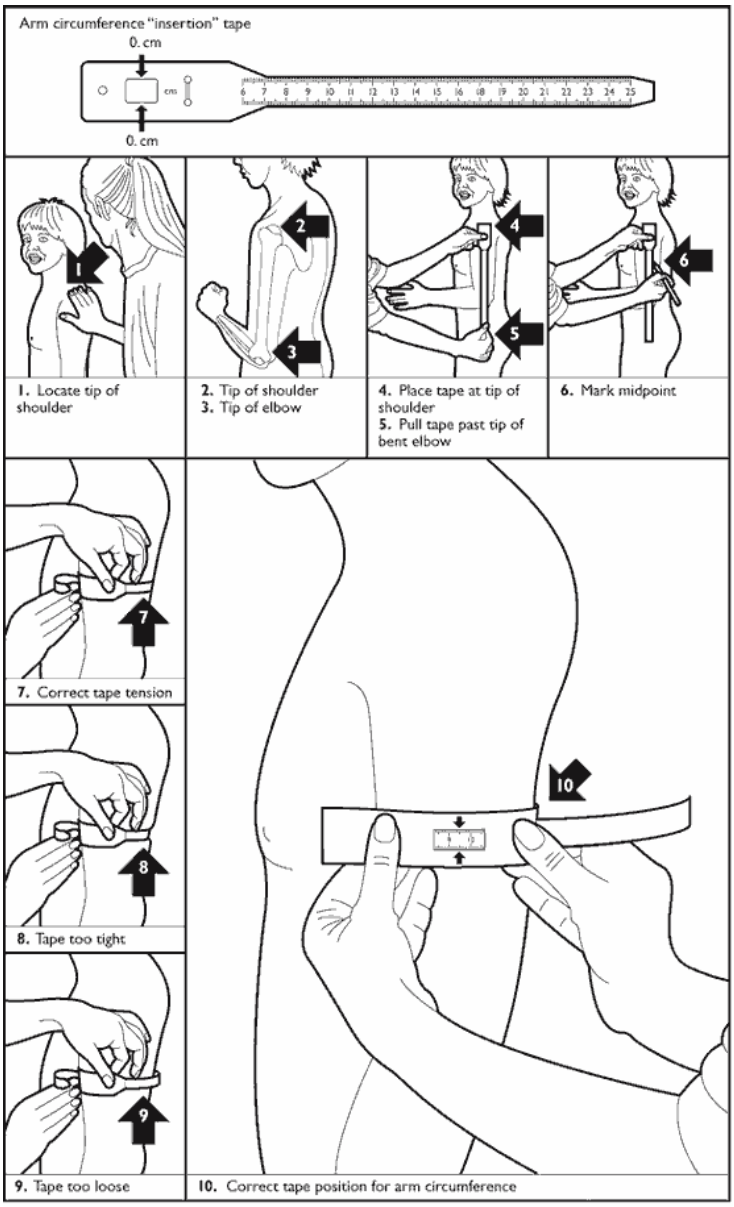
MUAC is used for children 6-59 months. It is essential to use the age cutoff of 6 months for MUAC. It is not recommended to use a height cutoff as proxy for 6 months; in a stunted population many infants 6 months or older will have a height less than 65 centimetres (cm). If the birth date is unconfirmed, use the recall of the mother/caregiver to estimate the infant's age.

How to measure MUAC:

- The MUAC is always taken on the left arm.
- Measure the length of the child's left upper arm, between the bone at the top of the shoulder and the elbow bone (the child's arm should be bent).
- Mark the middle of the child's upper arm with a pen. It is helpful to use a string to find the midpoint rather than the MUAC tape.
- The child's arm should then be relaxed, falling alongside his/her body.
- Wrap the MUAC tape around the child's arm, such that all of it is in contact with the child's skin. It should be neither too tight, nor too loose.
- Read the MUAC in millimetres (mm).

For the numbered tapes, feed the end of the tape down through the first opening and up through the **third opening. The measurement is read from the middle window where the arrows point inward. MUAC can be recorded with a precision of 1 mm.**

For the simple three-color tape (red, yellow, green), slide the end through the first opening and then through the second opening. Read the colour that shows through the window at the point the two arrows indicate.



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

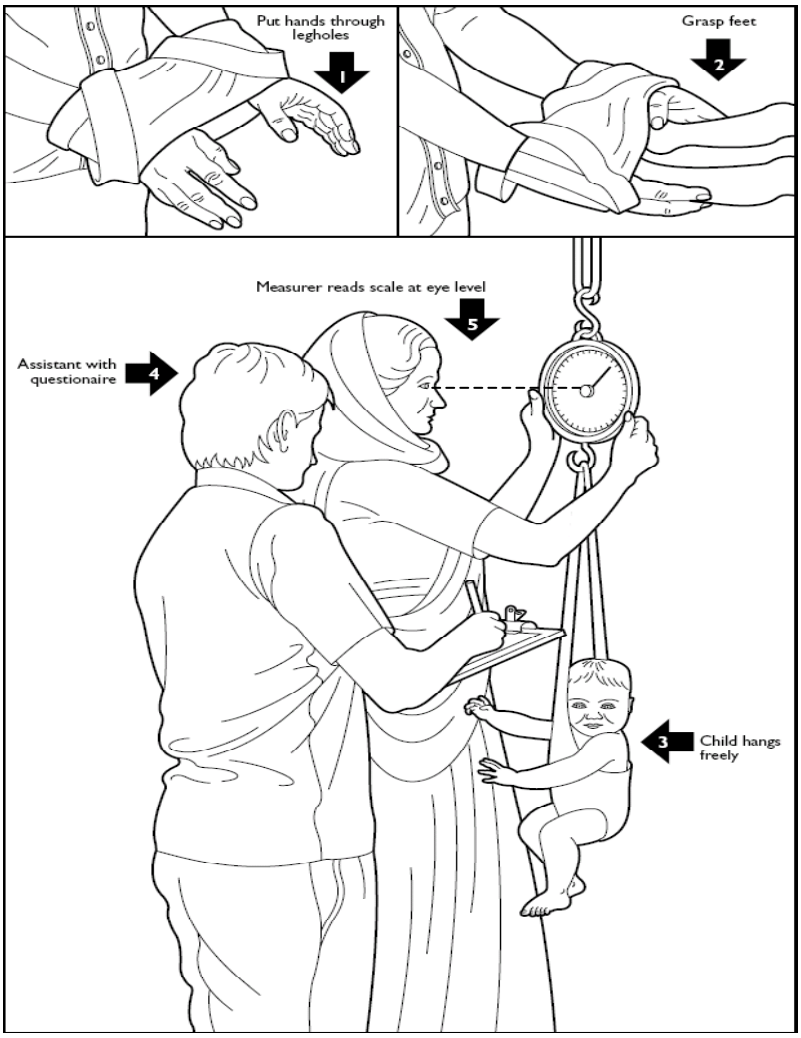
WEIGHT

To increase accuracy and precision, two people are always needed to measure weight. Weight can be measured using a Salter-type hanging spring scale (as is commonly found in the field) or an electronic scale such as the United Nations Children's Fund (UNICEF) UNISCALE, which is more precise and allows a child to be measured in the mother/caregiver's arms.

Hanging Spring (Salter) Scale

A 25 kilogram (kg) hanging spring scale, graduated by 0.100 kg, is most commonly used. In the field setting, the scale is hooked to a tree, a tripod or a stick held by two people. In a clinic, it is attached to the ceiling or a stand.

Weighing pants (or a weighing hammock for smaller infants) are attached to the scale. Culturally adapted solutions, such as a mother's wrap, basin or grass basket, might be preferable to use to weigh the child. The weighing pants or hammock is suspended from the lower hook of the scale, and the scale is readjusted to zero. The child's clothes are removed and the child is placed in the weighing pants or hammock. The scale should be read at eye level.



How to use the Salter Scale:

- Before weighing the child, take all his/her clothes off.
- Zero the weighing scales (i.e., make sure the arrow is on 0).
- Place the child in the weighing pants/hammock, making sure the child is touching nothing.
- Read the child's weight. The arrow must be steady and the weight/scale should be read at eye level.
- Record the weight in kg and to the nearest 100 grams (g) (e.g., 6.4 kg).

Considerations when using the Salter Scale:

- Make sure the child is safely in the weighing pants or hammock with one arm in front and one arm behind the straps to help maintain balance.
- In cold climates or in certain cultures it might be impossible or impractical to undress a child completely. The average weight of the clothes should be estimated and deducted from the measure. It is helpful to retain similar clothing for girls and boys during weighing to help to standardise weight deductions.
- When the child is steady and settled, the weight is recorded in kg to the nearest 100 g. If the child is moving and the needle does not stabilise, the weight should be estimated by recording the value at the midpoint of the range of oscillations. The measurer reads the value on the scale aloud, and the assistant repeats it for verification and records it on the anthropometric form or treatment card. The child is then dressed.
- The scale should be checked daily against a known weight. To do this, set the scale to zero and weigh objects of known weight (e.g., 5.0 kg, 10.0 kg, 15.0 kg). If the measure does not match the weight to within 10 grams the springs must be changed or the scale should be replaced.

Electronic Scale (e.g., UNISCALE)

The UNISCALE, which is very precise, is powered by a lithium battery good for one million weighings and a solar switch that turns the device on in daylight or a normally lit room. It is designed to allow a mother/caregiver to hold the child while the child is being weighed. The scale comes with instructions.

How to use the UNISCALE:

- Place the scale on a flat surface in a well-lit area, making sure that all four of the scale's feet are on the ground.
- Remove as much of the child's clothing as possible.
- Wave a hand over the solar switch to turn on the scale. The scale shows a picture of an adult, indicating that it is ready to weigh an adult.
- The mother/caregiver stands on the scale first, without the child. The scale shows the weight and stores it in its memory. The adult remains on the scale.
- Wave a hand over the solar switch again. The scale shows a picture of an adult holding a child indicating that it is ready to weigh an adult with a child.
- Pass the child to be weighed to the adult on the scale. The adult should remain still.
- The scale shows the child's weight.

Note: Infants under 6 months with SAM are referred to inpatient care where specific infant scales with a precision of 10 g or 20 g should be available.

HEIGHT

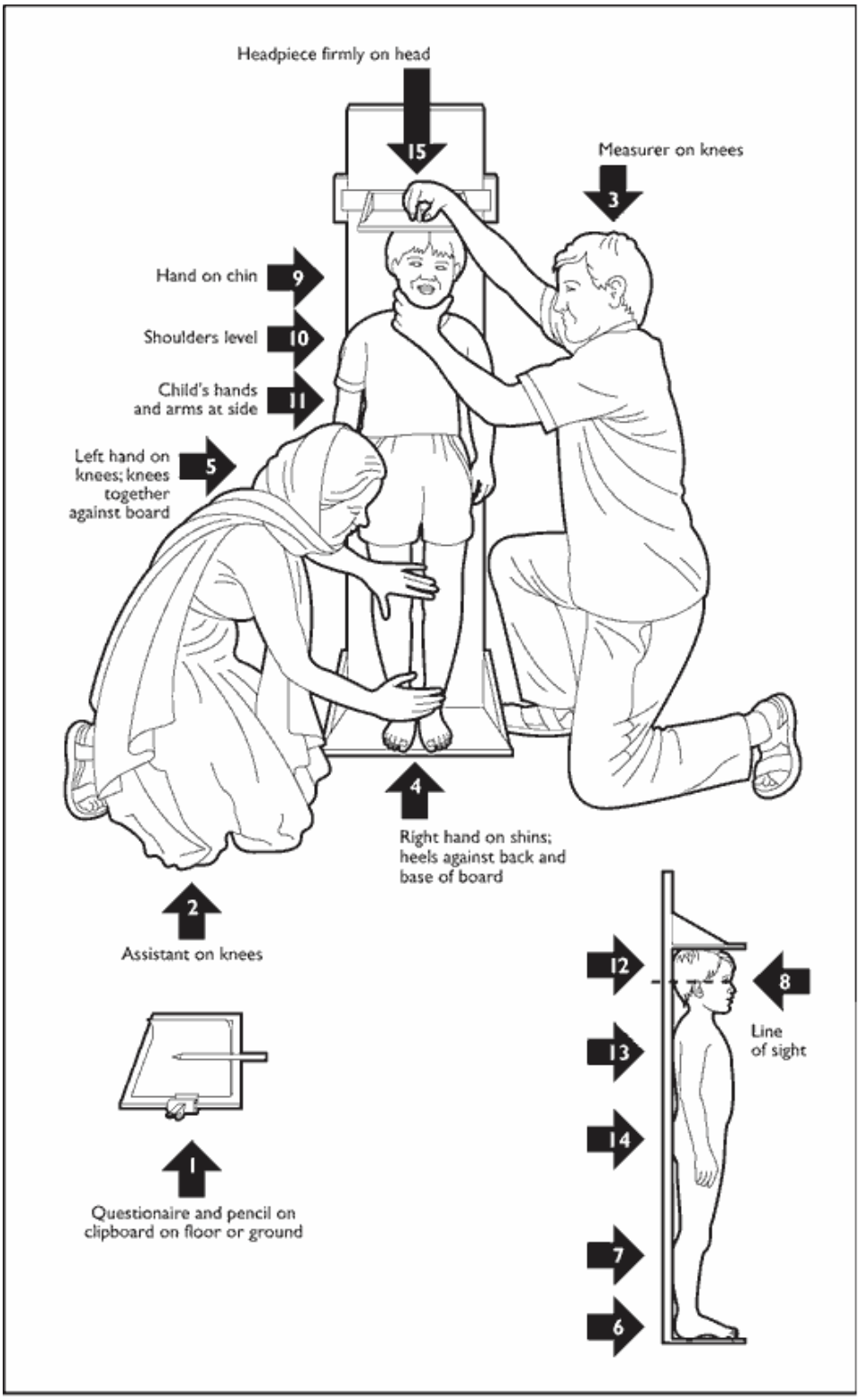
To increase accuracy and precision, two people are always needed to measure length and height.

Children 2 years or older are measured standing up, while those under 2 are measured lying down. If the age is difficult to assess, children with a height of 87 cm tall or above are measured standing and those less than 87 cm are measured lying down. If children age 2 or older or with a height of 87 cm or above are measured lying down, 0.7 cm is subtracted from the measurement (WHO Standards).

For Children 2 Years or Older or With a Height of 87 cm or Greater

Steps for and considerations in measuring HEIGHT (standing up):

- The child's shoes are removed.
- The child is placed on the height board, standing upright in the middle of the board with arms at his/her sides.
- The assistant firmly presses the child's ankles and knees against the board while the measurer holds the child's head straight.
- The child's heels, back legs, buttocks, shoulders and head should be touching the back of the board, and his or her feet should be close together.
- The child's head should be straight and looking ahead. A line between the ears and eyes should be parallel to the floor.
- The measurement is always made with two people: one assistant is holding the child's legs and feet, and the measurer the child's head. The person holding the head reads the measurement out loud to the nearest 0.1 cm. The assistant repeats it for verification and records it on the anthropometric form or treatment card.

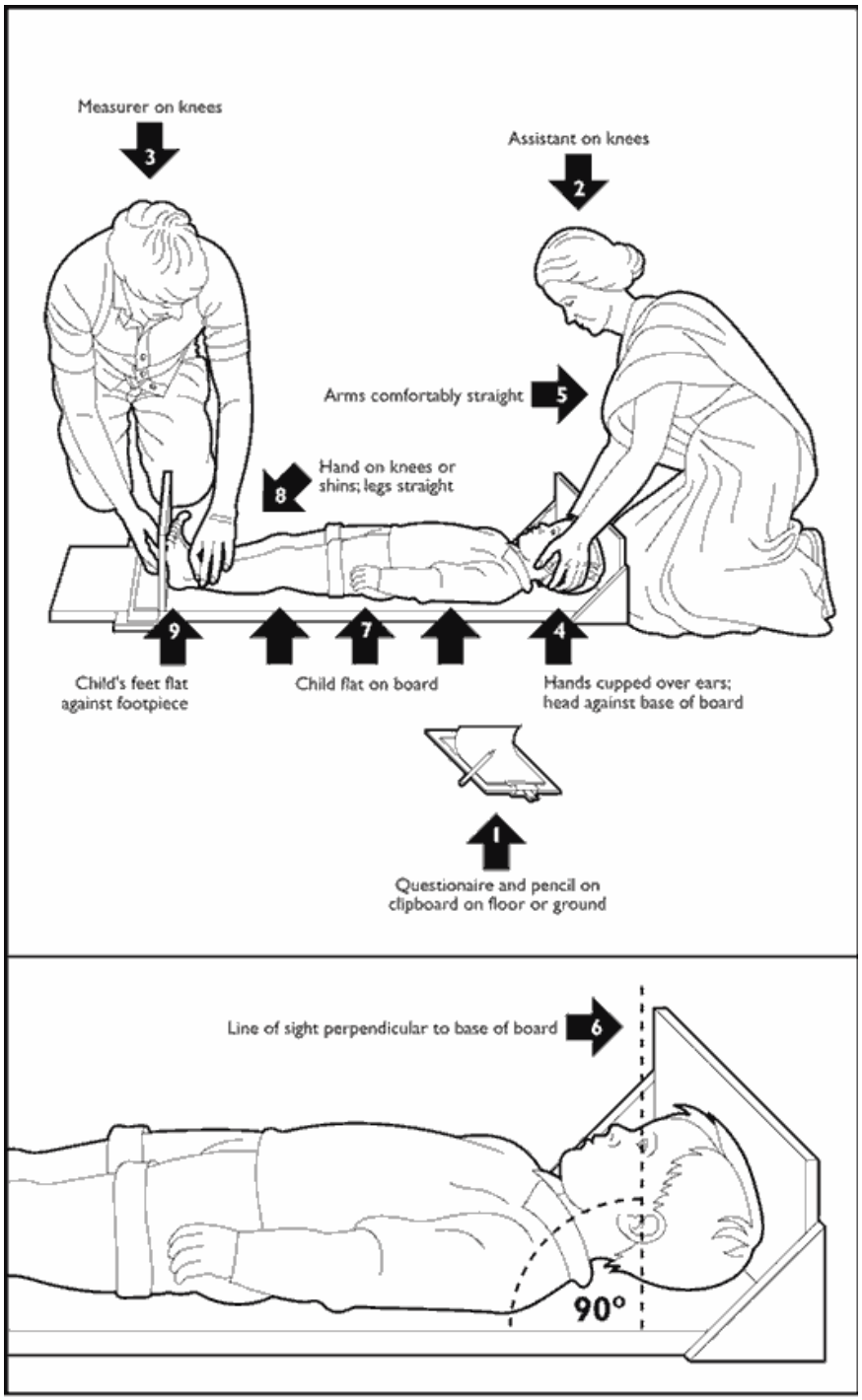


Source: How to Weigh and Measure Children: Assessing the Nutritional Status of Young Children, UN 1986.

For Children Under 2 or With a Height Less Than 87 cm

Steps for and considerations in measuring LENGTH (Lying Down):

- The height board is placed on the ground.
- The child's shoes are removed.
- The child is gently placed on his or her back on the middle of the board, facing straight up with arms at his/her sides and feet at right angles.
- The assistant holds the sides of the child's head and positions it on the board.
- While holding down the child's ankles or knees, the measurer moves the sliding board up against the bottom of the child's feet and takes the measurement to the nearest 0.1 cm. The measurer announces the measurement, and the assistant repeats it for verification and records it on the anthropometric form or treatment card.



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

BODY MASS INDEX[27]

Body Mass Index (BMI) or "Quetelet's index" is based on a weight-to-height ratio that is considered a good index of body fat and protein stores. Body stores are of interest because they reflect the stores needed to cope with physiological stress due to reduced intake and increased demands due to increased activity, pregnancy and diseases. Adults who have a healthy nutrition status would be expected to have body stores or BMI within a certain range.

The formula for BMI is the weight (in kilograms) divided by the height (in meters) squared:

$$BMI = weight / (height)^2$$

Example: A woman who weighs 55.5 kg with a height of 162.5 cm would have a BMI of (55.5/(1.625x1.625)) = 20.9.

When an adult is too ill to stand or has a spinal deformity, the half-arm span should be measured to estimate the height. This is the distance from the middle of the sternal notch to the tip of the middle finger with the arm held out horizontally to the side. Both sides should be measured. If there is a discrepancy, the measurements should be repeated and the longest one taken. The BMI is then computed from the calculated height and measured weight. The height (in metres) can then be calculated as follows:

$$Height = [0.73 \times (2 \times \text{half arm span})] + 0.43$$

WHO classification of malnutrition in adults by BMI:[28]

Nutrition Status	BMI (kg/m^2)
Normal	≥ 18.5
Mild malnutrition	17.0 – 18.49
Moderate malnutrition	16.0 – 16.99
Severe malnutrition	< 16.0

While these categories are suggested, there is difficulty in using them to compare across populations due to: 1) a lack of understanding of the functional significance of these categories and 2) the influence of body shape to interpreting BMI.[29] The BMI look-up table is found in **Annex 4. Anthropometry Look-up Tables**.

BMI-for-Age

The release of the WHO 2006 child growth standards (WHO Standards) prompted the development of the WHO 2007 growth reference for school-aged children and adolescents 5-19 years (WHO Reference).

The new reference indicator for wasting for school-aged children and adolescents 5-19 years is BMI-for-age (WHO Reference). Previously WHO recommended weight-for-height (WFH; National Centre for Health Statistics [NCHS] Reference) as indicator for wasting for children above 5 years since the *BMI-for-age (NCHS Reference) tables started at 9 years only.* [30, 31] The BMI-for-age indicator for severe wasting is expressed as a z-score below 3 standard deviations (SD) of the median and for moderate wasting below 2 SD of the median. The BMI-for-age look-up tables for boys and girls are found in **Annex 4. Anthropometry Look-up Tables**.

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[27] FANTA. 2003. *Anthropometric Indicators Measurement Guide*. Washington, DC: FANTA at AED.
[28] WHO. 1999. *Management of severe malnutrition: a manual for physicians and other senior health workers.* Geneva: WHO.
[29] See for further guidance in: FANTA. 2003. *Anthropometric Indicators Measurement Guide*. Washington, DC: FANTA at AED. p 72.
[30] WHO 2007 Reference. Growth reference data for 5-19 years. http://www.who.int/growthref/en/
[31] de Onis M, Onyango AW, Borghi E, Siyam A, Nishida C, and Siekmann J. 2007. *Development of a WHO growth reference for school-aged children and adolescents* Bulletin of the World Health Organization: 85:660-7. http://www.who.int/growthref/growthref_who_bull.pdf

Annex 4. Anthropometry Look-up Tables

Weight-for-Length Look-Up Table for Children 0-23 Months

WHO 2006 Child Growth Standards

Boys' weight (kg)				Length [a]	Girls' weight (kg)			
-3 SD	-2 SD	-1 SD	Median	(cm)	Median	-1 SD	-2 SD	-3 SD
1.9	2.0	2.2	2.4	**45**	2.5	2.3	2.1	1.9
2.0	2.2	2.4	2.6	**46**	2.6	2.4	2.2	2.0
2.1	2.3	2.5	2.8	**47**	2.8	2.6	2.4	2.2
2.3	2.5	2.7	2.9	**48**	3.0	2.7	2.5	2.3
2.4	2.6	2.9	3.1	**49**	3.2	2.9	2.6	2.4
2.6	2.8	3.0	3.3	**50**	3.4	3.1	2.8	2.6
2.7	3.0	3.2	3.5	**51**	3.6	3.3	3.0	2.8
2.9	3.2	3.5	3.8	**52**	3.8	3.5	3.2	2.9
3.1	3.4	3.7	4.0	**53**	4.0	3.7	3.4	3.1
3.3	3.6	3.9	4.3	**54**	4.3	3.9	3.6	3.3
3.6	3.8	4.2	4.5	**55**	4.5	4.2	3.8	3.5
3.8	4.1	4.4	4.8	**56**	4.8	4.4	4.0	3.7
4.0	4.3	4.7	5.1	**57**	5.1	4.6	4.3	3.9
4.3	4.6	5.0	5.4	**58**	5.4	4.9	4.5	4.1
4.5	4.8	5.3	5.7	**59**	5.6	5.1	4.7	4.3
4.7	5.1	5.5	6.0	**60**	5.9	5.4	4.9	4.5
4.9	5.3	5.8	6.3	**61**	6.1	5.6	5.1	4.7
5.1	5.6	6.0	6.5	**62**	6.4	5.8	5.3	4.9
5.3	5.8	6.2	6.8	**63**	6.6	6.0	5.5	5.1
5.5	6.0	6.5	7.0	**64**	6.9	6.3	5.7	5.3
5.7	6.2	6.7	7.3	**65**	7.1	6.5	5.9	5.5
5.9	6.4	6.9	7.5	**66**	7.3	6.7	6.1	5.6
6.1	6.6	7.1	7.7	**67**	7.5	6.9	6.3	5.8
6.3	6.8	7.3	8.0	**68**	7.7	7.1	6.5	6.0
6.5	7.0	7.6	8.2	**69**	8.0	7.3	6.7	6.1
6.6	7.2	7.8	8.4	**70**	8.2	7.5	6.9	6.3
6.8	7.4	8.0	8.6	**71**	8.4	7.7	7.0	6.5
7.0	7.6	8.2	8.9	**72**	8.6	7.8	7.2	6.6
7.2	7.7	8.4	9.1	**73**	8.8	8.0	7.4	6.8
7.3	7.9	8.6	9.3	**74**	9.0	8.2	7.5	6.9
7.5	8.1	8.8	9.5	**75**	9.1	8.4	7.7	7.1
7.6	8.3	8.9	9.7	**76**	9.3	8.5	7.8	7.2
7.8	8.4	9.1	9.9	**77**	9.5	8.7	8.0	7.4
7.9	8.6	9.3	10.1	**78**	9.7	8.9	8.2	7.5
8.1	8.7	9.5	10.3	**79**	9.9	9.1	8.3	7.7
8.2	8.9	9.6	10.4	**80**	10.1	9.2	8.5	7.8
8.4	9.1	9.8	10.6	**81**	10.3	9.4	8.7	8.0
8.5	9.2	10.0	10.8	**82**	10.5	9.6	8.8	8.1
8.7	9.4	10.2	11.0	**83**	10.7	9.8	9.0	8.3
8.9	9.6	10.4	11.3	**84**	11.0	10.1	9.2	8.5
9.1	9.8	10.6	11.5	**85**	11.2	10.3	9.4	8.7
9.3	10.0	10.8	11.7	**86**	11.5	10.5	9.7	8.9
9.5	10.2	11.1	12.0	**87**	11.7	10.7	9.9	9.1
9.7	10.5	11.3	12.2	**88**	12.0	11.0	10.1	9.3
9.9	10.7	11.5	12.5	**89**	12.2	11.2	10.3	9.5
10.1	10.9	11.8	12.7	**90**	12.5	11.4	10.5	9.7
10.3	11.1	12.0	13.0	**91**	12.7	11.7	10.7	9.9
10.5	11.3	12.2	13.2	**92**	13.0	11.9	10.9	10.1
10.7	11.5	12.4	13.4	**93**	13.2	12.1	11.1	10.2
10.8	11.7	12.6	13.7	**94**	13.5	12.3	11.3	10.4
11.0	11.9	12.8	13.9	**95**	13.7	12.6	11.5	10.6
11.2	12.1	13.1	14.1	**96**	14.0	12.8	11.7	10.8
11.4	12.3	13.3	14.4	**97**	14.2	13.0	12.0	11.0
11.6	12.5	13.5	14.6	**98**	14.5	13.3	12.2	11.2
11.8	12.7	13.7	14.9	**99**	14.8	13.5	12.4	11.4
12.0	12.9	14.0	15.2	**100**	15.0	13.7	12.6	11.6

[a] Length is measured for children under 2 years or less than 87 cm height. For children 2 years or older or 87 cm height or greater, height is measured. Recumbent length is, on average, 0.7 cm greater than standing height; although the difference is of no importance to individual children, a correction may be made by subtracting 0.7 cm from all lengths greater than 86.9 cm if standing height cannot be measured.

