Government of Southern Sudan
Ministry of Health

Interim Guidelines Integrated Management of Severe Acute Malnutrition

December 2009

Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF BOXES

Acknowledgements

These guidelines were developed in partnership with the United States Agency for International Development (USAID)-funded Food and Nutrition Technical Assistant II Project (FANTA-2). The Government of Southern Sudan (GOSS) Ministry of Health (MOH) would like to thank USAID for providing financial support and especially thank FANTA-2 for its technical assistance. We acknowledge the United Nations Children's Fund (UNICEF) for being instrumental in compiling the initial draft of the guidelines and for its commitment to continued support. We also recognise with special gratitude the significant contribution of the United Nations Food and Agriculture Organisation (FAO) through the European Commission-funded Sudan Institution (Capacity Program) Food Security Information for Action (SIFSIA) Project, which provided financial support for the coordination of meetings and technical reviews during the development of the guidelines.

The guidelines were largely constructed from World Health Organisation (WHO) scientific recommendations and globally recognized best practices. The guidelines were validated with the recommendations of both local and international health and nutrition organisations that participate in the Integrated Management of Severe Acute Malnutrition Technical Working Group (IM-SAM TWG). Their expert presence in the field within Southern Sudan has greatly informed the final product.

I particularly acknowledge the important role of the current Minister of Health, His Excellency Dr. Joseph Monytwil Wejang, whose political commitment and aspiration to ensure better health outcomes in Southern Sudan has propelled the agenda of nutrition high enough within the GOSS to warrant the establishment of a full Directorate of Nutrition within the MOH. These achievements would also not have been possible without the leadership of a competent Directorate of Nutrition, which led the initiative and mobilised and coordinated resources for the development of the guidelines. Therefore, a special thank you goes to Ms. Victoria Jabe Eluzai, the current Director General of Nutrition of the GOSS MOH, for her diligent efforts, commitment to her work and overarching guidance during the development of these guidelines. Many thanks to the entire staff of the Directorate of Nutrition, especially Ms. Bibian Alex Philip, Senior Inspector for Nutrition Information Systems, and Ms. Catherine Jurua Otto, Senior Inspector for Maternal and Child Nutrition, for their collective support in leading the processes.

Thank you to all director generals, senior paediatricians and senior staff who have represented other key MOH Directorates and institutions, such as Juba Teaching Hospital and El Sabah Children's Hospital. They have greatly supported and participated in the technical review of the guidelines. Their participation in the IM-SAM TWG not only has demonstrated their individual commitment, it has provided government leadership, and had a positive impact on the quality of the review process.

I am also particularly grateful for the significant efforts of the FANTA-2 team: Ms. Hedwig Deconinck, for her efforts to ensure these guidelines are technically in line with the most up-to-date WHO scientific standards and best practices; Ms. Senewa Montet-Timayio, for her support to the Directorate of Nutrition; and to Ms. Rachel Elrom for her diligent editing of this document.

Materials from the following sources are also gratefully acknowledged:

- WHO. 1999. *Management of severe malnutrition: a manual for physicians and other senior health workers.* Geneva: WHO.
- WHO. 2002. *Training course on the management of severe malnutrition.* Geneva: WHO.
- Golden, M.H., and Y. Grellety. 2006. *Guidelines for the management of the severely malnourished.* (Draft)
- Valid International. 2006. *Community-based Therapeutic Care. A Field Manual.* 1st edition. Oxford, UK: Valid International.
- Concern Worldwide, FANTA, UNICEF and Valid International. 2008. *Training Guide for Community-Based Management of Acute Malnutrition (CMAM)*. Washington, DC: FANTA AED.
- Prof. M. Golden and Dr. Y. Grellety kindly permitted us to copy their original material on the clinical management of severe acute malnutrition with medical complications in inpatient care. This material is reproduced with the understanding that it can be taken and used by national

I am inspired to and encourage all of us to make collective efforts as stakeholders to ensure these guidelines contribute to a new revolution in the efforts of the GOSS and its partners to mitigate the long history of acute malnutrition in the country and to achieve a significant reduction in its toll on the overall disease burden and mortality, especially among children under five years of age and their mothers and caregivers.

Dr. Majok Yak Majok
Undersecretary
Ministry of Health
Government of Southern Sudan

Acronyms and Abbreviations

<	Less than
≤	Less than or equal to
>	Greater than
≥	Greater than or equal to
ACT	Artemisinin-based combination therapy
AIDS	Acquired immune deficiency syndrome
AQ	Amodiaquine
ART	Antiretroviral therapy
AS	Artesunate
AWG	Average weight gain
BMI	Body mass index
BPHNS	Basic Package of Health and Nutrition Services
CBO	Community-based organisation
CD4	Cluster of differentiation 4
CHW	Community health worker
cm	Centimetre(s)
CMAM	Community-Based Management of (Severe) Acute Malnutrition
CMV	Combined mineral and vitamin complex
CSB	Corn-soy blend
CSF	Cerebro-spinal fluid
dl	Decilitre(s)
ENA	Essential Nutrition Actions
EPI	Expanded programme of immunisation
F100	Formula 100 therapeutic milk
F75	Formula 75 therapeutic milk
g	Gram(s)
GOSS	Government of Southern Sudan
Guidelines	Interim National Guidelines on the Integrated Management of Severe Acute Malnutrition
Hb	Haemoglobin
HFA	Height-for-age
HIV	Human immunodeficiency virus
HMIS	Health management information system
IECHC	Integrated essential child health care policy
IM	Intramuscular
IM-AM	Integrated Management of Acute Malnutrition
IM-MAM	Integrated Management of Moderate Acute Malnutrition
IM-SAM	Integrated Management of Severe Acute Malnutrition
IMCI	Integrated Management of Childhood Illnesses
IQ	Intelligence quotient
IU	International unit(s)
IV	Intravenous
IYCF	Infant and young child feeding
KAP	Knowledge, Attitudes and Practice
kcal	Kilocalorie(s)
kg	Kilogram(s)
L	Litre(s)
LOS	Length of stay
M&R	Monitoring and reporting
MAM	Moderate acute malnutrition
MDG	Millennium Development Goal
mg	Milligram(s)
mgmt	Management
ml	Millilitre(s)
mm	Millimetre(s)
mmol	Millimole(s)
MOH	Ministry of Health

mOsmol	Milliosmol(s)
MUAC	Mid-upper arm circumference
NCHS	National Centre for Health Statistics
NGO	Nongovernmental organisation
NGT	Nasogastric tube
NHP	Nutrition Health Policy
OPD	Outpatient department
ORS	Oral rehydration solution
ORT	Oral rehydration therapy
PCV	Packed cell volume
PHCC	Primary Health Care Centre
PHCU	Primary Health Care Unit
PLHIV	People living with HIV
PMTCT	Prevention of mother-to-child transmission of HIV
RDA	Recommended Daily Allowance
ReSoMal	Rehydration solution for malnutrition
RUTF	Ready-to-use therapeutic food
SAM	Severe acute malnutrition
SD	Standard deviation(s)
SFP	Supplementary feeding programme
SWOT	Strengths, weaknesses, opportunities and threats
TB	Tuberculosis
ThG	Thematic group
TOR	Terms of reference
TWG	Technical working group
UN/SCN	United Nations Standing Committee on Nutrition
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
US	United States
WFA	Weight-for-age
WFH	Weight-for-height
WFP	World Food Programme
WHO standards	World Health Organisation 2006 Child Growth Standards
WHO	World Health Organisation
µg	Microgram(s)

1. Introduction

These interim national guidelines for Southern Sudan address the *integrated management of severe acute malnutrition (SAM) in children under 5*, and include community outreach, outpatient care and inpatient care for the integrated management of SAM. Southern Sudan has opted to name the approach the "Integrated Management of SAM" (IM-SAM), underlining the importance and the linkage of the different components as one approach.[1] Community outreach is an essential part of the *integrated* 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.

The Interim National Guidelines for the Management of IM-SAM (the Guidelines) provide practical and easy-to-follow guidance based on current evidence and best practices in the integrated management of SAM. Job aids will accompany the guidelines. The Guidelines seek to improve the integrated management of SAM in children 6-59 months with medical complications in inpatient care and without medical complications in outpatient care, as these children do not require hospitalisation but can be treated at the community level. Infants under 6 months with SAM follow a specific treatment protocol in inpatient care only. A separate paragraph addresses the management of SAM in inpatient care in older age groups (i.e., older children ages 5-9 years, adolescents ages 10-18 years, adults over 18 years). SAM occurs as a primary disorder in these age groups 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.

Adherence to the Guidelines will contribute significantly towards improving the management of SAM as measured by increases in recovery rates, reductions in case fatality and defaulter and non-recovery rates, and increases in service access and utilisation (coverage). They will contribute to improved standardised treatment and standardised monitoring and reporting (M&R). They can also be used as a mobilising force for addressing SAM and strengthening capacities. They should 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 Southern Sudan.

The Guidelines for IM-SAM are intended to be used by health and nutrition managers and health care providers working at different levels of health and nutrition service provision in Southern Sudan.

The Guidelines for IM-SAM will be expanded to the Guidelines for Integrated Management of Acute Malnutrition (IM-AM) to include the management of moderate acute malnutrition (MAM) adhering to the World Health Organisation (WHO) 2006 Child Growth Standards (WHO standards),[2] and reflecting new evidence and best practices in the integrated management of MAM (IM-MAM).

[1] IM-SAM is equivalent to Community-Based Management of (Severe) Acute Malnutrition (CMAM).
[2] 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 (US).

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 they overlap in one child or in a population.

Undernutrition is identified through anthropometric indicators and clinical signs. Nutrition indicators[3] are an interpretation of nutrition indices[4] based on cutoff points. They measure the clinical phenomena of undernutrition and are used for making a judgment or assessment.

There are four common anthropometric nutrition indicators: 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.

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 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, and other clinical signs such as poor appetite. 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[5]:

- **Marasmus**, characterised by severe wasting of fat and muscle, which the body breaks down for energy, leaving 'skin and bones'
- **Kwashiorkor**, characterised essentially by bilateral pitting oedema (usually starting in the feet and legs), accompanied by a skin rash and/or changes in hair colour (greyish or reddish)
- **Marasmic kwashiorkor**, characterized by a combination of severe wasting and bilateral pitting oedema

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 serous 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 using the WHO standards.

- MUAC involves measuring the circumference of a child's left mid-upper arm. MUAC < 115 millimetres (mm) for children ages 6-59 months indicates SAM. MUAC ≥ 115 mm and < 125 mm for children ages 6-59 months indicates MAM. MUAC is a better indicator of mortality risk

[3] 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.
[4] When body measurements are compared to a reference value, they are called nutrition indices.
[5] WHO. 2000. *The management of nutrition in major emergencies*. Geneva: WHO.

associated with acute malnutrition than WFH z-score.[6] MUAC is used for children 6 months and older. A child's date of birth or age is assessed based on the mother 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 using the WHO standards. 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.

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.

Table 1. Independent Indicators and Clinical Signs 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**

In most cases, anthropometric measurements alone can confirm the clinical diagnoses of severe acute malnutrition (see **Table 1**).

Clinical signs are essential to assess because they will indicate the severity of illness. 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

Other clinical signs of wasting may be present without the anthropometric confirmation, e.g., skin on the buttocks has a "baggy pants" look.

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.

[6] 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.

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 that sick children without SAM have when they are ill, such as fever. 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 5 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 5 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.[7]

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 3 percent of their gross domestic product.

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.[8]

[7] Black, RE, LH Allen, ZA Bhutta, LE Caulfield, M de Onis, M Ezzati, C Mathers, and J Rivera. 2008. Maternal and child undernutrition: Global and regional exposures and health consequences. *The Lancet* 371(9608): 243-60.
[8] Gross, R, and P Webb. 2006. Wasted time for wasted children: Severe child undernutrition must be resolved in non-emergency settings. *The Lancet* 367: 1209-11.

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), lays 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, and 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 SOUTHERN SUDAN

Malnutrition rates have soared in Southern Sudan because of poor health conditions, suboptimal maternal and child feeding and care practices, and food insecurity. This has been compounded by high rates of poverty and illiteracy, long years of civil strife and recurrent environmental shocks (e.g., floods, droughts). The 22 percent prevalence of wasting is significantly higher than the WHO 15 percent threshold for nutrition emergencies. Among children under 5, stunting affects 34 percent and underweight affects 33 percent. Although few data exist on the prevalence of vitamin and mineral deficiencies, they are almost certainly widespread given the general malnutrition situation; for instance, only 2.6 percent of children under 5 currently receive vitamin A supplementation. Among young children, Southern Sudan has a heavy burden of communicable diseases most associated with undernutrition, such as fever, acute respiratory infection and diarrhoea. At the same time, appropriate health-seeking behaviour is limited and the health system struggles to meet the needs of the country for primary care. At any given time, 45.5 percent of children have a fever, but only 3.4 percent receive treatment. A mere 16 percent of children are fully immunised.[9]

Southern Sudan's health infrastructure is being rebuilt and remains heavily dependent on nongovernmental organisations (NGOs) and external funding. Aid officials estimated in 2006 that NGOs provide 85 percent of primary health care services, which reach only 25 percent of the population.[9]

IYCF practices are also highly inadequate. Inappropriate breastfeeding practices and low dietary quality of complementary foods are recognised as the major causes of undernutrition in infants and young children. Throughout Southern Sudan, only 20 percent of infants are exclusively breastfed and just 15.8 percent of children 6-11 months receive complementary foods. Dietary diversity is limited and food prescriptions prevent mothers and young children from consuming many of the accessible nutritious foods. Environmental health and hygiene are also problematic, with only 48.5 percent of households having access to improved drinking water sources and only 6.9 percent of households safely disposing of excreta.[9]

Access to and availability of food in this heavily agrarian society have suffered because of widespread poverty, the protracted conflict and resulting mass population movements, the seasonal hunger gap, climate conditions such as floods and drought, cattle raids, and continued inter-ethnic violence. More than 90 percent of the population lives on less than 1 United States (US) dollar per day and nearly one-third, or 31.3 percent, of households experience poor food consumption. With 76 percent of the population unable to read and the economy still being weak, food security will be precarious for the foreseeable future. [10]

1.3 Principles of the Integrated Management of Acute Malnutrition (IM-AM)

For a number of years, the main intervention for the treatment of SAM globally has been inpatient care provided either in paediatric wards or specialised therapeutic feeding centres, following the WHO 1999 treatment protocol for SAM. However, a new approach was developed following the invention and use of RUTF, whereby children with SAM without medical complications can start treatment for

[9] GOSS MOH, Central Bureau of Statistics (BCS) and Southern Sudan Commission for Census, Statistics and Evaluation (SSCCSE). 2007. *Sudan Household Health Survey (SHHS) 2006*. Juba, Southern Sudan: SSCCSE; FAO and WFP. *Crop and Food Supply Assessment Mission to Sudan, 1 February 2007*. Rome: FAO and WFP.
[10] GOSS MOH. 2007. *Health Policy 2007-2011*. Juba, Southern Sudan: GOSS.

SAM in outpatient care (rather than inpatient care) and continue drug and dietary treatment in the home. Meanwhile, children with SAM 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 1** shows the classification of SAM that is used in the community-based management of SAM (CMAM) approach, adopted in Southern Sudan as IM-SAM. The use of MUAC as an independent criterion for SAM for children is also approved and makes detection of SAM in the community and at the health facility simple and effective.

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 or integrated 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 the need to have 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 mobilisation and early case-finding 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 IM-SAM approach based on a few key principles.

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 communities 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 thus be admitted to outpatient care. The child should receive systematic medication according to the treatment protocol, as well as a home ration of RUTF equivalent to about 200 kilocalories per kilogram of bodyweight per day (kcal/kg bodyweight/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 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[11] 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 that provide 24-hour inpatient care for SAM with medical complications by skilled health care providers.

IM-SAM inpatient care treatment protocols are adapted from the WHO 1999, 2007 and 2009 protocols for the management of SAM[12] and refer the child 6-59 months with SAM to outpatient care as soon as the child's bilateral pitting oedema begins reducing, the 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 are on a weekly basis until full recovery. In rare situations, children 6-59 months remain in inpatient care until full recovery.

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 THE MANAGEMENT OF MAM IN CHILDREN 6-59 MONTHS AND PREGNANT AND LACTATING WOMEN

The management of MAM in children 6-59 months and other vulnerable groups consists of providing a fortified food supplement, antihelminthic drug, and vitamin and mineral supplementation, and the monitoring of health and nutritional status. A commonly known approach in food-insecure environments or emergencies is targeted supplementary feeding for children 6-59 months and vulnerable individuals with MAM. Vulnerable groups with MAM might include pregnant women and lactating women with infants under 6 months, individuals with special needs such as people living with HIV (PLHIV), people with tuberculosis (TB) and the elderly. Specific anthropometric criteria for entry and discharge are used. Also, children with SAM should benefit after recovery from a dietary supplement and regular monitoring.