Weight-for-Height Look-Up Table for Children 24-59 Months

WHO 2006 Child Growth Standards

Boys' weight (kg)				Height [a]	Girls' weight (kg)			
-3 SD	-2 SD	-1 SD	Median	(cm)	Median	-1 SD	-2 SD	-3 SD
5.9	6.3	6.9	7.4	**65**	7.2	6.6	6.1	5.6
6.1	6.5	7.1	7.7	**66**	7.5	6.8	6.3	5.8
6.2	6.7	7.3	7.9	**67**	7.7	7.0	6.4	5.9
6.4	6.9	7.5	8.1	**68**	7.9	7.2	6.6	6.1
6.6	7.1	7.7	8.4	**69**	8.1	7.4	6.8	6.3
6.8	7.3	7.9	8.6	**70**	8.3	7.6	7.0	6.4
6.9	7.5	8.1	8.8	**71**	8.5	7.8	7.1	6.6
7.1	7.7	8.3	9.0	**72**	8.7	8.0	7.3	6.7
7.3	7.9	8.5	9.2	**73**	8.9	8.1	7.5	6.9
7.4	8.0	8.7	9.4	**74**	9.1	8.3	7.6	7.0
7.6	8.2	8.9	9.6	**75**	9.3	8.5	7.8	7.2
7.7	8.4	9.1	9.8	**76**	9.5	8.7	8.0	7.3
7.9	8.5	9.2	10.0	**77**	9.6	8.8	8.1	7.5
8.0	8.7	9.4	10.2	**78**	9.8	9.0	8.3	7.6
8.2	8.8	9.6	10.4	**79**	10.0	9.2	8.4	7.8
8.3	9.0	9.7	10.6	**80**	10.2	9.4	8.6	7.9
8.5	9.2	9.9	10.8	**81**	10.4	9.6	8.8	8.1
8.7	9.3	10.1	11.0	**82**	10.7	9.8	9.0	8.3
8.8	9.5	10.3	11.2	**83**	10.9	10.0	9.2	8.5
9.0	9.7	10.5	11.4	**84**	11.1	10.2	9.4	8.6
9.2	10.0	10.8	11.7	**85**	11.4	10.4	9.6	8.8
9.4	10.2	11.0	11.9	**86**	11.6	10.7	9.8	9.0
9.6	10.4	11.2	12.2	**87**	11.9	10.9	10.0	9.2
9.8	10.6	11.5	12.4	**88**	12.1	11.1	10.2	9.4
10.0	10.8	11.7	12.6	**89**	12.4	11.4	10.4	9.6
10.2	11.0	11.9	12.9	**90**	12.6	11.6	10.6	9.8
10.4	11.2	12.1	13.1	**91**	12.9	11.8	10.9	10.0
10.6	11.4	12.3	13.4	**92**	13.1	12.0	11.1	10.2
10.8	11.6	12.6	13.6	**93**	13.4	12.3	11.3	10.4
11.0	11.8	12.8	13.8	**94**	13.6	12.5	11.5	10.6
11.1	12.0	13.0	14.1	**95**	13.9	12.7	11.7	10.8
11.3	12.2	13.2	14.3	**96**	14.1	12.9	11.9	10.9
11.5	12.4	13.4	14.6	**97**	14.4	13.2	12.1	11.1
11.7	12.6	13.7	14.8	**98**	14.7	13.4	12.3	11.3
11.9	12.9	13.9	15.1	**99**	14.9	13.7	12.5	11.5
12.1	13.1	14.2	15.4	**100**	15.2	13.9	12.8	11.7
12.3	13.3	14.4	15.6	**101**	15.5	14.2	13.0	12.0
12.5	13.6	14.7	15.9	**102**	15.8	14.5	13.3	12.2
12.8	13.8	14.9	16.2	**103**	16.1	14.7	13.5	12.4
13.0	14.0	15.2	16.5	**104**	16.4	15.0	13.8	12.6
13.2	14.3	15.5	16.8	**105**	16.8	15.3	14.0	12.9
13.4	14.5	15.8	17.2	**106**	17.1	15.6	14.3	13.1
13.7	14.8	16.1	17.5	**107**	17.5	15.9	14.6	13.4
13.9	15.1	16.4	17.8	**108**	17.8	16.3	14.9	13.7
14.1	15.3	16.7	18.2	**109**	18.2	16.6	15.2	13.9
14.4	15.6	17.0	18.5	**110**	18.6	17.0	15.5	14.2
14.6	15.9	17.3	18.9	**111**	19.0	17.3	15.8	14.5
14.9	16.2	17.6	19.2	**112**	19.4	17.7	16.2	14.8
15.2	16.5	18.0	19.6	**113**	19.8	18.0	16.5	15.1
15.4	16.8	18.3	20.0	**114**	20.2	18.4	16.8	15.4
15.7	17.1	18.6	20.4	**115**	20.7	18.8	17.2	15.7
16.0	17.4	19.0	20.8	**116**	21.1	19.2	17.5	16.0
16.2	17.7	19.3	21.2	**117**	21.5	19.6	17.8	16.3
16.5	18.0	19.7	21.6	**118**	22.0	19.9	18.2	16.6
16.8	18.3	20.0	22.0	**119**	22.4	20.3	18.5	16.9
17.1	18.6	20.4	22.4	**120**	22.8	20.7	18.9	17.3

[a] Length is measured for children under 2 years or less than 87 cm height. For children 2 years or older or 87 cm height or more, height is measured. Recumbent length is, on average, 0.7 cm greater than standing height; although the difference is of no importance to individual children, a correction may be made by subtracting 0.7 cm from all lengths greater than 86.9 cm if standing height cannot be measured.

BMI Look-Up Table

	Body Mass Index (BMI)																													
H	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	H
95	9.0	9.9	10.8	11.7	12.6	13.5	14.4	15.3	16.2	17.1	18.1	19.0	19.9	20.8	21.7	22.6	23.5	24.4	25.3	26.2	27.1	28.0	28.9	29.8	30.7	31.6	32.5	33.4	34.3	95
96	9.2	10.1	11.1	12.0	12.9	13.8	14.7	15.7	16.6	17.5	18.4	19.4	20.3	21.2	22.1	23.0	24.0	24.9	25.8	26.7	27.6	28.6	29.5	30.4	31.3	32.3	33.2	34.1	35.0	96
97	9.4	10.3	11.3	12.2	13.2	14.1	15.1	16.0	16.9	17.9	18.8	19.8	20.7	21.6	22.6	23.5	24.5	25.4	26.3	27.3	28.2	29.2	30.1	31.0	32.0	32.9	33.9	34.8	35.8	97
98	9.6	10.6	11.5	12.5	13.4	14.4	15.4	16.3	17.3	18.2	19.2	20.2	21.1	22.1	23.0	24.0	25.0	25.9	26.9	27.9	28.8	29.8	30.7	31.7	32.7	33.6	34.6	35.5	36.5	98
99	9.8	10.8	11.8	12.7	13.7	14.7	15.7	16.7	17.6	18.6	19.6	20.6	21.6	22.5	23.5	24.5	25.5	26.5	27.4	28.4	29.4	30.4	31.4	32.3	33.3	34.3	35.3	36.3	37.2	99
100	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	100
101	10.2	11.2	12.2	13.3	14.3	15.3	16.3	17.3	18.4	19.4	20.4	21.4	22.4	23.5	24.5	25.5	26.5	27.5	28.6	29.6	30.6	31.6	32.6	33.7	34.7	35.7	36.7	37.7	38.8	101
102	10.4	11.4	12.5	13.5	14.6	15.6	16.6	17.7	18.7	19.8	20.8	21.8	22.9	23.9	25.0	26.0	27.1	28.1	29.1	30.2	31.2	32.3	33.3	34.3	35.4	36.4	37.5	38.5	39.5	102
103	10.6	11.7	12.7	13.8	14.9	15.9	17.0	18.0	19.1	20.2	21.2	22.3	23.3	24.4	25.5	26.5	27.6	28.6	29.7	30.8	31.8	32.9	33.9	35.0	36.1	37.1	38.2	39.3	40.3	103
104	10.8	11.9	13.0	14.1	15.1	16.2	17.3	18.4	19.5	20.6	21.6	22.7	23.8	24.9	26.0	27.0	28.1	29.2	30.3	31.4	32.4	33.5	34.6	35.7	36.8	37.9	38.9	40.0	41.1	104
105	11.0	12.1	13.2	14.3	15.4	16.5	17.6	18.7	19.8	20.9	22.1	23.2	24.3	25.4	26.5	27.6	28.7	29.8	30.9	32.0	33.1	34.2	35.3	36.4	37.5	38.6	39.7	40.8	41.9	105
106	11.2	12.4	13.5	14.6	15.7	16.9	18.0	19.1	20.2	21.3	22.5	23.6	24.7	25.8	27.0	28.1	29.2	30.3	31.5	32.6	33.7	34.8	36.0	37.1	38.2	39.3	40.4	41.6	42.7	106
107	11.4	12.6	13.7	14.9	16.0	17.2	18.3	19.5	20.6	21.8	22.9	24.0	25.2	26.3	27.5	28.6	29.8	30.9	32.1	33.2	34.3	35.5	36.6	37.8	38.9	40.1	41.2	42.4	43.5	107
108	11.7	12.8	14.0	15.2	16.3	17.5	18.7	19.8	21.0	22.2	23.3	24.5	25.7	26.8	28.0	29.2	30.3	31.5	32.7	33.8	35.0	36.2	37.3	38.5	39.7	40.8	42.0	43.2	44.3	108
109	11.9	13.1	14.3	15.4	16.6	17.8	19.0	20.2	21.4	22.6	23.8	25.0	26.1	27.3	28.5	29.7	30.9	32.1	33.3	34.5	35.6	36.8	38.0	39.2	40.4	41.6	42.8	44.0	45.1	109
110	12.1	13.3	14.5	15.7	16.9	18.2	19.4	20.6	21.8	23.0	24.2	25.4	26.6	27.8	29.0	30.3	31.5	32.7	33.9	35.1	36.3	37.5	38.7	39.9	41.1	42.4	43.6	44.8	46.0	110
111	12.3	13.6	14.8	16.0	17.2	18.5	19.7	20.9	22.2	23.4	24.6	25.9	27.1	28.3	29.6	30.8	32.0	33.3	34.5	35.7	37.0	38.2	39.4	40.7	41.9	43.1	44.4	45.6	46.8	111
112	12.5	13.8	15.1	16.3	17.6	18.8	20.1	21.3	22.6	23.8	25.1	26.3	27.6	28.9	30.1	31.4	32.6	33.9	35.1	36.4	37.6	38.9	40.1	41.4	42.6	43.9	45.2	46.4	47.7	112
113	12.8	14.0	15.3	16.6	17.9	19.2	20.4	21.7	23.0	24.3	25.5	26.8	28.1	29.4	30.6	31.9	33.2	34.5	35.8	37.0	38.3	39.6	40.9	42.1	43.4	44.7	46.0	47.2	48.5	113
114	13.0	14.3	15.6	16.9	18.2	19.5	20.8	22.1	23.4	24.7	26.0	27.3	28.6	29.9	31.2	32.5	33.8	35.1	36.4	37.7	39.0	40.3	41.6	42.9	44.2	45.5	46.8	48.1	49.4	114
115	13.2	14.5	15.9	17.2	18.5	19.8	21.2	22.5	23.8	25.1	26.4	27.8	29.1	30.4	31.7	33.1	34.4	35.7	37.0	38.4	39.7	41.0	42.3	43.6	45.0	46.3	47.6	48.9	50.3	115
116	13.5	14.8	16.1	17.5	18.8	20.2	21.5	22.9	24.2	25.6	26.9	28.3	29.6	30.9	32.3	33.6	35.0	36.3	37.7	39.0	40.4	41.7	43.1	44.4	45.8	47.1	48.4	49.8	51.1	116
117	13.7	15.1	16.4	17.8	19.2	20.5	21.9	23.3	24.6	26.0	27.4	28.7	30.1	31.5	32.9	34.2	35.6	37.0	38.3	39.7	41.1	42.4	43.8	45.2	46.5	47.9	49.3	50.6	52.0	117
118	13.9	15.3	16.7	18.1	19.5	20.9	22.3	23.7	25.1	26.5	27.8	29.2	30.6	32.0	33.4	34.8	36.2	37.6	39.0	40.4	41.8	43.2	44.6	45.9	47.3	48.7	50.1	51.5	52.9	118
119	14.2	15.6	17.0	18.4	19.8	21.2	22.7	24.1	25.5	26.9	28.3	29.7	31.2	32.6	34.0	35.4	36.8	38.2	39.7	41.1	42.5	43.9	45.3	46.7	48.1	49.6	51.0	52.4	53.8	119
120	14.4	15.8	17.3	18.7	20.2	21.6	23.0	24.5	25.9	27.4	28.8	30.2	31.7	33.1	34.6	36.0	37.4	38.9	40.3	41.8	43.2	44.6	46.1	47.5	49.0	50.4	51.8	53.3	54.7	120
121	14.6	16.1	17.6	19.0	20.5	22.0	23.4	24.9	26.4	27.8	29.3	30.7	32.2	33.7	35.1	36.6	38.1	39.5	41.0	42.5	43.9	45.4	46.9	48.3	49.8	51.2	52.7	54.2	55.6	121
122	14.9	16.4	17.9	19.3	20.8	22.3	23.8	25.3	26.8	28.3	29.8	31.3	32.7	34.2	35.7	37.2	38.7	40.2	41.7	43.2	44.7	46.1	47.6	49.1	50.6	52.1	53.6	55.1	56.6	122
123	15.1	16.6	18.2	19.7	21.2	22.7	24.2	25.7	27.2	28.7	30.3	31.8	33.3	34.8	36.3	37.8	39.3	40.8	42.4	43.9	45.4	46.9	48.4	49.9	51.4	53.0	54.5	56.0	57.5	123
124	15.4	16.9	18.5	20.0	21.5	23.1	24.6	26.1	27.7	29.2	30.8	32.3	33.8	35.4	36.9	38.4	40.0	41.5	43.1	44.6	46.1	47.7	49.2	50.7	52.3	53.8	55.4	56.9	58.4	124
125	15.6	17.2	18.8	20.3	21.9	23.4	25.0	26.6	28.1	29.7	31.3	32.8	34.4	35.9	37.5	39.1	40.6	42.2	43.8	45.3	46.9	48.4	50.0	51.6	53.1	54.7	56.3	57.8	59.4	125
126	15.9	17.5	19.1	20.6	22.2	23.8	25.4	27.0	28.6	30.2	31.8	33.3	34.9	36.5	38.1	39.7	41.3	42.9	44.5	46.0	47.6	49.2	50.8	52.4	54.0	55.6	57.2	58.7	60.3	126
127	16.1	17.7	19.4	21.0	22.6	24.2	25.8	27.4	29.0	30.6	32.3	33.9	35.5	37.1	38.7	40.3	41.9	43.5	45.2	46.8	48.4	50.0	51.6	53.2	54.8	56.5	58.1	59.7	61.3	127
128	16.4	18.0	19.7	21.3	22.9	24.6	26.2	27.9	29.5	31.1	32.8	34.4	36.0	37.7	39.3	41.0	42.6	44.2	45.9	47.5	49.2	50.8	52.4	54.1	55.7	57.3	59.0	60.6	62.3	128
129	16.6	18.3	20.0	21.6	23.3	25.0	26.6	28.3	30.0	31.6	33.3	34.9	36.6	38.3	39.9	41.6	43.3	44.9	46.6	48.3	49.9	51.6	53.3	54.9	56.6	58.2	59.9	61.6	63.2	129
130	16.9	18.6	20.3	22.0	23.7	25.4	27.0	28.7	30.4	32.1	33.8	35.5	37.2	38.9	40.6	42.3	43.9	45.6	47.3	49.0	50.7	52.4	54.1	55.8	57.5	59.2	60.8	62.5	64.2	130
131	17.2	18.9	20.6	22.3	24.0	25.7	27.5	29.2	30.9	32.6	34.3	36.0	37.8	39.5	41.2	42.9	44.6	46.3	48.1	49.8	51.5	53.2	54.9	56.6	58.3	60.1	61.8	63.5	65.2	131
132	17.4	19.2	20.9	22.7	24.4	26.1	27.9	29.6	31.4	33.1	34.8	36.6	38.3	40.1	41.8	43.6	45.3	47.0	48.8	50.5	52.3	54.0	55.8	57.5	59.2	61.0	62.7	64.5	66.2	132
133	17.7	19.5	21.2	23.0	24.8	26.5	28.3	30.1	31.8	33.6	35.4	37.1	38.9	40.7	42.5	44.2	46.0	47.8	49.5	51.3	53.1	54.8	56.6	58.4	60.1	61.9	63.7	65.4	67.2	133
134	18.0	19.8	21.5	23.3	25.1	26.9	28.7	30.5	32.3	34.1	35.9	37.7	39.5	41.3	43.1	44.9	46.7	48.5	50.3	52.1	53.9	55.7	57.5	59.3	61.1	62.8	64.6	66.4	68.2	134
135	18.2	20.0	21.9	23.7	25.5	27.3	29.2	31.0	32.8	34.6	36.5	38.3	40.1	41.9	43.7	45.6	47.4	49.2	51.0	52.9	54.7	56.5	58.3	60.1	62.0	63.8	65.6	67.4	69.3	135
136	18.5	20.3	22.2	24.0	25.9	27.7	29.6	31.4	33.3	35.1	37.0	38.8	40.7	42.5	44.4	46.2	48.1	49.9	51.8	53.6	55.5	57.3	59.2	61.0	62.9	64.7	66.6	68.4	70.3	136
137	18.8	20.6	22.5	24.4	26.3	28.2	30.0	31.9	33.8	35.7	37.5	39.4	41.3	43.2	45.0	46.9	48.8	50.7	52.6	54.4	56.3	58.2	60.1	61.9	63.8	65.7	67.6	69.4	71.3	137
138	19.0	20.9	22.9	24.8	26.7	28.6	30.5	32.4	34.3	36.2	38.1	40.0	41.9	43.8	45.7	47.6	49.5	51.4	53.3	55.2	57.1	59.0	60.9	62.8	64.7	66.7	68.6	70.5	72.4	138
139	19.3	21.3	23.2	25.1	27.0	29.0	30.9	32.8	34.8	36.7	38.6	40.6	42.5	44.4	46.4	48.3	50.2	52.2	54.1	56.0	58.0	59.9	61.8	63.8	65.7	67.6	69.6	71.5	73.4	139
140	19.6	21.6	23.5	25.5	27.4	29.4	31.4	33.3	35.3	37.2	39.2	41.2	43.1	45.1	47.0	49.0	51.0	52.9	54.9	56.8	58.8	60.8	62.7	64.7	66.6	68.6	70.6	72.5	74.5	140
141	19.9	21.9	23.9	25.8	27.8	29.8	31.8	33.8	35.8	37.8	39.8	41.8	43.7	45.7	47.7	49.7	51.7	53.7	55.7	57.7	59.6	61.6	63.6	65.6	67.6	69.6	71.6	73.6	75.5	141
142	20.2	22.2	24.2	26.2	28.2	30.2	32.3	34.3	36.3	38.3	40.3	42.3	44.4	46.4	48.4	50.4	52.4	54.4	56.5	58.5	60.5	62.5	64.5	66.5	68.6	70.6	72.6	74.6	76.6	142
143	20.4	22.5	24.5	26.6	28.6	30.7	32.7	34.8	36.8	38.9	40.9	42.9	45.0	47.0	49.1	51.1	53.2	55.2	57.3	59.3	61.3	63.4	65.4	67.5	69.5	71.6	73.6	75.7	77.7	143
144	20.7	22.8	24.9	27.0	29.0	31.1	33.2	35.3	37.3	39.4	41.5	43.5	45.6	47.7	49.8	51.8	53.9	56.0	58.1	60.1	62.2	64.3	66.4	68.4	70.5	72.6	74.6	76.7	78.8	144
145	21.0	23.1	25.2	27.3	29.4	31.5	33.6	35.7	37.8	39.9	42.1	44.2	46.3	48.4	50.5	52.6	54.7	56.8	58.9	61.0	63.1	65.2	67.3	69.4	71.5	73.6	75.7	77.8	79.9	145
146	21.3	23.4	25.6	27.7	29.8	32.0	34.1	36.2	38.4	40.5	42.6	44.8	46.9	49.0	51.2	53.3	55.4	57.6	59.7	61.8	63.9	66.1	68.2	70.3	72.5	74.6	76.7	78.9	81.0	146
147	21.6	23.8	25.9	28.1	30.3	32.4	34.6	36.7	38.9	41.1	43.2	45.4	47.5	49.7	51.9	54.0	56.2	58.3	60.5	62.7	64.8	67.0	69.1	71.3	73.5	75.6	77.8	80.0	82.1	147
	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	

	Body Mass Index (BMI)																												
H	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	H
148	21.9	24.1	26.3	28.5	30.7	32.9	35.0	37.2	39.4	41.6	43.8	46.0	48.2	50.4	52.6	54.8	57.0	59.1	61.3	63.5	65.7	67.9	70.1	72.3	74.5	76.7	78.9	81.0	83.2	148
149	22.2	24.4	26.6	28.9	31.1	33.3	35.5	37.7	40.0	42.2	44.4	46.6	48.8	51.1	53.3	55.5	57.7	59.9	62.2	64.4	66.6	68.8	71.0	73.3	75.5	77.7	79.9	82.1	84.4	149
150	22.5	24.8	27.0	29.3	31.5	33.8	36.0	38.3	40.5	42.8	45.0	47.3	49.5	51.8	54.0	56.3	58.5	60.8	63.0	65.3	67.5	69.8	72.0	74.3	76.5	78.8	81.0	83.3	85.5	150
151	22.8	25.1	27.4	29.6	31.9	34.2	36.5	38.8	41.0	43.3	45.6	47.9	50.2	52.4	54.7	57.0	59.3	61.6	63.8	66.1	68.4	70.7	73.0	75.2	77.5	79.8	82.1	84.4	86.6	151
152	23.1	25.4	27.7	30.0	32.3	34.7	37.0	39.3	41.6	43.9	46.2	48.5	50.8	53.1	55.4	57.8	60.1	62.4	64.7	67.0	69.3	71.6	73.9	76.2	78.6	80.9	83.2	85.5	87.8	152
153	23.4	25.7	28.1	30.4	32.8	35.1	37.5	39.8	42.1	44.5	46.8	49.2	51.5	53.8	56.2	58.5	60.9	63.2	65.5	67.9	70.2	72.6	74.9	77.2	79.6	81.9	84.3	86.6	89.0	153
154	23.7	26.1	28.5	30.8	33.2	35.6	37.9	40.3	42.7	45.1	47.4	49.8	52.2	54.5	56.9	59.3	61.7	64.0	66.4	68.8	71.1	73.5	75.9	78.3	80.6	83.0	85.4	87.7	90.1	154
155	24.0	26.4	28.8	31.2	33.6	36.0	38.4	40.8	43.2	45.6	48.1	50.5	52.9	55.3	57.7	60.1	62.5	64.9	67.3	69.7	72.1	74.5	76.9	79.3	81.7	84.1	86.5	88.9	91.3	155
156	24.3	26.8	29.2	31.6	34.1	36.5	38.9	41.4	43.8	46.2	48.7	51.1	53.5	56.0	58.4	60.8	63.3	65.7	68.1	70.6	73.0	75.4	77.9	80.3	82.7	85.2	87.6	90.0	92.5	156
157	24.6	27.1	29.6	32.0	34.5	37.0	39.4	41.9	44.4	46.8	49.3	51.8	54.2	56.7	59.2	61.6	64.1	66.6	69.0	71.5	73.9	76.4	78.9	81.3	83.8	86.3	88.7	91.2	93.7	157
158	25.0	27.5	30.0	32.5	34.9	37.4	39.9	42.4	44.9	47.4	49.9	52.4	54.9	57.4	59.9	62.4	64.9	67.4	69.9	72.4	74.9	77.4	79.9	82.4	84.9	87.4	89.9	92.4	94.9	158
159	25.3	27.8	30.3	32.9	35.4	37.9	40.4	43.0	45.5	48.0	50.6	53.1	55.6	58.1	60.7	63.2	65.7	68.3	70.8	73.3	75.8	78.4	80.9	83.4	86.0	88.5	91.0	93.5	96.1	159
160	25.6	28.2	30.7	33.3	35.8	38.4	41.0	43.5	46.1	48.6	51.2	53.8	56.3	58.9	61.4	64.0	66.6	69.1	71.7	74.2	76.8	79.4	81.9	84.5	87.0	89.6	92.2	94.7	97.3	160
161	25.9	28.5	31.1	33.7	36.3	38.9	41.5	44.1	46.7	49.2	51.8	54.4	57.0	59.6	62.2	64.8	67.4	70.0	72.6	75.2	77.8	80.4	82.9	85.5	88.1	90.7	93.3	95.9	98.5	161
162	26.2	28.9	31.5	34.1	36.7	39.4	42.0	44.6	47.2	49.9	52.5	55.1	57.7	60.4	63.0	65.6	68.2	70.9	73.5	76.1	78.7	81.4	84.0	86.6	89.2	91.9	94.5	97.1	99.7	162
163	26.6	29.2	31.9	34.5	37.2	39.9	42.5	45.2	47.8	50.5	53.1	55.8	58.5	61.1	63.8	66.4	69.1	71.7	74.4	77.1	79.7	82.4	85.0	87.7	90.3	93.0	95.6	98.3	101	163
164	26.9	29.6	32.3	35.0	37.7	40.3	43.0	45.7	48.4	51.1	53.8	56.5	59.2	61.9	64.6	67.2	69.9	72.6	75.3	78.0	80.7	83.4	86.1	88.8	91.4	94.1	96.8	99.5	102	164
165	27.2	29.9	32.7	35.4	38.1	40.8	43.6	46.3	49.0	51.7	54.5	57.2	59.9	62.6	65.3	68.1	70.8	73.5	76.2	79.0	81.7	84.4	87.1	89.8	92.6	95.3	98.0	101	104	165
166	27.6	30.3	33.1	35.8	38.6	41.3	44.1	46.8	49.6	52.4	55.1	57.9	60.6	63.4	66.1	68.9	71.6	74.4	77.2	79.9	82.7	85.4	88.2	90.9	93.7	96.4	99.2	102	105	166
167	27.9	30.7	33.5	36.3	39.0	41.8	44.6	47.4	50.2	53.0	55.8	58.6	61.4	64.1	66.9	69.7	72.5	75.3	78.1	80.9	83.7	86.5	89.2	92.0	94.8	97.6	100	103	106	167
168	28.2	31.0	33.9	36.7	39.5	42.3	45.2	48.0	50.8	53.6	56.4	59.3	62.1	64.9	67.7	70.6	73.4	76.2	79.0	81.8	84.7	87.5	90.3	93.1	96.0	98.8	102	104	107	168
169	28.6	31.4	34.3	37.1	40.0	42.8	45.7	48.6	51.4	54.3	57.1	60.0	62.8	65.7	68.5	71.4	74.3	77.1	80.0	82.8	85.7	88.5	91.4	94.3	97.1	100	103	106	109	169
170	28.9	31.8	34.7	37.6	40.5	43.3	46.2	49.1	52.0	54.9	57.8	60.7	63.6	66.5	69.4	72.2	75.1	78.0	80.9	83.8	86.7	89.6	92.5	95.4	98.3	101	104	107	110	170
171	29.2	32.2	35.1	38.0	40.9	43.9	46.8	49.7	52.6	55.6	58.5	61.4	64.3	67.3	70.2	73.1	76.0	79.0	81.9	84.8	87.7	90.6	93.6	96.5	99.4	102	105	108	111	171
172	29.6	32.5	35.5	38.5	41.4	44.4	47.3	50.3	53.3	56.2	59.2	62.1	65.1	68.0	71.0	74.0	76.9	79.9	82.8	85.8	88.8	91.7	94.7	97.6	101	104	107	110	112	172
173	29.9	32.9	35.9	38.9	41.9	44.9	47.9	50.9	53.9	56.9	59.9	62.9	65.8	68.8	71.8	74.8	77.8	80.8	83.8	86.8	89.8	92.8	95.8	98.8	102	105	108	111	114	173
174	30.3	33.3	36.3	39.4	42.4	45.4	48.4	51.5	54.5	57.5	60.6	63.6	66.6	69.6	72.7	75.7	78.7	81.7	84.8	87.8	90.8	93.9	96.9	99.9	103	106	109	112	115	174
175	30.6	33.7	36.8	39.8	42.9	45.9	49.0	52.1	55.1	58.2	61.3	64.3	67.4	70.4	73.5	76.6	79.6	82.7	85.8	88.8	91.9	94.9	98.0	101	104	107	110	113	116	175
176	31.0	34.1	37.2	40.3	43.4	46.5	49.6	52.7	55.8	58.9	62.0	65.0	68.1	71.2	74.3	77.4	80.5	83.6	86.7	89.8	92.9	96.0	99.1	102	105	108	112	115	118	176
177	31.3	34.5	37.6	40.7	43.9	47.0	50.1	53.3	56.4	59.5	62.7	65.8	68.9	72.1	75.2	78.3	81.5	84.6	87.7	90.9	94.0	97.1	100	103	107	110	113	116	119	177
178	31.7	34.9	38.0	41.2	44.4	47.5	50.7	53.9	57.0	60.2	63.4	66.5	69.7	72.9	76.0	79.2	82.4	85.5	88.7	91.9	95.1	98.2	101	105	108	111	114	117	120	178
179	32.0	35.2	38.4	41.7	44.9	48.1	51.3	54.5	57.7	60.9	64.1	67.3	70.5	73.7	76.9	80.1	83.3	86.5	89.7	92.9	96.1	99.3	103	106	109	112	115	119	122	179
180	32.4	35.6	38.9	42.1	45.4	48.6	51.8	55.1	58.3	61.6	64.8	68.0	71.3	74.5	77.8	81.0	84.2	87.5	90.7	94.0	97.2	100	104	107	110	113	117	120	123	180
181	32.8	36.0	39.3	42.6	45.9	49.1	52.4	55.7	59.0	62.2	65.5	68.8	72.1	75.4	78.6	81.9	85.2	88.5	91.7	95.0	98.3	102	105	108	111	115	118	121	125	181
182	33.1	36.4	39.7	43.1	46.4	49.7	53.0	56.3	59.6	62.9	66.2	69.6	72.9	76.2	79.5	82.8	86.1	89.4	92.7	96.1	99.4	103	106	109	113	116	119	123	126	182
183	33.5	36.8	40.2	43.5	46.9	50.2	53.6	56.9	60.3	63.6	67.0	70.3	73.7	77.0	80.4	83.7	87.1	90.4	93.8	97.1	101	104	107	111	114	117	121	124	127	183
184	33.9	37.2	40.6	44.0	47.4	50.8	54.2	57.6	60.9	64.3	67.7	71.1	74.5	77.9	81.3	84.6	88.0	91.4	94.8	98.2	102	105	108	112	115	119	122	125	129	184
185	34.2	37.6	41.1	44.5	47.9	51.3	54.8	58.2	61.6	65.0	68.5	71.9	75.3	78.7	82.1	85.6	89.0	92.4	95.8	99.3	103	106	110	113	116	120	123	127	130	185
186	34.6	38.1	41.5	45.0	48.4	51.9	55.4	58.8	62.3	65.7	69.2	72.7	76.1	79.6	83.0	86.5	89.9	93.4	96.9	100	104	107	111	114	118	121	125	128	132	186
187	35.0	38.5	42.0	45.5	49.0	52.5	56.0	59.4	62.9	66.4	69.9	73.4	76.9	80.4	83.9	87.4	90.9	94.4	97.9	101	105	108	112	115	119	122	126	129	133	187
188	35.3	38.9	42.4	45.9	49.5	53.0	56.6	60.1	63.6	67.2	70.7	74.2	77.8	81.3	84.8	88.4	91.9	95.4	99.0	103	106	110	113	117	120	124	127	131	134	188
189	35.7	39.3	42.9	46.4	50.0	53.6	57.2	60.7	64.3	67.9	71.4	75.0	78.6	82.2	85.7	89.3	92.9	96.4	100	104	107	111	114	118	122	125	129	132	136	189
190	36.1	39.7	43.3	46.9	50.5	54.2	57.8	61.4	65.0	68.6	72.2	75.8	79.4	83.0	86.6	90.3	93.9	97.5	101	105	108	112	116	119	123	126	130	134	137	190
191	36.5	40.1	43.8	47.4	51.1	54.7	58.4	62.0	65.7	69.3	73.0	76.6	80.3	83.9	87.6	91.2	94.9	98.5	102	106	109	113	117	120	124	128	131	135	139	191
192	36.9	40.6	44.2	47.9	51.6	55.3	59.0	62.7	66.4	70.0	73.7	77.4	81.1	84.8	88.5	92.2	95.8	99.5	103	107	111	114	118	122	125	129	133	136	140	192
193	37.2	41.0	44.7	48.4	52.1	55.9	59.6	63.3	67.0	70.8	74.5	78.2	81.9	85.7	89.4	93.1	96.8	101	104	108	112	116	119	123	127	130	134	138	142	193
194	37.6	41.4	45.2	48.9	52.7	56.5	60.2	64.0	67.7	71.5	75.3	79.0	82.8	86.6	90.3	94.1	97.9	102	105	109	113	117	120	124	128	132	136	139	143	194
195	38.0	41.8	45.6	49.4	53.2	57.0	60.8	64.6	68.4	72.2	76.1	79.9	83.7	87.5	91.3	95.1	98.9	103	107	110	114	118	122	126	129	133	137	141	145	195
196	38.4	42.3	46.1	49.9	53.8	57.6	61.5	65.3	69.1	73.0	76.8	80.7	84.5	88.4	92.2	96.0	99.9	104	108	111	115	119	123	127	131	135	138	142	146	196
197	38.8	42.7	46.6	50.5	54.3	58.2	62.1	66.0	69.9	73.7	77.6	81.5	85.4	89.3	93.1	97.0	101	105	109	113	116	120	124	128	132	136	140	144	148	197
198	39.2	43.1	47.0	51.0	54.9	58.8	62.7	66.6	70.6	74.5	78.4	82.3	86.2	90.2	94.1	98.0	102	106	110	114	118	122	126	129	133	137	141	145	149	198
199	39.6	43.6	47.5	51.5	55.4	59.4	63.4	67.3	71.3	75.2	79.2	83.2	87.1	91.1	95.0	99.0	103	107	111	115	119	123	127	131	135	139	143	147	151	199
200	40.0	44.0	48.0	52.0	56.0	60.0	64.0	68.0	72.0	76.0	80.0	84.0	88.0	92.0	96.0	100	104	108	112	116	120	124	128	132	136	140	144	148	152	200
	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	

BMI-for-Age Look-Up Table School-Aged Children and Adolescents 5-19 Years

WHO 2007 Growth Reference

Boys' BMI-for-age				Year:Month	Girls' BMI-for-age			
-3 SD	-2 SD	-1 SD	Median		Median	-1 SD	-2 SD	-3 SD
12.1	13.0	14.1	15.3	**5:1**	15.2	13.9	12.7	11.8
12.1	13.0	14.1	15.3	**5:6**	15.2	13.9	12.7	11.7
12.1	13.0	14.1	15.3	**6:0**	15.3	13.9	12.7	11.7
12.2	13.1	14.1	15.4	**6:6**	15.3	13.9	12.7	11.7
12.3	13.1	14.2	15.5	**7:0**	15.4	13.9	12.7	11.8
12.3	13.2	14.3	15.6	**7:6**	15.5	14.0	12.8	11.8
12.4	13.3	14.4	15.7	**8:0**	15.7	14.1	12.9	11.9
12.5	13.4	14.5	15.9	**8:6**	15.9	14.3	13.0	12.0
12.6	13.5	14.6	16.0	**9:0**	16.1	14.4	13.1	12.1
12.7	13.6	14.8	16.2	**9:6**	16.3	14.6	13.3	12.2
12.8	13.7	14.9	16.4	**10:0**	16.6	14.8	13.5	12.4
12.9	13.9	15.1	16.7	**10:6**	16.9	15.1	13.7	12.5
13.1	14.1	15.3	16.9	**11:0**	17.2	15.3	13.9	12.7
13.2	14.2	15.5	17.2	**11:6**	17.6	15.6	14.1	12.9
13.4	14.5	15.8	17.5	**12:0**	18.0	16.0	14.4	13.2
13.6	14.7	16.1	17.9	**12:6**	18.4	16.3	14.7	13.4
13.8	14.9	16.4	18.2	**13:0**	18.8	16.6	14.9	13.6
14.0	15.2	16.7	18.6	**13:6**	19.2	16.9	15.2	13.8
14.3	15.5	17.0	19.0	**14:0**	19.6	17.2	15.4	14.0
14.5	15.7	17.3	19.4	**14:6**	19.9	17.5	15.7	14.2
14.7	16.0	17.6	19.8	**15:0**	20.2	17.8	15.9	14.4
14.9	16.3	18.0	20.1	**15:6**	20.5	18.0	16.0	14.5
15.1	16.5	18.2	20.5	**16:0**	20.7	18.2	16.2	14.6
15.3	16.7	18.5	20.8	**16:6**	20.9	18.3	16.3	14.7
15.4	16.9	18.8	21.1	**17:0**	21.0	18.4	16.4	14.7
15.6	17.1	19.0	21.4	**17:6**	21.2	18.5	16.4	14.7
15.7	17.3	19.2	21.7	**18:0**	21.3	18.6	16.4	14.7
15.8	17.4	19.4	22.0	**18:6**	21.3	18.6	16.5	14.7
15.9	17.6	19.6	22.2	**19:0**	21.4	18.7	16.5	14.7

Annex 5. Guidance Table to Identify the Target Discharge Weight

Guidance Table to Identify the Target Discharge Weight Children 6-59 Months			
Weight on admission*	**Target weight: 15% weight gain**	**Weight on admission***	**Target weight: 15% weight gain**
4.1	4.7	10.7	12.3
4.3	4.9	10.9	12.5
4.5	5.2	11.1	12.8
4.7	5.4	11.3	13.0
4.9	5.6	11.5	13.2
5.1	5.9	11.7	13.5
5.3	6.1	11.9	13.7
5.5	6.3	12.1	13.9
5.7	6.6	12.3	14.1
5.9	6.8	12.5	14.4
6.1	7.0	12.7	14.6
6.3	7.2	12.9	14.8
6.5	7.5	13.1	15.1
6.7	7.7	13.3	15.3
6.9	7.9	13.5	15.5
7.1	8.2	13.7	15.8
7.3	8.4	13.9	16.0
7.5	8.6	14.1	16.2
7.7	8.9	14.3	16.4
7.9	9.1	14.5	16.7
8.1	9.3	14.7	16.9
8.3	9.5	14.9	17.1
8.5	9.8	15.1	17.4
8.7	10.0	15.3	17.6
8.9	10.2	15.5	17.8
9.1	10.5	15.7	18.1
9.3	10.7	15.9	18.3
9.5	10.9	16.1	18.5
9.7	11.2	16.3	18.7
9.9	11.4	16.5	19.0
10.1	11.6	16.7	19.2
10.3	11.8	16.9	19.4
10.5	12.1	17.1	19.7

*** Or weight free of oedema**

Annex 6. Routine Medicines Protocols

Name of the Medication	When	Age / Weight	Prescription	Dose
AMOXICILLIN ANTIBIOTIC	On Admission	All beneficiaries	Amoxicillin 50-100 mg/kg bodyweight/day	Three times a day for 7 days
ANTI MALARIAL: Artemisinin Combination Therapy	Test on admission. Repeat test later if initial test negative and suspected malaria	All beneficiaries	Artesunate 50 mg, and Sulphadoxine 500 mg Pyrimethamine 25 mg -see IMCI protocol-	Artesunate: day 1 twice a day day 2 and day 3 once a day Sulphadoxine Pyrimethamine: day 1 twice a day
ANTIHELMINTHIC DRUG*	After one week	< 12 months <10 kg ≥10 kg	DO NOT GIVE Albendazole 200 mg Mebendazole 250 mg Albendazole 400 mg Mebendazole 500 mg	NONE Single dose Single dose
MEASLES VACCINATION**	Inpatient care: On admission and discharge Outpatient care: On week four or on discharge	From 6 months	Standard	Single dose, or repeated dose
VITAMIN A***	On week four or on discharge	6-12 months ≥12 months	100.000 IU 200.000 IU	Single dose

* ANTIHELMINTHIC DRUG can be given after 3 months if signs of re-infection appear.

** MEASLES VACCINATION: In case of a measles epidemic, give measles vaccination on admission and repeat on discharge. If the child receives a vaccination before the age of 12 months, a repeat vaccination is provided after the age of 12 months.

***VITAMIN A: Do not give if child has already received vitamin A in the last month. Do not give to children with oedema until discharge unless there are eye signs of vitamin A deficiency (see Treatment protocol in Appendix)

IRON and FOLIC ACID: Do not give routinely. Where anaemia is identified according to the national IMCI Guidelines, treatment of anaemia should begin after 14 days in treatment of SAM and not before. All severe anaemia cases are referred to inpatient care.

Annex 7. Supplemental Medicines Protocols

Supplemental Medicines for Children with SAM

Name of Product	When to Give	Prescription	Special Instructions
CHLORAMPHENICOL GENTAMYCIN	For 2nd line antibiotic treatment for children with SAM not responding to Amoxicillin for continued fever that is not due to malaria. – Refer child with SAM to inpatient care	See Annex 8. Drug Dosages for the Treatment of Children 6-59 Months with SAM	Continue for 7 days
TETRACYCLINE EYE OINTMENT	For treatment of eye infection	Apply 3 times a day, morning, afternoon and at night before sleep.	Wash hands before and after use. Wash eyes before application. Continue for 2 days after infection is gone.
NYSTATIN	For treatment of candida	100,000 units (1 ml) 4 times a day after food (use dropper and show caregiver how to use it).	Continue for 7 days
PARACETAMOL	For treatment of fever over 38.5°C	See Annex 9, Drug Dosages for the Treatment of Children 6-59 Months with SAM	Single dose only - DO NOT give to take home
BENZYL BENZOATE	For treatment of scabies	Apply over whole body. Repeat without bathing on following day. Wash off 24 hours later.	Avoid eye contact. Do not use on broken or secondary infected skin.
WHITFIELDS	For treatment of ringworm or other fungal infections of the skin	Apply twice a day.	Continue treatment until condition has completely resolved.
GENTIAN VIOLET	For treatment of minor abrasions or fungal infections of the skin	Apply on lesion.	Can be repeated at next visit and continued until condition resolved.
QUININE	For 2nd line anti-malarial treatment for children who have not responded to ACT– Refer child with SAM to inpatient care	See Annex 8. Drug Dosages for the Treatment of Children 6-59 Months with SAM	
FERROUS SULPHATE/FOLATE	For treatment of anaemia identified according to national IMCI Guidelines	See Annex 8. Drug Dosages for the Treatment of Children 6-59 Months with SAM	ONLY to be given after 14 days in treatment of SAM

Annex 8. Drug Dosages for SAM Treatment of Children Under 5

ANTIBIOTICS

Antibiotics should be given to every severely malnourished child even if they do not show clinical signs of systemic infection. Small bowel bacterial overgrowth is frequently the source of systemic infection. Moreover, in some of the severely malnourished children, bacteria such as *Staphylococcus epidermidis* can cause systemic infection or septicaemia.

First line antibiotics are always provided in outpatient care and inpatient care. In case of need of second line antibiotic in outpatient care, the child with severe acute malnutrition (SAM) is referred to inpatient care.

Box 1. Antibiotic Regimen

First Line
oral Amoxicillin (use Ampicillin if Amoxicillin is not available)

Second Line
add Chloramphenicol (do not stop Amoxicillin)
OR
add Gentamycin (do not stop Amoxicillin)
OR
change to Amoxicillin/Clavulinic acid (Augmentin)

Third Line
individual medical decision

Note:

- A systemic anti-fungal (Fluconazole) is frequently added if there are signs of severe sepsis or systemic candidiasis.
- Co-trimoxazole is not active against small bowel bacterial overgrowth. It is inadequate for the severely malnourished child. If it is being given for preventive therapy in HIV-positive children, the other antibiotics should be given first and the prophylactic Co-trimoxazole after one week.

Box 2. Duration of Antibiotic Treatment

Inpatient Care (stabilisation phase)
Every day plus 4 more days or until referral to outpatient care

Outpatient Care (stabilisation and rehabilitation phases)
For a total of 7 day

Note: Paediatric antibiotic formulation is preferred. For children < 5 kg, antibiotic tablets should be used and cut in half by the health care provider before it is given to the caregiver to give to the child.

Box 3. Administration of Antibiotics

Whenever possible, antibiotics should be given orally, or in special circumstances by NGT. Infusions containing antibiotics should not be used because of the danger of inducing heart failure. Indwelling cannulae should rarely be used.

Note: Indwelling cannulae give access to the circulation of antibiotic-resistant bacteria in immuno-compromised patients as the dressing easily becomes dirty. Patients often become colonised with Candida which can give rise to fungal septicaemia. They also require fluid or anticoagulants to keep the vein open; however, severely malnourished children have impaired liver function making them sensitive to fluid overload. Extravagation into the tissue or misplacement of the cannula in the artery can cause skin necrosis.

Table 1. Dosage for 1st and 2nd Line Antibiotic Therapy for Children with SAM

Child Weight	**Amoxicillin** Tablet 250 mg (50-100 mg/kg/day) Dosage: 3 times per day		**Gentamycin*** Ampoule 20 mg of 10mg/ml (5 mg/kg/day) Dosage: once per day	**Chloramphenicol**** Tablet 250 mg (50 mg/kg/day) Dosage: 3 times per day	
Kg	**mg**	**Tab**	**mg**	**Mg**	**Cap/tab**
< 5	125 mg	½ tab	5 mg/kg	62.5 mg	¼ cap
5-10	250 mg	1 tab	5 mg/kg	125 mg	½ cap
10-20	500 mg	2 tabs	5 mg/kg	250 mg	1 cap
20-35	750 mg	3 tabs	5 mg/kg	500 mg	2 caps
>35	1,000 mg	4 tabs	mg	1000 mg	4 caps

*For Gentamycin, the 20 mg ampoule (10 mg/ml) should be used. It is difficult to measure small volumes with the stronger Gentamycin solution.
**Chloramphenicol should never be used in babies under 2 months and should be used with caution in infants 2 to 6 months .

VITAMIN A

There is sufficient vitamin A in F75, F100 and ready-to-use therapeutic food (RUTF) to manage mild vitamin A deficiency and to replace depleted liver stores during treatment. However, severely malnourished children are at a high risk of developing blindness due to vitamin A deficiency, especially in areas with high baseline prevalence and special care needs to be provided if xerophtalmia is identified.

Because of its toxicity and considerable amounts of vitamin A are available in the therapeutic milk and RUTF, vitamin A is provided on week four or on the day of discharge. A 10 kilogram (kg) child taking maintenance amounts of F75 (1,000 kilocalories [kcal]) will receive about 7,300 international units (IU) (2.2 milligrams [mg]) of vitamin A per day. The United States Recommended Daily Allowance (US RDA) for such a child is 1,700 IU (0.5 mg) per day.

Children with oedema should not receive vitamin A while oedema is present. Vitamin A should never be provided if the child has received a dose in the last four months prior to admission. Vitamin A is never provided to children under 6 months.

Box 4. Vitamin A (Retinol) Systematic Treatment

Age of the child	Vitamin A oral dose (IU)
6- 11 months	100, 000 IU - One Blue Capsule
≥ 12 months (or ≥ 8 kg)	200, 000 IU - One Red Capsule

MALARIA TREATMENT

All severely malnourished children should be systematically screened for malaria. If in clinical doubt, repeat the test in the days or weeks following the initial test. A persistently negative test excludes *p. falciparum* malaria.

In the absence of screening methods, all children under five with SAM with clinical signs of malaria are treated with ACT.

Notes:

- The malaria load in oedematous children may be low at testing.
- The usual clinical signs and symptoms of malaria may be absent in severely malnourished children as they might lack the ability to mount an acute phase inflammatory response as a result of pathophysiological changes in their bodies.
- Care should be taken not to give intravenous infusions of quinine to severely malnourished children within two weeks of treatment.

- Provision of insecticide impregnated bed nets is essential to protect children with SAM, especially in areas where malaria is endemic.

First Line Antimalarial - Artesunate and Sulfadoxine Pyrimethamine: In case of malaria with pneumonia or dysentery, artemisinin-based combination therapy (ACT) can be combined with Amoxicillin and Nalidixic Acid, but not with Cotrimoxazole.

Table 2. Malaria Treatment Based on the First Line Antimalarial - Artesunate [AS 50 mg Tablet] and Sulfadoxine Pyrimethamine [S 500 mg P 25 mg Tablet]*

Age (or weight) of the child	DAY 1 Initially	DAY 1 8 hours	DAY 2	Day 3
<1 year (or <10 kg)	½ AS and ½ SP	½ AS and ½ SP	½ AS	½ AS
1 - <7 years (or 10-<20 kg)	1 AS and 1 SP	1 AS and 1 SP	1 AS	1 AS
7 – 13 years (or 20-40 kg)	2 AS and 2 SP	2 AS and 2 SP	2 AS	2 AS
14+ years (or 40+ kg)	3 AS and 3 SP	4 AS and 4 SP	4 AS	4 AS

*Integrated Management of Childhood Illness (IMCI) Sudan protocol

Second Line Antimalarial – Quinine: Caution needs to be taken with intramuscular (IM) injections for risk of abscess. Also, Quinine given in the presence of hypovolaemia can lead to shock and renal failure. Vital signs and urine flow need to be monitored carefully before and during Quinine treatment.

Table 3. Malaria Treatment Based on Quinine 10 mg/kg/day [300 mg/ml in 2 ml Ampoules]

Age (or weight) of the child	IM Quinine 300 mg/ml [Quinine salt in 2 ml ampoules]		
	Amount of undiluted Quinine	Add this amount of normal saline	Total diluted solution (60 mg/ml)
2 - < 4 months	0.2 ml	0.8 ml	1 ml
4 - < 12 months	0.3 ml	1.2 ml	1.5 ml
12 - < 2 years (or 10 - <12 kg)	0.4 ml	1.6 ml	2.0 ml
2 - < 3 years (or 12 - < 14 kg)	0.5 ml	2.0 ml	2.5 ml
3 - 5 years (or 14 - < 19 kg)	0.6 ml	2.4 ml	3.0 ml

Second Line Antimalarial – Coartem: In case of malaria with pneumonia or dysentery, ACT can be combined with Amoxicillin and Nalidixic Acid, but not with Cotrimoxazole.

Table 4. Malaria Treatment Based on Artemether 20 mg Lumefantrine 120 mg [Coartem Tablet]*

Age (or weight) of the child	DAY 1 Initially	DAY 1 8 hours	DAY 2 morning	DAY 2 evening	Day 3 morning	Day 3 evening	Total number of Tablets
<1 year (or <10 kg)	Coartem is not recommended. Give oral Quinine [300 mg salt] instead: ¼ tablet 3 times per day for 7 days						
1 - <3 years (or 10-<14 kg)	1	1	1	1	1	1	6
3 – 8 years (or 15-24 kg)	2	2	2	2	2	2	12
8-10 years (or 24-35 kg)	3	3	3	3	3	3	18
11+ years (or 35+ kg)	4	4	4	4	4	4	24

*Note: Give with fatty meals to enhance absorption; IMCI Sudan protocol

DEWORMING TREATMENT

Inpatient Care: For children remaining in the rehabilitation phase in inpatient care, the anthihelmintic drug is given at the start of rehabilitation phase.

Outpatient Care: For children admitted directly to outpatient care as well as those who have been transferred from inpatient care, the anthihelmintic drug is given at the second visit to outpatient care (i.e., after one week).

Table 5. Dosage for Antihelminthic Drug for Children with SAM

Age or weight of the child	**Albendazole 400 mg**	**Mebendazole 500 mg**
Less than 1 year	Not Given	Not Given
< 10 kg	200 mg or ½ Tablet once	250 mg or ½ Tablet once
≥ 10 kg	400 mg or 1 Tablet once	500 mg or 1 Tablet once

MEASLES VACCINATION

Inpatient Care: All children 6 months and older should be vaccinated if they cannot give evidence (vaccination card) of previous vaccination. Vaccination should be given at admission and upon discharge.

Note: The first measles vaccination given at admission often does not give a protective antibody response in a severely malnourished child undergoing inpatient treatment. It is given because it ameliorates the severity of incubating measles and partially protects from nosocomial measles. The second dose provokes protective antibodies.

Outpatient Care: All children 6 months and older should be vaccinated once if they cannot give evidence (vaccination card) of previous vaccination. Vaccination should be given on the fourth week of treatment. Children referred from inpatient care should also be vaccinated on week four of treatment if the repeat vaccination was not provided.

Note: Provision of two vaccinations (at admission and discharge) is usually unnecessary with outpatient treatment as there is limited risk of crowding and thus of transmission, except in case of a measles epidemic or if age of infant was under 12 months upon the first vaccination.

PARACETAMOL

Paracetamol is given for the treatment of children with fever, given as a single dose, and start antibiotic and/or malaria treatment immediately. Children with SAM with a fever over 38.5°C are referred to inpatient care.

Table 6. Paracetamol as a Single Dose

Weight of the child (kg)	**Paracetamol Syrup – 125 mg/5ml**	**Paracetamol Tablets – 100 mg**
<4.0	25 mg (1 ml)	25 mg – ¼ tablet
4.0-7.9	60 mg (2.5 ml)	50 mg – ½ tablet
8.0-14.9	120 mg (5 ml)	100 mg – 1 tablet
>15.0	240 mg (10 ml)	200 mg – 2 tablets

METRONIDAZOLE

Metronidazole is provided for the treatment of Giardiasis and Amaebiasis.

Table 7. Metronidazole 10 mg/kg bodyweight/day in 3 Doses for 5 Days

Weight of the child(kg)	**Metronidazole 5 days, 3x a day** **Suspension 200 mg/5ml**	**Metronidazole 5 days, 3x a day** **Tablet 200 mg**
3-5.9	1 ml	50 mg or ¼ tablet
6-7.9	1.25 ml	100 mg or ½ tablet
8-10	1.5 ml	100 mg or ½ tablet

IRON OR FOLIC ACID

There is an adequate amount of iron and folic acid in F75, F100 and RUTF to treat mild anaemia and folate deficiency in severely malnourished children. Children diagnosed with anaemia according to Integrated Managment of Childhood Illness (IMCI) will be treated, and children with severe anaemia are forwarded to inpatient care for treatment.

A 10 kg child taking maintenance amounts of therapeutic diet will receive 400 micrograms (µg) of folic acid per day. The US RDA for such a child is 80 µg per day.

OTHER NUTRIENTS

F75, F100 and RUTF contain all the essential Type 1 and Type 2 nutrients that are required to treat and correct the pathophysiological changes in a child with SAM.

Additional potassium, magnesium or zinc should not be given to these children as a double dose can potentially be toxic.

RESOMAL

ReSoMal is a rehydration solution for children with SAM provided in inpatient care only after careful diagnosis of dehydration based on history and clinical signs.

While ReSoMal is administered, the child is monitored regularly. If the respiratory rate increases, there is increasing bilateral pitting oedema (e.g., of eyelids) or neck veins become distended, stop ReSoMal. Reassess the child after the first hour of treatment.

Resomal is always provided under supervision in controlled amounts (see **Table 8**).

Table 8. ReSoMal for the Treatment of Children with SAM and Dehydration

Weight of the child (kg)	First 30 minutes ml	Second 30 minutes ml	Second hour Ml
2.0-2.9	10	10	20
3.0-3.9	15	15	30
4.0-4.9	20	20	40
5.0-5.9	25	25	50
6.0-6.9	30	30	60
7.0-7.9	35	35	70
8.0-8.9	40	40	80
9.0-9.9	45	45	90
10.0-10.9	50	50	100
11.0-11.9	55	55	110
12.0-12.9	60	60	120
13.0-13.9	65	65	130
14.0-14.9	70	70	140
15.0-15.9	75	75	150

SUGAR WATER 10 PERCENT DILUTION

All children who have travelled for long distances or have waited a long time for attention should be given sugar water as soon as they arrive (approximately 10 percent sugar solution: 10 g of sugar per 100 ml of water). Children with SAM can develop hypoglycaemia, though it is a very uncommon medical complication.

A child who has taken the diet during the day will not develop hypoglycaemia overnight and does not need to be woken for night-time feeding. If the diet has not been taken during the day, the mother should give at least one feed during the night.

Children that are at risk of hypothermia or septic shock should be given sugar water whether or not they have a low blood glucose level. (See **Appendix**.)

Table 9. Sugar Water 10% Solution

Water	Sugar
100 ml	10 g or 2 heaped teaspoons
200 ml (average cup)	20 g or 4 heaped teaspoons
500 ml (small bottle)	50 g or 10 heaped teaspoons
1 L	100 g or 20 heaped teaspoons

Note:

- Take clean drinking water (slightly warm if possible to help dilution). Add required amount of sugar and shake or stir vigorously.
- Give immediately to ALL children refusing RUTF or being referred to inpatient care.
- If possible, especially when very hot, give to all children in outpatient care while awaiting treatment.

Annex 9. Appetite Test

For children meeting the anthropometric criteria for admission for treatment for severe acute malnutrition (SAM), the appetite test, in addition to the presence or absence of severe medical complications, forms the most important criteria for deciding whether to treat a child with SAM in outpatient care or in inpatient care.

The pathophysiological responses to nutrient depletion in children with SAM are such that liver and metabolic functions are disturbed and dysfunctional, leading to poor appetite. In addition, children with a significant infection also lose appetite, especially in the acute phase. As a result, children with SAM with poor appetite face a higher risk of death.

The appetite is tested upon admission and at each follow-up visit to the health facility in outpatient care.

POINTS TO CONSIDER WHEN CONDUCTING AN APPETITE TEST

- Conduct the appetite test in a quiet separate area.
- Explanation the purpose of the test to the caregiver and describe the procedure.
- Observe the child eating the amount of ready-to-use therapeutic food (RUTF) in 30 minutes and decide if the child passes or fails the test.
- Advise the caregiver to:
    - Wash hands before giving the RUTF
    - Sit with child in lap and gently offer the RUTF
    - Encourage the child to eat the RUTF without force feeding
    - Offer plenty of clean water, to drink from a cup, when child is eating the RUTF

Appetite Test

Pass Appetite Test	Fail Appetite Test
The child eats at least one third of a packet of RUTF (92 g) or 3 teaspoons from a pot.	The child does NOT eat one third of a packet of RUTF (92 g) or 3 teaspoons from a pot.

Note: If necessary, arrange a quiet corner where the child and caregiver can take their time to get accustomed to eat the RUTF. Usually the child eats the RUTF in 30 minutes. A child who fails the appetite test should be admitted to inpatient care.

Annex 10. Dietary Treatment

THERAPEUTIC MILK

F75 and F100 are therapeutic products that are available commercially as powder formulations. The formulas can also be prepared using basic ingredients of milk, sugar, cereal flour, vegetable oil and CMV. (See **Annex 13. Alternate Recipes for F75, F100 and ReSoMal using CMV**.)

F75 Therapeutic Milk

- F75 therapeutic milk has 75 kilocalories (kcal) per 100 millilitres (ml). It has the correct balance of Type 1 and Type 2 nutrients, a greater nutrient density and bioavailability, lower osmolarity and renal solute load. It is designed to restore hydration, electrolyte and metabolic balance; provide the necessary calories and nutrients for maintenance needs; and start the process of restoration of adequate immune function.
- F75 is provided in inpatient care during the stabilisation phase ONLY.
- Quantities to give of F75: 100 kcal/130 ml/kilogram (kg) bodyweight/day.

F100 Therapeutic Milk

- F100 therapeutic milk has 100 kcal/100 ml. It has the correct balance of Type 1 and Type 2 nutrients, a greater nutrient density and bioavailability. The F100 diet is designed to provide adequate calories and nutrients to promote catch-up growth in children recovering from SAM.
- F100 should NEVER be given for use at home or in outpatient care.
- F100 is provided in inpatient care - transition and rehabilitation phases.
- Quantities to give of F100 inpatient care during the transition phase: 130 kcal/130 ml/kg bodyweight/day.
- Quantities to give of F100 inpatient care during the rehabilitation phase: 200 kcal/200 ml/kg. bodyweight/day, in case RUTF cannot be taken.

F100-Diluted Therapeutic Milk

- F100-Diluted therapeutic milk has 66 kcal/100 ml, as one-third of water is added to the F100 mixture.
- F100-Diluted is provided in inpatient care in all phases for infants under 6 months or less than 4 kg (if no bilateral pitting oedema).
- Quantities to give of F100-Diluted: 100 kcal/130 ml/kg bodyweight/day.

Box 1. Overview of Dietary Treatment

F75 Therapeutic Milk	75 kcal/100 ml Use: Inpatient care - stabilisation phase Diet: 100 kcal/kg bodyweight/day
F100 Therapeutic Milk	100 kcal/100 ml Use: Inpatient care – transition and rehabilitation phases Diet: 150 and 200 kcal/kg bodyweight/day
F100-Diluted Therapeutic Milk	100 kcal/135 ml or 66 kcal/100 ml (add 35 ml water per 100 ml F100) Use: Infants under 6 months (no bilateral pitting oedema) in inpatient care – stabilisation phase, to complement breastfeeding Diet: 130 kcal/kg bodyweight/day
RUTF Use:	500 kcal/92g Use: Outpatient care; inpatient care during transition and rehabilitation phases Diet: 200 kcal/kg bodyweight/day

READY-TO-USE THERAPEUTIC FOOD (RUTF)

RUTF are soft foods or pastes specifically developed with the right mix of Type 1 and Type 2 nutrients and caloric composition to treat a child over 6 months with SAM. It is easy for children to consume and it requires no preparation and no mixing with water or other foods. RUTF has similar nutrient and caloric composition to F100, but has very low water activity, which means bacteria cannot grow in it. This allows it to be given as a take-home ration in outpatient care.