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: In a next step, these Guidelines will include the Integrated Management of MAM (IM-MAM) reflecting the transition to the WHO standards and latest evidence of best practices.

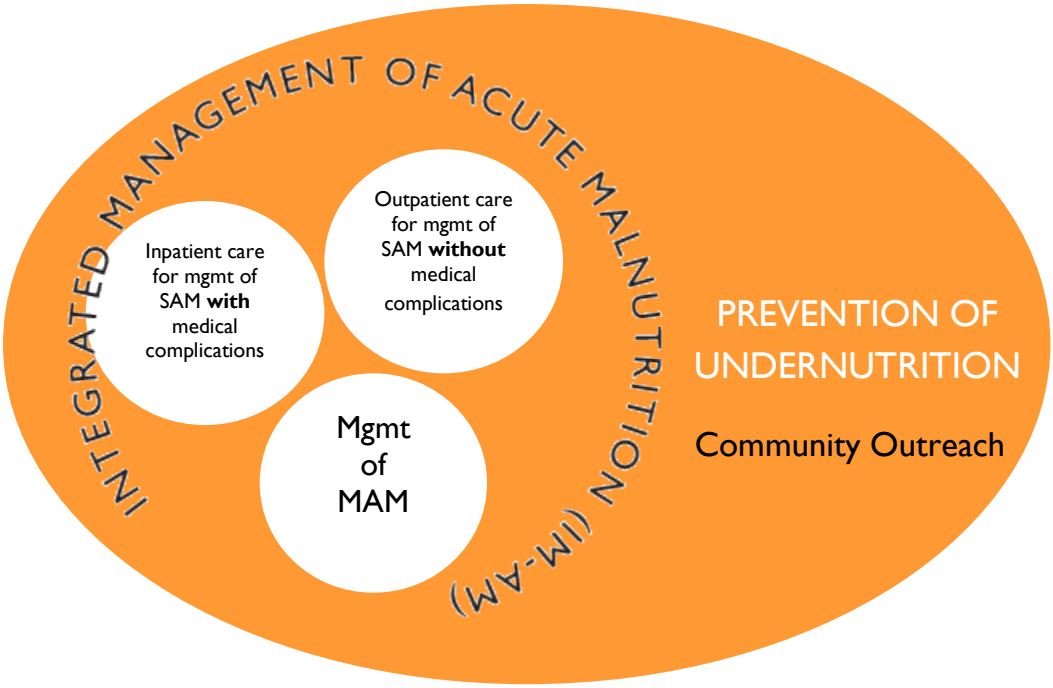
[11] Infection leads to loss of appetite in the acute phase. In addition, liver and metabolic disturbances that accompany Type 2 nutrient deficiency also leads to loss of appetite in children with SAM.

[12] 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.

Table 2. Admission and Discharge Criteria for IM-SAM for 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
REFERRAL/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 maintained 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 maintained (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 maintained for two consecutive visits (of admission weight or weight free of oedema) Oedema free for two consecutive visits Child clinically well and alert *Children are referred to Supplementary Feeding if available*

Figure 1: Components of Integrated Management of Acute Malnutrition (IM-AM)



1.4 IM-SAM in the Context of Southern Sudan

1.4.1 OPERATIONAL PRACTICES OF IM-SAM TO DATE

No geographic mapping yet exists of programmes focusing on the management of SAM in Southern Sudan. Overall, the capacity to manage acute malnutrition can be characterised as fragmented with low coverage. Ministry of Health (MOH) and a number of nongovernmental organizations (NGOs) currently support acute malnutrition intervention programmes following a facility- or community-based approach with differing treatment protocols operating integrated or in parallel to the MOH health system. Since 2003, community-based or services for SAM have been implemented and gradually expanded to about 10 of the 62 counties. Country-specific lessons from implementing IM-SAM will be reviewed and may lead to recommending adaptations to these interim Guidelines.

Other nutrition programmes, such as the Essential Nutrition Actions (ENA), growth monitoring and micronutrient supplementation, are part of the Basic Package of Health and Nutrition Services (BPHNS) and are implemented in some areas.

1.4.2. POLICY FRAMEWORK FOR IM-SAM

The national **Health Policy (2007-2011)**[13] recognises that nutrition is one of the priority areas in health; however, it does not recognise acute malnutrition as a priority health problem. According to the Health Policy, the MOH will develop and expand nutrition programmes, especially at the community level, to improve the nutritional status of the population. Strategies will focus on reducing the existing prevalence of malnutrition and related morbidity and mortality by increasing equitable access to nutrition services through an integrated health programme. The Health Policy ensures that components of nutrition such as breastfeeding, weaning practices, nutrition education and counselling, the management of acute malnutrition, inpatient feeding, and dietary therapy will be integral parts of primary health services.

[13]GOSS MOH. 2007. *Health Policy 2007-2011*. Juba, Southern Sudan: GOSS.

The **National Policy for Health Promotion**[14] guides health promotion activities across all health technical areas in Southern Sudan. It establishes leadership for health promotion through the Health Education and Promotion Sub-Directorate of the MOH. Health promotion cross-cuts all health sectors and layers of programming, from national policy makers to community health workers (CHWs), as well as multiple public sectors such as education, agriculture and information, The health promotion activities are ideally linked to a health facility, but in places where there is no facility, implementers will work directly with the communities. The national policy promotes improved maternal nutrition, exclusive breastfeeding and appropriate complementary feeding, diagnosis and treatment of SAM, and vitamin A supplementation. The policy also promotes interventions that indirectly improve the nutritional status of mothers and children. It provides strategies for improving the coverage of primary health care activities such prevention and treatment of communicable diseases, as well as increasing good hygiene and sanitation practices at the household level.

The **Basic Package of Health and Nutrition Services (BPHNS)** for Southern Sudan[15] to be implemented at the primary care levels of the county (district), payam (sub-district), and boma (community), comprises a selection of interventions that address priority health problems accessible at appropriate levels of care at affordable cost to improve maternal and child health, control communicable diseases, improve community nutrition, and control the most common non-communicable diseases. The integrated essential child health care (IECHC) component of the BPHS stipulates strategies of ENA in reducing malnutrition, including the management of acute malnutrition.

The national **Nutrition Health Policy (NHP)**, currently under development, will lay forth the policy framework for key strategies and priority interventions proven to have a high public health and nutritional impact to prevent maternal and child malnutrition, including the integrated management of acute malnutrition. Implementation of essential nutrition actions as integral part of the BPHS will become the responsibility of all front-line primary health care workers and nutrition staff at primary health facilities and the community level.

1.4.3 NATIONAL STRATEGY AND IMPLEMENTATION FOR IM-SAM (2010)

The overall objective of integrating and scaling up IM-SAM in Southern Sudan is to reduce under-5 morbidity and mortality rates related to acute malnutrition through increased access to quality services for the management of acute malnutrition.

The Nutrition Directorate at the national and state MOH, in collaboration with the National Nutrition Technical Working Group (TWG), the IM-AM Thematic Group (ThG) and the IM-AM Support Team, will collaborate with the United Nations Children's Fund (UNICEF), the World Health Organisation (WHO), the World Food Programme (WFP), national training institutions, NGOs and other relevant partners to strategically plan, coordinate, technically lead and support IM-SAM integration into the national health system. The Guidelines are based on international guidelines and best practices and reflect country-specific adaptations and lessons learned from early implementation of IM-SAM. Operational guidance booklets and job aids for the different levels of implementation of IM-SAM will be developed and made available.

A capacity-development plan targeting different audiences through various training strategies will be developed and implemented based on a capacity assessment.

The IM-AM Support Team – based at the MOH and together with the national MOH, the state MOH, national academic and training institutions and partners – will provide continuous technical support for strengthening capacities. In the long term, health professionals and health care providers will need to have access to pre-service training for IM-AM. In the short term, in-service training and mentoring, including other created opportunities for learning using training materials adapted from internationally developed generic sources, will gradually be made available. Learning sites for inpatient and outpatient care and community outreach for IM-SAM will be established and supported by a qualified mentor to accommodate trainees for gaining practical experience and expertise. ThG meetings and technical workshops will also serve as learning fora. Formal and informal links with international

[14] GOSS MOH. 2009. *National Policy for Health Promotion*. Draft. Juba, Southern Sudan: GOSS.
[15] GOSS MOH. 2009. *Basic Package of Health and Nutrition Services for Southern Sudan*. Draft. Juba, Southern Sudan: GOSS.

experts and amongst national experts and implementers will be nurtured. Research opportunities will be sought.

Reviews on IM-AM country practices since 2003, on community outreach opportunities building upon and strengthening existing community initiatives and on integrating IM-AM into the BPHNS will be conducted. A national workshop will be convened after a period of service implementation following the interim guidelines. This event will be an opportunity to consolidate lessons from reviews of country experiences, revise the interim guidelines and adopt the final guidelines.

Besides the numerous IM-SAM implementation sites of partners in the country, the MOH-lead IM-SAM capacity development and integration and scale-up will start and be consolidated at learning sites, consisting of an inpatient care site at the teaching hospitals, a selection of outpatient care sites at primary health care centres (PHCC) and/or primary health care units (PHCU), and expanded community outreach in the communities of their catchment area. IM-SAM will be integrated into the BPHNS in the learning sites. Expansion will be planned to occur gradually. This initial operational learning experience will inform the strategic planning for expanding services across priority counties and states.

To ensure quality of services, standardised monitoring and reporting (M&R), and support and supervision systems will be set up. Generic planning and quality assurance tools will be adapted for country-use. National and state IM-AM data repositories based on standardised IM-AM M&R tools, and informed by a minimum reporting package, will be established. The IM-AM repository and reporting will link to the national health management information system (HMIS) and the national nutrition surveillance system.

2. Community Outreach

Community outreach is a critical component in IM-SAM and can be undertaken on its own or integrated into community health outreach activities, further strengthening and supporting existing health outreach systems.

The main aims of community outreach for IM-SAM include:

- Empowering the community through increasing knowledge of causes, types, identification and treatment of SAM; promoting health and nutrition behaviour change; and involving the community in planning and implementing the services
- Increasing service access and uptake (coverage) for the management of SAM
- Strengthening early case-finding and referral of new SAM cases and follow-up of problem cases
- Strengthening the responsibility of the Village Health Committee to encourage sustainability and ownership

Community outreach increases knowledge and acceptance of IM-SAM services and enables behaviour change in care practices for children with SAM. It also provides a feedback loop that enables nutrition workers and health care providers to understand the constraints that might hinder effective provision of care in outpatient and inpatient care settings. Community outreach should form one of the important initial steps towards development of a successful programme for the management of SAM.

Community outreach is a continuous process that contributes toward strengthening case-finding, referral and follow-up of children with SAM in the community. It should aid in effective monitoring of screening activities to increase programme coverage and ensure that the majority of children with SAM receive the appropriate care they require. Ultimately, communities are empowered and are better able to fulfil their roles and obligations related to the care of malnourished children.

BOX 1. SUMMARY OF STEPS IN COMMUNITY OUTREACH

Planning for Community Outreach
Step 1: Conducting a Community Assessment
Step 2: Formulating a Community Outreach Strategy
Step 3: Developing Messages and Materials
Step 4: Conducting Training on Community Outreach

Implementation of Community Outreach
Step 5: Conducting Community Mobilisation
Step 6: Conducting Case-Finding and Referral of New Cases with SAM
Step 7: Conducting Home Visits of Problem Cases
Step 8: Linking with other Community Services, Programmes and Initiatives

Step 1: Conducting a Community Assessment

An assessment of the community is the first step in the planning of community outreach for IM-SAM. The assessment is key to determining the factors that are likely to impact both service delivery and demand.

The IM-SAM outreach coordinator (i.e., one focal point or a team consisting of the health outreach coordinator, community health nurse, members of the county health department) should conduct the assessment with the objective of answering two main questions:

- What aspects of the community are likely to affect the demand for the IM-SAM services?
- How can community outreach be organised to meet the demand for the IM-SAM services most effectively?

The community assessment comprises the following activities:

- Engage the community in a participatory discussion on its understanding of acute malnutrition and its causes, the magnitude of the problem, and possible solutions. This may be done through local social structures or meetings or during child survival outreach services. Groups to engage with include key community leaders, elders and other influential people, mothers, fathers, caregivers, and traditional health professionals.
- Identify local terms for malnutrition, perceived causes and common local solutions.
- Gather information on ethnic, social or religious groups, and the most vulnerable groups (e.g., single mothers, orphans and vulnerable children, PLHIV).
- Identify existing community systems and structures, and community-based organisations (CBOs) or informal groups (e.g., faith-based groups, youth groups, women's groups).
- Identify formal and informal channels of communication that are known to be effective.
- Identify health attitudes and health-seeking behaviours.
- Identify available services and resources for mother and child care.
- Review Knowledge, Attitudes and Practices (KAP) and coverage surveys or other sociological studies conducted on health-seeking, care and feeding practices and behaviours.
- Map (and/or list) the information that is gathered.

Prior to the community visits, key questions will be identified to guide the community discussions (see example in **Annex 22. Community Assessment Questionnaire and Tools**). Information that is gathered during the community assessment is consolidated to facilitate ease of understanding and utilisation. A variety of tools will be used to simplify this process (see **Box 2**). This information will be later used in methods to evaluate the service access and utilisation (coverage).

BOX 2. 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, e.g., 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 IM-SAM

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 IM-SAM. 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 IM-SAM. Identify potential ways to appropriately address the identified key issues.

5. Matrix of potential community outreach workers for IM-SAM

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

6. Matrix of community actors selected for community participation and outreach for IM-SAM

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.

Step 2: Formulating a Community Outreach Strategy

Outreach for IM-SAM will be tailored to the context in which it is being implemented and is designed and planned in participation with the communities. The Government of Southern Sudan (GOSS), state MOH or county health department will take the lead role and decide how to strategise and roll out IM-SAM activities.

The IM-SAM outreach coordinator will:

- Negotiate for the adoption of IM-SAM to manage acute malnutrition in the community
- Identify (and agree upon) the best mechanisms for community outreach:
    - Outreach workers (e.g., CHWs, extension workers, volunteers who are respected in the community)
    - Sites and/or the type of screening that will be conducted (e.g., house-to-house, home visits, regular gatherings in the community)
- Discuss and develop clear definitions of roles and responsibilities for the outreach worker to ensure that children with acute malnutrition are identified and referred for treatment and subsequently followed up in their homes as needed; outreach workers will also provide feedback to the health facilities on problems related to the children's home environment

Strategies to identify and refer children with acute malnutrition could include:

- House-to-house visits
- Screening during national campaigns, at any contact with the primary health service, at health facilities and any other health outreach points
- Screening at community activities and services (e.g., community meetings, markets, activities of CBOs, other available opportunities)
- Self referrals from the community

Step 3: Developing Messages and Materials

Note: Standardised messages will be developed and adapted to the local context of Southern Sudan and are expected to be used in materials including pamphlets or radio messages.

The use of standardised messages adapted to different audiences will facilitate uniform and accurate information sharing on malnutrition, its causes and treatment, and places where treatment services are available.

Pamphlets, local radio and television messages, and meetings with community and religious leaders provide essential information about the service/programme aims, methods and actors. In particular, communities should understand what the service/programme will mean to them in practice: what it will

do, who is eligible, where it will operate, who will implement it, how to access it and what the overall benefit of the service/programme is to the community.

Activities at this stage could include:

- Developing messages for different audiences and messaging tools (e.g., pamphlet, radio message, letter) that will provide information about IM-SAM services in the community (see **Annex 1. Community Outreach Messages**)
- Developing an orientation and dissemination plan on community mobilisation for key members of the health system (e.g., health care providers, health extension workers or other support staff, managers and supervisors) and outreach workers
- Developing a training plan for outreach workers on active screening for referral and home visits in the communities

Step 4: Conducting Training on Community Outreach

Training for coordinators, planners and supervisors of community outreach could include:

- Outreach strategies
- Basic information on the causes, types, identification and treatment of malnutrition
- Objectives and target population for the management of SAM
- Practice in the identification of bilateral pitting oedema and the use of MUAC and WFH measurements
- Case referral and follow-up strategies and issues
- Health and nutrition education and strategy
- Community mobilisation and how to engage with the communities and share information
- Training and supervising community outreach workers
- Roles and responsibilities of community outreach coordinators and workers

Training for community outreach workers could include:

- Basic information on the causes and types of malnutrition, and its identification and treatment
- Objectives and target population for the management of SAM
- Practice in the identification of bilateral pitting oedema and the use of MUAC and WFH measurements
- IM-SAM services, sites and referral for treatment
- Follow-up strategies and issues
- Health and nutrition education
- Community mobilisation and how to engage with the communities and share information
- Roles and responsibilities of community outreach workers

Step 5: Conducting Community Mobilisation

Community mobilisation aims to raise awareness of the service/programme. It promotes understanding and service access and use and lays the foundations for community ownership.