RUTF can also be provided in inpatient care during the transition and rehabilitation phases.

Plumpy'nut® is a commercial RUTF manufactured by Nutriset. It comes in 92 g sachets of 500 kcal. RUTF can also be produced locally with dried skim milk, sugar, oil, CMV and peanut paste.

Table 1. RUTF Protocol Based on 200 kcal/kg bodyweight/day

Weight of Child (kg)	Packets per Week 500 kcal/92g packet	Packets per Day
3.5 – 3.9	11	1.5
4.0 – 4.9	14	2
5.0 – 6.9	18	2.5
7.0 – 8.4	21	3
8.5 – 9.4	25	3.5
9.5 – 10.4	28	4
10.5 – 11.9	32	4.5
≥ 12	35	5

COMBINED MINERAL AND VITAMIN MIX (CMV)

Description: CMV, or vitamin and mineral mix for use in the dietetic treatment of SAM, is packed in an airtight metallic tin. Each tin contains a measuring scoop = 6.35 grams (g) to be added to prepare 2 litres (L) of self-prepared F75, F100 or ReSoMal.

The mineral mix should have a moderate positive non-metabolisable base sufficient to eliminate the risk of metabolic acidosis. The non-metabolisable base can be approximated by the formula: estimated absorbed millimoles (mmol) (sodium + potassium + calcium + magnesium) - (phosphorus + chloride). The mineral mix reproduced below has a suitable positive non-metabolisable base
Its shelf life is 24 months from the manufacturing date.

Box 2. NutritionValue for 6.35 g Commercial CMV (or 1 Levelled Measuring Spoon)

Vitamins
- Biotin: 0.2 mg
- Folic acid: 700 µg
- Niacin: 20 mg
- Pantothenic acid: 6 mg
- Vitamin A: 3,000 µg
- Vitamin B1: 1.4 mg
- Vitamin B12: 2 µg
- Vitamin B2: 4 mg
- Vitamin B6: 1.4 mg
- Vitamin C: 200 mg
- Vitamin D: 60 µg
- Vitamin E: 44 mg
- Vitamin K: 80 µg

Minerals
- Copper: 5.7 mg
- Iodine: 154 µg
- Iron: 0 mg
- Magnesium: 146 mg
- Potassium: 2,340 mg
- Selenium: 94 µg
- Zinc: 40 mg

Table 2. Overview of Dietary Treatment in Inpatient Care for Children 6-59 Months

	Stabilisation phase	Transition phase	Rehabilitating phase
Objective	Stabilising medical condition and replenishing electrolyte and micronutrient deficiencies	Recovering metabolism and organ functions	Restoring body function
Condition	Child has poor appetite or is clinically unwell	Child has returned appetite and is alert and clinically well	Child is alert and clinically well
Duration of stay	2-7 days	2-3 days Referral to outpatient care as soon as passed appetite test	1- 4 weeks Referral to outpatient care as soon as passed appetite test. Exceptional cases remain until full recovery
Therapeutic food	F75	RUTF and/or F100	RUTF or F100
Energy intake	100 kcal/kg/day	150 kcal/kg/day	200 kcal/kg/day
Amount of therapeutic food	130 ml/kg/day F75 in 8 meals	130 ml/kg/day RUTF or F100 in 8 meals	200 ml/kg/day RUTF or F100 in 5-6 meals
Gain of weight	Not expected	Average	Remarkable

Annex 11. Alternate Recipes for F75, F100 and ReSoMal Using CMV

Recipes for F75 Formula

Type of milk/eggs	Milk (g)	Eggs (g)	Sugar (g)	Oil (g)	Cereal powder (g)	CMV red scoop = 6.35 g	Water (ml)
Dry skim milk	50	0	140	54	70	1	Add boiled water up to 2,000 ml
Dry whole milk	70	0	140	40	70	1	
Fresh cow milk	560	0	130	40	70	1	
Fresh goat milk	560	0	130	40	80	1	
Whole eggs	0	160	140	40	80	1	
Egg yolk	0	100	140	30	80	1	

*Cereal powder is cooked in water for about 10 minutes before the other ingredients are added

To prepare F75, add the milk or eggs, sugar, cereal powder and oil to 1 litre (L) water and mix. Boil for five to seven minutes. Allow to cool, then add the combined mineral and vitamin mix (CMV) and mix again. Make up the volume to 2,000 millilitres (ml) with boiled water.

Recipes for F100 Formula

Type of milk	Milk (g)	Eggs (g)	Sugar (g)	Oil (g)	CMV red scoop = 6.35 g	Water (ml)
Dry skim milk	160	0	100	120	1	Add boiled water up to 2,000 ml
Dry whole milk	220	0	100	60	1	
Fresh cow milk	1,800	0	100	50	1	
Fresh goat milk	1,800	0	100	60	1	
Whole eggs	0	440	180	70	1	
Egg yolk	0	340	180	20	1	

To prepare F100 follow same procedure for preparing F75 and adapt ingredients and amounts.

Recipe for Rehydration Solution for Malnutrition (ReSoMal)

Ingredient	Amount
Standard WHO ORS	One litre package
CMV	1 red scoop or 6.35 g
Sugar	50 g
Water	Add boiled water up to 2,000 ml

To prepare ReSoMal from oral rehydration solution (ORS), add CMV and sugar to 1 L package of ORS and add boiled water making up a volume to 2,000 ml.

Annex 12. Use of Home-Modified Cow Milk for Replacement Feeding in Case of No Access to Infant Formula[32]

Modifying animal milk for feeding infants under 6 months raises difficult technical challenges. First, the currently-recommended recipe would need to have an increased essential fatty acid content. This involves adding daily small amounts of vegetable oil in quantities that would need to be adjusted to their essential fatty acid composition and to the weight of the child. The feasibility of this approach has never been tested in the field. Second, the present recommendation of adding a mineral and vitamin mix to the recipe has not proved feasible to implement in practice, even on a pilot scale. Giving a mineral and vitamin supplement once per day to the child as a drug or mixed with a feed might be possible, although the safety of this approach would be a concern if this supplement contains iron.

In view of the technical difficulties in formulating and preparing a nutritionally adequate recipe for home-modified animal milk, and in view of the lack of data regarding the safety of this milk for replacement feeding of infants under 6 months, home-modified animal milk should not be recommended as a feasible and safe long-term replacement feeding option. Only in situations where access to commercial infant formula has been temporarily interrupted should home-modified animal milk be considered for short-term feeding of non-breastfed infants under 6 months.

Recipes for Home-Prepared Infant Formula with Fresh Cow Milk

Quantity of cow milk (ml)	Added water (ml)	Added sugar (g)	Amount of prepared formula (ml)
40	20	4	60
60	30	6	90
80	40	8	120
100	50	10	150

[32] Source: WHO. October 2006. *Home-Modified Animal Milk for Replacement Feeding: is it Feasible and Safe?* Consultation, Background document. http://whqlibdoc.who.int/HQ/2006/a91064.pdf.

Annex 13. RUTF Specification

Children with severe acute malnutrition (SAM) require specialised therapeutic food to recover, such as F100 and F75 therapeutic milk. Ready-to-use therapeutic food (RUTF) is an integral part of outpatient care, as it allows children to be treated at home rather than at inpatient care. RUTF is an energy dense mineral/vitamin enriched food with the same nutrition composition in relation to its energy as the F100 therapeutic milk diet, except that it contains iron.

There are currently two commercial types of RUTF: Plumpy'nut® and BP 100®. Several countries are producing their own RUTF using recipes that are adapted to locally available ingredients, and the product produced has similar nutrition quality as F100. These locally-made products have also been shown to be physiologically similar to both commercial forms of F100 and RUTF.

PLUMPY'NUT®

Plumpy'Nut® is a ready-to-eat therapeutic spread presented in individual sachets. It is a groundnut paste composed of vegetable fat, peanut butter, skimmed milk powder, lactoserum, maltodextrin, sugar, and mineral and vitamin complex.

Instructions for Use: Clean drinking water must be made available to children during consumption of ready-to-eat therapeutic spread. The product should only be given to children who can express their thirst.

Recommendations for Use: In therapeutic care, it is recommended to use the product during the rehabilitation phase (two) as part of the dietetic management of SAM. Use a milk-based diet (F75) in the stabilisation phase (one).

Plumpy'nut® is contraindicated for children who are allergic to cow's milk, proteins or peanut, and also for asthmatic people due to risk of allergic response.

Storage and Packaging: Plumpy'nut® has a shelf life of 24 months from the manufacturing date. Keep it stored in a cool and dry place.

Plumpy'nut® is packaged in 92 gram (g) sachets containing 500 kilocalories (kcal). Each carton (around 15.1 kilograms [kg]) contains 150 sachets.

Table 1. Mean Nutrition Value of Plumpy'Nut®

Nutrients	For 100 g	Per 92 g sachet	Nutrients	For 100 g	Per 92 g sachet
Energy	545 kcal	500 kcal	Vitamin A	910 µg	840 µg
Proteins	13.6 g	12.5 g	Vitamin D	16 µg	15 µg
Lipids	35.7 g	32.86 g	Vitamin E	20 mg	18.4 mg
Calcium	300 mg	276 mg	Vitamin C	53 mg	49 mg
Phosphorus	300 mg	276 mg	Vitamin B1	0.6 mg	0.55 mg
Potassium	1,111 mg	1,022 mg	Vitamin B2	1.8 mg	1.66 mg
Magnesium	92 mg	84.6 mg	Vitamin B6	0.6 mg	0.55 mg
Zinc	14 mg	12.9 mg	Vitamin B12	1.8 µg	1.7 µg
Copper	1.8 mg	1.6 mg	Vitamin K	21 µg	19.3 µg
Iron	11.5 mg	10.6 mg	Biotin	65 µg	60 µg
Iodine	100 µg	92 µg	Folic acid	210 µg	193 µg
Selenium	30 µg	27.6 µg	Pantothenic acid	3.1 mg	2.85 mg
Sodium	< 290 mg	< 267 mg	Niacin	5.3 mg	4.88 mg

PRODUCTION OF RUTF

The required ingredients for producing RUTF are as follows:

Basic ingredients: sugar; dried skimmed milk; oil; and a vitamin and mineral supplement. Furthermore, up to 25 percent of the weight of the product can come from vegetable sources such as oil-seeds, groundnuts or cereals such as oats.

In addition to good nutrition quality (protein, energy and micronutrients), RUTF should have the following attributes:

1. Taste and texture suitable for young children
2. Does not need additional processing such as cooking before consumption
3. Resistant to contamination by microorganisms and a long shelf life without sophisticated packaging
4. Ingredients that are low cost and readily available in developing countries

WHO/UNICEF/WFP/SCN 2007 SPECIFICATIONS FOR RUTF

RUTF is high nutrient-energy dense ready-to-eat food suitable for the treatment of severely malnourished children. This food should be soft or crushable, palatable and should be easy for young children to eat without any preparation. At least half of the proteins contained in the product should come from milk products.

Nutrition Composition

Moisture content	2.5% maximum
Energy	520-550 kcal/100 g
Proteins	10-12% total energy
Lipids	45-60% total energy
Sodium	290 mg/100 g maximum
Potassium	1,100-1,400 mg/100 g
Calcium	300-600 mg/100 g
Phosphorus (excluding phytate)	300-600 mg/100 g
Magnesium	80-140 mg/100 g
Iron	10-14 mg/100 g
Zinc	11-14 mg/100 g
Copper	1.4-1.8 mg/100 g
Selenium	20-40 µg
Iodine	70-140 µg/100 g
Vitamin A	0.8-1.1 mg/100 g
Vitamin D	15-20 µg/100 g
Vitamin E	20 mg/100 g minimum
Vitamin K	15-30 µg/100 g
Vitamin B1	0.5 mg/100 g minimum
Vitamin B2	1.6 mg/100 g minimum
Vitamin C	50 mg/100 g minimum
Vitamin B6	0.6 mg/100 g minimum
Vitamin B12	1.6 µg/100 g minimum
Folic acid	200 µg/100 g minimum
Niacin	5 mg/100 g minimum
Pantothenic acid	3 mg/100 g minimum
Biotin	60 µg/100 g minimum
n-6 fatty acids	3%-10% of total energy
n-3 fatty acids	0.3-2.5% of total energy

Note: RUTF includes iron in contrast to F100 which has no added iron.

Safety

The food shall be kept free from objectionable matter. It shall not contain any substance originating from microorganisms or any other poisonous or deleterious substances, such as anti-nutrition factors, heavy metals or pesticides in amounts that may represent a hazard to health of severely malnourished patients.

Aflatoxin level: 5 ppb maximum
Micro-organism content: 10,000/g maximum
Coliform test: negative in 1 g
Clostridium perfringens: negative in 1 g
Yeast: maximum 10 in 1 g
Moulds: maximum 50 in 1 g.
Pathogenic Staphylococci: negative in 1 g

Salmonella: negative in 125 g
Listeria: negative in 25 g

The product should comply with the International Code of Hygienic Practice for Foods for Infants and Children of the *Codex Alimentarius* Standard CAC/RCP 21-1979. All added mineral and vitamins should be on the Advisory List of Mineral Salts and Vitamin compounds for Use in Foods for Infants and Children of the *Codex Alimentarius* Standard CAC/GL 10-1979.

The added minerals should be water-soluble and should not form insoluble components when mixed together. This mineral mix should have a positive non-metabolisable base sufficient to eliminate the risk of metabolic acidosis or alkalosis.

The non-metabolisable base can be approximated by the formula:

estimated absorbed mmol (sodium + potassium + calcium + magnesium) - (phosphorus+chloride)

The mineral mix recommended for F100 by the World Health Organisation (WHO) is an example of a mineral mix with suitable positive non-metabolisable base.

Information on how to produce RUTF in countries is available at: http://www.who.int/child-adolescent health/New_Publications/NUTRITION/CBSM/tbp_4.pdf.

Annex 14. Action Protocol in Outpatient Care

Action Protocol in Outpatient Care

Sign	Referral to Inpatient Care	Home Visit
GENERAL CONDITION	Deteriorating	Child is absent or defaulting Child is not gaining weight or losing weight on follow-up visit Child is not losing oedema Child returned from inpatient care or refused referral to inpatient care
BILATERAL PITTING OEDEMA	Grade +++	
	Any grade of bilateral pitting oedema with severe wasting (marasmic kwashiorkor)	
	Increase in bilateral pitting oedema	
	Bilateral pitting oedema not reducing by week 3	
ANOREXIA *	Poor appetite or unable to eat – Failed appetite test	
VOMITING *	Intractable vomiting	
CONVULSIONS *	Ask mother if the child had convulsions during the since the previous visit	
LETHARGY, NOT ALERT *	Child is difficult to awake	
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 Low level of blood glucose < 3 mmol/L	
DEHYDRATION	Severe 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 ≥ 38.5° C, rectal temperature ≥ 39° C taking into consideration the ambient temperature	
HYPOTHERMIA	Axillary temperature < 35° C, rectal temperature < 35.5° C taking into consideration the ambient temperature	
RESPIRATION RATE	≥ 60 respirations/minute for children under 2 months	
	≥ 50 respirations/minute from 2 to 12 months	
	≥ 40 respirations/minute from 1 to 5 years	
	≥ 30 respirations/minute for children over 5 years	
	Any chest in-drawing	
ANAEMIA	Palmer 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 2 consecutive visits	
	Static weight for 3 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.	

* IMCI danger signs

Annex 15. Key Messages upon Admission to Outpatient Care

KEY MESSAGES UPON ADMISSION

1. RUTF is a food and medicine for very thin and swollen children only. Do not share it.
2. Sick children often don't like to eat. Give small regular meals of RUTF and encourage the child to eat often (if possible 8 meals a day). Your child should have _____ packets a day.
3. For young children, continue to breastfeed. Offer breast milk first before every RUTF feed.
4. RUTF is the only food sick and thin/swollen children need to recover during their time in Outpatient Care. Always give RUTF before other foods, such as porridge "(use local name)."
5. Always offer plenty of clean water to drink while eating RUTF. Children will need more water than normal.
6. Wash the child's hands and face with soap before feeding. Keep food clean and covered.
7. Sick children get cold quickly. Always keep the child covered and warm.
8. For children with diarrhoea, continue feeding. Give them extra food and water.
9. Return to the health facility whenever the child's condition deteriorates or if the child is not eating sufficiently.

Note: Ask the caregiver to repeat the messages back to be sure they have been correctly understood.

Upon the next visits to the health facility, the health and nutrition messages are expanded (see **Annex 16. Health and Nutrition Education Messages**).

Annex 16. Health and Nutrition Education Messages

KEY BEHAVIORS TO PROMOTE

Essential Nutrition Actions

- Optimal breastfeeding during the first 6 months of life
- Optimal complementary feeding starting at 6 months with continued breastfeeding to 2 years of age and beyond
- Continued feeding when the child is ill
- Optimal nutrition care of malnourished children
- Prevention of vitamin A deficiency for women and children
- Adequate iron and folic acid intake, and the prevention and control of anemia for women and children
- Adequate iodine intake by all members of the household
- Optimal nutrition for women

Household Hygiene Actions

- Treatment and safe storage of drinking water
- Handwashing with soap or ash at critical times: after defecation, after handling children's feces, before preparing food, before feeding children, before eating
- Safe disposal of feces
- Proper storage and handling of food to prevent contamination

Other Care Practices

- Antenatal care attendance, including: at least four visits, tetanus toxoid vaccine, iron/folic acid supplementation
- Full course of immunisations for all children before their first birthday
- Children and women sleeping under insecticide-treated bednets
- Recognition when a sick child needs treatment outside of the home and seeking care from appropriate providers
- Recognition of pregnancy danger signs

RECOMMENDED FOODS FOR INFANTS AND CHILDREN 6 MONTHS TO 5 YEARS

Breast milk continues to be an important source of nutrients up to age 2 years of age and beyond. However, your baby needs other foods and liquids in addition to breast milk once he or she reaches 6 months.

Staple foods give your child energy. These foods include cereals (rice, wheat, maize, millet, quinoa), roots (cassava, potato) and starchy fruits (plantain, breadfruit). Staple foods do not contain enough nutrients by themselves. You also need to give animal-source and other nutritious foods.

Your child should eat a variety of foods. Feed your child different foods from the groups along with the staple food:

Table 1. Staple and Other Nutritious Foods

Staple foods:	Cereals: Rice, wheat, maize, millet, quinoa, Roots: cassava, potato, and Starchy fruits: plantain, breadfruit
Animal-source foods:	Liver, meat, chicken, fish, eggs
Milk products:	Cheese, yoghurt, curds (and milk for non-breastfed children)
Green leafy and yellow-coloured vegetables:	Spinach, broccoli, chard, sweet potatoes, carrots, pumpkin
Fruits:	Banana, orange, guava, mango, peach, papaya
Pulses:	Chickpeas, lentils, cow peas, black-eyed peas, kidney beans, lima beans
Oils and fats:	Vegetable oils, butter
Nuts and seeds:	Groundnut paste, other nut pastes, soaked or germinated seeds such as sesame, pumpkin, sunflower, melon seeds

Recommendations for Feeding Infants 6 Months to 1 Year

- Breastfeed as often as your baby wants and exclusively on demand.
- To initiate complementary feeding, begin offering him/her small amounts of other foods at 6 months.
- Introduce new foods one at a time.
- Wait a few days to be sure that he or she can tolerate a new food before introducing another food.
- Give him/her staple foods and a variety of animal-source and other nutritious foods.
- Increase the quantity of food as he or she grows older, while continuing to breastfeed frequently.

For 6-8 Months

- Start by offering 2 to 3 tablespoons of thick porridge or well-mashed foods two to three times per day.
- Increase the amount gradually to a 1/2 cup.
- By 8 months, give him/her small chewable items to eat with his/her fingers.
- Let him/her try to feed him/herself, but provide help.
- Avoid foods that can cause choking, such as nuts, grapes and raw carrots.
- Give one to two snacks between meals depending on his/her appetite.

For 9-11 Months

- Offer three to four meals per day of finely-chopped or mashed foods and foods that baby can pick up, about a 1/2 cup's worth.
- Also give one to two snacks per day, depending on his/her appetite.
- Feed him/her from his/her own plate or bowl.
- Patiently help your baby eat. Talk to him/her lovingly and look into his/her eyes. Actively encourage him/her to eat, but do not force him/her.
- If he or she loses interest while eating, remove any distractions and try to keep him/her interested in the meal.
- After 6 months of age, babies may need more water even when they drink the recommended amounts of milk. To find out if your baby is still thirsty after eating, offer him/her some water (that has been boiled and cooled).

Recommendations for Feeding Children 1 to 2 Years

- Breastfeed your child as often as he or she wants, up to 2 years of age and beyond.
- Continue to give three to four meals of nutritious foods, chopped or mashed if necessary, 3/4 to 1 cup at each meal.
- Also give one to two snacks per day between the meals depending on his/her appetite.
- At each meal, feed your child a staple food along with different nutritious foods from the groups listed in **Table 1**.

- Feed him/her from his/her own plate or bowl. Continue to actively help him/her to eat.

Recommendations for Feeding Children 2 to 5 Years

- Give three meals per day of family foods.
- Give nutritious snacks twice daily between meals.
- Offer a variety of foods such as listed in **Table 1.**
- If your baby refuses a new food, offer him/her “tastes” of it several times. Show that you like the food.
- Do not force him/her to eat.
- Give realistic portions depending on his/her age, size and activity level.
- Increase the quantity of food as he or she grows older.

Annex 17. Emotional and Physical Stimulation

Children with severe acute malnutrition (SAM) have delayed mental and behavioural development which, if not treated, can become the most serious long-term consequences of malnutrition. Emotional and physical stimulation through play activities that start during rehabilitation and continue after discharge can substantially reduce the risk of permanent mental retardation and emotional impairment. Care must be taken to avoid sensory deprivation. It is essential that the caregiver be encouraged to feed, hold and play the child as much as possible.

STIMULATING ENVIRONMENT

Inpatient and outpatient care activities should be carried out in a stimulating environment. For inpatient care, treatment should be carried out in brightly coloured rooms with decorations that interest children. The atmosphere should be relaxed, cheerful and welcoming. Toys should always be available for the recovering child to play with. The toys should be safe, washable and appropriate for the child's age and level of development. Inexpensive toys made out of simple materials such as cardboard boxes, plastic bottles and similar materials are best because caregivers can copy them.

PLAY ACTIVITIES

Malnourished children need interaction with other children during rehabilitation. For inpatient care after the initial phase of treatment, the child should spend prolonged periods playing with other children. These activities do not increase the risk of cross infection appreciably and the benefit for the child is substantial.

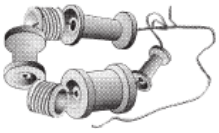
Community health promoters and volunteers can also develop play activities in the community that can keep children in the outpatient care active. Activities should be selected to develop both motor and language skills, and new activities and materials should be introduced regularly.

PHYSICAL ACTIVITIES

Physical activities promote the development of essential motor skills and can also enhance growth during rehabilitation. For children who cannot move, passive limb movements and splashing in a warm bath are helpful. For other children, play should include such activities as rolling on a mattress, walking, running after and tossing a ball. The duration and intensity of physical activities should increase as the child's nutrition and general health improves.

TOYS FOR CHILDREN WITH SAM[33]

Ring on a string (from 6 months)
Thread cotton reels and other small objects (e.g. cut from the neck of plastic bottles) on to a string. Tie the string in a ring, leaving a long piece of string hanging.



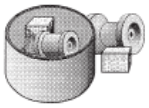
Rattle (from 12 months)
Cut long strips of plastic from coloured plastic bottles. Place them in a small transparent plastic bottle and glue the top on firmly.

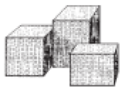
Drum (from 12 months)
Any tin with a tightly fitting lid.

Mirror (from 18 months)
A tin lid with no sharp edges.

Posting bottle (from 12 months)
A large transparent plastic bottle with a small neck and small long objects that fit through the neck (not small enough to be swallowed).

In-and-out toy (from 9 months)
Any plastic or cardboard container and small objects (not small enough to be swallowed).





Blocks (from 9 months)
Small blocks of wood. Smooth the surfaces with sandpaper and paint in bright colours, if possible.

Push-along toy (from 12 months)
Make a hole in the centre of the base and lid of a cylindrical-shaped tin. Thread a piece of wire (about 60 cm long) through each hole and tie the ends inside the tin. Put some metal bottle tops inside the tin and close the lid.

Stacking bottle tops (from 12 months)
Cut at least three identical round plastic bottles in half and stack them.

Pull-along toy (from 12 months)
As above, except that string is used instead of wire.

Nesting toys (from 9 months)
Cut off the bottom of two bottles of identical shape, but different size. The smaller bottle should be placed inside the larger bottle.

Puzzle (from 18 months)
Draw a figure (e.g. a doll) in a crayon on a square- or rectangular-shaped piece of cardboard. Cut the figure in half or quarters.

Doll (from 12 months)
Cut out two doll shapes from a piece of cloth and sew the edges together, leaving a small opening. Turn the doll inside-out and stuff with scraps of materials. Stitch up the opening and sew or draw a face on the doll.

Book (from 18 months)
Cut out three rectangular-shaped pieces of the same size from a cardboard box. Glue or draw a picture on both sides of each piece. Make two holes down one side of each piece and thread string through to make a book.

WHO 97402

[33] Source: WHO. 1999. *Management of Severe Malnutrition: A manual for physicians and other senior health workers*. Geneva: WHO. page 58.

Annex 18. Failure to Respond to Treatment in Inpatient Care

Some children undergoing inpatient care for the management of severe acute malnutrition (SAM) may show failure to respond to treatment or exhibit deterioration of the health and nutrition condition at different stages of the treatment. Criteria for defining failure to respond to treatment are listed in **Table 1**.

Failure to achieve initial improvement at the expected rate is termed **primary failure to respond to treatment**. This can be attributed to unrecognised infection or drug-resistant infections such as bacterial (tuberculosis [TB]), viral (measles, hepatitis B, HIV) or parasitic (malaria) infections. Deterioration in a child's condition after a satisfactory response has been established is termed **secondary failure to respond to treatment**. This may be due to acute infection contracted during inpatient care, reactivation of infection as immune and inflammatory responses recover, or insufficiency in essential nutrients in the diet provided to the child.

Table 1. Criteria for Defining Failure to Respond to Treatment in Inpatient Care

Primary failure* to respond to treatment	**Time after admission**
Failure to regain appetite	4 – 7 days
Failure to start losing oedema	4 - 7 days
Bilateral pitting oedema still present	10 days
Failure to enter rehabilitation phase or outpatient care	10 days
Secondary failure* to respond to treatment	**During rehabilitation phase**
Failure to gain more than 5g/kg/d	for 2 successive days
Static weight	for 3 successive days

* Primary failure to respond means when the criteria has been noticed since admission and secondary failure to respond means when the child has shown improvement and then later deteriorates as described by the criteria.

A child who is undergoing treatment for SAM meeting any of the above criteria should be diagnosed as failing to respond to treatment. When such a diagnosis is made an extensive medical evaluation of the child must be carried out (i.e., medical history, physical examination, laboratory investigations of urine and stool samples). The overall management of these cases should be reviewed, e.g., evaluation of adherence to treatment protocol, availability of trained staff.

Failure to respond to treatment should be recorded on the individual treatment chart and the child should be scheduled to be seen by more senior and experienced staff. Furthermore, corrective measures should be taken to strengthen specific areas that need improvement in the practice of managing SAM while ensuring that treatment protocols are adhered to and that staff receives adequate supervision.

CARE FOR CHILDREN FAILING TO RESPOND TO TREATMENT IN INPATIENT CARE

When a child shows signs of failure to respond to treatment, the causal factors contributing to this situation should be thoroughly investigated and the child should be treated appropriately according to the recommendations in these guidelines.

The child that fails to respond should receive a thorough medical examination. The following laboratory investigations are recommended:

- Urine analysis for pus cells and culture
- Blood screening and culture
- Screening for TB
- Stool test for trophozoites and cysts of Giardia
- HIV test according to the national guidance
- Malaria screening
- Hepatitis screening

Primary Failure to Respond to Treatment

Every child with unexplained primary failure to respond should have a detailed medical history and examination performed. In particular, the child should be assessed carefully for infection as follows:

- Examine the child carefully. Measure the temperature, pulse rate and respiration rate.
- Where appropriate, examine urine for pus cells and culture blood. Examine and culture sputum or tracheal aspirate for TB, examine the fundi for retinal TB and do a chest x-ray.[34] Examine stool for blood and look for trophozoites or cysts of Giardia. Culture stool for bacterial pathogens. Test for HIV, hepatitis and malaria. Culture and examine the cerebrospinal fluid.

Secondary Failure to Respond to Treatment

Secondary failure to respond to treatment is a deterioration/regression in condition after having progressed satisfactorily to the rehabilitation phase with a good appetite and weight gain. It is usually due to:

- Inhalation of diet into the lungs: Severely malnourished children often have poor neuromuscular coordination between the muscles of the throat and the oesophagus. It is quite common for children to inhale food into their lungs during recovery if they are: 1) force-fed, particularly with a spoon or pinching of the nose; 2) laid down on their back to eat; and 3) given liquid diets. Inhalation of part of the diet is a common cause of pneumonia in all malnourished patients. Patients should be closely observed while being fed by the caregiver to ensure that the correct feeding technique is being used. One of the advantages of ready-to-use therapeutic food (RUTF) is that it is much less likely to be force-fed and inhaled.
- An acute infection that has been contracted in the health facility from another patient (called a nosocomial infection) or at home from a visitor/sibling/household member: At times, as the immune and inflammatory system recovers, there appears to be a “reactivation” of infection during recovery. Acute onset of malaria and TB (for example sudden enlargement of a cervical abscess or development of a sinus) may arise several days or weeks after starting a therapeutic diet.
- A limiting nutrient in the body that has been “consumed” by the rapid growth and is not being supplied in adequate amounts by the diet: This is very uncommon with modern diets (F100 and RUTF), but could occur with home-made diets or with the introduction of other foods. Frequently, introduction of the family diet slows the recovery rate of a severely malnourished child. The same can occur at home when the child is given family food or traditional weaning foods that are inadequate in Type 1 and Type 2 nutrients.