Community mobilisation is an ongoing activity, not a one-time-only event. Much of the community interaction takes place early in the programme, but should be continually reinforced throughout the implementation phase to be effective. Community mobilisation should be seen as a process of constant dialogue in which communities can periodically voice their views and suggest alternative courses of action. The aim is to continue a dialogue with community members, address concerns, encourage positive behaviour changes and share success stories.

When the community outreach strategy for IM-SAM includes volunteers, the community mobilisation activity should engage community leaders and village health committees to identify volunteers for IM-SAM from their community.

Step 6: Conducting Case-Finding and Referral of New Cases with SAM

Active case-finding involves identification of children with SAM in the communities and is important to ensure that children with SAM are identified before they develop of severe medical complications, which make their condition harder to treat. Identified children are referred to the appropriate care services.

It is recommended that all children under 5 are routinely screened for SAM since it is one of the most important contributing causes of childhood mortality. Widespread identification of children with SAM at the community level is achieved through timely screening using MUAC measurement and assessment for the presence of bilateral pitting oedema. Community outreach workers can perform the bilateral pitting oedema check and MUAC measurement after having received training to ensure they can accurately screen.

Case-finding and referral is carried out by community outreach workers (e.g., CHWs, volunteers) who are trained to identify children with SAM at all points of contact with the community, according to the developed strategy. The community screening and its training is standardised (see **Annex 3. Anthropometric Measurements**). Therefore, the quality of the community screening – whether performed by community volunteers or extension workers – is the same as the screening performed at the health facility by a health care provider. In this way, children who are correctly screened at the community level will also be admitted to the treatment service. Thus, there is no discrepancy between the two systems.

The screening procedure is as follows:

- Bilateral pitting oedema is checked by pressing the thumbs for three seconds on both dorsal sides of the feet. If the indentation remains after removal of the thumb pressure, the child is diagnosed with having bilateral pitting oedema or kwashiorkor, a sign of SAM (see **Annex 3. Anthropometric Measurements**).
- Measurement of MUAC for children 6-59 months is made possible through use of simple plastic tapes designed to measure the arm circumference. In the absence of a “road to health” card or birth certificate, determination of an infant’s age is based on recall of the caregiver. The height cutoff is never used as a proxy to determine age.
- Infants under 6 months with bilateral pitting oedema and/or visible wasting are not measured but referred to the health facility where they are further investigated.

A referral slip is used to refer children identified with SAM to the nearest health facility with IM-SAM services. (See **Annex 23. Referral Slip Community Screening**.)

BOX 3. COMMUNITY SCREENING AND REFERRAL FOR TREATMENT

- Presence of bilateral pitting oedema
- MUAC < 115 mm (children 6 -59 months)

Note: Infants under 6 months with visible wasting or at high risk of SAM because of inadequate feeding of infant or lactating mother are referred to the health facility for investigation.

Step 7: Conducting Home Visits for Problem Cases

The role of the community outreach worker is to identify children with acute malnutrition and refer them for treatment. Thus, they know most of the children in their community who are in treatment. They will be asked to follow the children more closely in the case of a problem or concern, if they are at increased risk of death or developing other serious illness.

Children in treatment for SAM are monitored at the health facility to ensure sustained improvement in their condition. If the child is not thriving, the health care provider will discuss this with the

mother/caregiver and request that the outreach worker pay a home visit to provide support and/or investigate the home environment (see **Annex 17. Action Protocol in Outpatient Care**)

The outreach worker will provide feedback to the health care provider on problems related to the child's home environment.

Cases where home visits are critical include:

- Child is absent or defaulting
- Child is not gaining weight or is losing weight on a follow-up visit
- Child's oedema is not reducing
- Child returned from inpatient care or caregiver refused inpatient care

Absentees from outpatient care should be followed up with by outreach workers. It is important to gain an understanding of the reason for the absence and to encourage a return to treatment. The absentee should not be reprimanded as this can discourage return. If possible, a home visit record is filled and shared with the health care provider at the outpatient care site (see **Annex 24. Home Visit Record Form**). A checklist for home visits is made available to guide the outreach worker with the investigation in the home (see **Annex 25. Checklist for Home Visits**).

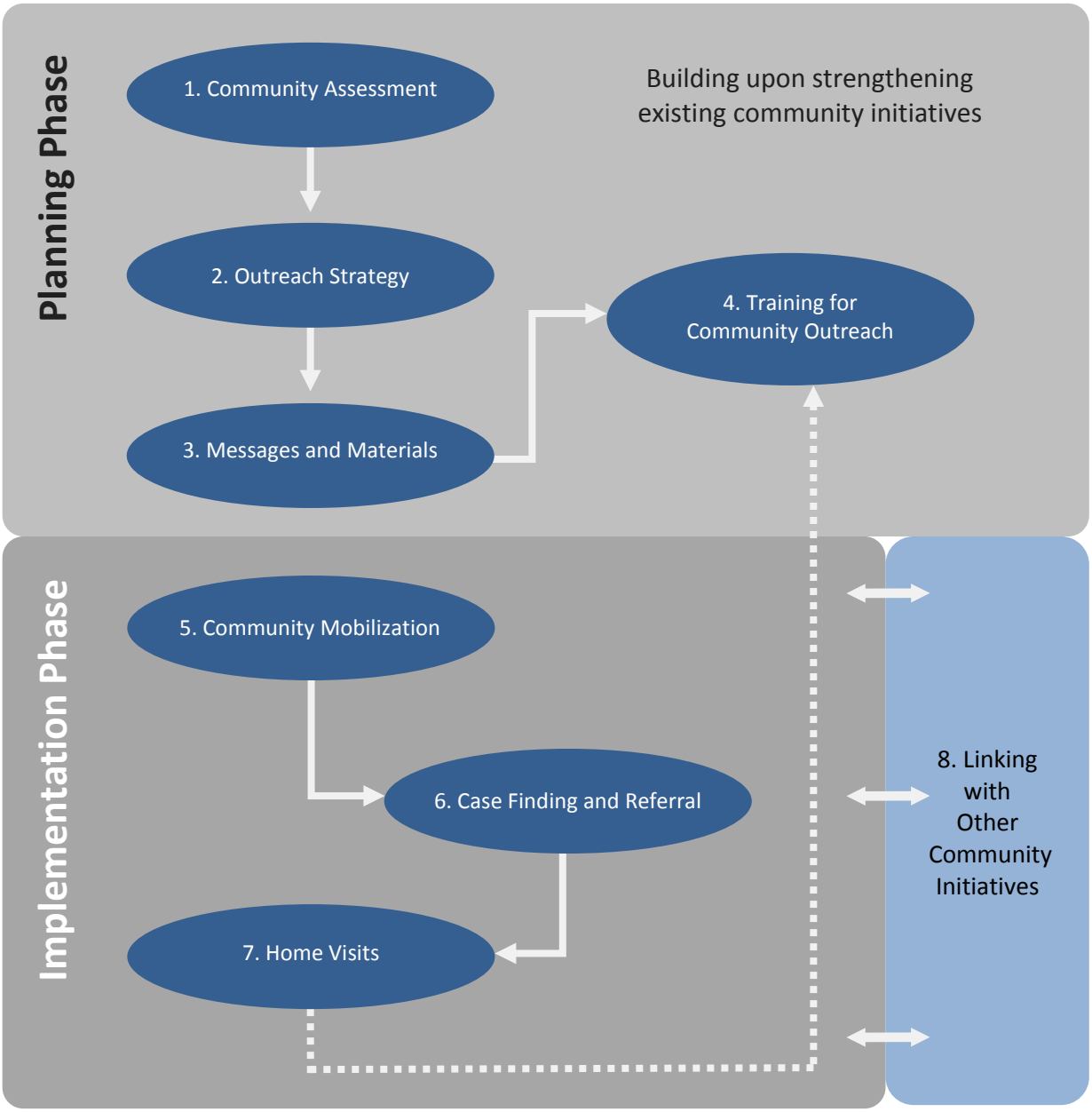
The health care provider liaises with the community outreach worker by direct contact or through exploiting available communication channels in the community to convey the message to arrange a home visit to high-risk children.

Step 8: Linking with Other Community Services, Programmes and Initiatives

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 care practices, and a poor public health environment. It is recommended that families with children with acute malnutrition are targeted by community initiatives that improve their home environment and promote access to an improved quality diet.

Through the mapping exercise (see **Step 1**), community health, nutrition or livelihoods services or initiatives are identified that exist in the area and may be complementary to IM-SAM. It is recommended that health care providers, health managers and community outreach coordinators discuss ways to link mothers, caregivers or households with children with acute malnutrition to these initiatives.

Figure 2. Stages in Community Outreach



3. Outpatient Care for the Management of SAM Without Medical Complications in Children 6-59 Months

Outpatient care is aimed at providing treatment for children 6-59 months with SAM who have an appetite and are without medical complications in the community. It achieves this objective through timely detection, referral and early treatment before the health condition is severe or before the onset of a complication. Effective community mobilisation, active case finding, referral and follow-up form the cornerstone of successful outpatient care. The treatment protocol of SAM for children 6-59 months 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, then 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:

- Poor access or long distance to the health facility increases the opportunity cost for the caregivers and may prevent weekly participation
- Weekly sessions and high case loads 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, 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 IM-SAM identifies 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 caregiver)
- “Ripple effect” of caregiver-to-caregiver referral within the community
- Referral by health or nutrition programmes or initiatives, such as growth monitoring and health extension campaigns, or through any contact with the primary or secondary health care system

Children are screened for SAM at the health facility. For some of these children, this could be a second-level screening. It is essential that the strategy for community screening is compatible with the screening upon admission to IM-SAM services at the health facility. The quality of the community screening should be high so as to avoid referrals being refused by the facility, as this could be

damaging for the appreciation and the uptake of the service. If referred children are inaccurately assessed on a regular basis, action should be taken to retrain the outreach worker.

3.2 Admission Criteria for Outpatient Care

Usually, the first point of contact with the health care system for a child under 5 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 of whether to admit the child 6-59 months to outpatient care or refer the child to inpatient care based on certain admission criteria (see **Table 3**). The outpatient care site is usually the entry point for admission to IM-SAM.

Criteria for admission are based on anthropometric assessment of severe wasting and clinical presence of bilateral pitting oedema. In addition, clinical signs in children 6-59 months with SAM are essential to assess because they indicate the severity of illness and will determine whether the child is treated in inpatient care or outpatient care. **Table 4** provides the case definitions for medical complications of importance in the presence of SAM. Moreover, other clinical signs of wasting may be present without anthropometric confirmation, e.g., skin on the buttocks has a “baggy pants” look.

In 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 for social reasons. And vice versa, a child 6-59 months with SAM eligible for outpatient care can be admitted to inpatient care for social reasons.

Table 3. Admission Criteria to IM-SAM 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 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

Table 4. Case Definitions of Medical Complications with SAM

Medical Complication	Case Definition
Anorexia, poor appetite*	Child is unable to drink or breastfeed. Child failed 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.
High fever	Child has a high body temperature – axillary temperature ≥ 38.5° C or rectal temperature ≥ 39° C – taking into consideration the ambient temperature.
Hypothermia	Child has a low body temperature – axillary temperature < 35° C or 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.
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 the palms of other children); Haemoglobin (Hb) < 40 grams per litre (g/l), or if there is respiratory distress and Hb is between 40 and 60 g.
Eye signs of vitamin A deficiency	Stages of xerophthalmia are: conjunctival xerosis or dry, opaque and dull conjunctiva with or without Bitot's spots (foamy material on conjunctiva); corneal xerosis or dry and dull cornea; keratomalacia or ulceration, necrosis, perforation of cornea, leading to total blindness.
Skin lesion	Child has broken skin, fissures or flaking of skin.

* denotes Integrated Management of Childhood Illness (IMCI) danger signs

3.3 Admission Procedure at the Health Facility

Upon arrival at the health facility with IM-SAM 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 4** and **Annex 9. Sugar Water Protocol**).

First, the child's nutritional 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 (of admission weight or weight free of oedema) is identified and indicated on the treatment card (see **Annex 5. Guidance Table to Identify Target Weight for Discharge**)

If equipment and skills are available:

- Length or height is measured.
- 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 IM-SAM receive a medical assessment consisting of a medical history and physical examination, including an appetite test (see **Box 5**).

The medical history includes:

- Diet before current episode of illness
- Breastfeeding history
- Food and fluids taken in the past few days
- Recent sinking of eyes
- Duration and frequency of vomiting or diarrhoea, appearance of vomit or diarrhoeal stools
- Time when urine was last passed
- Contact with people with measles or TB
- Any deaths of siblings
- Birth weight
- Milestones reached (e.g., sitting up, standing)
- Immunisation status
- Place of origin

The physical examination includes:

- MUAC, weight and length or height
- Bilateral pitting oedema
- Appetite test: anorexia
- Enlargement or tenderness of the liver, jaundice
- Abdominal distension, bowel sounds, “abdominal splash” (a splashing sound in the abdomen)
- Severe pallor
- Signs of circulatory collapse: cold hands and feet, weak radial pulse, diminished consciousness
- Body temperature: hypothermia or fever
- Thirst
- Eyes: signs 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

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. All infants under 6 months with bilateral pitting oedema or visible wasting and children over 5 years 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/she receives medical and dietary treatment that will be continued at home.

The caregiver receives advice on the treatment, 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-up monitoring sessions or whenever a problem arises until the child has recovered (see **Annex 18. Key Messages Upon Admission to Outpatient Care**).

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.

Additional points to consider during the admission procedure:

- Explain to the caregiver the outcome of the assessment and the treatment, and decide with the caregiver 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 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 reassessed at the health facility to cross check on 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/she should not be admitted, but the caregiver can be linked with other primary health services or initiatives as appropriate (e.g., supplementary feeding, expanded programme of immunisation [EPI]).

During referral, the outreach worker's skills are indirectly verified (e.g., how many were referred that did not fulfil the admission criteria?) and the need for improved supervision or retraining can be identified.

BOX 4. 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 grams (g) of sugar per 100 millilitres (ml) of water.

Define nutritional status:

- Check for bilateral pitting oedema, take MUAC, and measure weight and height.
- Use the admission criteria (see **Table 3**) to guide decision making for admission.
- Indicate target weight for discharge at 15 percent weight gain (of admission weight or weight free of oedema) (see **Annex 5. Guidance Table to Identify Target Weight for Discharge**).
- Register the child and record measurements on treatment card.

Conduct a medical assessment:

- Take the child's medical history, conduct a physical examination, determine if the child has a minor health problem or a medical complication, and record on the treatment card.
- Fast-track children with SAM with medical complications in need of inpatient care and start treatment (no need for appetite test, administer first dose antibiotic).
- Test the appetite (see **Box 5**). 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 to inpatient care.

Provide treatment:

- Provide treatment for underlying infections and decide if treatment for additional health conditions is needed.
- Provide weekly (or biweekly) amount of RUTF based on +- daily 200 kcal of RUTF per kg bodyweight (see **Annex 11. Dietary Treatment**).
- Counsel the caregiver on key messages for treatment, the intake of antibiotics and RUTF, and care practices, and instruct him/her to return to the health facility for monitoring sessions or whenever a problem arises (see **Annex 16. Key Messages Upon Admission to Outpatient Care**).
- Link the caregiver with the community outreach worker.
- Link the caregiver with other services or initiatives as appropriate.

BOX 5. 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 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.

3.3.1 ADMISSION CATEGORIES

New Cases

Children 6-59 months with SAM meet the criteria for outpatient care and are directly admitted for treatment in outpatient care.

Note: Relapsed cases are considered new cases, as the children were successfully treated before and now have a new episode of acute malnutrition.