The most frequent causes of failure to respond to inpatient treatment are listed in **Box 1**.

ACTION REQUIRED WHEN A CHILD FAILS TO RESPOND TO TREATMENT IN INPATIENT CARE

- Keep accurate records of all children who fail to respond to the treatment and of those who died. These records should include, at a minimum, detail of the child’s age, sex, date of admission, mid-upper arm circumference (MUAC), weight-for-height (WFH), weight on admission, principal diagnosis, treatment and where appropriate, date and time of death, and apparent cause of death.
- Always systematically examine the common causes of failure to respond and death, and identify areas where case management practices should be improved in order to rectify the problems.
- If these actions are not immediately successful, then an external evaluation by someone experienced with the inpatient care of SAM should be conducted. An investigation into the organisation and application of the protocol for treatment should be carried out as part of the evaluation.
- Review the supervision of staff with refresher training, if necessary.
- Recalibrate scales (and length-boards).

[34] Gastric aspirates are very rarely positive in the malnourished child with active TB – particularly if there is overnight feeding; this test should not be relied on, is difficult to perform well and is traumatic for the child. If it is used, overnight feeds should not be given.

Box 1. Examples of Frequent Causes of Failure to Respond to Treatment in Inpatient Care

Problems related to the health facility:

- Poor environment for malnourished children
- Lack of adherence to treatment protocols for SAM
- Failure to treat malnourished children in a separate area
- Failure to complete the individual treatment card correctly resulting in gaps in data for monitoring the child's progress
- Insufficient staff
- Inadequately trained staff
- Inadequate supervision and constant rotation of staff in treatment facility
- Inaccurate weighing machines
- Food prepared or given incorrectly

Problems related to the caregiver:

- Inappropriate care and feeding practices
- Uncooperative caregiver
- Caregiver overwhelmed with other work and responsibilities

Problems related to the individual child:

- Insufficient feeds taken
- Sharing within family
- Vitamin and mineral deficiencies
- Malabsorption
- Psychological trauma (particularly in refugee situations and families living with HIV/AIDS)
- Rumination
- Infection, especially diarrhoea (amaebiasis, giardiasis, dysentery), pneumonia, TB, urinary infection/otitis media, malaria, HIV/AIDS, schistosomiasis, Kalazar/Leishmaniasis, hepatitis/cirrhosis
- Other serious underlying disease: congenital abnormalities (e.g., Down's syndrome), neurological damage (e.g., cerebral palsy), inborn errors of metabolism

Monitoring and Reporting Tools

Annex 19. Community Assessment Questionnaire and Tools

COMMUNITY ASSESSMENT QUESTIONNAIRE

The following topics and questions should be explored in a community assessment for CMAM.

Topic One: Understanding Community Knowledge, Beliefs and Practices in Relation to Childhood Acute Malnutrition and Ill Health

1. Defining acute malnutrition
   - What are the different terms used to describe acute malnutrition locally?
   - Is there a perceived difference between acute malnutrition and general illness?

2. Signs of acute malnutrition
   - What signs are locally associated with acute malnutrition?

3. Causes of acute malnutrition
   - What are the locally-perceived causes of acute malnutrition?

Note: There may be many perceived causes of malnutrition. Probe for awareness about the different causes of malnutrition including food, health and care, and cultural beliefs and practices in the community.

4. Treatment of acute malnutrition

Note: In some areas treatment, for acute malnutrition will be available through the national health system. Where this is the case, indicate which services are available and how far away these services are (distance and/or time required to travel there).

   - How has the community traditionally dealt with acute malnutrition?
     - Are home remedies with herbs used? If so, which herbs are used?
     - Are traditional healers used? If so, which traditional healing practices are carried out?
   - Has the use of home remedies or traditional healers changed in recent years? Was there an increase or decrease in their use? Why?
   - Where conventional treatment is available through the health facilities, how does the community perceive these services? Is it happy to use the services? Do caregivers continue to use traditional healers while attending conventional treatment?

5. Treatment of sick children
   - How does the community generally deal with a child who is sick?
     - Are home remedies used? If so, which home remedies?
     - Which services do caregivers take the children to for treatment: Ministry of Health, NGO or private clinic, or traditional healers? Are traditional treatments sought and administered before children are taken to a health facility?
   - What are the key factors that influence the decision on where to take a child for treatment?

6. Infant and young child feeding (IYCF)
   - Do most of mothers breastfeed their babies under 6 months of age?
   - At what age do mothers start to give additional liquids to infants (in addition to breastmilk)?
   - At what age do mothers start to give complementary soft foods? What do they give?
   - How many times per day would a mother feed a 12 month old infant? What is it fed?

Topic Two: Understanding Community Systems, Structures and Organisation

1. Community organisation
   - Explore the existence and level of activity of the various community groups in the locality, and particularly those which focus on health and women. This includes groups created by communities themselves and groups with external support from a nongovernmental organization (NGO) and/or the government.
   - Investigate if and how these various groups link together/coordinate activities.

2. Community outreach workers
   - Explore the various health and nutrition community outreach workers and volunteer networks **currently active** in the area - the respective roles and responsibilities - which facilities these outreach workers and volunteers are attached to and the geographical coverage of the various cadres/networks within the area. (Includes Nut Educators, Integrated PHC cadres, Vaccinators, Village Midwives, CHWs, C-IMCI CBI and CFCI Volunteers and ORWs and volunteers supported by any other agencies).
   - Investigate commitment from unpaid volunteers in terms of hours worked per week / month

3. Formal and informal communication in the locality
   - Explore the usual methods of disseminating information to the community in the locality, including the **official methods** (e.g., community meetings, through local leaders, local radio) and **more informal methods** (e.g., groups getting together on market day).
   - Explore the perceived relative effectiveness of the various channels.

4. Options for supporting community participation and outreach activity for CMAM
   - Explore perceptions of the key individuals and groups to involve in community participation and outreach activities.
   - Gather suggestions on the most appropriate groups and networks to carry out outreach activity for CMAM.

COMMUNITY ASSESSMENT TOOLS

1. Geographic community map

Plot the presence of NGOs, community-based organizations (CBOs), community health committees and community volunteer networks on a geographic representation of the catchment area. Add geographic and demographic information and community structures (e.g., road, river, canyon, marketplace, mosque, health facility, water source). Represent the information on a hand drawn map on, for example, a flip chart.

2. Matrix of community actors and their initiatives, target population and coverage

List NGOs, CBOs, community committees and community volunteer networks by community and/or assessment area. List the various community actors with their initiatives and/or activities, target population and coverage.

3. Strengths, weaknesses, opportunities and threats (SWOT) analysis for community participation and outreach for CMAM

Conduct a SWOT analysis.. Plot into a matrix the identified strengths and weaknesses of the current situation and the identified opportunities and threats for future community participation and outreach strategies and activities for CMAM.

4. Matrix of key perceptions and practices on health and nutrition

List key perceptions and practices impacting health and nutritional status and implications for community participation and outreach strategies and activities for CMAM. Identify potential ways to appropriately address the identified key issues.

5. Matrix of potential community outreach workers for CMAM

List community outreach workers, including various extension workers and volunteers, with potential for involvement in community outreach for CMAM. Identify strengths and weaknesses of involving these actors in community outreach for CMAM.

6. Matrix of community actors selected for community participation and outreach for CMAM

List the various community actors that are identified to be used for community participation and outreach activities and coordination/supervision. Outline their respective responsibilities and specific functions at start up and during the implementation phase.

Annex 20. Referral Slip Community Screening

Referral Slip Community Screening

Child Name:

Family Name:

Name of Mother/Caregiver:

Place of Origin: **Referral Health Facility:**

Date of Outreach:

Bilateral Pitting Oedema: Yes /No **MUAC:** **mm**

Other Findings:

Name of Community Outreach Worker: **Signature:**

Annex 21. Community Outreach Reports

HOME VISIT RECORD

HOME VISIT RECORD

Reason for Home Visit (circle): Absence Defaulter Dead Non-response to treatment Other:

Registration Number _____ **Date**_____

SITE _____ **Community** _____ **Locality** _____

CHILD'S NAME _____ **Age** _____ **Sex** _____

FAMILY NAME _____ **NAME OF THE CAREGIVER** _____ _____

ADDRESS

DATE OF VISIT _____

Findings

Community Outreach Worker's Name _____ **Signature** _____

COMMUNITY OUTREACH REPORT

Locality Name:	**State Name:**
Reporting Period:	**Date:**
Author Name and Position:	

Catchment area:
Number of children under 5:
Expected number under 5 with SAM:
Number of CMAM outpatient sites:
Number of CMAM inpatient sites:

Key Indicators:

- Training:
  - Number of community outreach workers including volunteers trained and active
  - Number of community representatives oriented
- Community participation:
  - Number of communities involved in community participation and outreach
  - Number of communities orientation meetings
- Community outreach:
  - Number of community level screening sessions conducted
  - Number of children with SAM referred for treatment
  - Number of community home visits for problem cases
  - Number of community health and nutrition education sessions held
  - Number of caregivers received health and nutrition education
  - Coverage of CMAM

Service Progress:

Barriers to access

Causes of death

Reasons for defaulting

Reasons for non-response to treatment

Reasons why areas are not covered:

Success stories:

Identified Problems:

Planned Activities:

Annex 22. Checklist Home Visits

CHECKLIST HOME VISITS

Outreach Worker's Name: _____

Date of Visit: _____

Child's Name: _____

Note: If problems are identified, please list any health education or advice given in the space below or on the other side of the page. Return this information to the health facility.

Feeding		
Is the ration of RUTF present in the home?	Yes	No
If not, where is the ration?		
Is the available RUTF enough to last until the next outpatient care session?	Yes	No
Is the RUTF being shared or eaten only by the sick child?	Shared	Sick child only
Yesterday, did the sick child eat food other than RUTF?	Yes	No
If yes, what type of food?		
Yesterday, how often did the child receive breast milk? (for children < 2 years)		
Yesterday, how many times did the sick child receive RUTF to eat?		
Did someone help or encourage the sick child to eat?	Yes	No
What does the caregiver do if the sick child does not want to eat?		
Is clean water available?	Yes	No
Is water given to the child when eating RUTF?	Yes	No
Caring		
Are both parents alive and healthy?		
Who cares for the sick child during the day?		
Is the sick child clean?	Yes	No
Health		
What is the household's main source of water?		
Is there soap for washing in the house?	Yes	No
Do the caregiver and child wash hands and face before the child is fed?	Yes	No
Is food/RUTF covered and free from flies?	Yes	No
What action does the caregiver take when the child has diarrhoea?		
Food Security		
Does the household currently have food available?	Yes	No
What is the most important source of income for the household?		
COMMENTS:		

Annex 23. Inpatient Care Treatment Card[35]

[35] Adapted from: Critical Care Pathway-CCP, 2002. In: WHO. 2002. *Training course on the management of severe malnutrition*. Geneva: WHO.

Name: _____ Page ____ of _____

INITIAL MANAGEMENT Comments on pre-referral and/or emergency treatment already given:

SIGNS OF MALNUTRITION Severe wasting? Yes No

Bilaterial Pitting Oedema? 0 + ++ +++

Dermatosis? 0 + ++ +++ (raw skin, fissures)

Weight (kg): Height/length (cm):

WFH z-score: MUAC (mm):

TEMPERATURE: °C rectal axillary
If rectal < 35.5° C, or axillary <35° C, actively warm child. Check temperatures every 30 minutes.

BLOOD GLUCOSE (mmol/l)
If <3mmol/l and alert, give 50 ml bolus of 10% glucose or sucrose (oral or NG).
If <3 mmol/l and lethargic, unconscious, or convulsing, give sterile 10% glucose IV: 5 ml x ___kg (child's wt) = ___ml *Then give 50 ml bolus NG.*
Time glucose given: Oral NG IV

HAEMOGLOBIN (Hb) (g/l): or Packed cell vol (PCV):
Blood type:
If Hb <40 g/l or PCV<12%, transfuse 10 ml/kg whole fresh blood (or 5-7 ml/kg packed cells) slowly over 3 hours. Amount: Time started: Ended:

EYE SIGNS None Left Right
Bitot's spots Pus/Inflammation Corneal clouding Corneal ulceration
If ulceration, give vitamin A & Atropine immediately. Record on Daily Care page. If no ulceration, give Vitamin A upon discharge.
Record on Comments/Outcome page.

Oral doses Vitamin A:	< 6 months	50 000 IU
	6 – 12 months	100 000 IU
	>12 months	200 000 IU

MEASLES Yes No

FEEDING
Begin feeding with F-75 as soon as possible. (If child is rehydrated, reweigh before determining amount to feed.
New weight: _____ kg)
Amount for 2-hourly feedings: ____ ml F-75* Time first fed: _____
** If hypoglycaemic, feed ¼ of this amount every half hour for first 2 hours; continue until blood glucose reaches 3 mmol/l.*
Record all feeds on 24-hour Food Intake Chart.

SIGNS OF SHOCK None Lethargic/unconscious Cold hand Slow capillary refill (> 3 seconds) Weak/fast pulse

If lethargic or unconscious, plus cold hand, plus either slow capillary refill or weak/fast pulse, give *oxygen. Give IV glucose as described under Blood Glucose (left).*

Then give IV fluids: Amount IV fluids per hour: 15 ml x ____ kg (child's wt) = _____ml

	Start:	Monitor every 10 minutes					*2nd hr	Monitor every 10 minutes				
Time							*					
Resp. rate							*					
Pulse rate							*					

**If respiratory & pulse rates are slower after 1 hour, repeat same amount IV fluids for 2nd hour; then alternate ReSoMal and F-75 for up to 10 hours as in right part of chart below. If no improvement on IV fluids, transfuse whole fresh blood. (See left, Haemoglobin.)*

DIARRHOEA

Watery diarrhea? Yes No
Blood in stool? Yes No
Vomiting? Yes No

If diarrhoea, circle signs present: Skin pinch goes back slowly
Lethargic Thirsty
Restless/irritable Dry mouth/tongue No tears
Sunken eyes

If diarrhoea and/or vomiting, give ReSoMal. Every 30 minutes for first 2 hours, monitor and give:*
5 ml x ____ kg (child's wt) = ____ ml ReSoMal

For up to 10 hours, give ReSoMal and F-75 in alternate hours. Monitor every hour. Amount of ReSoMal to offer:*
5 to 10 ml x ____ kg (child's wt) = _____ to _____ ml ReSoMal

Time	Start													
Resp. rate														
Pulse rate														
Passed urine? Y N														
Number stools														
Number vomits														
Hydration signs														
Amount taken (ml)						F-75		F-75		F-75		F-75		F-75

* ***Stop ReSoMal if:*** Increase in pulse & resp. rates Jugular veins engorged Increase in oedema, e.g., puffy eyelids
** If bilateral pitting oedema, give ReSoMal 30 ml after each watery stool only.

ANTIBIOTICS (All receive) Drug/Route	**Dose/Frequency/Duration**	**Time of 1st Dose**

MALARIA TEST Type/Date/Outcome	**Antimalarial: Dose/Frequency/Duration**	**Time of 1st Dose**

Name: _____ Page ____ of _____

DAILY CARE

	Week 1							Week 2							Week 3						
DAYS IN HOSPITAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Date																					
Daily weight (kg)																					
Weight gain (g/kg)	*Calculate daily after on RUTF or F100*																				
Bilateral pitting oedema 0 + ++ +++																					
Diarrhoea/Vomit O D V																					
FEED PLAN: Type feed																					
# daily feeds																					
Volume to give per feed																					
Total volume taken (ml)																					
NGT Y N																					
Breastfeeding Y N																					
Appetite test with RUTF F failed P passed																					
ANTIBIOTICS	*List prescribed antibiotics in left column. Allow one row for each daily dose. Draw a box around days/times that each drug should be given. Initial when given.*																				
ANTIMALARIAL (note type of drug)																					
FOLIC ACID (if not on RUTF)	5mg	1mg →																			
VITAMIN A	*		*Give day 1, 2 and 15 if child admitted with eye sign or recent measles. Else, give routinely single dose on week four or upon discharge unless evidence of dose in past month*																		
ANTIHELMINTHIC (note type of worms)																					
IRON (if not on RUTF) 2 x daily	*Begin iron after 2 days on F100. Do not give when on RUTF.*																				
EYE INFECTIONS											*After 7-10 days, when eye drops are no longer needed, shade boxes for eye drops.*										
Tetracycline/Chloramphenicol 1 drop 4 x daily																					
Atropine 1 drop 3 x daily																					
Dermatosis 0 + ++ +++																					
Stool appearance																					
Ear problems																					
Mouth or Throat problems																					
Bathing, 1% permanganate																					
OTHER																					

Name: _____ Page ____ of _____

MONITORING RECORD

Monitor respiratory rate, pulse rate, and temperature 4-hourly until after transition to RUTF or F-100 and patient is stable. Then monitoring may be less frequent (e.g., twice daily).

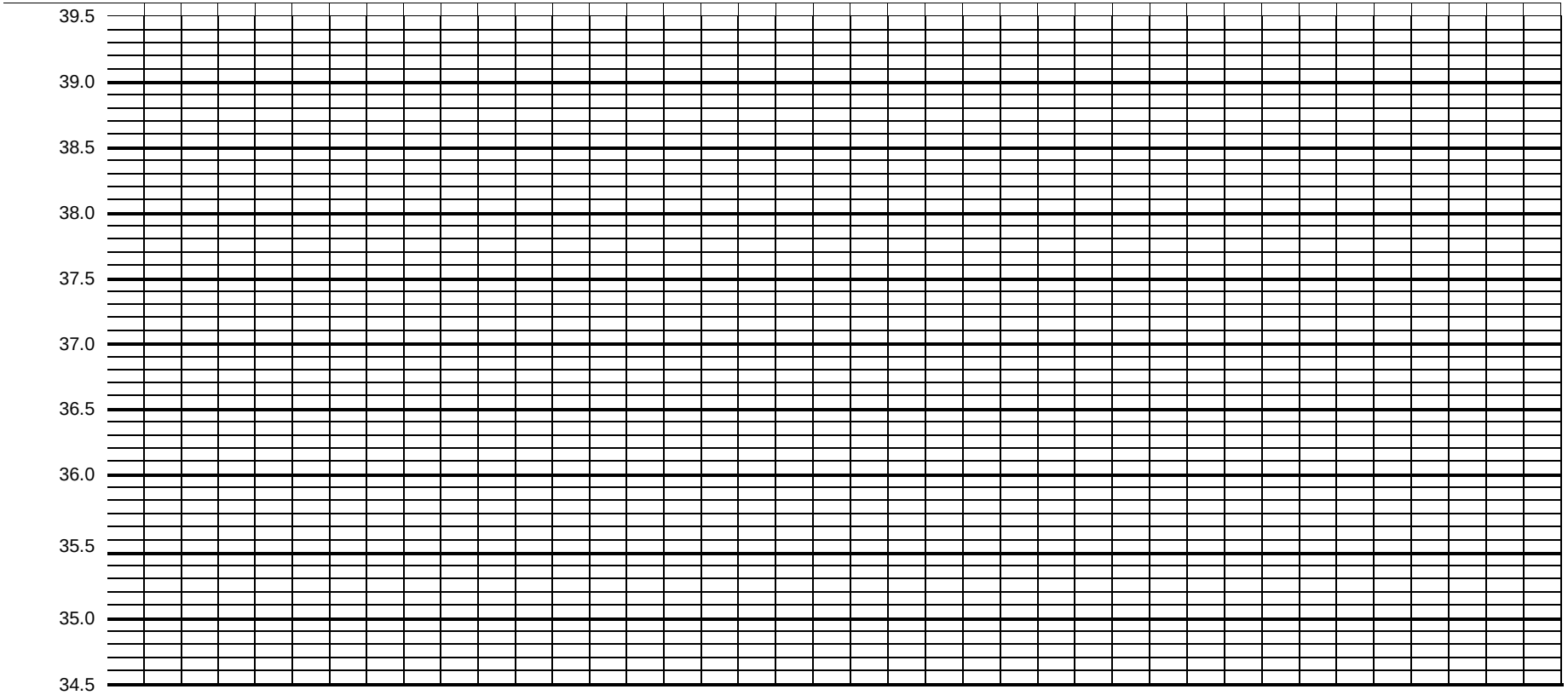
RESPIRATORY RATE

Breaths/ minute																																						

PULSE RATE

Beats/ minute																																						

TEMPERATURE



Danger Signs: Watch for increasing pulse and respirations, fast or difficult breathing, sudden increase or decrease in temperature, rectal temperature below 35.5°C, and other changes in condition.

Name: _____ Page ____ of _____

WEIGHT CHART

Weight on admission: _____ kg

Height / length: _____ cm

Bilateral pitting oedema on admission:
0 + ++ +++

Desired weight at discharge based on 15% weight change:
_____ kg

[Desired weight based on weight for height -1 z-score:
_____kg]

Actual weight at referral to outpatient care:
_____ kg

[Actual weight at discharge if treatment until full recovery in inpatient care
_____ kg]

Weight (Use appropriate scale.)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

Name: _____ Page ____ of _____

24-HOUR FOOD INTAKE CHART

Complete one chart for every 24-hour period.

Admission weight (kg): _____ Today's weight (kg): _____

DATE:		TYPE OF FEED:		GIVE: _____ feeds of _____ml		
Time	a. Amount offered (ml)	b. Amount left in cup (ml)	c. Amount taken orally (a – b)	d. Amount taken by NG, if needed (ml)	e. Estimated amount vomited (ml)	f. Watery diarrhoea (if present, yes)
		Column totals	c.	d.	e.	Total yes:

Total volume taken over 24 hours = amount taken orally (c) + amount taken by NG (d) – total amount vomited (e) = _____ml

Name: _____ Page ____ of _____

COMMENTS/OUTCOME

COMMENTS

TRAINING GIVEN TO PARENTS/ CAREGIVERS

IMMUNIZATIONS

Immunization card? Yes No

Circle immunizations already given.
Add initial and date by any given in during treatment in Inpatient Care.

Immunization	First	Second	Third	Booster
BCG	At birth	Optional: > 6 months	__	__
Polio	At birth	2 months	3 months	12 months
DPT	3 months	4 months	5 months	12 months
Measles	Upon admission	Week 4 or upon discharge 6-12 months +12 months	+12 months __	__ __

SPECIAL DISCHARGE AND FOLLOW-UP INSTRUCTIONS

PATIENT OUTCOME

	DATE	CIRCUMSTANCES/COMMENTS
Referral to Outpatient Care		Site:
In case of treatment in **Inpatient Care until full recovery** in Inpatient Care or unexpected discharge, *indicate outcome*:		
Discharge based on 15% weight change [or on weight for height -1 z-score] (Discharged cured)		Discharge weight equal or above 15% weight gain: Y N [Weight for height Z-score: _____]
Early departure (Discharged defaulted)		
Non Response to treatment (Discharged non-responded)		
Referral for non response or medical complication		
Death (Discharged died)		Number of days after admission (circle): < 24 1-3 days 4-7 days >7 days Approximate time of death: Day Night
		Apparent cause(s) of death: Had child received IV fluids? Yes No

Annex 24. Outpatient Care Treatment Card [36]

FRONT

OUTPATIENT CARE TREATMENT CARD

ADMISSION INFORMATION

Name					Reg. N°		/	/
Age (months)		Sex	M	F	Date of admission			
Community, Locality					Time to travel to site			
House location					Father alive		Mother alive	
Name of carer				Total number in household		Twin	Yes/ No	
Admission	Direct from community	Referred from heath facility		Referred from inpatient care			Readmission (relapse)	Yes / No

Admission anthropometry

MUAC (mm)		Weight (kg)		Height (cm)		WFH z-score		
Admission criteria	Bilateral pitting oedema	MUAC < 115 mm	WFH < - 3 z-score	Other, specify		Target weight (kg) based on 15% weight gain (oedema free)		

Medical history

Diarrhoea	Yes	No		# Stools/day	1-3	4-5	>5
Vomiting	Yes	No			Passing urine	Yes	No
Cough	Yes	No			If oedema, since how long?		
Appetite	Good	Poor	None		Breastfeeding	Yes	No
Additional information							

Physical examination

Appetite Test	Passed	Failed						
Respiratory rate ***(# per min)***	<30	30 – 39	40 - 49	50-59	60 +	Chest Indrawing	Yes	No
Temperature	^{0}C					Palmar Palor	Normal	Pale
Eyes	Normal	Sunken	Discharge		Dehydration based on history	None	Moderate	Severe
Ears	Normal	Discharge			Mouth	Normal	Sores	Candida
Enlarged lymph nodes	None	Neck	Axilla	Groin		Hands & feet	Normal	Cold
Skin changes	None	Scabies	Peeling	Ulcers / Abscesses		Disability	Yes	No
Additional information								

Routine medicines

Drug				*Date*		
ADMISSION: Amoxicillin	Dosage:	Date:	Malaria test	Positive/Negative	Malaria Symptoms: Yes/No	
2nd VISIT: Antihelminthic	Yes	No	Malaria treatment	Drug/Dosage:	Date:	
Week Four: Measles Imm Vitamin A Suppl	Yes Yes	No No	Fully immunised	Yes	No	

Other medicines

Drug	*Date*	*Dosage*	*Drug*	*Date*	*Dosage*

[36] Adapted from Valid International. 2006. *Community-based Therapeutic Care (CTC): A Field Manual*. Oxford, UK: Valid International.

BACK

MONITORING INFORMATION

Weeks in treatment	**ADM.**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Date																	
Anthropometry																	
Bilateral Pitting Oedema **(+ ++ +++)**																	
MUAC **(mm)**																	
Weight **(kg)**																	
Weight loss * ***(Y/N)***				*													
If no weight gain or losing weight ask home visit; If below admission weight after 3 weeks* or weight loss for 2 weeks, or static weight for 3 weeks refer to inpatient care																	
Medical history																	
Diarrhoea ***(# days)***																	
Vomiting ***(# days)***																	
Fever ***(# days)***																	
Cough ***(# days)***																	
Physical examination																	
Temperature (^{0}C)																	
Respiratory rate***(# /min)***																	
Dehydrated ***(Y/N)***																	
Anaemia / palmer pallor ***(Y/N)***																	
Skin lesion ***(Y/N)***																	
Appetite check / feeding																	
RUTF test **Passed/Failed**																	
RUTF ***(# units given)***																	
Action / follow up																	
ACTION NEEDED ***(Y/N)*** ***(note below)***																	
Other medication ***(see front)***																	
Name examiner																	
OUTCOME**																	

** OK=**Continue Treatment** A=**Absent** D=**Defaulted (3 consecutive absences)** R=**Referral** RR=**Refused Referral** C=**Cured** X=**Died** NR=**Non-Recovered** HV= **Home Visit**

Action taken during home visit ***(include date)***

Name Community Outreach Worker:

Annex 25. Referral Form Inpatient Care/Outpatient Care

INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS (IMCI) REFERRAL NOTE

Refer to Hospital……...

Date……. Time…….....

Name.....

Age..... Weight..... Temperature.....

Reason of Referral.....
.....
.....

Other Classifications.....
.....
.....

Treatments Given before Referral.....
.....
.....

Vaccinations.....Dose of Vitamin A.....

Name.....
Location.....
Signature.....