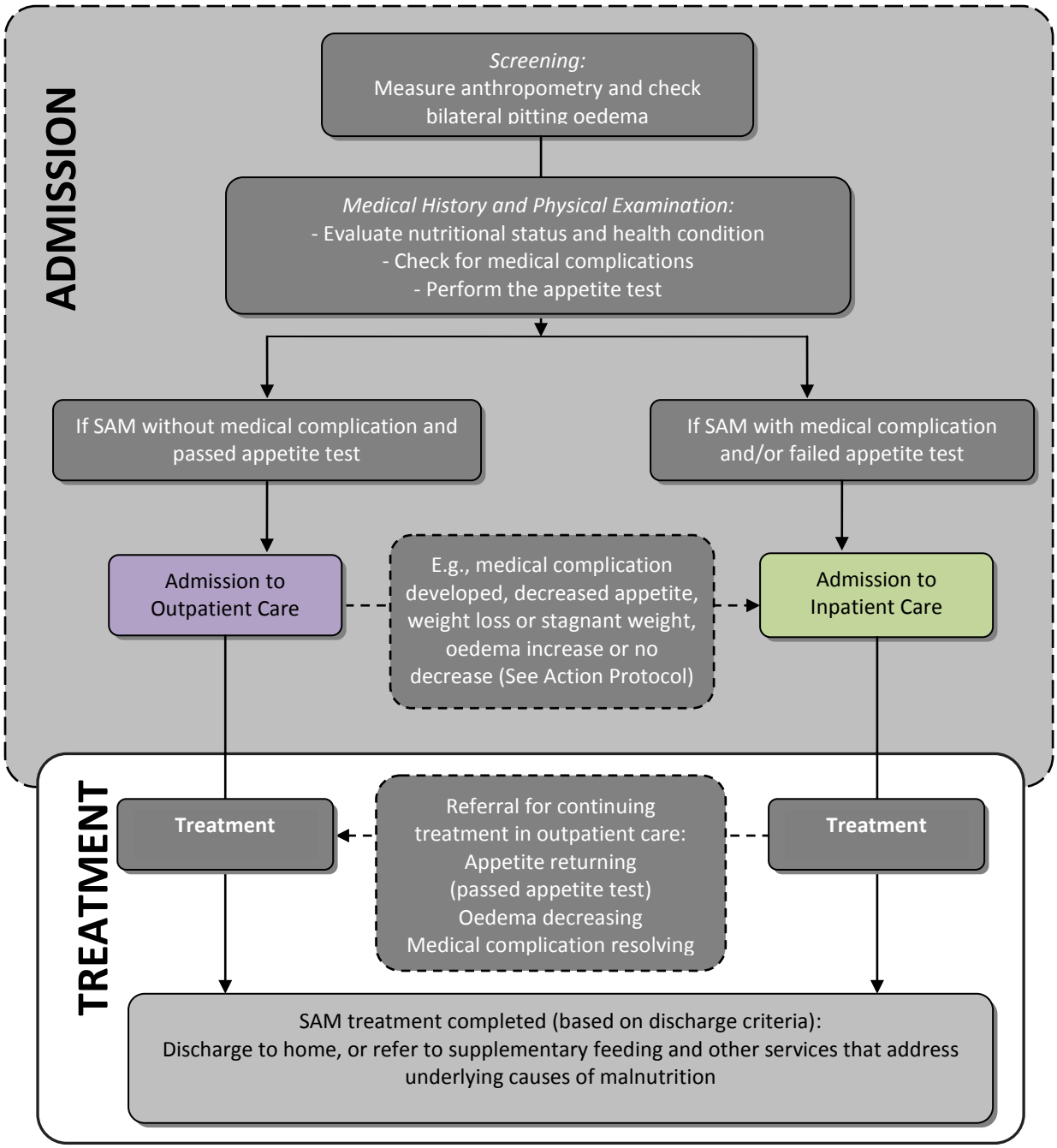
Children Referred from Inpatient Care (Old Cases)

Children with SAM are referred from inpatient care after stabilisation to continue treatment as outpatients. Children with SAM under treatment in another outpatient site could move to the new outpatient care site.

Returned Defaulters (Old Cases)

Children who defaulted from treatment before recovery return to continue treatment.

Figure 3. Admission and Treatment Flow Chart, Children 6-59 Months with SAM



3.3.2 KEY MESSAGES FOR THE INDIVIDUAL COUNSELLING OF THE CAREGIVER UPON ADMISSION

The key messages upon admission are brief and simple (see **Annex 18. Key Messages Upon Admission to Outpatient Care**). Upon the next visits to the health facility, the health and nutrition messages are expanded (see **Annex 19. Health and Nutrition Education Messages**).

The key messages are:

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, eight meals per day). Your child should have __ packets per 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 "local name."
5. Always offer plenty of clean water to drink while eating RUTF. Children will need to drink more water than normal.
6. Use soap for the child's hands and face 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 back the information to check that the messages have been correctly understood.

Upon the next visits to the health facility, the health and nutrition messages are expanded (see **Annex 19. Health and Nutrition Education Messages**).

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 Doses**.)

Antibiotic Treatment with Amoxicillin

- Give oral antibiotic treatment for a period of five days to be taken at home (give 10 days if needed), based on a dose 50-100 mg/kg bodyweight/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 there is a need for a second-line antibiotic drug, the child will be referred to inpatient care (see **Annex 8. Drug Doses**).

Table 5. First-Line Antibiotic Treatment: Amoxicillin, Three Times a Day for Seven Days (50-100 mg/kg Bodyweight/Day)

Age (or weight) of the child	Syrup 125 mg/5 ml 5 days	Syrup 250 mg/5 ml 5 days	Tablets 250 mg 5 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. If in clinical doubt, repeat the malaria test in the weeks following of the initial test.
- If no diagnostic test is available but malaria symptoms are diagnosed, treat the child.
- Treat malaria according to the national treatment protocol with first-line artemisinin-based combination therapy (ACT) in compliance with Integrated Management of Childhood Illnesses (IMCI) treatment.

Note: A child with SAM cannot auto-regulate his/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.

In malaria-endemic areas, children with SAM should be provided with insecticide-treated bednets to prevent malaria.

First-Line Antimalarial – ACT: Artesunate (AS) and Amodiaquine (AQ)

Table 6. Malaria Treatment Based on Artesunate [AS 50 mg Tablet] and Amodiaquine [AQ 153 mg Tablet]

Age (or weight)	Day 1 Initially	Day 2	Day 3	TOTAL Number of Tablets
< 4 kg	Not recommended			
<1 year (or 4-8 kg)	½ AS and ½ AQ	½ AS and ½ AQ	½ AS and ½ AQ	3
1-5 years (or 9-15 kg)	1 AS and 1 AQ	1 AS and 1 AQ	1 AS and 1 AQ	6
5-15 years (or 16-35 kg)	2 AS and 2 AQ	2 AS and 2 AQ	2 AS and 2 AQ	12
Adult (or > 35 kg)	4 AS and 4 AQ	4 AS and 4 AQ	4 AS and 4 AQ	24

Second-Line Antimalarials: Coartem or Quinine

In the case of severe malaria, the child is referred to inpatient care and treatment with a second-line antimalarial drug is provided (see **Annex 8. Drug Doses**).

Measles Vaccination

- Give a single vaccine on week four (or upon discharge) if there is no record of a previous vaccination.
- Infants under 12 months who receive a measles vaccination will need one routine measles vaccination when they have reached 12 months.
- In the 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 treatment, in compliance with the IMCI treatment protocol and/or adapt according to the national protocol.
- Do not give Albendazole or Mebendazole to children under 1 year.

Table 7. Antihelminthic Drug Dosage, Single Dose Albendazole [400 mg Tablet] or Mebendazole [500 mg Tablet]

Age (Weight) of the child	Albendazole	Mebendazole
< 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: 100,000 international units (IU) for infants 6-11 months and 200,000 IU for children 12 months and older. Cases with bilateral pitting oedema should receive vitamin A when the oedema has resolved or upon discharge.
- Refer any child with 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 RUTF.
- Where anaemia is identified according to IMCI protocols, children are referred to inpatient care and receive treatment in compliance with the IMCI treatment protocol.
- In inpatient care, if the child is on a therapeutic milk diet, folic acid 5 mg on day one and 1 mg per day starting on day two is given, and iron 3 mg/kg bodyweight/day is given after two days on F100 when the child is gaining weight. In inpatient care, if the child is on a RUTF diet, neither folic acid nor iron is supplemented. Iron and folic acid should never be provided 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. 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 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 for oral rehydration therapy (ORT) to receive oral rehydration salt (ORS). Children with SAM and severe dehydration (diagnosis based on recent history of profuse watery diarrhoea and recent change in child's appearance) are referred to inpatient care and receive rehydration solution for malnutrition (ReSoMal) instead of ORS, which contains less sodium and more potassium then ORS. ReSoMal is always provided in controlled amounts and never given freely for use to the child and/or caregiver. ORS in 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 should not be given routine medicines for a second time as they have already been administered to them. The child's records and documentation should be checked for details of medications already given and, where applicable, and the remaining schedule of medications and supplements should be continued according to this protocol.

3.5 Dietary Treatment

Children receive RUTF based on a dose 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 8**). The dietary treatment is managed at home, with the children attending outpatient care sessions on a weekly basis for monitoring health and nutritional status and replenishing stocks of RUTF.

3.5.1 QUANTITIES OF RUTF TO PROVIDE

- Provide 200 kcal per kg bodyweight per day of RUTF. Use the RUTF look-up tables for the amounts of RUTF to give on each weekly visit, based on the child's weight. One sachet RUTF of 92 g provides 500 kcal.
- Explain the daily amount the child will need to consume to the caregiver.
- Give the required RUTF ration to the caregiver.

Table 8. Look-Up Table for Amounts of RUTF to Give to a Child per Day or Week Based on a Dose of 200 kcal/kg Bodyweight/Day Using 92 g Packets Containing 500 kcal

Child's Weight (kg)	Packets per Day	Packets per Week
4.0* – 4.9	2	14
5.0 – 6.9	2.5	18
7.0 – 8.4	3	21
8.5 – 9.4	3.5	25
9.5 – 10.4	4	28
10.5 – 11.9	4.5	32
≥ 12	5	35

* Infants < 4 kg are referred to inpatient care

3.5.2 FEEDING PROCEDURE

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

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 and are also repeated upon every visit and 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 18. 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 as 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:

- **Anthropometry**
  - MUAC
  - Weight
- **Physical examination**
  - Degree of bilateral pitting oedema
  - Weight gain:
    - The weight is compared with the target weight for discharge (see **Annex 5. Guidance Table to Identify Target Weight for Discharge**)
    - Children who lose weight or have no weight gain or have their weight fluctuating receive special attention during the medical examination (see **Annex 17. Action Protocol in Outpatient Care**)
  - Body temperature

- Standard clinical signs: stool, vomiting, dehydration, cough, respiration, liver size, eyes, ears, skin condition and peri-anal lesions are assessed
- 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 19. Health and Nutrition Education Messages**).

Follow-up action is based on the action protocol (see **Annex 17. Action Protocol in Outpatient Care**). The action protocol describes when to decide for home visit, referral to inpatient care or referral for medical investigation. Children who were absent for one or more visits are traced in the community (including those who were discharged because they became defaulters after three absent visits).

3.7 Home Visits

The outreach worker covering the geographical area of a child's place of origin 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 17. Action Protocol in Outpatient Care**):

- Child is absent or defaulting
- Child is not gaining weight or is losing weight on a follow-up visit
- Child's oedema is not reducing
- Child returned from inpatient care or caregiver refused inpatient care
- Child has a deteriorating medical condition

A system to monitor home visits should be kept at the outpatient care site (see **Annex 24. Home Visit Record Form** and **Annex 25. Checklist for Home Visits**).

3.8 Criteria to Refer the 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 17. Action Protocol in Outpatient Care**).

The following medical complications and deterioration of nutritional 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
- Less than admission weight on third week
- Weight loss for two consecutive visits
- Static weight (no weight gain) for three consecutive visits
- Hypoglycaemia, dehydration, high fever, hypothermia, high respiratory rate, anaemia, eye signs of vitamin A deficiency, skin lesion, infection in need of second-line or intramuscular (IM) antibiotic treatment, no response to treatment

In addition, the absence or death of the caregiver can lead the new caregiver to request inpatient care. Also, referral to inpatient care must be granted upon request from the caregiver at any time.

If a child is referred to inpatient care, it is essential that a referral form or health card is used to provide basic health and nutrition information, including a description of the treatment, reasons for referral, and vaccination status (see **Annex 30. Referral Form for Inpatient Care/Outpatient Care**). If a referral system already exists in the health facility, then this should be used. What is of importance is that the nutrition and medical information is recorded and shared with the health care provider at the next level.

3.9 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 9** are diagnosed as failing to respond to treatment.

Based on the action protocol (see **Annex 17. Action Protocol in Outpatient Care**), the child receives a home visit or is referred to a health facility with expertise in inpatient care for SAM with medical complications for medical investigation and specialised treatment.

Table 9. 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
Bilateral pitting 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 14 days
Static weight	For 21 days
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 worker or volunteer conducts home visit 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 requested to verify the organisation of the services and the compliance to treatment protocols.

Common causes of failure to respond to treatment (see **Box 6**) should be systematically examined to determine and rectify the problem.

BOX 6. 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 for home care provided

Problems Related to Home Environment

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

3.10 Discharge Criteria

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

- 15 percent weight gain maintained for two consecutive visits (of admission weight or weight free of oedema) (see **Annex 5. Guidance Table to Identify Target Weight for Discharge**)
- No bilateral pitting oedema for two consecutive visits
- 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 the third consecutive week or outpatient care session
- 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 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 (e.g., supplementary feeding) and for follow-up are made

3.11 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 treatment card
- Advise the caregiver to immediately go to the nearest health facility if the 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
- 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 nutritional status.

3.12 Infant and Young Child Feeding Support

Annex 19. Health and Nutrition Education Messages summarizes health and nutrition education messages that can be used for individual and group counselling for improving and supporting IYCF practices. It provides a list of key behaviours to promote, summarizes the importance of breastfeeding for the infant and young child, and recommends IYCF practices on breastfeeding and complementary feeding.[16] It also provides an example of a country-adapted tool for recommended foods for infants and young children.

[16] IFE Core Group. 2009. *Integration of IYCF support into CMAM*. Facilitator's Guide and Handouts. Oxford, UK: ENN.

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

Inpatient care for the management of SAM 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 because their medical condition is deteriorating (see **Annex 17. Action Protocol in Outpatient Care**) are admitted to inpatient care. Children with SAM with appetite or without medical complications may exceptionally be admitted to inpatient care for social reasons (e.g., no caregiver, security problem), to be decided by the supervisor of the health facility.

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/or the oedema is reducing. Exceptionally, children will complete the full treatment in inpatient care, because, e.g., child cannot eat RUTF, RUTF is not available, social reason.

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 in inpatient care until full recovery (see **Section 6**).

4.1 Admission Criteria

BOX 7. ADMISSION CRITERIA FOR INPATIENT CARE

Children 6-59 months

Bilateral pitting oedema +++

Any grade of bilateral pitting oedema with severe wasting

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

Referred from outpatient care according to action protocol

Other: e.g., infants ≥ 6 months and < 4 kg with SAM follow the SAM treatment protocol as infants < 6 months

4.2 Admission Procedure

- Upon arrival at the health facility, the child and caregiver are welcomed and informed about the admission procedure. The child's weight, height or length and MUAC is measured and recorded.
- Critically ill children are triaged and receive priority treatment. Sugar water is made available to prevent hypoglycaemia (see **Box 4** and **Annex 9. Sugar Water Protocol**).
- 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 need 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 4**).
- The medical and nutrition assessment information is recorded on the inpatient care treatment card (see **Annex 27. 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 handwashing and general hygiene, and food during his/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, and 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 5**). If he/she passes the appetite test but needs admission to inpatient care for

medical complications, he/she should take RUTF. A child who fails the appetite test will be put on the milk diet and tested again as soon as the appetite has returned. As soon as the appetite returns, the child graduates 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 in case of need.

- A child 6-59 months with SAM without medical complications and appetite will be admitted to inpatient care only if there is an exceptional social or medical reason. This is decided by the supervisor of the health facility in discussion with the caregiver.

4.3 Stabilisation Phase

Medical treatment and nutritional rehabilitation of children with SAM and medical complications in inpatient care follow the adapted WHO SAM treatment protocol.[17] As soon as the medical condition is stabilised, the oedema is reducing and/or the medical complication is resolving, the child is referred to outpatient care to continue the nutritional rehabilitation. It is expected that the child is in stabilisation for one to seven days.

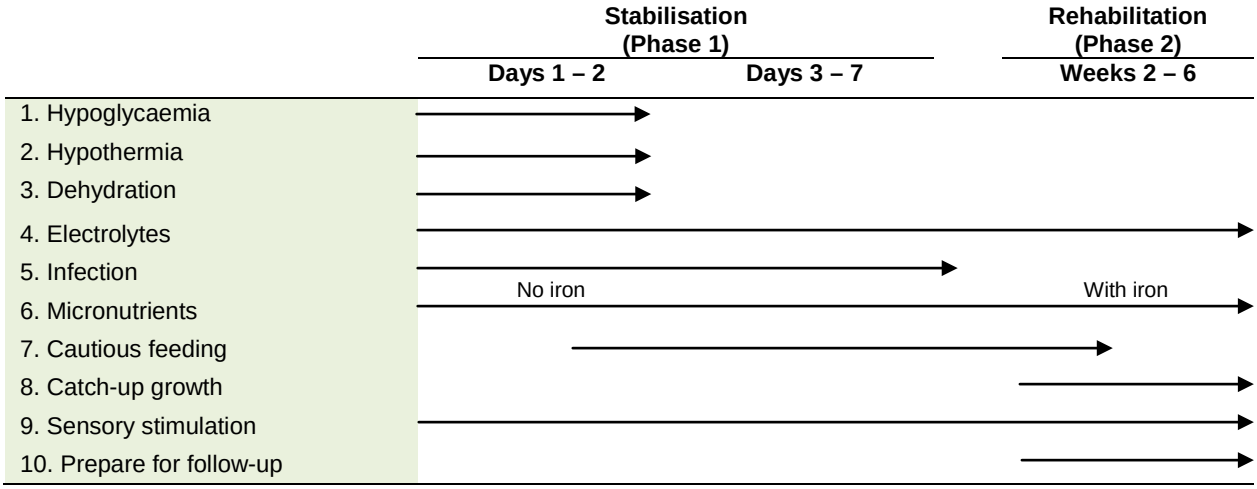
The general principles of the WHO SAM treatment protocol are:

- 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 4. Overview Treatment of Children with SAM: WHO 10-Step According to the WHO 1999 Treatment Protocol[18]



[17] 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.

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

4.3.1 MEDICAL TREATMENT

Routine medicines and supplements should follow the schedule as described in outpatient care, (see **Section 3.4 Routine Medication**). (See also **Annex 6. Routine Medicines Protocols**, **Annex 7. Supplemental Medicines Protocols** and **Annex 8. Drug Doses**.)

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

Quantities of F75 in the Stabilisation Phase

- Give 130 ml of F75 (100 kcal) per kg bodyweight per day
- Give six or eight feeds per day (every three or 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 10** and **11)**

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.
- 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 eight or more feeds should be given daily.

Feed Preparation

- For a large number of children:
  Add one packet of F75 to 2 litres (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 millilitres (ml) boiled and cooled water per one 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 14. Alternative Recipes for F75, F100 and ReSoMal Using CMV**).

Feeding Procedure

- Feed by cup and saucer.
- Only feed with a nasogastric tube (NGT) when the child is unable to take sufficient F75 by mouth. A sufficient amount is defined as intake of 80 percent of the milk.
- The use of a NGT should not exceed three days and should only be used in the stabilisation phase.

BOX 8. SUMMARY OF REASONS FOR USING A NGT TO FEED THE CHILD DURING STABILISATION

A NGT should be used if the child:

- Takes less than 80 percent of the prescribed diet per 24-hours during stabilisation
- Has pneumonia (rapid respiration rate) and has difficulties swallowing
- Has painful lesions of the mouth
- Has cleft palate or other physical deformity
- Shows disturbed level of consciousness

Feeding Technique

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/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.

The meals for the caregivers should be organised by the health facility. The caregivers' meals 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.

Tables 10 and **11** provide volumes of F75 to give to children with severe wasting and severe bilateral pitting oedema in the stabilisation phase. See also **Annex 12. Therapeutic Feeds Look-Up Tables**, which provides F75 look-up tables for daily use in the ward.

Table 10. Stabilisation Phase Volume of F75 for Persons with Severe Wasting

Weight (kg)	F75 (ml per feed if 12 feeds per day)	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	20	40	50	65
2.2 – 2.4	25	45	60	70
2.5 – 2.7	30	50	65	75
2.8 – 2.9	30	55	70	80
3.0 – 3.4	35	60	75	85
3.5 – 3.9	40	65	80	95
4.0 – 4.4	45	70	85	110
4.5 – 4.9	50	80	95	120
5.0 – 5.4	55	90	110	130
5.5 – 5.9	60	100	120	150
6.0 – 6.9	70	110	140	175
7.0 – 7.9	80	125	160	200
8.0 – 8.9	90	140	180	225
9.0 – 9.9	100	155	190	250
10 – 10.9	110	170	200	275
11 – 11.9	115	190	230	275
12 – 12.9	125	205	250	300
13 – 13.9	135	230	275	350
14 – 14.9	145	250	290	375
15 – 19.9	150	260	300	400
20 – 24.9	160	290	320	450
25 – 29.9	175	300	350	450
30 – 39.9	185	320	370	500
40 – 60	200	350	400	500

Table 11. Stabilisation Phase Volume of F75 for Persons with Severe (+++) Bilateral Pitting Oedema

Weight (kg)	F75 (ml per feed if 12 feeds per day)	F75 (ml per feed if 8 feeds per day)	F75 (ml per feed if 6 feeds per day)	F75 (ml per feed if 5 feeds per day)
3.0 – 3.4	30 –35	50 – 60	60 – 75	70 – 85
3.5 – 3.9	30 – 40	50 – 65	65 – 80	75 – 95
4.0 – 4.4	35 – 40	55 – 70	70 – 85	90 – 110
4.5 – 4.9	35 – 45	65 – 80	70 – 95	95 – 120
5.0 – 5.4	45 – 55	70 – 90	90 – 110	105 – 130
5.5 – 5.9	50 – 60	80 – 100	95 – 120	120 – 150
6 – 6.9	55 – 70	90 – 110	110 – 140	140 – 175
7 – 7.9	65 – 80	100 – 125	130 – 160	160 – 200
8 – 8.9	70 – 90	110 – 140	145 – 180	180 – 225
9 – 9.9	75 – 95	125 – 155	150 – 190	200 – 250
10 – 10.9	80 – 100	135 – 170	160 – 200	220 – 275
11 – 11.9	95 – 115	150 – 190	185 – 230	220 – 275
12 – 12.9	100 – 125	165 – 205	200 – 250	240 – 300
13 – 13.9	110 – 135	185 – 230	220 – 275	280 – 350
14 – 14.9	115 – 145	200 – 250	230 – 290	300 – 375
15 – 19.9	120 – 150	210 – 260	240 – 300	320 – 400
20 – 24.9	125 – 170	230 – 290	255 – 320	360 – 450
25 – 29.9	140 – 175	240 – 300	280 – 350	360 – 450
30 – 39.9	150 – 185	255 – 320	295 – 370	400 – 500
40 – 60	160 – 200	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
- Target weight for discharge at 15 percent weight gain (of admission weight or weight free of oedema) is recorded (see **Annex 5. Guidance Table to Identify Target Weight for Discharge**)
- Degree of bilateral pitting oedema (0 to +++) is assessed
- Body temperature is measured (twice per day)
- Standard clinical signs: stool, vomiting, dehydration, cough, respiration, liver size, eyes, ears, skin condition, peri-anal lesions
- MUAC is taken upon admission and thereafter on each seventh day
- Length or height is taken upon admission and after 21 days
- A record is taken (on the intake part of the treatment card) if the child is absent, vomits or refuses a feed, and whether the child 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 THE 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 a F75 diet at least until their oedema has reduced to moderate (++) oedema; these children are particularly vulnerable and at high risk of death.

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 two-to-three days on average.

- Children 6-59 months are gradually prepared for referral to outpatient care. As soon as the child passes the appetite test and eats 80 percent of his/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.

4.4.1 MEDICAL TREATMENT

Routine medicines and supplements should follow the schedule as described in outpatient care.

The child can be referred to outpatient care and continue the drug regimen at home if the medical complication is resolving. If a child has to complete his/her antibiotic schedule while in outpatient care, then this should be noted on the child's referral card (see **Annex 30. Referral Form for 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, the RUTF appetite test is done (see **Box 5. Appetite Test**). RUTF is offered at every feed and complemented by F100 if needed. Few children

might initially refuse the RUTF but should be encouraged to eat RUTF 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.[19]

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

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

For children over 6 months but weighing less than 4 kg, only F100-Diluted should be given. Full-strength F100 should not be used. These children are treated as infants under 6 months (see **Section 5**).

Number of Feeds

- Eight feeds per day should be provided in 24-hour care if sufficient staff is present to prepare and distribute the feeds at night.
- Five-to-six feeds per day should be provided if there are no night feeds possible, 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 (**Table 12**).
- A full day's amount of RUTF is given to the caregiver, and the amount taken should be checked five times during the day.
- Children that are not taking sufficient RUTF as inpatients are given F100 to make up any deficit in intake.
- When the child has passed the appetite test and is taking 80 percent of the daily prescribed amount of RUTF, the child is ready for referral to outpatient care to continue the treatment at home.

Tables 12 and **13** provide volumes of RUTF and F100 to give to children in the transition phase. See **Annex 12. Therapeutic Feeds Look-Up Tables**, which provides F100 and RUTF look-up tables for daily use in the ward.

Table 12. Transition Phase Look-Up Table for Amounts of RUTF to Give to a Child per Day Based on a Dose of 150 kcal/kg Bodyweight/Day Using 92 g Packets Containing 500 kcal

Child's Weight (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

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.

[19] This is an acceptable approximation. If tables are to be constructed, 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.

- Use the transition phase look-up table for the volume of F100 to give per feed according to the child's bodyweight (**Table 13**).

Table 13. Transition Phase Look-Up Table for Volume of F100 per Feed if No RUTF is Taken, Based on 150 kcal/kg Bodyweight/Day

Weight (kg)	F100 (ml per feed if 8 feeds per day)	F100 (ml per feed if 6 feeds per day)	F100 (ml per feed if 5 feeds per day)
3.0 - 3.4	60	75	85
3.5 – 3.9	65	80	95
4.0 – 4.4	70	85	110
4.5 – 4.9	80	95	120
5.0 – 5.4	90	110	130
5.5 – 5.9	100	120	150
6.0 – 6.9	110	140	175
7.0 – 7.9	125	160	200
8.0 – 8.9	140	180	225
9.0 – 9.9	155	190	250
10 – 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

Feed Preparation of 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 one red scoop of F100 powder).

If pre-packaged F100 is not available, use one of the recipes given (see **Annex 14. Alternative Recipes for F75, F100 and ReSoMal Using CMV**) to prepare F100 using locally-available ingredients and CMV.

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 were provided during the stabilisation phase (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 be reintroduced to RUTF when their appetite is fully established.

F100

- Feeding and timing of F100 feeds in the transition phase is 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 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.
- The feeding technique for F100 is the same as for F75 in the stabilisation phase.

4.3.3 INDIVIDUAL MONITORING

Individual monitoring of a severely malnourished child in the transition phase is done daily. Average expected daily weight gain is 5 g/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, liver size, eyes, ears, skin condition and peri-anal lesions are assessed
- MUAC is taken each week
- Length or height is taken every three weeks
- Other records: e.g., absent, vomits or 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 treatment until full recovery
- 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. Older age groups will remain in inpatient care until full recovery.

Criteria to Progress to Outpatient Care for Children 6-59 Months

- A good appetite: if the child passes the appetite test and takes 80 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

The following criteria for progression from the transition phase to the rehabilitation phase in inpatient care are for the few exceptions of those who do not progress to outpatient care (i.e., children who will not be able to return to their community, children who cannot eat the RUTF):

- A good appetite: taking at least 90 percent of the F100 prescribed for 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 bodyweight/day in association with an increase in respiratory rate (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 refeeding diarrhoea so that there is weight loss
  Note: It is common for the children to get some change in stool frequency when they change diet. This does not need to be treated unless the children lose weight. Several loose stools without weight loss is not a criterion to move back to the stabilisation phase.
- A complication that necessitates an IV infusion
- A need for feeding by NGT

4.5 Rehabilitation Phase

Few children 6-59 months progressing from the transition phase will require inpatient care and will move to the rehabilitation phase. This phase is associated with full recovery and rapid catch-up of weight.

Children progressing to the rehabilitation phase and who are on an RUTF diet can be referred to the outpatient department (OPD) of the health facility and monitored weekly if there is no outpatient care site close to his/her community. They should not occupy a bed and be 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 taking large amounts of their diet and gaining weight rapidly.

Routine medicines that are added in this phase are (see **Section 3.4** and **Annex 6. Routine Medicines Protocols**):

- Deworming medicine as a single dose
- Vitamin A supplementation and measles vaccination on week four (or upon discharge)
- If the child is on F100: Iron sulphate is added to F100 (one crushed tablet – 200 mg of iron sulphate is 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 when the child's body function is restoring and the child will recuperate weight. The diet based on 200 kcal/bodyweight/day will be RUTF. For those that cannot take sufficient RUTF, F100 is given exclusively or 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 19. 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.[20]

[20] This is an acceptable approximation. If tables are to be constructed, 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.

Number of Feeds

- Offer RUTF. Those that are not taking sufficient RUTF as inpatients are given F100 to make up any deficit in intake. If both F100 and RUTF are being given, they can be substituted on the basis that about 100 ml of F100 = 20 g of RUTF.[21]
- Provide RUTF and/or F100 according to child's bodyweight.
- Give five or six 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

Quantities of RUTF

Use **Table 14** to calculate the amount of RUTF to provide. RUTF is provided on the basis 200 kcal/kg bodyweight/day, just as in outpatient care.

Quantities of F100 for Children Not Taking RUTF

Give 200 ml of F100 which provides 200 kcal/kg bodyweight/day. Use the look-up tables (**Table 15**) for the volume of F100 in the inpatient rehabilitation phase and give per feed according to child's bodyweight.

Tables 14 and **15** provide volumes of RUTF and F100 to give to children in the rehabilitation phase. See also **Annex 12. Therapeutic Feeds Look-Up Tables**, which provides F100 and RUTF look-up tables for daily use in the ward.

Feed Preparation for 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 one 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.

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/she takes all the feed quickly and easily. The child should be able to take as much F100 as they want.

[21] Idem.

- Gradually replace one feed a day with a porridge.

Table 14. Rehabilitation Phase Look-Up Table for Amounts of RUTF to Give to a Child per Day Based on a Dose of +- 200 kcal/kg Bodyweight/Day Using 92 g Packets Containing 500 kcal

Child's Weight (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 15. Rehabilitation Phase Look-Up Table for Volume of F100 per Feed if no RUTF is Taken Based on +- 200 kcal/kg Bodyweight/Day

Child's Weight (kg)	F100 (ml per feed if 6 feeds per day)	F100 (ml per feed if 5 feeds per day)
3.0 – 3.4	110	130
3.5 – 3.9	120	150
4.0 – 4.9	150	180
5.0 – 5.9	180	200
6.0 – 6.9	210	250
7.0 – 7.9	240	300
8.0 – 8.9	270	330
9.0 – 9.9	300	360
10.0 – 11.9	350	420
12.0 – 14.9	450	520
15.0 – 19.9	550	650
20.0 – 24.9	650	780
25.0 – 29.9	750	900
30.0 – 39.9	850	1,000
40 – 60	1,000	1,200

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 and liver size, eyes, ears, skin condition and peri-anal lesions are assessed
- MUAC each week
- Length or height is taken after 21 days
- Other records: e.g., absent, vomits or refuses a feed
- A full medical examination is done every two days

4.5.4 PROGRESSION FROM REHABILITATION PHASE TO DISCHARGE

Based on the child fulfilling the discharge criteria, a decision can be made to discharge the child to his/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.

BOX 9. DISCHARGE CRITERIA FROM INPATIENT CARE REHABILITATION PHASE

- 15 percent weight gain maintained for two consecutive days (of admission weight or weight free of oedema) (see **Annex 5. Guidance Table to Identify Target Weight for Discharge**)
- No bilateral pitting oedema for two weeks
- Clinically well and alert

Additional concerns:

- Nutrition and health education scheme completed
- Immunisation schedule updated
- Adequate arrangements for linking caregiver and child with appropriate community initiatives (e.g., supplementary feeding) and for follow-up made

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/she should be referred back to the stabilisation phase. Routine drugs are individually prescribed depending upon what has already been given and the cause of the referral (see **Annex 17. Action Protocol in Outpatient Care**).

4.6 Failure to Respond to Treatment in Inpatient Care

Some children undergoing inpatient care may show failure to respond to treatment or exhibit deterioration in condition at different stages of the treatment. Criteria for defining failure to respond to treatment are listed in **Table 16**.

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 16. 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
Oedema is not reducing	4 - 7 days
Oedema is 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 bodyweight/day	for 2 successive days
Static weight	for 3 successive days

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

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.

4.6.1 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 most frequent causes of failure to respond to inpatient treatment are listed in **Box 10**.

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.[22] 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/or 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

[22] 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.

child. The same can occur at home when the child is given family food or traditional complementary foods that are inadequate in Type 1 and Type 2 nutrients.

4.6.2 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, 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 10. 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 (multi-chart) correctly, resulting in gaps in data for monitoring the child's progress
- Insufficient staff (particularly at night) or 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 Individual Child

- Insufficient feeds given
- Vitamin and mineral deficiencies
- Malabsorption of food
- Psychological trauma (particularly in refugee situations and families living with HIV)
- Rumination
- Infection, especially: diarrhoea (amaebiasis, giardiasis, dysentery), pneumonia, TB, urinary infection/otitis media, malaria, HIV, 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

4.7 Criteria for Discharge from Inpatient Care After Full Recovery

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

- 15 percent weight gain maintained for two consecutive days (of admission weight or weight free of oedema) (see **Annex 5. Guidance Table to Identify Target Weight for Discharge**)
- No bilateral pitting oedema for two consecutive 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 caregiver and child with appropriate community initiatives (e.g., supplementary feeding) and for follow-up are made

Other children that are discharged but did not meet the discharge cured 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

4.8 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 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 IM-SAM should be referred to supplementary feeding, where available, for a minimum of three-to-four months, regardless of their nutritional status.