Annex 26. Site Tally Sheet

Long version

TALLY SHEET

SITE (circle)	Outpatient care	Inpatient care		Community, Locality, State		
MONTH						
Date of weeks						
INFANTS < 6 MONTHS						***TOTAL MONTH***
Total at start of week (A)						//
Admissions New Cases SAM: (B)						
Admissions Old Cases SAM: Returned defaulters (C)						
TOTAL ADMISSIONS (D) (D= B+C)						
Discharged Cured (E1)						
Discharged Died (E2)						
Discharged Defaulted (E3)						
TOTAL DISCHARGED (E) (E= E1+E2+E3)						
Referrals (F)						
TOTAL EXITS (G) (G= E+F)						
Total in treatment at end of week (H) (H=A+D-G)						
CHILDREN 6-59 Months						***TOTAL MONTH***
Total at start of week (A)						//
Admissions New Cases SAM (B)						
Admissions Old Cases SAM: Referred from Outpatient or Inpatient care; or Returned defaulter (C)						
TOTAL ADMISSIONS (D) (D=B +C)						
Discharged Cured (E1)						

Discharged Died (E2)						
Discharged Defaulted (E3)						
Discharged Non-Recovered (E4)						
TOTAL DISCHARGED (E) (E= E1+E2+E3+E4)						
Referrals to other Outpatient care or Inpatient care site (F)						
TOTAL EXITS (G) (G= E+F)						
Total in treatment at end of week (H) (H=A+D-G)						
CHILDREN ABOVE 5, ADOLESCENTS, ADULTS						***TOTAL MONTH***
Total at start of week (A)						*//*
Admissions New Cases SAM (B)						
Admissions Old Cases SAM: Returned defaulter (C)						
TOTAL ADMISSIONS (D) (D=B +C)						
Discharged Cured (E1)						
Discharged Died (E2)						
Discharged Defaulted (E3)						
Discharged Non-Recovered (E4)						
TOTAL DISCHARGED (E) (E= E1+E2+E3+E4)						
TOTAL EXITS (G) (G= E+F)						
Total in treatment at end of week (H) (H=A+D-G)						

GENDER NEW ADMISSIONS Children 6-59 months **MALE**						
FEMALE						

Short version

TALLY SHEET

	Community, Locality, State					
SITE	Outpatient care	Inpatient care				
MONTH						
Date of weeks						
INFANTS < 6 MONTHS						***TOTAL MONTH***
Total at start of week (A)						//
Admissions (B)						
TOTAL DISCHARGED (E)						
Total in treatment at end of week (H) (H= A+B-E)						
CHILDREN 6-59 Months						***TOTAL MONTH***
Total at start of week (A)						//
Admissions New Cases SAM (B)						
Admissions Old Cases SAM: Referred from Outpatient or Inpatient care; or Returned defaulter (C)						
TOTAL ADMISSIONS (D) (D=B +C)						
Discharged Cured (E1)						
Discharged Died (E2)						
Discharged Defaulted (E3)						
Discharged Non-Recovered (E4)						
TOTAL DISCHARGED (E) (E= E1+E2+E3+E4)						
Referrals to other Outpatient care or Inpatient care site (F)						
TOTAL EXITS (G) (G= E+F)						
Total in treatment at end of week (H) (H=A+D-G)						
CHILDREN ABOVE 5, ADOLESCENTS, ADULTS						***TOTAL MONTH***
Total at start of week (A)						//
Admissions: (B)						
TOTAL DISCHARGED (E)						
Total in treatment at end of week (H) (H=A+B-E)						
GENDER NEW ADMISSIONS Children 6-59 months **MALE**						
FEMALE						

Annex 27. Monthly Statistical Site Report

MONTHLY STATISTICAL SITE REPORT - Management of SAM

SITE		IMPLEMENTED BY	*MOH* *Other: _____*
LOCALITY		MONTH / YEAR	
STATE		TYPE	*Inpatient Care* / *Outpatient Care*

Age	Total beginning of the month (A)	**Admissions New Cases** (B)	Admissions Old Cases (C) Referral from other site or Returned defaulters	Total Admissions (D) (B+C=D)	Discharged CURED (E1)	Discharged DIED (E2)	Discharged DEFAULTED (E3)	Discharged NON-RECOVERED (E4)	**Total Discharged** (E) (E1+E2+E3+E4 = E)	Referral to other site (F)	Total Exits (G) (E+F=G)	**Total end of the month** (H) (A+D-G=H)
Infants < 6 months			^					NA		NA		
Children 6-59 m*												
Children 5 years and older			^							NA		

* Children 6-59 months
^ Returned defaulters

Children 6-59 months*	**Performance Indicators**	**Cure Rate %** E1*/E*100	**Death Rate %** E2*/E*100	**Defaulter Rate %** E3*/E*100	**Non-recovery Rate %** E4*/E*100
	Sphere standards	>75%	<5%	<15%	
Children 6-59 months*	**Gender New Admission**	**Male:**			
		Female:			

Type of product	**At start of month**	**Delivered**	**Consumed**	**Left at end of month**
RUTF				
F75				
F100				
CMV				
ReSoMal				

E1: Discharged Cured = met discharge criteria
E2: Discharged Died = died while in treatment
E3: Discharged Defaulted = absented for three consecutive visits in outpatient care/three days in inpatient care
E4: Discharged Non-recovered = did not meet discharge criteria after four months in treatment//two months in inpatient care

Annex 28. Monthly Statistical Locality or State Report

MONTHLY LOCALITY/STATE REPORT – Management of SAM

SITE		IMPLEMENTED BY	*MOH* *Other:*
LOCALITY		MONTH / YEAR	
STATE		NUMBER OF SITES	*Inpatient Care:* *Outpatient Care:*

Age	Total beginning of the month (A)	Admissions New Cases (B)	Discharged CURED (E1)	Discharged DIED (E2)	Discharged DEFAULTED (E3)	Discharged NON-RECOVERED (E4)	Total Discharged (E)	**Total end of the month** (H) (A+D-G=H)
Infants < 6 months						NA		
Children 6-59 m*								
Children 5 years and older								

* Children 6-59 months
^ Returned defaulters

Children 6-59 months*	**Performance Indicators**	**Cure Rate %**	**Death Rate %**	**Defaulter Rate %**	**Non-recovery Rate %**
		E1*/E*100	**E2*/E*100**	**E3*/E*100**	**E4*/E*100**
	Sphere standards	>75%	<5%	<15%	
Children 6-59 months*	**Gender New Admission**	**Male:**			
		Female:			

E1: Discharged Cured = met discharge criteria
E2: Discharged Died = died while in treatment
E3: Discharged Defaulted = absented for three consecutive visits in outpatient care/three days in inpatient care
E4: Discharged Non-recovered = did not meet discharge criteria after four months in treatment//two months in inpatient care

Type of product	**At start of month**	**Delivered**	**Consumed**	**Left at end of month**
RUTF				
F75				
F100				
CMV				
ReSoMal				

Annex 29. CMAM Narrative Reporting Template

CMAM Narrative Report

Author

Date and period of reporting

Geographical catchment area and population

Number of outpatient care sites
Number of inpatient care sites

Starting date of CMAM services

Output and Performance Indicators Children 6-59 months:

Number of new admissions
Number of children under treatment
Percentage cured
Percentage died
Percentage defaulted
Percentage non-recovered

Progress Indicators Children 6-59 months:

Number of communities involved in community participation and outreach
Number of community outreach workers trained and active
Reasons for defaulting
Reasons for non-response to treatment
Length of stay in treatment

Output Indicators Other Age Groups:

Number of admissions infants under 6 months
Number of discharges infants under 6 months
Number of admissions children 5 years and older, adolescents, adults
Number of discharges children 5 years and older, adolescents, adults

Discussion on performance of sites

Contextual information

Success stories

Action plan

Figures (optional)

- Figure (graph) with trends of key performance and output indicators:
  - Bars with new admissions, discharges, beneficiaries in treatment
  - Lines for cured, died, defaulted and non-recovered rates
- Figure (graph) for monthly average LOS and average weight gain per category of admission criteria
- Figure (pie chart) with distribution of admission criteria
- Figure (pie chart) with distribution of discharge categories

Annex 30. Checklists for Supervision

COMMUNITY OUTREACH CHECKLIST (Example)

Communities of Health Facility:_____ Date:_____

Question/Issue	Why?
Coordination of Community Outreach	
Has someone at the facility level been designated as responsible for managing/coordinating community outreach efforts?	Outreach is less clear-cut and less glamorous than clinical work, and health managers and health care providers might need reminding that outreach is also part of CMAM.
Has the job of the outreach worker (case-finder) been clearly defined, including the range of responsibilities and level of effort?	Case-finders are sometimes recruited before the amount of work required is specified.
Do outreach workers meet periodically (e.g., monthly, quarterly) with the designated outreach coordinator?	Supervisory meetings might help to motivate case-finders, especially when they are unpaid.
In general, do outreach workers feel they receive adequate information and support from the outreach coordinator?	Supervisory meetings should be an opportunity for two-way communication, not just for giving instructions.
Does the outreach coordinator appear familiar with basic service data (e.g., admissions, absentees, defaults)?	The outreach coordinator should be interpreting this data and using the information to adjust outreach methods and priorities.
Does the outreach coordinator have a means of discussing outreach problems or issues with community leaders? Is this being used?	Not all issues can be addressed by discussion between the outreach coordinator and the outreach workers alone. Problems such as defaulting and barriers to access might require the inclusion of community leaders, mothers/caregivers and other stakeholders.
Case-Finding	
What form of case-finding is being used locally? Is it still the most appropriate form?	The service/programme might need to alter case-finding methods as levels of SAM and community awareness change.
How active are case-finders? Is this level of activity appropriate, given SAM prevalence?	Active case-finding should not be so frequent as to be intrusive, but neither should it be left alone for too long. During periods of high SAM prevalence and while awareness of CMAM is still low, monthly screenings might be appropriate.
Home Visits	
Has responsibility for home visits been clearly designated and accepted in all parts of the health facility catchment area?	Home visits might break down unless it is worked out in advance who is responsible for following up cases in a given location.
Are absentees and children who defaulted being followed up reliably with home visits?	Even with clear lines of responsibility, home visits might not occur. The reasons for this must be understood and addressed.
What do outreach workers and community members say about the value of these visits?	Outreach workers who perform home visits sometimes need further training on advising and negotiating effectively with families.

HOME VISITS CHECKLIST (Example)

Communities of Health Facility:_____ Date:_____

	Quality **1 Done correctly** **2 Done but needs work** **3 Not done or done incorrectly**	**Discussed with Supervisor (Y/N)**	**Comment**
All absentees/defaults from previous week followed up			
Outreach home visits form filled in correctly; information noted on RUTF ration card			
Appropriate education (according to key messages) 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-recovered cases			
Outreach worker returns home visit checklists or observations to health centre			
Outreach worker feedback provided on a timely basis (before the next outpatient care follow-up session)			
Outreach worker has helpful, positive attitude with mothers/caregivers			

OUTPATIENT CARE CHECKLIST (Example)

Health Facility:_____ Date:_____

	Total observed	**Total correct**	**Direct observation at site**	**Quality** **1 – Done correctly** **2 – Done but needs improvement** **3 – Not done/ done incorrectly**	**Comment**
Number of health care providers (staff) and volunteers present					*Staff:* *Volunteers:*
Staff greet mothers/caregivers and are friendly and helpful	_____	_____			
Registration numbers assigned correctly	Total new admissions in past month__				
Registration numbers written on all documents					
Grade of bilateral pitting oedema measured accurately	Total bilateral pitting oedema checks observed___				
MUAC measured accurately	Total MUAC checks observed___				
Weight measured accurately	Total weighings observed___				
Height measured accurately	Total measurements observed___				
WFH classification done correctly	Total WFH checked___				
Admission is according to correct criteria	Total cards checked___				(Spot check cards)
Medical history recorded accurately	Total medical histories observed____				
Physical examination performed and recorded accurately	Total cards checked___	Total w/ full exam ____			(Check card)
Child's appetite tested using RUTF, upon admission and during outpatient care follow-up sessions					How tested and by whom?
Routine medication given according to protocol and recorded accurately	Total cards checked___	Total with correct medicines__			
Amount of RUTF needed is correctly calculated	Total cards checked____				
Appropriate education given to mothers/caregivers					Note topic and form:
Follow-up medicines given according to protocol and recorded accurately	Total cards checked___				
RUTF ration cards completed correctly	Total cards checked ____				(Spot check)

Slow responders are identified according to the definition for home visits and communicated to Community Outreach Workers	Total non-responders needing home visit during past month___	Total			
Priorities for home visits discussed with Community Health Worker/ volunteer; list of names recorded/ cards marked			List/ clear discussion?		
Beneficiaries discharged according to protocol	Total cards checked___				
Correct number of absentees/defaults identified for home visits	Total number of absentees/ defaults according to cards___	Total w/ outcome recorded___			
Tally sheets, reporting sheets and stock cards completed correctly	Total weeks reviewed____				(Spot check)

INPATIENT CARE CHECKLISTS[37]

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 mix added correctly?			
Is 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			

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 lost?			
After transition, are amounts of F100 given freely and increased as the child gains weight?			
Warming			
Is the room kept between 25-30° C (to the extent possible)?			
Are blankets provided and children kept covered at night?			
Are safe measures used for re-warming children?			
Are temperatures taken and recorded correctly?			
Weighing			
Are scales functioning correctly?			
Are scales standardized 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			

[37] Adapted from WHO. 2002. *Training Course on the Management of Severe Malnutrition*, WHO/NHD/02.4(P)4. Geneva: WHO.

scale?			
Do staff immediately record weights to the nearest division of the scale?			
Do staff immediately record weights on the child's treatment card?			
Are weights correctly plotted on the Weight Chart?			
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 treatment card?			
Is vitamin A given according to schedule?			
After children are on F100 for 2 days, is the correct dose of iron given twice daily and recorded on the treatment card?			
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?			

Checklist for Monitoring Hygiene

OBSERVE:	YES	NO	COMMENTS
Hand washing			
Are there working hand washing 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 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?			

Management Tools

Annex 31. Set-Up of Inpatient Care and Outpatient Care

INPATIENT CARE

Inpatient care is intended for the treatment of children 6-59 months with severe acute malnutrition (SAM) with poor appetite and/or with medical complications and all infants under 6 months with SAM, as well as for those that cannot benefit from outpatient care due to distance or lack of caregivers.

Inpatient care is established at the paediatric ward (or a specially assigned unit of the paediatric ward at a hospital or health facility with bed capacity. In emergencies, a semi-permanent structure can be set up. In all cases, the inpatient care site should have qualified and experienced staff, equipment and supplies, a good permanent supply of clean potable water (for preparing the milk, washing and for cleaning the wards), and sanitation.

Experience shows that, on average, 10-20 percent of children with SAM will need stabilisation in inpatient care. This figure might be much higher at the start-up of an intervention, if outpatient care is not covering all the areas of origin of beneficiaries or if early detection of cases is deficient (late presentation).

Children with SAM and medical complications in the stabilisation phase are usually kept in a separate room from patients in the rehabilitation phase or other hospital patients. On average, patients in stabilisation stay for 3-10 days. Those who need to complete treatment in inpatient care stay an average of 30 days.

Staff Needs

Clinical care staff: This includes senior nurses and junior nurses. A physician is recommended, but is not always necessary. Only clinicians who are specifically trained in management of SAM should treat these patients, as many treatments normally given to children that are not malnourished could be dangerous for the malnourished child.

Feeding assistants: Feeding assistants are in charge of weighing the child, supervising meals, interacting with caregivers, monitoring clinical warning signs and filling in most of the information on the patient's card. A ratio of one assistant per 10 patients is considered appropriate in emergency inpatient care health facilities. Other staff in this category could be in charge of the emotional and physical stimulation programme.

Support staff: Cleaners and kitchen staff are vital to maintaining a tidy environment and preparing therapeutic milks and food for caregivers. In large centres, a person in charge of the logistics and transport will be necessary. Guardians, store keepers and other ancillary staff might be needed depending on the context and size of the facility.

Supervisors: One supervisor is needed for each ward with inpatient care (usually, but not necessarily, a clinician).

OUTPATIENT CARE

Outpatient care is intended for children 6-59 months with SAM without medical complications and for children who have been referred from inpatient care after they have recovered appetite or their medical complication resolved. Outpatient care can be set up in a health facility, or can be organised at health outreach sites. It is always advisable to have a store, a covered waiting area and a separate protected area for clinical assessment of patients even if the health facility or site is in a provisional structure.

Outpatients visit the health facility once a week or once every two weeks. The number of patients attending an outpatient care facility might vary from 10-20 per session to several hundreds. When too

many children are attending on the same day, it might be more appropriate to open new sites or increase the number of service days for existing facilities

Staff Needs

A nurse or other health care provider (or several depending on the size) is sufficient to take on outpatient care. Health care providers must be trained and able to identify danger signs and decide whether referral to inpatient care is necessary. They should be able to identify anorexia and assess children's progress, calculate indicators for monitoring and evaluation of patients (e.g., weight-for-height [WFH] z-score, weight gain, mid-upper arm circumference [MUAC]), fill in registration books and patient's treatment cards, and manage stores and supplies of food and drugs.

Where there are access problems or insufficient staff, mobile outpatient clinics could be used for a limited period of time. One mobile team can visit up to five sites per week providing services once a week in each site.

Annex 32. Checklist of Materials Needed for Inpatient Care[38]

Note: Always check the health facility drug and equipment list and identify items that are needed in addition to their regular supply.

KIT 1

Inpatient care: 400 children for 3 months or more

NAME	Needs in unit	Unit
ORAL		
Folic acid 5 mg	5,000	tabs
Amoxicillin 250 mg	30,000	tabs
Chloramphenicol 250 mg	4,000	tabs
Cotrimoxazole 120 mg	3,000	tabs
Mebendazole 100 mg	4,000	tabs
Metronidazole 250 mg	2,000	tabs
Nystatin 100,000 IU	2,000	tabs
Oral solution for rehydration 1 L	300	sachets
Paracetamol 100 mg	2,000	tabs
Quinine 300 mg	1,000	tabs
Vitamin A 200,000 IU	2,000	gel
Vitamin A 50,000 IU	1,000	gel
EXTERNAL USE		
Benzyl benzoate 90% 1L	4	L
Cetrimide 15% + chlorhexidine gluconate 1.5% 1 L	5	L
Tetracycline HCl 1% eye ointment 5 g	300	tube
Benzoic Acid 6% + salicylic acid 3%	50	tube of 40 g
Gentian violet crystals 25 g	12	pot of 25 g
Zinc oxide 10% ointment	20	tube of 100 g
PVP iodine 10% solution	50	vial of 200 ml
Nystatin ointment 100,000 IU/g	100	tube of 30 g
RENEWABLE EQUIPMENT		
Tongue depressor, wood, 15*18 cm	400	piece
Elastic bandage 7.5 cm x 5 m	20	piece
Nail brush	10	piece
Gauze compresses 10*10 cm, sterile	700	piece
Gauze compresses 10*10 cm, non sterile	1,500	piece
Cotton 400 g	10	piece
Examination gloves, medium, disposable	800	pieces
Blade for surgical knives, size 22	100	piece
Bags for medicines	2,000	piece
Adhesive tape 5 cm x 5 cm	20	piece
Thermometer	100	piece
Gauze bandage	200	piece
Adhesive tape 2.5 cm	16	roll

[38] Source: Action Contre la Faim-International Network (ACF IN) kits for opening new therapeutic care programmes

KIT 2

Inpatient care: 400 children for 3 months or more, in addition to kit 1

NAME	Needs in unit	Unit
ORAL		
Ferrous sulphate 200 mg	15,000	tabs
INJECTABLES		
Ampicillin 1 g	300	vial
Ceftriaxone 250 mg	300	amp
Chloramphenicol 1 g	400	vial
Dextrose 50%/20 ml	25	vial
Digoxine 0.25 mg/ml 2 ml vial	100	amp
Water for injectable preparations	1,700	amp
Furosemide 20 mg	100	amp
Gentamicin 80 mg/2 ml	400	amp
Quinine 600 mg/2 ml	100	amp
DRIPS		
Dextrose 5% in water, 500 ml without set	40	bag
Ringer-Lactate solution, 500 ml without set	60	bottle
RENEWABLE EQUIPMENT		
Needle 18 g Preparation	1,000	piece
Needle 21 g IM	1,200	piece
Needle 25 g subcutaneous	1,000	piece
Urine test strips (glucose, protein, PH)	100	piece
Catheter 22 g	200	piece
Catheter 24 g	200	piece
Butterfly 21 g	100	piece
Butterfly 25 g	100	piece
Tourniquet	4	piece
Haemoglobin scale 557 tallquist booklet (250)	1	piece
Infusion giving set w. airinlet & needle	100	piece
Blood lancets	200	piece
Safety box	6	piece
Seringue, disposable, 0.5 ml	200	piece
Syringe, disposable, 2 ml	1,000	piece
Syringe, disposable, 5 ml	1,000	piece
Syringe, disposable, 10 ml	400	piece
Syringe, disposable, 20 ml	600	piece
Feeding tube ch. 5, disposable	200	piece
Feeding tube ch. 8, disposable	400	piece
Feeding tube ch. 10, disposable	100	piece

KIT 3

Inpatient Care, 400 children or adults, no time limit

NAME	Needs in unit	Unit
NON RENEWABLE EQUIPMENT		
AT cuff adult	3	piece
AT cuff child	3	piece
Stethoscope – double cup	6	piece
Electronic thermometer	10	piece
Scissors sharp/blunt	10	piece
Kidney dish	10	piece
Kocher forceps, teeth	5	piece
Kocher forceps, no teeth	5	piece
Forceps dissecting	5	piece
Dressing tray	5	piece
Instrument box	3	piece
Inox cup	5	piece
Mortar + pestle	5	piece
Otoscope	2	piece

KIT 4

Inpatient care, 400 adults

NAME	Needs in unit	Unit
ORAL		
Acetylsalicylic acid 500 mg	2,000	tabs
Aluminium hydroxide 500 mg	1,000	tabs
Aminophylline 100 mg	1,000	tabs
Ampicillin 500 mg	3,000	tabs
Amoxicillin 500 mg	7,000	tabs
Butylscopolamine bromide 10 mg coated	1,000	tabs
Ciprofloxacin 100 mg	1,000	tabs
Chloramphenicol 250 mg	3,000	tabs
Doxicycline 100 mg	1,000	tabs
Ibuprofen 200 mg	1,000	tabs
Mebendazole 500 mg	2,000	tabs
Nystatin 500,000 IU	4,000	tabs
Paracetamol 500 mg	4,000	tabs
Phenoxypenicillin 250 mg	3,000	tabs
Quinine 300 mg	2,000	tabs
Ferrous sulphate 200 mg	18,000	tabs
INJECTABLES		
Ampicillin 1 g	300	vials
Dextrose 50%/20 ml	100	vials
Water for injectable preparations	300	vials
Procaine penicillin 3 Miu, benzylpenicillin 1 Miu	100	vials
Quinine 600 mg /2 ml	500	vials
Furosemide 40 mg	10	vials
DRIPS		
Dextrose 5% in water, 500 ml without set	40	bags
Ringer-Lactate solution, 500 ml without set	60	bags
RENEWABLE EQUIPMENT		
Needle 19 g IM	300	
Needle 21 g IM	300	
Needle 18 g preparation	300	
Catheter 20g	200	
Gauze compresses 10*10 cm, sterile	300	
Gauze compresses 10*10 cm, non-sterile	300	
Infusion giving set w. airinlet & needle	300	piece
Syringe, disposable, 20 ml	100	
Syringe, disposable, 10 ml	100	
Syringe, disposable, 5 ml	100	
NGT No 14	100	

Annex 33. Checklist of Materials Needed for Outpatient Care[39]

Note: Estimations per Outpatient Care site for the treatment of 500 children will need to be adjusted according to current and projected case load.

Equipment

Item	Quantity
File for admission cards	1
Markers, pens	2
Clipboards	2
Staples and box of staples	1
Pens	3
Pair of Scissors	1
Notebook	1
Calculator	1
Small clock with second hand	1
Bucket with lid	2
Soap bar for hand washing	1
Small bowl	1
Small jug	1
Hand towels	2
Water jug (with lid)	2
Plastic cups	10
Metal spoons	2
Teaspoons or medicine cups	6
Thermometer	3
Salter scale (25 kg) plus pants or Electronic scale	1
Height board	1
MUAC tape	5
Weight for height table	1
Nail clippers	1

Minimum Stock to Keep Topped Up

Item	Quantity
Outpatient care cards for new admissions	100
Outpatient care ration cards for new admissions	100
ID bracelets (optional)	100
Clear plastic envelopes (for filling cards)	100
Bags for carrying RUTF (if required)	100
Jerry can for drinking water	1
Sugar (kg) to make 10% sugar solution	1/2
Soap bars for distribution	500
RUTF	(see separate list)
Medicines and dressing materials	(see separate list)

Medicines (per 500 children)

Routine Medicines: per 500 children	Quantity
Amoxicillin	500 treatments
Mebendazole	4 tins
Malaria tests	500
Malaria treatment ACT	250 treatments: 1,000 tablets [AS 50 mg] 500 tablets [S 500 mg P 25 mg]
Vitamin A capsules	1 tin
Measles vaccine –where there is no EPI	100 doses

[39] Source: Valid International. 2006. *Community-based Therapeutic Care (CTC). A Field Manual*.

Additional Medicines: per 500 children	Quantity
Chloramphenicol	100 bottles or 1 tin
Tetracycline eye ointment	50 tubes
Nystatin suspension	20 bottles
Paracetamol	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	1 tin
Cotton wool	5 rolls
Examintaino gloves	1 box
Medicine bags	100 bags

Other Supplies

Dressing Materials (where needed)	Quantity
Gauze 10x10	20 packets
Small bandage	10 pieces
Tape	2 rolls
Zinc ointment	10 tubes
Normal saline or wounds 100ml or 200ml	10 pieces
Dressing scissors	2 pairs

	RUTF	Quantity
A	Number of Outpatient Care beneficiaries	A
B	Monthly consumption per child @ 20 packets of RUTF/child/week	80
C	Monthly packet consumption for Outpatient Care Site	A x B
D	Monthly carton consumption for Outpatient Care Site	C/150
E	Monthly net weight (MT) @ 13.8 kg/carton	D x 13.8/1000
F	Monthly gross weight (MT) @14.9 kg/carton	D x 14.9/1000

Annex 34. Forecasting Therapeutic Food Needs

FORECASTING THERAEPEUTIC FOOD NEEDS IN INPATIENT CARE

- Assuming treatment lasts 10 days, 2 kilograms (kg) (5 packets) of dry **F75** per child can be used for planning. This is equivalent to 6 kg per month of dry F75 for each paediatric bed dedicated for the management of complicated forms of severe malnutrition.

  Preparing this quantity of F75 locally (6 litres [L]) requires 19 grams [g] of mineral vitamin mix (3 levelled scoops), 150 g of dried skim milk or 210 g of dried whole milk, 420 g of sugar, 162 g of vegetable oil, and 210 g of cereal powder.

- Usually less than 5 percent of children admitted for severe acute malnutrition (SAM) with poor appetite and/or with medical complications (or less than 1 percent of all children with SAM) will require F100 during the rehabilitation phase because they cannot eat ready-to-use therapeutic food (RUTF). For these children, 12 kg of F100 per child for the whole rehabilitation phase can be used for planning.

- **RUTF** is needed for a few days for every child in the transition phase and for all children in inpatient care (any phase) with appetite.

FORECASTING THERAEPEUTIC FOOD NEEDS IN OUTPATIENT CARE

- One treatment of a child with SAM based on +/- 200 kcal/kg bodyweight/day of **RUTF** diet corresponds to approximately 30-40 g/kg bodyweight/day for 60 days. This is equivalent to 12 kg per treatment of a child with SAM, which can be used for planning purposes.

- The total requirement of RUTF depends on the duration of the treatment and the weight of the child at the beginning of treatment.

Table 1. Estimating the Quantities of Nutrition Products Needed for the Management of SAM for Planning

Therapeutic food	When needed	Proportion of children with SAM admitted needing the product	Duration of treatment	Quantity needed to treat one child (kg)	Quantity needed to treat 100 children (kg)
F75	Inpatient care (stabilisation phase)	15%	5-10 days	2	200
F100	Inpatient care (rehabilitation phase)	< 5 %	4-6 weeks	12- 15	1,200-1,500
RUTF	Outpatient care and inpatient care (transition/rehabilitation phase)	> 95%	6-8 weeks	12	1200

Estimating Case Load for CMAM

In the absence of case load figures for services in similar locations (e.g., a similar neighbouring locality or state), use the following steps to estimate SAM case load for planning purposes for a 12-month period:

Case load = prevalence (take # of prevalent cases at start of program) + incidence (add new # of cases expected over a 12-month period)

and

Incidence = prevalence / duration of illness (with duration of SAM illness estimated at 7.5 months or 7.5/12); therefore, incidence = prevalence x 12/7.5 or prevalence x 1.6

Then, case load can be calculated by: prevalence + (prevalence x 1.6)

Account for the expected service coverage:
Assume a coverage of 70 percent and take into consideration any other other necessary caveats, e.g., seasonality and stability of incidence, precision of survey prevalence estimates, indicators used for prevalence versus admission or a combination.

Example, if planning for the treatment of SAM for the year 2016 in a population of 10,000 children under 5:

If the estimated SAM prevalence rate from a survey done in December 2015 is 1.2 percent, on January 1, 2016, then there are 120 children with SAM.

The number of new cases that will be expected to develop during the year, or 12-month incidence = prevalence/duration of disease = prevalence x 12/7.5. Incident cases are then expected to be 1.2 x 1.6 = 1.92 or 192 children

Then, for a 12-month program we plan to treat the prevalent cases plus the incident cases over 12-month period, and thus plan for treating 120+192 = 312 children

Next, we will account for the expected service coverage.

Annex 35. Staff Needs, and Roles and Job Descriptions

STAFF NEEDS

Community Outreach

Each health facility should have established links with

- A Community-Based Management of Severe Acute Malnutrition (CMAM) community outreach coordinator
- A team of community outreach workers: e.g., community health workers and/or volunteers, covering the communities in the catchment area of the health facility

Training on community participation, community screening, and health and nutrition education should be provided to all health care providers (for orientation, supervision and coordination) and outreach workers (for implementation).

An orientation is given at the start of the service followed by continuous training (e.g., refresher training, mentoring, feedback meetings).

Outpatient Care

In each health facility with outpatient care (and plan rotations if appropriate):

- A qualified CMAM health care provider (nurse or medical assistant)
- One community health worker as assistant (if needed due to caseload)

Inpatient Care[40]

In each health facility with inpatient care (and plan rotations if appropriate):

- A qualified senior CMAM clinician, at least one per shift for 24-hour care (nurse, medical assistant, physician, paediatrician)
- Qualified CMAM health care providers (nurse or medical assistant)
- Nutrition assistants and assistant cook
- Support staff
- Liaison staff

Note:

- Inpatient care staff will be responsible for managing the child with severe acute malnutrition (SAM) with medical complication on a 24-hour basis.
- The recommended staff to bed ratio is 1:7.
- Experienced staff who are experts in the treatment of SAM with medical complications understand the needs of a child with SAM and are familiar with SAM services and aspects- are essential for a well-functioning inpatient care.
- Loss of experienced staff must be avoided wherever possible. Disruption of ongoing services should not happen.

ROLES

Locality Health Manager or Locality Nutritionist as CMAM Focal Person or Coordinator

- Resource mobilisation and allocation (human resources, infrastructure, supplies, transportation, training)
- Planning of services
- Support and supervision

[40] If outpatient care is functioning well, the inpatient caseload should be low (normally 5-10 patients in inpatient care per locality, depending on the catchment area and prevalence of SAM).

- Monitoring and reporting (M&R)
- Training of health care providers and community outreach workers

Locality Community Outreach Coordinator

- Community assessment
- Community participation (e.g., community meetings)
- Training of community outreach workers
- Support and supervision of community outreach workers

Health Care Provider (nurse, medical assistant)

- Evaluation of the child's medical condition and nutrition status (anthropometry, medical history, physical examination, appetite test)
- Admission
- Referral to inpatient and/or outpatient care
- Treatment of SAM (prescription of medicines and therapeutic foods)
- Monitoring progress of children
- Health and nutrition education individual counselling
- Organisation and supervision of admission
- Discharge of children
- M&R of service (site tally sheets and monthly statistical report)
- Monitoring of equipment and supplies
- Linking with outreach workers
- Linking with other health, nutrition and livelihoods initiatives

Nutrition Assistant in Inpatient Care

- Anthropometry
- Breastfeeding support
- Therapeutic feeds
- Support to caregiver and child
- Health facility-based health and nutrition education and behaviour change communication (BCC)

Community Health Worker in Outpatient Care and Community

- Community participation
- Anthropometry
- Breastfeeding support
- Weekly ready-to-use therapeutic food (RUTF) administration
- Support to caregiver and child
- Health facility-based health and nutrition education and BCC
- Community-based health and nutrition education and BCC
- Community screening and referral
- Home visits for problem cases
- Training of volunteers

Volunteers

- Community participation
- Community-based health and nutrition education and BCC
- Community screening and referral
- Home visits for problem cases

EXAMPLES OF CMAM JOB DESCRIPTIONS

CMAM State (Locality) Focal Person, Manager or Coordinator

Site: State nutrition directorate (adapt job description if it is a locality health department)

Reports to: State director of nutrition directorate (locality health department), and coordination with UNICEF zonal office and CMAM Support Team.