4.9. Infant and Young Child Feeding Support

Annex 19. Health and Nutrition Education Messages summarizes health and nutrition education messages that can be used for individual and group counselling for improving and supporting IYCF practices. It provides a list of key behaviours to promote, summarizes the importance of breastfeeding for the infant and young child, and recommends IYCF practices on breastfeeding and complementary feeding.[23] It also provides an example of a country–adapted tool for recommended foods for infants and young children.

[28] IFE Core Group. 2009. *Integration of IYCF into CMAM.* Facilitator's Guide and Handouts. Oxford, UK: ENN.

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

Infants under 6 months with SAM should be treated within the context of IYCF recommendations.[24] 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 always admitted to inpatient care. They need special care and ideally should be separated from the other older infants and children with SAM. The main objective of treatment of these infants is to improve or re-establish breastfeeding; provide temporary or longer-term appropriate medical and dietary treatment; and provide nutrition, psychological and medical care for their caregivers. They are not offered RUTF as it is not suitable for infants under 6 months because the reflex of swallowing semi-solid foods 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 or traumatised, ill 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

This section provides guidance on treatment of the two categories of children under 6 months:

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

Infants with SAM over 6 months with a bodyweight below 4 kg will follow the same treatment protocol.

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).[25]

[24] WHO and UNICEF. 2003. *Global Strategy for Infant and Young Child Feeding*. Geneva: WHO; IFE Core Group. 2007. *Infant and Young Child Feeding in Emergencies: Operational Guidance for Emergency Relief Staff and Programme Managers.* Version 2.1. Oxford, UK: ENN.
[25] WHO. 2009. *Rapid advice: Revised WHO principles and recommendations on infant feeding in the context of HIV*. Geneva: WHO.

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:

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

Note: Infants under 6 months with SAM and their lactating mothers (or wet nurses) are both treated and taken care of. In food insecure environments or an emergency situation, they are at high risk of SAM, so it is important to include the following criteria:

- Infant unable to suckle effectively (e.g., too weak)
- Infant not satisfactory gaining weight at home despite breastfeeding counselling
- Lactating mother (or wet nurse) with insufficient breast milk
- Malnourished lactating mother (or wet nurse)
- Absent lactating mother

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, give Amoxicillin (for infants weighing a minimum of 2 kg) 30 mg/kg bodyweight, two times a day (60 mg/kg bodyweight/day) in association with Gentamycin 7.5 mg/kg bodyweight/day IM or IV for seven days.

Note: Do not use Chloramphenicol in young infants under 2 months, and use with caution in infants 2-6 months.

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

Folic Acid

Give 2.5 mg (tablet crushed) in a single dose.

Ferrous Sulphate

Give F100-Diluted, as F100 has already been enriched with ferrous sulphate and it is easier and safer than to calculate and add ferrous sulphate to very small amounts of feeds. F100 with one-third water makes the F100-Diluted (see **Feed Preparation** in **Section 5.1.3**).

5.1.3 DIETARY TREATMENT

The main objective 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 every three hours for at least 20 minutes (more if the child cries or demands more). The infant should be breastfed as frequently as possible.
- Between one half and one hour after a normal breastfeeding session, give maintenance amounts of therapeutic milk.
- Provide F100-Diluted for infants with severe wasting. F100-Diluted has a lower osmolarity than F75 and thus is better adapted to immature organ functions. Also, the dilution allows for

providing more water for the same energy with a better carbohydrates lipid ratio.[26] (See **Annex 11. Dietary Treatment**.)
- Provide F75 for infants with bilateral pitting oedema and change to F100-Diluted when the oedema is resolved.

Note: To prevent hypernatraemia in hot climates, sips of water or 10 percent sugar-water solution are given in addition to the milk diet until the thirst of the child is satisfied (see Hypernatraemic Dehydration in the **Appendix**).

Quantities of F100-Diluted

- F100-Diluted is given at 130 ml/kg bodyweight/day, distributed across eight feeds per day.
- Use the look-up tables (**Table 17**) for maintenance amounts of F100-Diluted to give to infants using the supplementary suckling technique. The quantity of F100-Diluted is not increased as the child starts to gain weight.
- F100-Diluted provides 130 kcal/kg bodyweight/day.

Regulation of Amount of F100-Diluted Given

- The progress of the infant is monitored by the 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 the F100-Diluted, add 5 ml extra to each feed.
- Maintenance amounts of F100-Diluted are given using the supplementary suckling 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.
- 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 the infant is taking adequate quantities to meet his/her requirements.
- The infant should be weighed daily with a scale graduated to within 10 g (or 20 g).

Table 17. Look-Up Table for Maintenance Amounts of F100-Diluted (Severe Wasting) or F75 (Bilateral Pitting Oedema Until the Oedema is Resolved) for Breastfed Infants

Child's Weight (kg)	F100-Diluted or F75 in case of oedema (ml per feed if 12 feeds per day)	F100-Diluted or F75 in case of oedema (ml per feed if 8 feeds per day)
≥ 1.2	20	25
1.3 – 1.5	25	30
1.6 – 1.7	30	35
1.8 – 2.1	30	40
2.2 – 2.4	35	45
2.5 – 2.7	40	50
2.8 – 2.9	40	55
3.0 – 3.4	45	60
3.5 – 3.9	50	65
4.0 – 4.4	50	70

Once Infant is Gaining Weight at 20 g per Day (Absolute Weight Gain)

- Gradually decrease the quantity of F100-Diluted by one-third of the maintenance intake so that the infant gets more breast milk.

[26] Note: F100-Diluted has a lower osmolarity than some readily-available infant formulae and thus has a lower risk of causing diarrhea. Studies have shown that F100-Diluted and some infant formulae give similar results in terms of mortality and weight gain.

- If the weight gain of 10 g per day is maintained for two-to-three days (after gradual decrease of F100-Diluted), 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.

Once the infant is gaining weight at 20 g per day on breastfeeding, 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 on breast milk alone to make sure that he/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, they should be discharged. When it is certain that the child is gaining weight on breast milk alone, he/she should be discharged, no matter what his/her current weight or weight-for-length.

Feed Preparation

- For a large number of children:
  Add one 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, which will yield 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 and discard any excess milk after use.
  - If F100 is not readily available, these 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/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 supplementary suckling technique to provide maintenance amounts of F100-Diluted. OR, 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 NGT should not exceed three days and should be used in the stabilisation phase only.

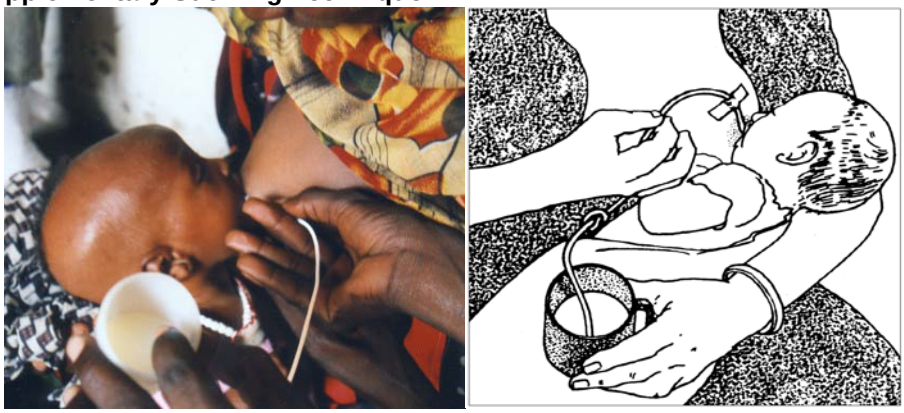
Feeding Technique

Use the supplementary suckling technique to re-establish or commence breastfeeding and also to provide 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 supplementary suckling 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 is placed 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, the cup can be lowered to up to 30 cm.

After feeding is completed, the tube 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 tube is then left exposed to direct sunlight.

Figure 5. Supplementary Suckling Technique



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, eyes, ears and skin condition
- Length or height (taken after 21 days when a new treatment card is used)
- Any other record: e.g., absent, vomits or refuses a feed, whether the child is fed by NGT or given IV infusion or transfusion

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

5.1.5 SUPPORTIVE CARE FOR MOTHERS

Supportive Care for Breastfeeding Mothers

Supportive care for breastfeeding mothers should be provided, especially in very stressful situations. Focus needs to be directed at creating conditions that will facilitate and increase breastfeeding, such as establishing safe “breastfeeding corners” for mothers and infants, one-to-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 important to assess nutritional status of the mother (MUAC and bilateral pitting oedema).

Explain to the mother the different steps of treatment that their 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 per 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 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 is a very essential component of the care for the mother and for the infant with SAM as the mother may have many problems of physical or psychological origin. These problems could affect her care of her infant or lead to defaulting. **Table 18** demonstrates 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 session and the supplementary suckling 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 breastfeed should be provided to the mother in a supportive, participatory way through individual counselling or group discussions to relieve her stress and fears.

Table 18. 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 misconceptions	Establish good communication with the mother

5.1.6 DISCHARGE CRITERIA

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

- Successful re-lactation with effective suckling = 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 these children is very important. In areas where services are available, the mother should be included in a supplementary feeding programme (SFP) and receive high-quality food with the right balance of nutrients 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

While the aim of the treatment of infants under 6 months with SAM with a caregiver with a potential of breastfeeding is to decrease F100-Diluted gradually until they are gaining sufficient weight on breast milk alone, the aim of the treatment of infants under 6 months with SAM without the prospect of being breastfed in Southern Sudan is to receive F100-Diluted or infant formula until they are old enough to take semisolid complementary food in addition to adapted cow milk. (See **Annex 15. 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 Admission Criteria for Children 6-59 Months in **Annex 2. Admission and Discharge Criteria for IM-SAM for Children Under 5**).

5.2.1 ADMISSION CRITERIA

Infants under 6 months not being breastfed (neither lactating mother nor wet nurse), if the infant has:

- Presence of bilateral pitting oedema
- Visible wasting

5.2.2 STABILISATION PHASE

Antibiotics

No antibiotic treatment is provided unless there are signs of infection.

If there is any sign of infection, give Amoxicillin (for infants weighing a minimum of 2 kg) 30 mg/kg bodyweight two times per day (60 mg/kg bodyweight/day) in association with Gentamycin 7.5 mg/kg bodyweight/day IM or IV for seven days.

Note: Do not use Chloramphenicol in young infants under 2 months, and use with caution in infants 2-6 months.

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

Folic Acid

Give 2.5 mg (tablet crushed) in a single dose.

Ferrous Sulphate

Give F100-Diluted, as F100 has already been enriched with ferrous sulphate, and it is easier and safer to use F100-Diluted than to calculate and add ferrous sulphate to very small amounts of feeds. F100 with one-third water makes the F100-Diluted (see **Feed Preparation** in **Section 5.1.3**).

Dietary Treatment

- Infants under 6 months 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 with bilateral pitting oedema (kwashiorkor) should always be given F75 until the oedema has resolved and then F100-Diluted.

Note: 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 19**) for amounts of F100-Diluted or F75 to give for non-breastfed infants under 6 months in the stabilisation phase.
- Amount given should be calculated based on 130 kcal/kg bodyweight/day.

Table 19. Stabilisation Phase Look-Up Table for Volume of F100-Diluted (Severe Wasting) or F75 (Bilateral Pitting Oedema) for Non-Breastfed Infants Under 6 Months

Child's Weight (kg)	F100-Diluted or F75 in case of oedema (ml per feed if 12 feeds per day)	F100-Diluted or F75 in case of oedema (ml per feed if 8 feeds per day)
≤ 1.5	25	30
1.6 – 1.8	30	35
1.9 – 2.1	30	40
2.2 – 2.4	35	45
2.5 – 2.7	40	50
2.8 – 2.9	40	55
3.0 – 3.4	45	60
3.5 – 3.9	50	65
4.0 – 4.4	50	70

Feed Preparation

- For a large number of children:
  Add one packet of F100 to 2.7 L of water instead of 2 L for F100-Diluted.
- For a small number of children
  - Add 35 ml of water to 100 ml of F100 already prepared to yield 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 and discard any excess milk after use.

Feeding Procedure

- Feed by cup and saucer or NGT by drip (using gravity not pumping).
- Only feed with 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.

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, eyes, ears and skin condition
- Length or height after 21 days
- Any other record: e.g., absent, vomits or refuses a feed, whether the child 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:

- Return of appetite
- Beginning of loss of 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 (++), as they are particularly vulnerable

5.2.3 TRANSITION PHASE

Routine Medicines and Supplements

See **Section 5.1.2**.

Dietary Treatment

Use the standard protocol for older children in 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 stabilisation phase.
- F100-Diluted provides 130 kcal/kg bodyweight/day.
- Use the look-up table (**Table 20**) for the amounts of F100-Diluted to give to non-breastfed infants in the transition phase.

Individual Monitoring

Continue surveillance as outlined in the stabilisation phase (see **Section 5.2.2**).

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, and
- No other medical problem

Table 20. Transition Phase Look-Up Table for Volume of F100-Diluted for Non-Breastfed Infants

Child's Weight (kg)	F100-Diluted (ml per feed if 8 feeds per day)
≤ 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

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.
- F100 provides 130 kcal/kg bodyweight/day.
- Use the look-up table (**Table 21**) for amounts of F100-Diluted to give to non-breastfed infants in the rehabilitation phase.

Table 21. Rehabilitation Phase Look-Up Table for Volume of F100-Diluted for Non-Breastfed Infants

Child's Weight (kg)	F100-Diluted (ml per feed if 6-8 feeds per day)
≤ 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 treatment of older children in **Section 6**.

5.2.5 DISCHARGE CRITERIA

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

- 15 percent weight gain maintained (of admission weight or weight free of oedema)
- No bilateral pitting oedema for two weeks
- Clinically well and alert

Other Considerations:

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

5.2.6 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.

5.3 Infant and Young Child Feeding Support

Annex 19. Health and Nutrition Education Messages summarizes health and nutrition education messages that can be used for individual and group counselling for improving and supporting IYCF practices. It provides a list of key behaviours to promote, summarizes the importance of breastfeeding for the infant and young child, and recommends IYCF practices on breastfeeding and complementary feeding.[27] It also provides an example of a country–adapted tool for recommended foods for infants and young children.

[32] IFE Core Group. 2009. *Integration of IYCF Support into CMAM.* Facilitator's Guide and Handouts. Oxford, UK: ENN.

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

In exceptional cases, older children, adolescents and adults with SAM will also be admitted in inpatient care until full recovery.

The physiological changes and principles of the management of SAM for children over 5 years, adolescents and adults are similar to those in children 6-59 months. However, there are differences in indicator use and index cutoffs. Moreover, for adolescents and adults there are differences in the diagnosis of bilateral pitting oedema and of acute weight. The amount of therapeutic food and 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. Also, it is 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.

Adolescents and adults do not always associate wasting or bilateral pitting oedema with their diet. As a consequence, they do not necessarily understand that altering their diet 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.[28]

6.1 Admission Criteria in Older Age Groups

BOX 11. ADMISSION CRITERIA FOR INPATIENT CARE FOR THE MANAGEMENT OF SAM IN OLDER AGE GROUPS

Older Children 5-9 Years
Bilateral pitting oedema or severe wasting

Adolescents 10-18 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

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

6.1.1 OLDER CHILDREN 5-9 YEARS

Bilateral Pitting Oedema

In children 5-9 years, examine the ankles and lower legs for presence of bilateral pitting oedema.

Severe Wasting

- The preferred indicator for severe wasting is MUAC < 135 mm.[29]
- 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 (of admission weight or weight free of oedema) as children 6-59 months with SAM treated in inpatient care until full recovery (see **Section 4**).

6.1.2 ADOLESCENTS 10-18 YEARS

Bilateral Pitting Oedema

Examine adolescents' ankles and lower legs for presence of bilateral pitting oedema. Non-nutritional causes of oedema can readily be identified by the history, physical examination and urinalysis.

Severe Wasting (Acute Weight Loss)

- The preferred indicator for severe wasting in adolescents with acute weight loss is MUAC < 160 mm.[29]
- 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

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

Severe Wasting (Acute Weight Loss)

- The preferred indicator for severe wasting in adults with acute weight loss is MUAC < 185 mm.[29]
- Also, BMI < 16.0 kg/m^2 could be used to indicate severe wasting in adults, (excluding or adjusted for) pregnant women and postpartum mothers (see **Annex 3. Anthropometric Measurements** and **Annex 4. Anthropometry Look-Up Tables**).