Supervises: CMAM health care providers and community outreach coordinator

Minimum qualifications and required skills:

- Ministry of Health (MOH) health management position
- University degree in health management, public health or nutrition or related field
- Experience in writing reports and nutrition information system
- Strong teamwork and team spirit
- Good management capacity, training capacity, and coordination and communication skills

Tasks:

- Management of CMAM services
    - Manage structure of service delivery
    - Manage human resources
    - Link with community outreach
    - Link with other community services
    - Prepare emergency and contingency plan
    - Organise and participate in coordination and technical meetings
- CMAM supply management
    - Manage supplies for medical and nutrition equipment, drugs and therapeutic foods
    - Follow up on expiry dates, validity and storage condition of feeding products
    - Prepare requests and forecasting and calculating needs based on case load
- Strengthening CMAM competencies
    - Assess capacities and identify training needs
    - Organise training sessions as needed and ask for technical support from federal or state level
- Quality assurance of CMAM services
    - Manage M&R system

CMAM Community Outreach Coordinator

Site: Community catchment area of health facility with CMAM services

Reports to: CMAM state (locality) focal person, manager or coordinator

Supervises: Community outreach workers

Minimum qualifications and required skills:

- MOH community outreach coordination or management position
- University degree in health management, public health or nutrition or related field
- Experience in writing reports and nutrition information system
- Strong teamwork and team spirit
- Good management capacity, training capacity, and coordination and communication skills

Tasks:

- Community assessment
    - Conduct community assessments and reporting
    - Develop strategy for community participation and outreach activities
- Community participation activities
    - Engage and meet with community leaders and members on Nutrition and CMAM

    - Lead group sessions on health and nutrition education and behaviour change
    - Give feedback to community leaders or committee on performance of SAM services and of volunteers
    - Involve influential community groups in case-finding (e.g., women's groups, community-based organisations, religious groups)
- Strengthening competencies, support and supervision
    - Assess capacities and identify training needs
    - Train community outreach workers on community participation, anthropometric measurements, screening and referral, home visits strategies, individual and group counselling on health and nutrition education and behaviour change, and reporting
    - Share information and feedback to community outreach workers
- M&R on referral and community activities
    - Report on community participation, community screening, referrals and home visits, training and supervision

CMAM Site Focal Person and/or Supervisor

Site: Locality or health facility with CMAM site (adapt job description as appropriate if for inpatient care or outpatient care)

Reports to: CMAM focal person at state level

Supervises: Medical doctors, medical assistants, nurses, nutritionists, nutrition assistants, outreach workers

Minimum qualifications and skills:
- University degree in health management, medicine, public health or nursing
- Trained in Integrated Management of Childhood Illness (IMCI)
- Experience in writing reports and nutrition information system
- Strong teamwork and team spirit
- Good management capacity, training capacity, and coordination and communication skills

Tasks:
- Management of CMAM services
    - Manage structure of service delivery
    - Manage human resources
    - Ensure referral systems and follow up of cases
    - Ensure health and nutrition education though individual counselling and group sessions
    - Link with community outreach
    - Track children between services
    - Link with other health and community services
    - Prepare emergency and contingency plan
    - Participate in coordination meetings with other supervisors and CMAM focal persons in the locality and state
- Supply management
    - Manage supplies for medical and nutrition equipment, drugs and therapeutic foods
    - Prepare requests and forecasting and calculating needs based on case load
- Strengthening competencies
    - Assess capacities and identify training needs
    - Conduct training sessions as needed and ask for technical support from federal or state level
- Quality assurance of CMAM services
    - Ensure that CMAM guidelines are adhered to
    - Maintain filling system
    - Monitor the quality of medical and nutrition services
    - Fill site tally sheets and statistical reports
    - Write and submit narrative reports
    - Report trends or observations to CMAM focal person

CMAM Health Care Provider (medical doctor, medical assistant or nurse)

Site: Health facility with CMAM site (adapt job description as appropriate if for inpatient care or outpatient care)

Reports to: CMAM supervisor

Supervises:
Nutrition assistants, outreach workers

Minimum qualifications and required skills:
- Diploma certificate in nursing, medical assistant certificate or university degree in medicine (and being fully registered)
- Training in IMCI

Tasks:
- Assessment and medical and dietary treatment
    - Assist in the admission procedure
    - Conduct and/or assist in and interpret anthropometric assessment
    - Conduct a medical history and physical examination
    - Identify child at risk and manage them according to the CMAM manual
    - Ensure the medical follow up of the patient, based on medical recommendation by medical doctor or medical assistant
    - Administer routine drugs and other drugs according to the CMAM manual
    - Refer as appropriate to different phases in the treatment or for medical investigation
    - Test appetite
    - Fill treatment card
    - Assist in monitoring the children while feeding
    - Check the vaccination status and encourage caregivers to get their children vaccinated
    - Provide individual counselling
    - Coordinate home visits for problem cases
    - Track children between services
    - Link with other health and community services
- Management of drugs, medical equipment and supplies
    - Ensure good management of drugs, medical equipment and supplies
- Well being of caregiver
    - Provide assistance to caregiver as needed
    - Give individual advice to the care giver during the clinical activity and provide individual counselling on nutrition, malnutrition causes, outcomes of treatment and prevention
    - Assist caregivers to stimulate the children in early learning activities
- Supervision
    - Support and supervise nurse and nutrition assistant work, and provide in-service training and mentoring as needed
    - Train the team and insure their understanding for rules of hygiene
    - Work in companionship with nutrition assistants and registers
- Reporting
    - Maintain filling system
    - Fill weekly tally sheets and monthly statistical report, and discuss findings with colleagues

CMAM Nutrition Assistant

Site of work: Health facility with CMAM site (adapt job description as appropriate if for inpatient care or outpatient care)

Supervised by: Medical doctor, medical assistant, nurse

Minimum qualifications and required skills:

- Sudanese high secondary school diploma as minimal qualification needed.
- Training in first aids and medical procedures will be an advantage

Tasks:

- Admission and registration
    - Assist in anthropometric measurements
    - Provide the child with a bed or a mat
    - Provide the patient with information on the functioning of the services
    - Explain to the caregiver accompanying the child his or her role as partner in caring for the child
    - Introduce caregiver to the other caregivers and to the support staff
    - Prepare the caregiver when the patient is going to the outpatient care and provide advises if the patient will be discharged
- Therapeutic meals preparation and nutrition care
    - Prepare the F75, F100 and F100-Diluted based on the child's weight according to CMAM manual
    - Ensure the quality and hygiene of the preparation
    - Distribute the therapeutic milk based on the quantities decided and the phases.
    - Supervise the meal time and ensure the correct modalities of feeding as stated in the CMAM manual
    - Ensure absence of forceful feeding and supervise the supplementary suckling technique for feeding the infants under 6 months
    - Encourage mothers to breast feed before administering the therapeutic milk
    - Notes the caregiver-child relationship and practices and advice the mother accordingly
    - Check and register the amounts taken by the child, and writing down if the child vomit or refused feeding
    - Check and encourage the stimulation and psychological support provided by mothers or caregivers accompanying the children
    - Supervise the appetite test and provide ready-to-use therapeutic food (RUTF) according to the weight
    - Supervises the child while eating the RUTF, and ensure access to drinking water and respect hygiene during the feeding
    - Check if children who do not present a risk of hypothermia are washed and properly dried every day
    - Check if children and caregivers wash their hands before each meal and after going to the toilet
    - Check that the bed mats are clean, are washed and changed regularly and that blankets are available
    - Check that the clothes are washed and changed regularly
    - Check that the child's space is washed by the caregiver
    - Check that the water containers and utensils are kept clean
    - Provide individual counselling and group sessions on health and nutrition education
    - Show the mothers how to breast feed their children and encourage them to follow the treatment prescribed
    - Solve problems observed regarding care and feeding practices: e.g., individual hygiene, use of sanitation
- Other tasks
    - Assist in taking temperatures during overcrowded periods
    - Assist a sick caregiver in taking care of the child
    - Report any serious changes in the condition of the child observed
    - Report any abnormal behaviour from the caregiver to the child or neighbours
    - Report any absentee
    - Assist the nurses during treatment
    - Assist in weighing the children

CMAM Community Outreach Worker

Site of work: Health facility with CMAM site and communities in the catchment area of the health facility

Supervised by: CMAM community outreach coordinator

Minimum qualifications and required skills:

- Diploma of community health worker, or community health promoter or volunteer
- Training in first aids and medical procedures will be an advantage

Tasks:

- Admission and registration at the health facility
    - Assist in anthropometric measurements
    - Assist in providing RUTF rations
- Community outreach activities
    - Conduct community screening for early case finding and referral
    - Conduct home visits for problem cases (i.e., absentees, defaulters, non-response to treatment) and encourage return to service
    - Provide individual counselling on health and nutrition education and behaviour change
- Community participation activities
    - Assist in community assessments
    - Engage and meet with community leaders and members on nutrition and CMAM
    - Provide group sessions on health and nutrition education and behaviour change communication
- Reporting on referral and community activities
    - Report on community activities, referrals and home visits

Annex 35. List of Job Aids and Monitoring and Reporting Tools

Community Outreach

Job Aids and Monitoring and Reporting (M&R) Tools for Community Outreach

- Messages for community outreach
- Community assessment questionnaire and tools
- Anthropometric measurements
- Health and nutrition education messages
- *Forms:* community assessment questionnaire, community assessment tools, referral slip community screening, home visit record, community outreach report, checklist home visits

Inpatient Care

Job Aids and M&R Tools for Inpatient Care

To distribute as desk or wall charts, or forms to fill at health facilities with inpatient care:

- CMAM manual and operational guidelines
- Anthropometric measurements
- Admission and discharge criteria
- Appetite test
- Look up-table weight-for-height (WFH)
- Routine medicines protocols
- Supplementary medicines protocols
- Drug dosages
- Look-up tables F75, F100
- Look-up tables ready-to-use therapeutic food (RUTF)
- Alternate recipes
- Guidance table target discharge weight
- Entry and exit categories
- Health and nutrition education messages
- Toys
- List of sites with catchment area, service day and name of community outreach workers*
- *Forms:* inpatient care treatment cards, growth monitoring (GM) cards, referral forms, site tally and statistical report, supervision checklists, and supply checklists

Outpatient Care

Job Aids and M&R Tools for Outpatient Care

To distribute as desk or wall charts, or forms to fill at health facilities with outpatient care:

- CMAM manual and operational guidelines
- Anthropometric measurements
- Admission and discharge criteria
- Appetite test
- Look up table WFH
- Routine medicines protocols
- Drug dosages
- Look-up table RUTF
- Key messages upon admission to outpatient care
- Action protocol for outpatient care
- Guidance table target discharge weight
- Entry and exit categories
- Health and nutrition education messages
- Toys
- List of sites with catchment area, service day and name of community outreach workers*
- *Forms*: outpatient care treatment cards, GM cards, referral forms, home visit reports, site tally and statistical reports, filing system, supervision checklists, and supply checklists

CMAM Management and Coordination

Job Aids and M&R Tools for CMAM Management

- CMAM manual and operational guidelines
- Packages of job aids and M&R tools for Community Outreach, Inpatient Care, Outpatient Care
- *Forms*: community assessment questionnaire, community assessment tools, referral slip community screening, home visit record, community outreach report, checklist home visits, inpatient care and outpatient care treatment cards, GM cards, referral forms, tally sheets, statistical reports, CMAM narrative reporting template, supervision checklists, and supply checklists
- List of sites with catchment area, service days and name of community outreach workers*
- CMAM database*
- Report filing system*
- Job descriptions*
- Training packages for Community Outreach, Inpatient Care, Outpatient Care, CMAM management

*To be developed or adapted at the State, Locality and site levels

Appendix

Clinical Management of SAM with Medical Complications in Inpatient Care[41]

All children with severe acute malnutrition (SAM) with poor appetite and/or with medical complications should be managed in in-patient care in a health facility with bed capacity and with staff trained in the special management of SAM with medical complications. These children should not be treated upon admission in the emergency ward but transferred to a special SAM ward where skilled health care providers will start life-saving treatment. The following paragraphs detail the diagnosis and treatment of the most common medical complications that occur in children with SAM.

DEHYDRATION

Misdiagnosis and inappropriate treatment for dehydration is the most common cause of death for malnourished children. The appearance of a severely wasted child who is NOT dehydrated is similar to a normal child who is dehydrated; therefore an untrained clinician may easily misdiagnose dehydration in SAM. With SAM, the “therapeutic window” is narrow so that even dehydrated children can quickly go from having a depleted circulation to over-hydration with fluid overload and cardiac failure. Intravenous (IV) infusions are therefore rarely used in children with SAM. In malnourished children, both marasmus and to a greater extent kwashiorkor, there is a particular renal problem that makes the children sensitive to sodium overload. The standard rehydration protocol for a well-nourished dehydrated child should therefore NOT be used.

Access to Rehydration Solution for Malnutrition (ReSoMal) should be restricted and must never be freely available for the caregivers to give to their children whenever they have a loose stool. Although a common practice, it is very dangerous to freely give ReSoMal or Oral Rehydration Solution (ORS) to these children. This can lead directly to heart failure, as well as failure to lose oedema, development of re-feeding oedema, and failure to report and record significant problems while the diet and phase remains unchanged. If there is no dehydration, diarrhoea must not be treated with rehydration fluids as a means of “preventing” the onset of dehydration. This again can lead to over-hydration and heart failure.

Dehydration in Children with Marasmus

All the classical signs of dehydration (i.e., skin pinch test, sunken eyes) are unreliable in marasmic children and should therefore not be used to make the diagnosis of dehydration in these patients.

- The skin of marasmic children normally lies in folds and is inelastic such that the “skin pinch” test is usually positive without there being any dehydration.

  Do NOT use the skin pinch test to diagnose dehydration in malnourished children.

- Eyes of marasmic children are normally sunken[42] without there being any dehydration.

  Do NOT assume that malnourished patients with sunken eyes have dehydration.

The diagnosis of dehydration in marasmic children is therefore much more uncertain and difficult than in normal children. Incorrect and over-diagnosis is very common and treatment is often given inappropriately. It is good practice not to make a definitive diagnosis of dehydration: if you think the child is dehydrated then make a *provisional* diagnosis and observe the response to treatment before confirming the diagnosis.

[41] Copied with permission from Prof Michael Golden, Therapeutic Feeding Guidelines (© Michael Golden and Yvonne Grellety).

[42] The orbit contains an eye, small muscles and nerves, fat, the lachrymal gland and a venous plexus. In marasmus, the fat and the lachrymal gland atrophy so that the eyes sink. In dehydration, there is contraction of the venous plexus forcing blood out of the orbit so that the eyes sink.

Box 1. Diagnosis of Dehydration in the Marasmic Patient

The main diagnosis of dehydration in marasmic children comes from the HISTORY rather than from physical examination.

There needs to be:

- A definite history of significant recent fluid loss - usually diarrhoea which is clearly watery (not just soft or containing mucus) and frequent *with a sudden onset* whose occurrence is within the past few hours or days.
- There should also be a HISTORY of a recent CHANGE in the child's appearance.
- If the eyes are sunken, the caregiver must confirm that the appearance of the eyes has changed to become sunken since the diarrhoea started.
- The child must not have any oedema.

Children with persistent or chronic diarrhoea (without an acute watery exacerbation) are NOT dehydrated and do not need acute rehydration therapy. They have adapted over the weeks to their altered hydration state and should therefore not be rehydrated over a few hours or days.

Diagnosis of Shock with Dehydration in the Marasmic Patient

- When there is definite dehydration diagnosed from both the history and examination and there is presence of a weak or absent radial or femoral pulse and cool or cold hands and feet (check with back of hand gently), the patient is going into shock.
- Severe shock occurs when, in addition to the above signs, there is also a decrease in the level of consciousness so that the patient is semiconscious or cannot be aroused.
- There are other causes of shock in the severely malnourished child. In particular: 1) toxic shock,[43] 2) septic shock, 3) liver failure, and 4) cardiogenic shock.
- Treatment of cardiogenic shock or liver failure based on the assumption that the patient has shock due to dehydration is very dangerous and the treatment itself may then lead to death.

Treatment of Dehydration in the Marasmic Patient

Whenever possible, a dehydrated patient with SAM should be rehydrated orally. Intravenous infusions are very dangerous and are not recommended unless there is severe shock with loss of consciousness from confirmed dehydration. The management of the rehydration process is based upon accurate measurements of weight (this is the best measurement of fluid balance). The weight measurements should be taken using an infant scale or, in the case of older children, a hanging scale to which a basin is attached with rope.[44] The basin hangs close to the ground and is easily cleaned. The patients should be weighed naked.

Monitoring Rehydration in the Marasmic Patient

BEFORE starting any rehydration therapy, do the following:

- WEIGH the child
- MARK the edge of the liver and the costal margin on the skin with an indelible marker pen
- RECORD the respiration rate

In addition, the following can be recorded if staff has the necessary skill:

- RECORD the heart sounds (presence or absence of gallop rhythm) on the treatment card
- RECORD the pulse rate on the treatment card

[43] Toxic shock may be caused by traditional medicines or self treatment with other medicine such as aspirin, paracetamol, metronidazole, etc. Septic shock is a specific type of toxic shock where the damage is caused by overwhelming sepsis. These are frequently associated with liver failure.

[44] Hanging pants used for surveys should not be used to weigh sick children in health facilities or those likely to soil the pants and pass infection to the next child.

Box 2. Rehydration in the Marasmic Patient

Rehydration of the child with SAM is managed entirely on the basis of the following:

- Weight changes
- Clinical signs of improvement
- Clinical signs of over-hydration

FLUID BALANCE is measured at intervals by WEIGHING the child.

- Give rehydration fluid until the weight deficit (measured or estimated) is corrected.
- Stop as soon as the child is “rehydrated” to the predetermined target rehydrated-weight.
- Additional fluid is not given to the malnourished child with a normal circulatory volume in order to “prevent” recurrence of dehydration.
- Normally much less ReSoMal is sufficient to restore adequate hydration in malnourished children than in normally nourished children (e.g., a total of 50 ml/kg body weight - 5 percent body weight).
- Begin rehydration therapy with a volume of 5 ml/kg bodyweight given at 30-minute intervals for the first two hours orally or by nasogastric tube (NGT) (2 percent bodyweight), and then adjust the volume of ReSoMal according to the weight changes observed. Weigh the child each hour and assess his/her liver size, respiration rate and pulse.
- After the rehydration therapy is completed usually no further treatment is given; however, for malnourished children 6-23 months, 30 ml of ReSoMal can be given for each watery stool that is lost. The standard instructions to give 50-100 ml for each stool should not be applied – it is dangerous.
- As the child gains weight, during rehydration there should be a definite clinical improvement and the signs of dehydration should disappear; if there are no signs of improvement accompanying the weight gain then the initial diagnosis was wrong and rehydration therapy should be stopped.
- Make a major reassessment at two hours.

If there is continued weight loss:

- Increase the rate of administration of ReSoMal by 10 ml/kg bodyweight/hour
- Formally reassess in one hour

If there is no weight gain:

- Increase the rate of administration of ReSoMal by 5 ml/kg bodyweight/hour
- Formally reassess in one hour

If there **is weight gain and deterioration** of the child’s condition with the re-hydration therapy:

- The diagnosis of dehydration was definitely wrong. It must be noted that even senior clinicians also make mistakes in the diagnosis of dehydration in malnutrition.
- Stop the ReSoMal and commence the child on the F75 diet.

If there is no improvement in the mood and look of the child or reversal of the clinical signs:

- The diagnosis of dehydration was probably wrong.
- Either change to F75 or alternate F75 and ReSoMal.

If there is clinical improvement but there are still signs of dehydration:

- Continue with the treatment until the appropriate weight gain has been achieved.
- Either continue with ReSoMal alone, or F75 and ReSoMal can be alternated.

If there is resolution of the signs of dehydration:

- Stop rehydration treatment and commence the child on F75 diet.

Target Weight for Rehydration with Watery Diarrhoea in the Marasmic Patient

1. If the child has been under treatment for SAM and there is a known pre-diarrhoeal weight just before the diarrhoea starts:

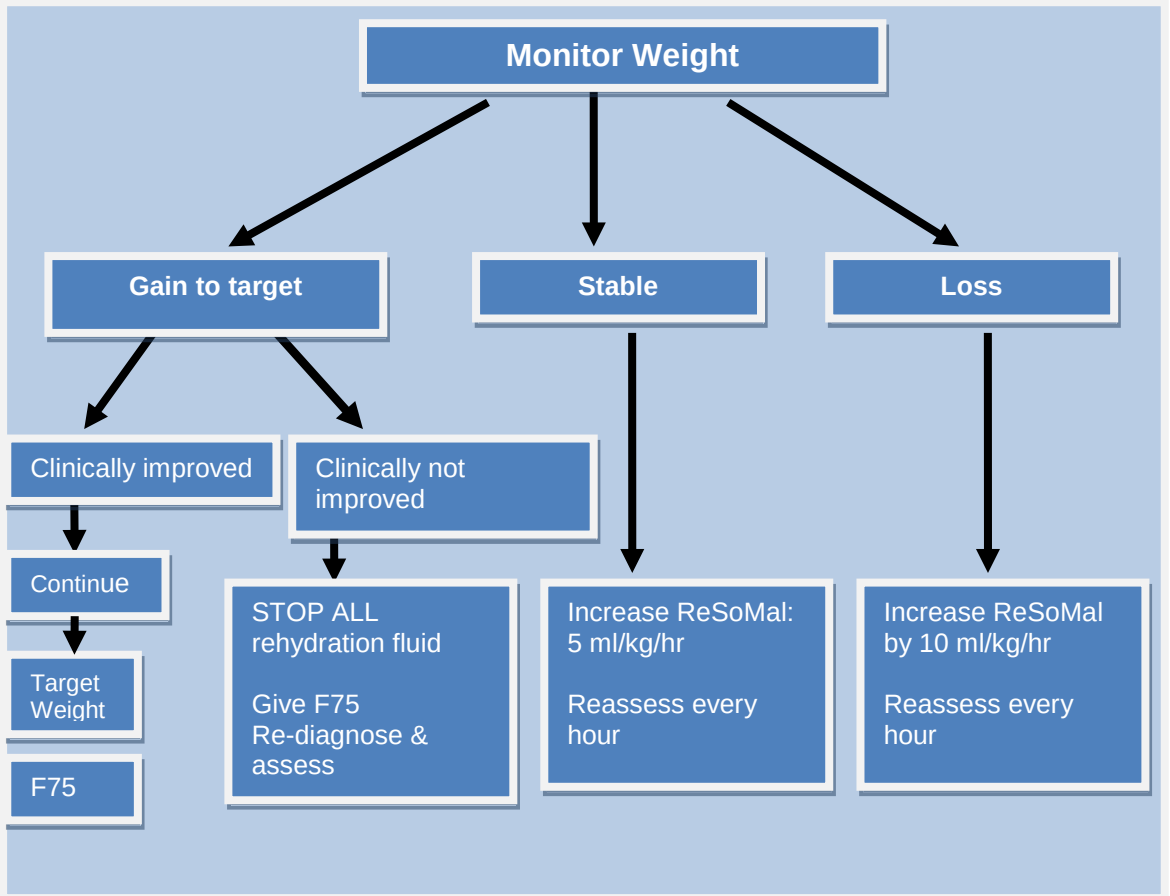
- If there has been no weight loss with the diarrhoea, rehydration treatment should not be given.
- If there has been weight loss, the actual fluid loss is equal to the weight loss and the target rehydration-weight is the pre-diarrhoeal weight. Treatment should not be given to increase the weight beyond the pre-diarrhoeal weight. “Prophylactic” administration of ReSoMal to prevent recurrence of dehydration is not given.

2. If the patient is newly admitted, it is extremely difficult to judge the amount of fluid that has been lost in the child with marasmus. Because of the narrow therapeutic window and the danger of going from under-hydration to over-hydration, the estimated weight deficit should be very conservative. It is better and much less dangerous to slightly underestimate the amount of weight deficit than to overestimate the weight deficit.

- In practice, the weight loss is generally 2 percent to 5 percent of bodyweight.
- Do not attempt to increase bodyweight by more than 5 percent in conscious children.
- If there is weight gain of up to 5 percent of bodyweight with rehydration, the truly dehydrated child will show dramatic clinical improvement and be out of immediate danger from death due to dehydration; treatment can then be continued with F75.

3. Breastfeeding should not be interrupted during rehydration. Begin to give F75 as soon as possible, orally or by NGT. ReSoMal and F75 can be given in alternate hours if there is still some dehydration and continuing diarrhoea. Introduction of F75 is usually achieved within 2-3 hours of starting rehydration.

Figure 1. Rehydration in the Marasmic Patient



Treatment of Shock from Dehydration in the Marasmic Patient

If there is definite dehydration (e.g., a history of fluid loss, a change in the appearance of the eyes) and the patient is *semiconscious or unconscious AND has a rapid weak pulse AND has cold hands and feet*, the patient should be treated with intravenous fluids. The amounts given should be half or less of that used in normally nourished children.

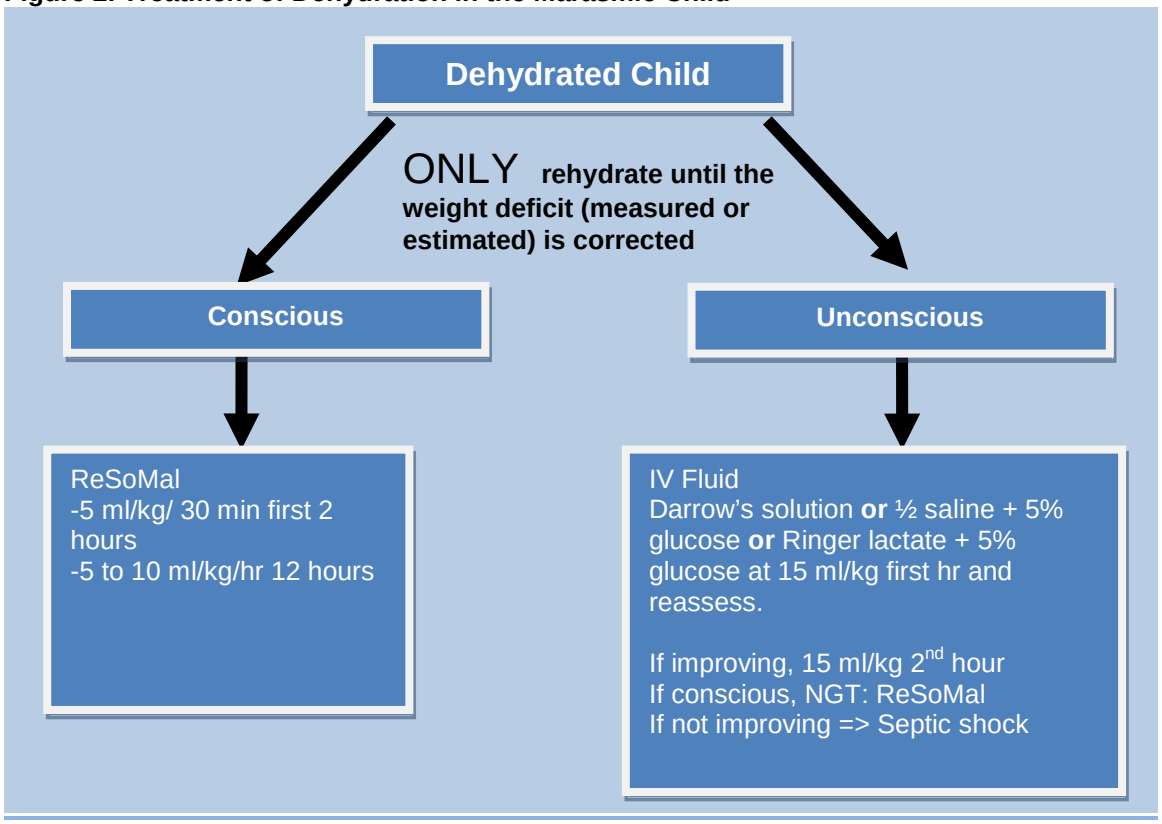
Use one of the following solutions:

- Half-strength Darrow's solution
- Ringer-Lactate with 5 percent dextrose
- Half strength Saline with 5 percent dextrose

Management:

- Give 15 ml/kg bodyweight IV over the first hour and reassess the child.
- If there is continued weight loss or the weight is stable, repeat the 15 ml/kg IV over the next hour. Continue until there is weight gain with the infusion. (15 mg/kg is 1.5 percent of bodyweight, so the expected weight gain after 2 hours is up to 3 percent of bodyweight.)
- If there is no improvement and the child has gained weight, then assume that the child has toxic, septic or cardiogenic shock or liver failure. Stop rehydration treatment. Search for other causes of loss of consciousness.
- As soon as the child regains consciousness or the pulse rate drops towards a normal level, stop the drip and treat the child orally or by NGT with 10 ml/kg/hour of ReSoMal. Continue with the protocol (above) for rehydration of the child orally using weight change as the main indicator of progress.
- There should never be a drip present in a malnourished child who is able to drink or is absorbing fluid adequately from an NGT.