[29] There is neither evidence nor international agreement on the cutoff.

6.2 The Management of SAM in Adolescents and Adults

6.2.1 STABILISATION PHASE

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.

- Give routine antibiotics and, except for pregnant women, a single dose of 200 000 IU of vitamin A orally after week four in treatment or upon discharge.
- Give the same dietary treatment as children 6-59 months with F75 and F100, but with adapted amounts. The initial goal of treatment is to prevent further loss of tissue. The amount of feed given per kg of bodyweight 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 22**. 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.
- Treat hypothermia and hypoglycaemia, as adults and adolescents are susceptible to them. The latter condition is managed as described for children (see **Appendix**).

Table 22. Dietary Requirements of Adolescents and Adults in the Stabilisation Phase

Age	Daily energy requirement*	Volume of diet required			
In years	In kcal/kg bodyweight	F75 (ml/kg bodyweight/hour)	F75 (ml/kg bodyweight if 8 feeds a day)	F100 (ml/kg bodyweight /hour)	F100 (ml/kg bodyweight 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.

6.2.2 REHABILITATION PHASE

An improving appetite indicates the beginning of rehabilitation.

During rehabilitation, adolescents and adults usually 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 CMV.

Also, 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.

6.2.3 FAILURE TO RESPOND TO TREATMENT

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.

6.2.4 DISCHARGE CRITERIA

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 be referred for treatment of any other health problem that has been diagnosed prior to discharge.

7. Monitoring and Reporting

A well-designed monitoring and reporting (M&R) system is an essential component in IM-SAM. M&R focuses on children under 5 as they are the primary target group for treatment. With well-informed monitoring data, aspects of the management of SAM that need improvement can be identified in a timely manner. Appropriate action then can be taken to improve on individual care, organisation of care and overall quality of care.

The IM-SAM 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 IM-SAM 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 recovery (cure rate), case fatality (death rate), defaulting (default rate), and non-recovery. Barriers to access for care and the degree of service uptake (coverage rate) are indicating how well the service or programme is reaching the target population and meeting the service needs. The objective of monitoring is to compare service performance 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 IM-SAM M&R system presents the specific M&R tools, describes the key indicators and provides guidance on support and supervision and minimal reporting.

7.1 Monitoring Tools

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

7.1.1 REGISTRATION

Unique SAM Number

All new admissions receive a unique **SAM number** that is maintained, even if a child is referred to another health facility or site. It helps in tracking a child across different services and for sharing of information. The unique SAM number should be used on all monitoring and referral forms pertaining to the child. It is indicated on the Road to Health card that is provided to all children in treatment for SAM.

The standard numbering system for unique SAM numbers is organised per state and uses the following format:

XXX/9999/MMYY/ZZ

XXX = Two- or three-letter code for health facility or site
9999 = Child's individual number
MMYY = Month and year of admission
ZZ = Two-letter code for start of treatment, OC is for outpatient care, IC is for inpatient care

E.g.: JUH/0001/0109/IC is the first child admitted directly to inpatient care in Juba Hospital in January 2009.

A system of coding all health facilities per state should exist or put into place.

Registration Book

The heath facility will record admissions 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:

- Registration number
- Unique SAM number
- Date of admission
- Name, age, sex, place of residence
- Date of discharge
- Outcome of treatment

7.1.2 INDIVIDUAL MONITORING

Individual monitoring information of the child's health and nutrition condition is recorded on **treatment cards**.

Individual monitoring of the child's health and nutrition condition 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, does not need the same level of health monitoring and is therefore monitored weekly.

Analysis of the individual treatment cards helps to identify and highlight problems which might contribute to failure to respond to treatment. Also, it is 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.

Inpatient Care Treatment Card

(See **Annex 27**)

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

Outpatient Care Treatment Card

(See **Annex 29**)

The child's information should be entered on the **outpatient care treatment card** upon admission and is updated during the weekly monitoring sessions. The outcome of the treatment is also marked on the card.

Referral Form
(See **Annex 30**)

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 and when to go where. The best form to use is the IMCI referral form. 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 treatment cards is kept at the health facility or site. A first file is for treatment cards of all those currently in treatment, including in a separate section the cards of the 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 were cured, died, defaulted or non-recovered.

7.1.3 SERVICE MONITORING

Site Tally Sheet
(See **Annex 31**)

The **site tally sheet** indicates the name of the health facility and type of IM-SAM service; one sheet is used per service. Site tally sheets provide information on weekly new admissions, old cases admitted, discharges, internal movements and total cases under treatment. All children admitted to and discharged from IM-SAM or referred are tallied; gender is tallied for all new admissions only.

The same site tally sheet is used in inpatient care or outpatient care. One site tally sheet covers a calendar month (indicating four or five weeks), is completed by the responsible health care provider at the end of each weekly session in outpatient care or weekly at inpatient care sites, and provides a monthly summary at the end of the month. Monthly summaries are used to fill the monthly site reporting sheet. Each health facility with an IM-SAM site should send the site tally sheet and/or site report to the state MOH monthly.

Site tally sheets are regularly checked by a supervisor for accuracy. The tally information can help identify differences in affected gender, age groups, type of SAM and trends.

Admissions – New Cases

New admissions are categorised as:
- New admission 6-59 months
- New admission other age group: infant under 6 months, child over 5 years, adolescent or adult

Admissions – Old Cases

Old cases that are admitted are:
- Referral from inpatient/outpatient care or from other site:
  Incoming referrals are children leaving the health facility's site of treatment. They are not counted as a new admission as they were already in treatment elsewhere in the state.
- Returned defaulter:
  Returning defaulters are children who left the service before ending the treatment and return to continue their treatment (same episode).

Discharges

Discharges children 6-59 months are categorised as:
- Cured:
  Children who meet the discharge criteria

- Died:
  Children who died during treatment
- Defaulted:
  Children who defaulted during treatment: were absent for two days in inpatient care or for the third consecutive visit in outpatient care
- Non-recovered:
  Children who could not reach the discharge criteria as cured after two months in treatment in inpatient care or after four months in treatment in outpatient care; during the period in treatment they were referred for further investigation based on the action protocol

Referrals to Another Site (Inpatient Care or Outpatient Care)

Outgoing referrals are children leaving the site of treatment. 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 temporarily exit the current health facility to be referred to another health facility for continued treatment because their condition deteriorated or they did not respond to treatment. Upon return, they re-enter the site as a referral.

Total Discharges

Total discharges are all children 6-59 months that leave the site as cured, died, defaulted or non-recovered. The number of total discharges is used as a denominator to calculate performance indicators for the cured, death, defaulter and non-recovery rates.

Total Exits

Total exits is a number that indicates all children that exit the site that week and includes all children who are discharged (as cured, died, defaulted or non-recovered) and who are leaving the site as referrals. The number of total exits provides the total number in treatment at the respective site and is used for site planning.

Total Number in Treatment

Total number in treatment at the respective site is calculated and used for site planning. It also provides the start number for the next week's tally column.

Gender

Gender is tallied for all children 6-59 months with SAM who enter as new admissions.

Monthly Site Report

(See **Annex 32**)

The **monthly site report** is completed monthly with inputs from the site tally sheet. The disaggregated report provides a summary of quantitative information to assess performance, monitor trends and identify areas that require investigation at the health facility level:

- Total number in treatment at the beginning of the month
- Admissions as new cases
- Admissions as old cases (incoming referrals and returned defaulters)
- Total admissions of the month
- The number and proportion of children 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
- Gender distribution for all new admissions children 6-59 months

Monthly site reporting sheets are regularly checked by a supervisor for accuracy.

Note: 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.

County/State Report

(See **Annex 33**)

The **county/state report** is completed monthly with inputs from all the site reports combining inpatient care and outpatient care. Information on referrals is not captured in this report, as referrals have remained in treatment within the county/state. The aggregated report does provide a summary of quantitative information to assess performance and monitor trends at the county/state level:

- Total number in treatment at the beginning of the month
- Admissions as new cases
- Total admissions of the month
- The number and proportion of children that are discharged cured, died, defaulted or non-recovered
- Total discharges
- Total number in treatment at the end of the month
- Gender distribution for all new admissions only

Note: 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.

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

Community Outreach Report

(See **Annex 26**)

The **community outreach reports** summarize activities from community outreach activities based on routine monitoring or from point activities at the community level. The information collected informs the narrative report and provides a summary of the following information:

- Scale of the service
- Key indicators:
    - Human resources: number of community outreach workers – MOH staff; number of community outreach volunteers
    - Training: number of community outreach workers including volunteers trained and active; number of community representatives oriented
    - Community mobilisation: number of communities targeted and involved; number of communities meetings
    - Community outreach activities: number of community screening sessions conducted; number of children with SAM identified and referred for treatment; number of community home visits for problem cases; number of community health and nutrition education sessions held
    - IM-SAM service coverage
- Discuss the following:
    - Barriers to access
    - Reasons why areas are not covered
    - Reasons for absentees and defaulting
    - Reasons for non-response to treatment
    - Causes of death
    - Success stories
    - Identified problems
    - Planned activities

Table 23 provides an overview of summary information on entry and exit categories for individual and service monitoring of children 6-59 months treated in IM-SAM.

Table 23. Summary Entry and Exit Categories for Individual and Service Monitoring for Children 6-59 Months

Inpatient Care	Outpatient Care
ENTRY CATEGORIES	
1. New admission: New cases of children 6-59 months who meet the admission criteria -- including *relapse* after cure *2. Other new admissions:* New cases of infants, children, adolescents or adults (< 6 months or ≥ 5 years) who need treatment of SAM in inpatient care *3. Referral from outpatient care:* Condition of child deteriorates in outpatient care (according to action protocol) and child needs inpatient care Or *Returned* after defaulting *(or Moved* from other inpatient care site)*	*1. New admission:* New cases of children 6-59 months who meet the admission criteria -- including *relapse* after cure *2. Other new admissions:* New cases who do not meet pre-set admission criteria but need treatment of SAM in outpatient care (special cases, based on decision of supervisor) *3. Referral from inpatient care:* Cases referred from inpatient care after stabilisation continue treatment in outpatient care Or *Returned* after defaulting *(or Moved* from other outpatient care site)*
EXIT CATEGORIES	
1. Discharged cured: Child 6-59 months who meets discharge criteria, i.e., special cases that were not referred to outpatient care earlier *2. Discharged died:* Child 6-59 months who dies while in inpatient care *3. Discharged defaulted:* Child 6-59 months who is absent for two days *4. Discharged non-recovered:* Child 6-59 months who remained in inpatient care does not reach discharge criteria after two months in treatment *5. Referred to outpatient care:* Condition of child has stabilised, child's appetite has returned, the medical complication is resolving and the child is referred to outpatient care to continue treatment	*1. Discharged cured:* Child 6-59 months who meets discharge criteria *2. Discharged died:* Child 6-59 months who dies while in outpatient care *3. Discharged defaulted:* Child 6-59 months who is absent for three consecutive visits *4. Discharged non-recovered:* Child 6-59 months who does not reach discharge criteria after four months in treatment 5. *Referred to inpatient care:* Condition of child has deteriorated or child is not responding to treatment (per the action protocol), and child is referred to inpatient care

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

Narrative Report

(See **Annex 34**)

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
  - Barriers to access
  - Reasons for absentees, default, non-response to treatment and relapse
  - Common causes of death

- Contextual information as appropriate, including context changes in relevant sectors such as food security, water and sanitation, health, and 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 from sites if considered useful, calculated on all or a sample of treatment cards from discharged cured beneficiaries in a particular month:

- Average length of stay (LOS) (expressed in days)
- Average daily weight gain (AWG) (expressed in g/kg bodyweight/day)
- Referral rate
- Categories of admission, e.g., bilateral pitting oedema, severe wasting based on MUAC or WFH z-score

7.2 Performance Indicators

There are three basic sets of indicators for measuring the performance of IM-SAM services for children 6-59 months, as described in the following sections:

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

7.2.1 INDICATORS MEASURING OUTPUT

Monthly output indicators:

- 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 use of F75, F100, RUTF, ReSoMal and CMV
- Total number of new admissions
- Total number of children under treatment

7.2.2 INDICATORS MEASURING PROCESS

The following are process indicators that are measured monthly and/or periodically depending on capacity.

Barriers to Access

Assessing this information can help identify problems with KAP on malnutrition and health service utilisation, and determine where strengthened support, training and mobilisation might be needed. It can also refine key messages on social and behaviour change and communication.

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.

Readmission 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 IM-SAM 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, e.g., 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[30]

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, e.g., 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[31]

[30] 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.
[31] Idem.

Referral Rate

Children are referred from outpatient care to inpatient care (per the action protocol in outpatient care, **see Annex 17 Action Protocol in Outpatient Care**) or from inpatient care to a higher level of care when their condition deteriorates or when the child is not responding to treatment. After treatment for the medical complication, the child returns to inpatient care and/or outpatient care to continue treatment for SAM. The child was not discharged from the SAM treatment, but had temporarily exited the respective SAM treatment site.

The referral rate provides information on severity of cases that are admitted and/or non-response to treatment and hence highlights weaknesses in the care system (e.g., late presentation of cases, quality of care, endemic patterns)

Calculation:

Referral rate = Number of children referred per number of children in treatment during the time period of reporting

7.2.3 INDICATORS MEASURING OUTCOME

Monthly Outcome Indicators

- % discharged cured (cure rate)
  = proportion of children discharged cured of total discharged*
- % discharged died (death rate)
  = proportion of children who died when under treatment of total discharged*
- % discharged defaulted (default rate)
  = proportion of children recorded as absent for third consecutive week or outpatient care session of total discharged*
- % discharged non-recovered (non-recovery rate)
  = proportion of children who do not meet the discharge criteria after four months under treatment of total discharged*

  * Total number of discharged = cured + died + defaulted + non-recovered

Note: Monthly outcome indicators are calculated for IM-SAM for children 6-59 months only. Inpatient care site reports only calculate these indicators if children 6-59 months remain in the IM-SAM inpatient care service until full recovery (large number of special cases or no outpatient care available) and if the numbers discharged are greater than 10. Otherwise, the results of the outcome indicators are maintained in proportions and not in percentages.

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 IM-SAM. The methods are being refined and adapted for routine implementation for measuring coverage of IM-SAM 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.

7.3 Supportive Supervision

As part of the M&R system, it is important to have focused attention on supportive 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 to strengthen the quality of community outreach, inpatient care and outpatient care.

Health care providers have job aids available at the health facility to guide them in implementing quality IM-SAM services (see **Annex 41. List of Job Aids**). 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.

Supervisors should perform regular supportive supervision visits and use a checklist to systematically cover specific job functions to assess and address service performance (see **Annex 35. Checklists for Supportive Supervision**). At the same time, the supervisor is a mentor and he/she should use the opportunity to provide support to health care providers and community outreach workers based on identified needs.

Supervision of the quality of protocol implementation entails monitoring admission and discharge trends and adherence to protocols. Accurate recording and compilation of information regarding admissions, re-admissions and referrals, and discharges from outpatient care or inpatient care sites is important. Analysis of the outpatient care and inpatient care site data is essential for the supervisor as it provides important information about the performance of individual sites and can be used to ensure actions be taken to strengthen service quality.

7.3.1 SUPERVISION OF SERVICES

Supervisors should review the quality of services by the following (see **Annex 35. Checklists for Supportive Supervision**):

- Community mobilisation
- Community screening and follow-up of problem cases
- 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
- Referral between services
- Quality of health and nutrition counselling
- M&R system: quality of tally sheets, monthly site reports and narrative reports

Regularly reviewing treatment cards, particularly of those children under treatment and of those who have defaulted, died, who did not respond to treatment or did not recover, can identify weaknesses in community outreach, the management of individual cases or service delivery. Treatment cards and site reports reveal if admissions and discharges are carried out according to the national guidelines, routine medicine and dietary treatments are administered correctly, and bilateral pitting oedema is properly assessed. They highlight 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. Review findings should be discussed with implementing health care providers so that necessary improvements can be made.

7.3.2 SUPERVISION OF OPERATIONAL MANAGEMENT OF SITES

Supervisors should review the following (see **Annex 35. Checklists for Supportive 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 group sessions at the health facility and in the communities
- Links with community outreach
- Links with other community services

7.3.3 FEEDBACK OF INFORMATION

Health care providers and supervisors at outpatient care and inpatient care sites and those involved in community outreach should hold regular meetings to discuss performance using the monitoring data. Aggregated monitoring data should also be analysed and discussed at the county, state and national levels. Experiences should be shared, feedback given and action plans for improving performance

developed and discussed. In outpatient care settings, feedback can be provided to the community through focus group discussions and community mobilisation activities.