Figure 2. Treatment of Dehydration in the Marasmic Child



Monitoring Rehydration in the Marasmic Patient

All rehydration (oral or IV) therapy should be stopped immediately if any of the following are observed:

- The target weight for rehydration has been achieved change to F75)

- The visible veins become full (change to F75)
- The development of oedema (over-hydration – change to F75)
- The development of prominent neck veins*
- The neck veins engorge when the abdomen (liver) is pressed*
- An increase in the liver size by more than one cm*
- The development of tenderness over the liver*
- An increase in the respiration rate by five breaths per minute or more*
- The development of a "grunting" respiration (this is a noise on expiration NOT inspiration)*
- The development of crepitations in the lungs
- The development of a triple rhythm

** If these signs develop, the child has fluid overload, an over-expanded circulation and is going into heart failure.*

Dehydration in Children with Kwashiorkor

All children with oedema have increased total body water and sodium levels. In other words, they are over-hydrated. Oedematous patients cannot be dehydrated, although they are frequently hypovolaemic. The hypovolaemia (relatively low circulating blood volume) is due to a dilatation of the blood vessels with a low cardiac output.

Diagnosis of Dehydration with Kwashiorkor

If a child with kwashiorkor has definite watery diarrhoea and the child is deteriorating clinically, then the fluid lost CAN be replaced on the basis of *30 ml of ReSoMal per watery stool*.

Treatment of Dehydration with Kwashiorkor

The treatment of hypovolaemia in kwashiorkor is the same as the treatment for septic shock.

HYPERNATRAEMIC DEHYDRATION[45]

Hypernatraemic dehydration is common in areas with a low relative humidity (very dry atmosphere), particularly if there is also a high temperature.[46] It is caused by loss of water without loss of salt, leading to pure water deficiency. This is because water is lost through the skin and breath at a high rate under these conditions. If solutions high in sodium or other osmolyte that is not metabolised are given, then water will still be lost while leaving the osmotically-active solute in the body. Also, in areas where bottle feeding is common, mothers frequently over-concentrate infant formula;[47] this can lead to hypernatraemic dehydration even in wet or cold climates and is lethal in hot and dry climates and seasons. The malnourished child is particularly at risk because he or she has a very low renal-concentrating ability and a high surface area relative to his or her body mass.

During development of the high plasma osmolarity, there is a balancing increase in intra-cellular osmolytes to prevent water being drawn out of the cells. During treatment, if the extracellular fluid osmotic pressure is reduced too quickly leaving a high intracellular osmotic pressure, sudden cellular swelling occurs that can lead to swelling of the brain to a sufficient degree to give convulsions and death.

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[45] This is the same as "hyper-osmolar syndrome" and other synonyms that denote that the plasma osmolarity is increased above normal. The increased osmoles can be urea if a very high protein diet has been taken or there is inadequate renal function or it can be glucose in patients with glucose intolerance.

[46] The dry atmosphere is the more important feature. Where the climate is very hot and wet, much less water is lost so that the child presents first with fever because of an inability to excrete the heat generated during metabolism.

[47] All infant formulae have a very much-higher renal solute load than breast milk. In very hot and dry climates even correctly made up infant formulae can result in hypernatraemic dehydration. This is a real danger that arises from the failure of breastfeeding in such climates. Because of the low renal solute load of human breast milk, exclusive breastfeeding is the best way to avoid hypernatraemic dehydration.

Although hypernatraemia is difficult to treat safely, it is easy to prevent safely. Malnourished children, particularly those in dry and hot environments should have continuous access to sufficient water without a high ion content that requires renal excretion to fulfil their requirements for water.

Diagnosis of Hypernatraemic Dehydration

The first sign of hypernatraemic dehydration is a change in the texture and feel of the skin, which develops a plasticity similar to the feel of dough (flour and water mixed for bread making). The eyes can sink somewhat. The abdomen then frequently becomes flat and may progressively become sunken and wrinkled (so-called “scaphoid abdomen or “prune belly”). The child may then develop a low-grade fever if there is insufficient water to evaporate to excrete the heat generated during normal metabolism. The child becomes progressively drowsy and then unconscious. Convulsions follow this stage, which leads to death if treatment for hypernatraemia is not instituted. The convulsions are not responsive to the normal anti-convulsants (e.g., phenoparbitone, diazepam).

Failure to control convulsions with anti-convulsants may be the first indication of the underlying diagnosis. The diagnosis can be confirmed by finding an elevated serum sodium: normally hypernatraemia is diagnosed when the serum sodium is greater than 150 mmol/L.

Treatment of Hypernatraemic Dehydration

For insipient hypernatraemic dehydration – a conscious, alert child who is ONLY showing changes in the texture and feel of the skin – breast milk is the best diet. This can be supplemented with up to about 10 ml/kg/hour of water that should be given as a 10 percent sugar-water solution in sips over several hours until the thirst of the child is satisfied. At this early stage – when impending water deficiency should be recognised and treated – treatment is relatively safe.

Treatment must be slow for developed hypernatraemic dehydration. If it is possible to measure serum sodium, aim to reduce the serum sodium concentration by about 12 mmol every 24 hours. Trying to correct the hypernatraemia quicker than this risks death from cerebral oedema. If it is not possible to measure the serum sodium, aim to correct hypernatraemic dehydration over at least 48 hours. The treatment should start slowly, and as the serum sodium approaches normality, the rate of repletion can increase.

The textbook treatment of hypernatraemia is to slowly give normal saline either orally or intravenously. This is dangerous in the severely malnourished child and should not be used, as it is based upon the premise that the excess sodium given can be safely excreted by the kidneys, which is not the case in the severely malnourished child.

Treatment progress is assessed by serial weighting of the child:

- FIRST, put the child in a humid, thermoneutral (28˚ to 32˚C) environment. This is critical to prevent further water loss as well as hyperthermia if the humidity in the air is increased in a hot environment.[48]
- Weigh the child on an accurate balance and record the weight.

The objective of treatment is to put the child into a positive water balance of about 60 ml/kg/day,[49] which is equivalent to 2.5 ml/kg/hour of plain water. This amount should not be exceeded until the child is awake and alert.

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[48] If the child is small, this can be in an incubator similar to that used for neonates. It can also be achieved with aerosol sprays into the atmosphere or a humidifying tent, such as that used to treat bronchiolitis. If such facilities are not available, hanging wet sheets in the room or spraying the walls with water intermittently will both humidify and cool the atmosphere. Wet clothes should not be placed directly onto the child unless he or she has a high fever. In one study in Chad (daytime climate of 43˚ C with 15% humidity), the turnover of water in malnourished children was one-third of body water per day (250 ml/kg/day). It is critical to prevent this ongoing excessive water loss, otherwise it is very difficult to judge the amount of fluid to give the child that is needed for slow rehydration, which is a relatively small faction of the requirements for replacing ongoing losses, which are unmeasured and very difficult to assess with any accuracy. The ONLY way to judge on-going losses and the rate of rehydration is with serial accurate weights.

[49] The extracellular fluid volume is about 250 ml/kg, depending on the level of body fat and the extent of cellular atrophy. If the extracellular sodium concentration is about 160 mmol/L and this is to be reduced by 12 mmol/day,

- If the **child is conscious or semi-conscious** and there is **no diarrhoea**, put down a NGT and start 2.5 ml/kg/hour of a 10 percent sugar-water solution.[50] Do not give F75 at this stage, as it gives a renal solute load (mainly as potassium). Never give F100 or infant formulae.
- Reweigh the child every 2 hours.
    - If the weight is static or there is continuing weight loss, recheck the environment to try to prevent on-going water losses then increase the amount of sugar-water intake to compensate for the ongoing weight loss (calculated as g/hour and increase the intake by this amount).
    - If the weight is increasing, continue treatment until the child is awake and alert.
- If there is **accompanying diarrhoea**, give one-fifth the normal saline in 5 percent dextrose orally or by NGT.
- If the **child is unconscious**, the same volumes of fluid (5 percent dextrose if there is no diarrhoea and one-fifth normal saline in 5 percent dextrose if there is diarrhoea) can be given by IV infusion. There should be a peristaltic pump or accurate paediatric burette in order to ensure that that the rate of administration of fluid is not exceeded during treatment.
- When the child is awake and alert, recommence feeding with F75.

SEPTIC (OR TOXIC) SHOCK

Septic shock presents with some of the signs of true dehydration and also of cardiogenic shock; the differential diagnosis is often very difficult.

Children that appear “very ill” may have septic shock, cardiogenic shock, liver failure, poisoning with traditional medicines, malaria, acute viral infection or other severe conditions. All “very ill” children should not be automatically diagnosed as having septic shock; the true reason for the condition should be sought. If this develops after admission to inpatient care, the treatment given to the child should be carefully reviewed to determine if the treatment is the cause of the clinical deterioration. Any “unusual” drugs should be stopped.

Diagnosis of Septic Shock

Diagnosis of developed septic shock requires that the signs of hypovolaemic shock be present. They include a fast weak pulse with:

- Cold peripheries
- Disturbed consciousness
- Absence of signs of heart failure

Treatment of Septic Shock

All patients with signs of incipient or developed septic shock should immediately be:

1. Given broad-spectrum antibiotics
    a. Second line and first line antibiotics should be given together
    b. For developed septic shock, consider third line antibiotics, antifungal treatment and anti-staphylococcal treatment
2. Kept warm to prevent or treat hypothermia
3. Given sugar-water by mouth or NGT as soon as the diagnosis is made (to prevent hypoglycaemia)
4. Be physically disturbed as little as possible (e.g., no washing, no excess examination, no investigations in other departments)
5. Never be transported to another facility – the stress of transport leads to dramatic deterioration

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the extracellular fluid should be expanded by about 0.75 percent per day. However, the extra water given will be distributed in both the intra- and extracellular compartments, so it is necessary to have a positive water balance of 0.75 percent of body water per day. There is a higher body water percentage in malnourished children than in normal children. Therefore, the daily positive water balance should be about 60 ml/kg/day, which equals 2.5 ml/kg/hour.

[50] Sugar-water should be used rather than plain water. It is isotonic and so empties from the stomach, and is absorbed more quickly. The treatment will last for about 48 hours. Sugar water prevents hypoglycaemia in these children.

For incipient (early) septic shock: Give the standard F75 therapeutic diet by NGT.

For developed septic shock:
If the patient is unconscious because of poor brain perfusion, a slow IV infusion of one of the following can be given:

- Whole blood of 10 ml/kg over at least 3 hours – nothing should be given orally during the blood transfusion

OR

- 10 ml/kg/hour for 2 hours of one of the following (do not give if there is a possibility of cardiogenic shock):
    - Half-strength Darrow's solution with 5 percent glucose
    - Ringer's lactate solution with 5 percent glucose
    - Half-normal (0.45 percent) saline with 5 percent glucose

Monitoring Treatment of Septic Shock

Monitor the child every 10 minutes for signs of deterioration, especially over-hydration and heart failure, including:

- Increasing respiratory rate, development of grunting respiration
- Increasing liver size
- Vein engorgement

As soon as the patient improves (e.g., stronger radial pulse, regain of consciousness) stop all IV intake and continue with a F75 diet.

If there are absent bowel sounds, gastric dilatation and intestinal splash with abdominal distension:

- Give first and second line antibiotic treatment by IM injection.
- Consider adding third line antibiotics.
- Stop all other drugs that may be causing toxicity (such as metronidazole).
- Give a single IM injection of magnesium sulphate (2 ml of 50 percent solution).
- Pass a NGT and aspirate the contents of the stomach. Then "irrigate" the stomach with isotonic clear fluid (5 percent dextrose or 10 percent sucrose – the solution does not need to be sterile). Do this by introducing 50 ml of solution into the stomach and then gently aspirating all the fluid back again. This should be repeated until the fluid that returns from the stomach is clear.
- Put 5 ml/kg of sugar water (10 percent sucrose solution) into the stomach and leave it there for one hour. Aspirate the stomach and measure the volume that is retrieved. If the volume is less than the amount that was introduced then either a further dose of sugar water should be given or the fluid returned to the stomach.
- There is frequently gastric and oesophageal candidiasis. In this case, give oral nystatin suspension or fluconazole.
- Keep the child warm.

If the child's level of consciousness is poor, given intravenous glucose:

- Do not put up a drip at this stage. Monitor the child carefully for six hours, without giving any other treatment
- Improvement is measured first by a change in intestinal function (i.e., decrease in the distension of the abdomen, visible peristalsis seen through the abdominal wall, return of bowel sounds, decreasing size of gastric aspirates) and secondly by improvement in the general condition of the child.

If there is intestinal improvement, start to give small amounts of F75 by NGT (half the quantities given in the stabilisation phase look-up table – subsequently adjust by the volumes of gastric aspirated).

If there is no improvement after six hours:

- Consider putting up an IV drip. It is very important that the fluid given contains adequate amounts of potassium. Sterile potassium chloride (20 mmol/L) should be added to all solutions that do not contain potassium. If it is available, use one-fifth normal saline in 5 percent dextrose, otherwise use Ringer-Lactate in 5 percent dextrose or half-strength saline

in 5 percent dextrose. The drip should be run VERY SLOWLY – the amount of fluid that is given should be NOT BE MORE THAN 2-4 ml/kg/hour.
- Start to give the first and second line antibiotics intravenously.
- When the gastric aspirates decrease such that one half of the fluid given to the stomach is absorbed, discontinue the IV treatment and continue with oral treatment only.

HEART FAILURE

Diagnosis of Heart Failure

Heart failure should be diagnosed when there is:
- Physical deterioration with a gain in weight: this is the most common way of making the diagnosis and does not require any equipment or particular clinical skill
- A sudden increase in liver size (this is why the liver is marked before starting any infusion)
- Tenderness developing over the liver
- An increase in respiration rate
    - An acute increase in respiration rate of more than five breaths per minute (particularly during rehydration treatment)
    - > 50 breaths/minute in infants
    - > 40 breaths/minute in children 1-5 years
- Respiration that has or develops a “grunting” sound during each expiration
- Crepitations in the lungs
- Prominent superficial and neck veins
- Engorgement of the neck veins when the abdomen (liver) is pressed
- Enlargement of the heart (very difficult to assess in practice)
- Appearance of triple rhythm (very difficult to assess in practice)
- Increasing oedema or reappearance of oedema during treatment
- An acute fall in haemoglobin (Hb) concentration[51] (needs laboratory)

During the last stage of heart failure development, there is either: 1) marked respiratory distress progressing to a rapid pulse, cold hands and feet, oedema and cyanosis; or 2) sudden, unexpected death. This is known as cardiac shock, it commonly occurs in the severely malnourished child after treatment has started. It has to be differentiated from shock due to dehydration or sepsis because the treatment is quite different.

Heart failure is usually preceded by weight gain. As heart failure usually starts after treatment, there is nearly always a record of the weight of the patient that was taken before the onset of heart failure. Heart failure and pneumonia are clinically similar and very difficult to tell apart. If there is an increased respiratory rate AND any gain in weight, heart failure should be the first diagnosis. If there is an increased respiratory rate with a loss of weight, pneumonia can be diagnosed. If there is no change in weight (fluid balance), the differentiation has to be made using the other signs of heart failure. Pneumonia should NOT be diagnosed if there has been a gain of weight just before the onset of respiratory distress.

Children with oedema can go into heart failure without a gain in weight if the expanded circulation is due to oedema fluid being mobilised from the tissues to the vascular space. During the initial treatment of SAM, any sodium containing fluid that has been given will have to be safely excreted later. Initial over-treatment can lead to death several days later from heart failure when intracellular sodium (marasmus and kwashiorkor) and oedema fluid are being mobilised.

As oedema fluid is mobilised (in kwashiorkor patients) and the sodium is coming out of the cells (both kwashiorkor and marasmus), the plasma volume expands and there is a FALL IN Hb concentration. This DILUTIONAL anaemia happens to some extent in nearly all children as they recover. A substantial fall in Hb as a sign of an expanding circulation is also a sign of impending or actual heart failure. These children should never be transfused.

[51] All children have a fall in Hb during the early phase of treatment. This “dilutional anaemia” is due to the sodium coming of the cells and mobilization of oedema – it must not be treated.

Treatment of Heart Failure

When heart failure is diagnosed:

- Stop all intakes of oral or IV fluids. No fluid or food should be given until the heart failure has improved. This may take 24-48 hours. Small amounts of sugar water can be given orally to prevent hypoglycaemia.
- Give frusemide (1 mg/kg).
- Digoxin can be given in single dose (5 µg/kg – note that this is lower than the normal dose of digoxin. A loading dose is not given. Use the paediatric preparation and not small quantities of the adult preparation).

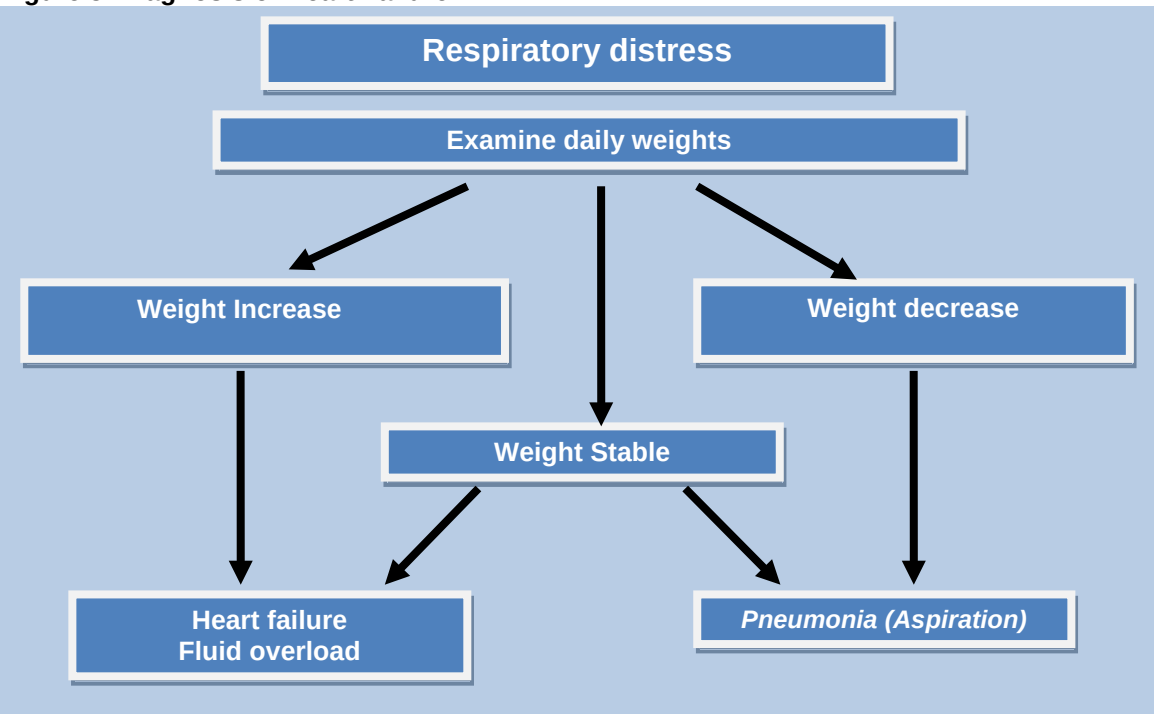
If heart failure is associated with severe anaemia, the treatment of the heart failure takes precedence over the treatment of the anaemia. A patient in heart failure should never be transfused (unless there are facilities and experience with exchange-transfusion).

Monitoring Treatment of Heart Failure

The following parameters should be monitored:

- Weight
- Respiration rate and sound
- Pulse rate
- Jugular vein or visible vein engorgement
- Liver size
- Heart sounds

Figure 3. Diagnosis of Heart Failure



HYPOTHERMIA

Severely malnourished patients are highly susceptible to hypothermia (rectal temperature below 35.5°C or under arm (axillary) temperature below 35°C).

Diagnosis of Hypothermia

- Check the temperature of the room (28-32ºC).
- Check if the child sleeps with his/her caregiver.
- Check the temperature of the patient: rectal temperature < 35.5ºC; axillary temperature < 35ºC

Management of Hypothermia

- Care should be taken not to bathe malnourished patients on admission. Bathing should be done after the child has stabilised. Bathe patients during the warmest part of the day using warm water. Drying of patients should be done quickly and gently after washing.
- Use the "kangaroo technique": put the naked child on the naked skin of the caregiver, put a hat on the child and wrap caregiver and child together, give hot drinks to the caregiver so her skin gets warmer (plain water, tea or any other hot drink).
- Monitor body temperature during re-warming.
- The room should be kept warm, especially at night (between 28-32°C): a maximum-minimum thermometer should be on the wall in the stabilisation phase area to monitor the temperature.
- Treat for hypoglycaemia and give second-line antibiotic treatment.

Note: The thermo-neutral temperature range for malnourished patients is 28-32°C. This is often uncomfortably warm for the staff and caregivers who may adjust the room to suit themselves.

Children with SAM should always sleep with their caregivers and not in traditional hospital child-cots/cages. There should be adequate blankets and a thick sleeping mat or adult bed.

Most heat is lost through the head; hats should be worn by malnourished children. Windows and doors should be kept closed at night.

SEVERE ANAEMIA

Diagnosis of Severe Anaemia

A child has very severe anaemia if the Hb concentration is less than 40 g/L or the packed-cell volume is less than 12 percent in the first 24 hours after admission.

Management of Severe Anaemia

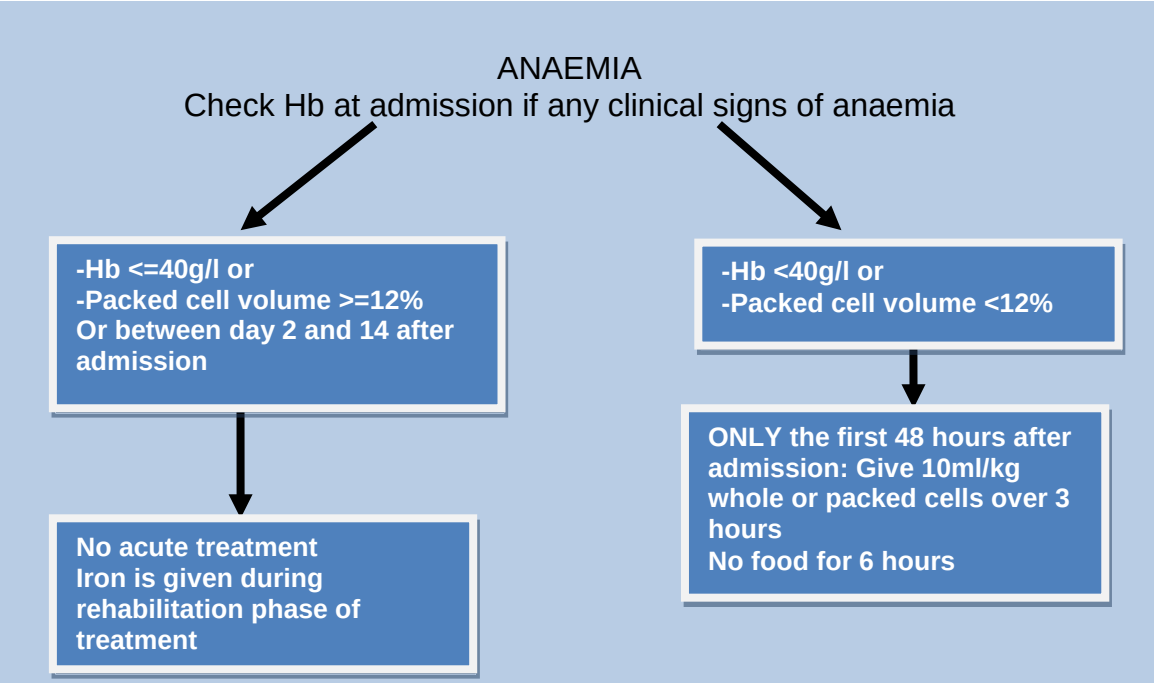
Transfusion is a radical treatment and extremely dangerous for children with SAM who often present with cardiac dysfunctions, reduction in renal function and with iron-carrier protein deficiency.

- Give 10 ml/kg bodyweight of packed red cells or whole blood slowly over three hours.
- All children should fast during the procedure and for at least three hours after a blood transfusion.
- Do not transfuse a child between 48 hours after the start of treatment with F75 until 14 days later.
- Do not give iron during the stabilisation phase of treatment.
- If the facilities and expertise exist (neonatal units), it is preferable to give an exchange transfusion to severely malnourished children with severe anaemia.

If there is heart failure with very severe anaemia, transfer the patient to a health facility with the capacity to perform an exchange transfusion. Heart failure due to anaemia is clinically different from "normal" heart failure. In heart failure due to anaemia, there is "high output" failure with an overactive circulation. Increasing anaemia and heart failure or respiratory distress is a sign of fluid overload and an expanding plasma volume. It should be borne in mind that the heart failure is not being "caused"

by the anaemia; these patients should never be given a straight transfusion of blood or even packed cells.

Figure 4. Diagnosis of Anaemia



HYPOGLYCEMIA

Children with SAM can develop hypoglycaemia, though it is a very uncommon medical complication. All children who have travelled for long distances or have waited a long time for attention should be given sugar water as soon as they arrive (approximately 10 percent sugar solution: 10 g of sugar per 100 ml of water).

Children that are at risk of hypothermia or septic shock should be given sugar water whether or not they have a low blood glucose level.

A child who has taken the diet during the day will not develop hypoglycaemia overnight and does not need to be woken for night-time feeding. If the diet has not been taken during the day, the mother should give at least one feed during the night.

Diagnosis of Hypoglycemia

There are often no clinical signs of hypoglycaemia. One sign that does occur in malnutrition is eye-lid retraction – if a child sleeps with his eyes slightly open.

Management of Hypoglycemia

- If a child sleeps with his /her eyes slightly open, then he or she should be woken up and given sugar solution to drink.
- Patients who are conscious and able to drink should be given about 50 ml (approximately 5 to 10 ml/kg bodyweight) of sugar water (about 10 percent ordinary sugar in potable water) or F75 (or F100) milk by mouth. The actual amount given is not critical.
- Patients losing consciousness should be given 50 ml (or 5-10 ml/kg bodyweight) of sugar water by NGT immediately. When consciousness is regained, give milk feed frequently.
- Unconscious patients should be given sugar water by NGT. They should also be given glucose as a single intravenous injection (approximately 5 ml/kg bodyweight of a sterile 10 percent glucose solution).

- All patients with SAM with suspected hypoglycaemia should be treated with second line antibiotics.
- The response to treatment is dramatic and rapid. If a very lethargic or unconscious patient does not respond in this way, then there IS another cause giving rise to the clinical condition that has to be identified and treated.

SAM AND HIV OR TB

Dietary management of children with SAM with HIV does not differ from dietary treatment of children with SAM who are HIV-negative. HIV infected children are likely to present more often with associated infection, and therefore rates of weight gain and recovery may be lower than in HIV-negative children.

The management of SAM in HIV-infected patients should take into account:

- High prevalence of TB: Always consider diagnosis of TB in HIV-infected patients. The signs are the same as those in children without HIV infection .
- Cotrimoxazole prophylaxis: Prophylactic doses of Cotrimoxazole should be given to patients when HIV is suspected, and provision should be indefinite in situations where antiretroviral therapy (ART) is not yet available. This antibiotic is added to the other systematic antibiotics for treatment of SAM given at the start of treatment.
- ART should be considered for HIV-positive patients with SAM where available: ART is potentially toxic for the child with SAM as it takes several weeks or months before having an impact on the CD4 cell count. Therefore, it is safe to wait until recovery of nutritional status (at least the end of inpatient care) to commence ART treatment. The most appropriate schedule for commencement of ART treatment for children with SAM and HIV infection is, however, not yet established and is currently being investigated.
- Voluntary testing and counselling of children with SAM and their parents in high HIV prevalence areas: Testing for HIV in children with SAM is advised in areas with a high HIV prevalence. It has implications for the treatment of SAM and it may lead to detection of HIV in the accompanying parent, with implications for counselling and treatment. If families of HIV-infected children are food insecure, they will also need special nutrition support.

Although guidelines for the management of SAM are considered appropriate for HIV-infected patients with the minor adaptations described above, extensive research is currently under way to further adapt protocols for these patients. These include, among other considerations:

- Comparison of recovery rates of HIV-infected and HIV-negative children with SAM treated in CMAM
- Development of nutrition products specifically designed for HIV-infected malnourished patients
- Use of micronutrient supplementation for HIV-infected individuals
- Development of nutrition support for PLHIV in ART
- Studies of the interaction between ART and nutritional status of the patient
- Assessment of SAM in HIV-infected adults
- Impact of nutrition support on HIV-infected individuals
- Integration of HIV programmes with CMAM

Until such a time where the evidence base is established, it is advised to treat SAM in HIV-infected patients with this standard treatment protocol for SAM, combined with prophylaxis (Cotrimoxazole) and start of antiretrovirals (ARVs), if necessary, only after initial recovery of nutritional status.

OTHER MEDICAL COMPLICATIONS

Children diagnosed with SAM may also be suffering from other underlying illnesses. In such circumstances these children should be treated according to this standard protocol for SAM. Those that fail to respond to treatment need further investigation for an underlying condition that makes them fail to respond to treatment.

Great care should be exercised in prescribing drugs for patients with SAM. They have abnormal kidney and liver function, altered levels of the enzymes necessary to metabolise and excrete drugs, excess entero-hepatic circulation (reabsorption) of drugs that are excreted in the bile, decreased body fat which increases the effective concentration of fat soluble drugs, and in kwashiorkor there may be a

defective blood-brain barrier. Moreover, very few drugs have had their pharmacokinetics, metabolism or side effects examined in patients with SAM.
The following considerations are strongly advised:

- The underlying malnutrition should be treated first before standard doses of drugs are given. Drugs used for HIV and TB can damage the liver and pancreas. These diseases do not usually cause immediate death (except military TB and TB meningitis) so treatment should normally be delayed for up to one week while the nutritional treatment returns the metabolism of the patient back to normal.
- If it is critical that a particular drug be given at the start of treatment for SAM, then it should initially be administered in reduced doses.
- Many drugs should be avoided altogether until there is research to show that they are safe and guidance is provided on the dosage appropriate for the malnourished child. Common drugs, such as paracetamol, do not function well in most children with SAM being treated in the stabilisation phase and can cause serious hepatic damage. Metronidazole should be avoided if at all possible, and ivermectin or other drugs that are dangerous if they cross the blood-brain barrier should never be given to oedematous patients.