It is also recommended that feedback be provided to the community on a regular basis to gain trust and confidence in the new treatment and empower them to participate in the treatment of children with SAM. This may be done through regular focus group discussions. Focus groups should be carefully selected to ensure that specific issues are discussed with appropriate community representatives. These may be, e.g., community leaders, teachers, or beneficiaries and non-beneficiaries. Discussions should be a two-way process to allow for explanation of service protocols or specific issues and for the community to provide input into the services. Discussion topics could cover: perceptions of medical and dietary treatment, and why mothers/caregivers do not bring children to the outpatient sites or health facilities and how this can be improved.

7.4 IM-SAM Information System

The tally and/or site reports are sent to the county MOH on a monthly basis. The site reports from individual sites are compiled monthly into a monthly county/state report combining inpatient care and outpatient care and reporting overall performance on the management of SAM. At the national level, reports from the county/state are compiled into a national SAM data repository.

Analysis of site, county and state reports provides information about service performance for the management of SAM for individual health facilities and the county and state as a whole. The results are compared to international standards (see **Table 24** with adaptations from Sphere Standards).

Table 24. Cutoffs for IM-SAM Outcome Indicators as per Sphere Minimum Standards[32]

	IM-SAM	Outpatient care site	Inpatient care site
Cure rate	> 75 %	> 75 %	> 75 %*
Default rate	< 15 %	< 15 %	< 15 %*
Death rate	< 10 %	-	-
Coverage	> 50% in rural areas, >70 % in urban areas and >90% in camp situations		

*Only if treatment until full recovery

The information will help service planners see whether, e.g.:

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

In the initial phase of IM-SAM implementation, it is recommended to maintain a standardised and comprehensive M&R system. The disaggregated monthly site reports and aggregated monthly state and national reports provide the key outcome indicators for M&R effectiveness of IM-SAM services (see **Section 7.2** for indicators). Additional information can be added depending on available capacity. More substantive reporting is indicated during periodical reviews.

The narrative report developed based on the minimum reporting guidance will enhance standardised reporting. The quantitative information from the monthly reports will be interpreted together with qualitative information derived from various sources, such as from stakeholder group discussions, interviews, supervisory checklists and observations. Then this information is triangulated and will strengthen the interpretation of the findings. The comprehensive information enables health managers, health care providers and outreach workers, in collaboration with supervisors and the communities, to strengthen the quality of services for IM-SAM. (See **Annex 34. Minimal Reporting Guidance for IM-SAM**.)

[32] The Sphere Project. 2004. *Humanitarian Charter and Minimum Standards in Disaster Response*. Oxford, UK: Oxfam; The Sphere Project. 2010. *Humanitarian Charter and Minimum Standards in Disaster Response.* Draft. Geneva: The Sphere Project.

Roles and responsibilities for the management of IM-SAM M&R should be defined among staff at the community outreach, inpatient care or outpatient care sites and also at the county and state MOH levels. These roles should be integrated in the job descriptions (see **Annex 40. Staff Needs, and Roles and Job Descriptions**).

Examples of the roles and responsibilities of IM-SAM information 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 IM-SAM M&R system
- Provide support and supervision
- Advocate for and ensure actions based on findings
- Update and maintain database and repository

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 24**).

List of Annexes

REFERENCES can be found following the Appendix.

Annex 1. Community Outreach Messages

Examples from Ghana are to be adapted for use in Southern Sudan.

TO COMMUNITY-BASED ORGANISATIONS

Dear Sir/Madam:

Re: New treatment for children with severe acute malnutrition

A new treatment is now available at Swedru hospital, Kwanyako, Abodom, Duakwa and Nsaba health centres under Agona Locality Health Directorate for children who are very thin or swollen (signs of severe acute malnutrition, or SAM). These children need referral to the health centre where they will receive an assessment. If a child with SAM has a good appetite and no medical complication, the child does not have to go to the hospital. S/he is given medicines and a weekly supply of the nutritional food called Plumpy'nut® and followed up through weekly health centre visits. If a child with SAM has poor appetite or has a medical complication, then s/he will be admitted to the hospital for a short time until the complication is resolving and then will receive further treatment at the health centre and at home. Children under 6 months who are very thin or swollen will need specialised care in Swedru hospital.

To determine whether a child is eligible for this treatment, his/her arm is measured in the community to see if s/he is too thin and both feet are checked for swelling. The arm measurement is taken with a tape similar to the cloth tape tailors use in the marketplace and can be taken by many types of persons. Community health workers or volunteers are being trained in communities around the above-mentioned health facilities to take the measurement so that it can be taken by a person the child or his/her family knows.

If you know a child who is very thin or whose feet are swollen, tell the parents or guardians about this new treatment. They can ask around their neighbourhood for a community health worker or volunteer or someone else trained to take the arm measurement, or they can go directly to these health facilities.

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

TO HEALTH FACILITIES

Dear Sir/Madam:

Re: Community-Based Management of Acute Malnutrition

As part of its mandate to improve the quality and accessibility of health services in Agona Locality, the Ghana Health Services (GHS) has introduced a new treatment for children under 5 years who have a severe form of acute malnutrition (bilateral pitting oedema or severe wasting). The service is called Community-Based Management of Acute Malnutrition (CMAM). It brings the treatment of children with severe acute malnutrition (SAM) much closer to the family, making it possible for children and their mothers/caregivers to avoid the long stays at the Pediatric Ward or the Nutrition Rehabilitation Centre that customarily have been necessary for treating undernutrition.

Children in the communities and the health facilities are checked for bilateral pitting oedema and screened for severe wasting based on a mid-upper arm circumference (MUAC) measurement with a specially marked tape (MUAC tape) for referral and admission to the CMAM service at the health centre.

At the health facility the child with SAM receives a medical evaluation. If a child with SAM has a good appetite and no medical complications, s/he can be treated at home and followed up through weekly health centre visits. If a child with SAM has poor appetite or has a medical complication, then s/he will be admitted to inpatient care at Swedru Hospital for a short time until the medical complication is resolving and then receive further treatment at the health centre and at home. Children under 6 months who are very thin or have swelling will need specialised care in inpatient care at Swedru hospital. Early detection of cases and referral for treatment is essential to avoid medical complications.

The treatment, which is free of charge, provides antibiotic, antihelminthic and malaria drug treatment; vitamin A supplementation; and a ready-to-use therapeutic food (RUTF) called Plumpy'nut® that the families of eligible children can take home from the health facility.

We would like to involve a variety of health practitioners and service providers, including private clinics, to help us identify children with SAM so they can be treated at an early stage. Currently the services are provided in five sites (Swedru Hospital and Kwanyako, Abodom, Duakwa and Nsaba Health Centres) under Agona Locality Health Directorate, but it is hoped that the services will be extended to other health centres in Agona Locality. Therefore, we 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 centres for treatment.

The GHS SAM team would be pleased to provide your clinic 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

TO MOTHERS/CAREGIVERS WITH CHILDREN 6-59 MONTHS

A new treatment is now available for children under 5 years with severe acute malnutrition (SAM). These children are very thin or are swollen and need a specific treatment with medicines and a nutritional food that will be provided at the health centre after a medical check. If a child with SAM has a good appetite and no medical complications, s/he can be treated at home and followed up through weekly health centre visits. These children do not have to go to the hospital but can stay at home with their families. If the child with SAM has poor appetite or has developed a medical complication, then s/he will be admitted to the hospital for a short time until the complication is resolving. The child will continue treatment at the health facility and at home. Children under 6 months who are very thin or are swollen will need specialised care in inpatient care in Swedru Hospital.

How to know whether your child needs this treatment
Some people within your communities have been trained to take an arm measurement of children with a small tape and check whether both feet are swollen.

The treatment
All children found to be thin or swollen are referred to the health centre, where the arm measurement and swelling are checked again. If the children have an appetite and are clinically well, they are given medicines and a weekly supply of the nutritional food called Plumpy'nut®. 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 guardians about this new treatment. They can ask around their neighbourhood for a community health worker, volunteer, or someone else trained to take the arm measurement. Or, they can go directly to the health centres to have their child measured any day. Follow-up service days in the health centres are:

- Swedru Hospital on Monday
- Kwanyako Health Centre on Wednesday
- Abodom Health Centre on Wednesday
- Nsaba Health Centre on Friday
- Duakwa Health Centre on Friday

Annex 2. Admission and Discharge Criteria to IM-SAM for 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
REFERRAL/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 maintained 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 maintained (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 maintained for two consecutive visits (of admission weight or weight free of oedema) Oedema free for two consecutive visits Child clinically well and alert *Children are referred to Supplementary Feeding if available*

Annex 3. Anthropometric Measurements

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 nutritional 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

Grade	Definition
Absent or 0	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

Pictures of Bilateral Pitting Oedema

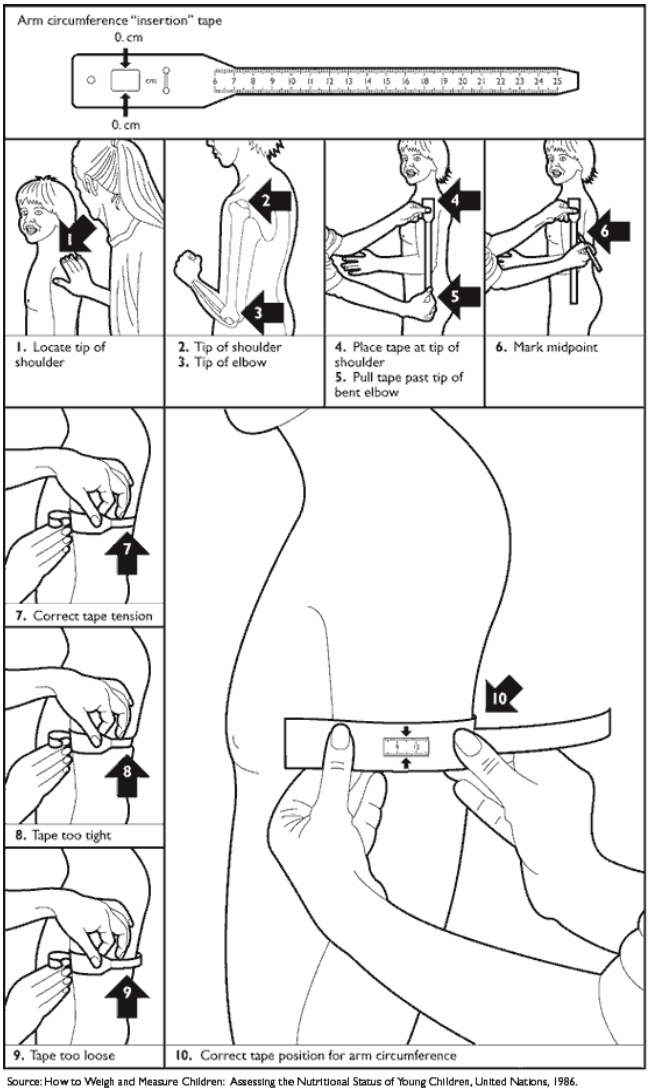
Grade + In this child, there is bilateral pitting oedema in both feet. This is grade + oedema (mild), however the child might have grade ++ or +++, so legs and face will also need to be checked.	
Grade ++ In this child, both feet plus the lower legs, hands and lower arms are swollen. This is grade + + bilateral pitting oedema (moderate).	
Grade +++ This child has +++ bilateral pitting oedema (severe). It is generalised, including both feet, legs, arms, hands 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 of age; 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:

- MUAC is always taken on the left arm.
- Measure the length of the child's upper arm, between the bone at the top of the shoulder and the tip of the elbow (the child's arm should be bent).
- Find the midpoint of the upper arm and mark it with a pen. It is recommended to use a string instead of the MUAC tape to find the midpoint.
- 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.
    - 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 millimetre (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/hammock. The scale should be read at eye level.

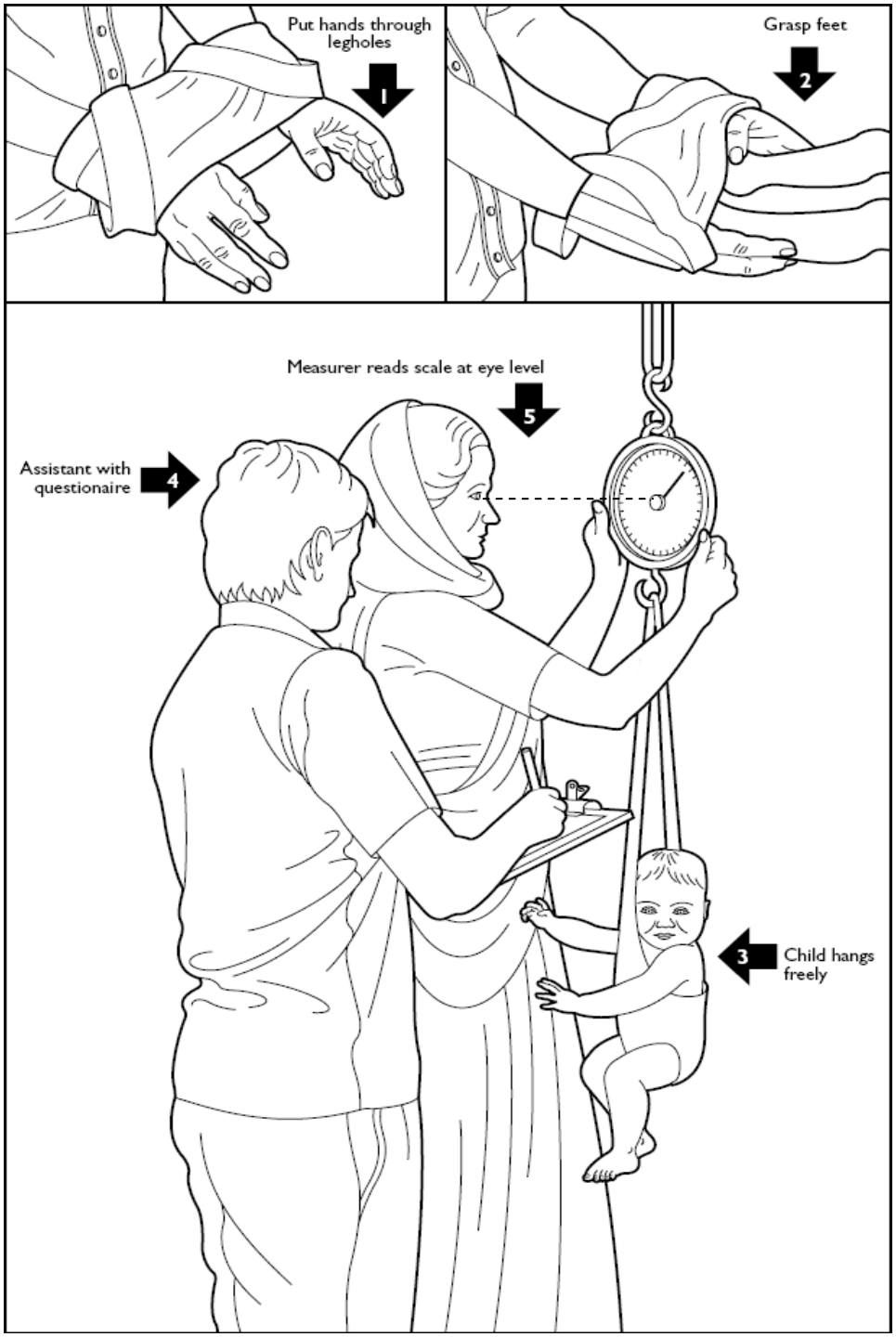
How to use the Salter Scale:

- 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:

- 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 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.

Weighing an Infant Using a Hanging Spring (Salter) Scale:



Weighing an Infant Using an Electronic Scale for "Tared Weighing"

"Tared weighing" means that the scale can be re-set to zero ("tared") with the person just weighed still on it.

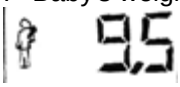
Explain the tared weighing procedure to the mother as follows. Stress that the mother must stay on the scale until her child has been weighed in her arms.

Be sure that the scale is placed on a flat, hard, even surface. Since the scale is solar powered, there must be enough light to operate the scale.

Mother's weight alone.

Taring the scale

. Baby's weight appears on display.



- To turn on the scale, cover the solar panel for a second. When the number 0.0 appears, the scale is ready.
- Check to see that the mother has removed her shoes. You or someone else should hold the naked baby wrapped in a blanket.
- Ask the mother to stand in the middle of the scale, feet slightly apart (on the footprints, if marked), and remain still. The mother's clothing must not cover the display or solar panel.
- Remind the mother to stay on the scale even after her weight appears, until the baby has been weighed in her arms.
- With the mother still on the scale and her weight displayed, tare the scale by covering the solar panel for a second. The scale is tared when it displays a figure of a mother and baby and the number 0.0.
- Gently hand the naked baby to the mother and ask her to remain still.
- The baby's weight will appear on the display. Record the weight. Be careful to read the numbers in the correct order (as though you were viewing while standing on the scale rather than standing in front of the scale).

If the child is 2 years or older, you will weigh the child alone if the child will stand still.

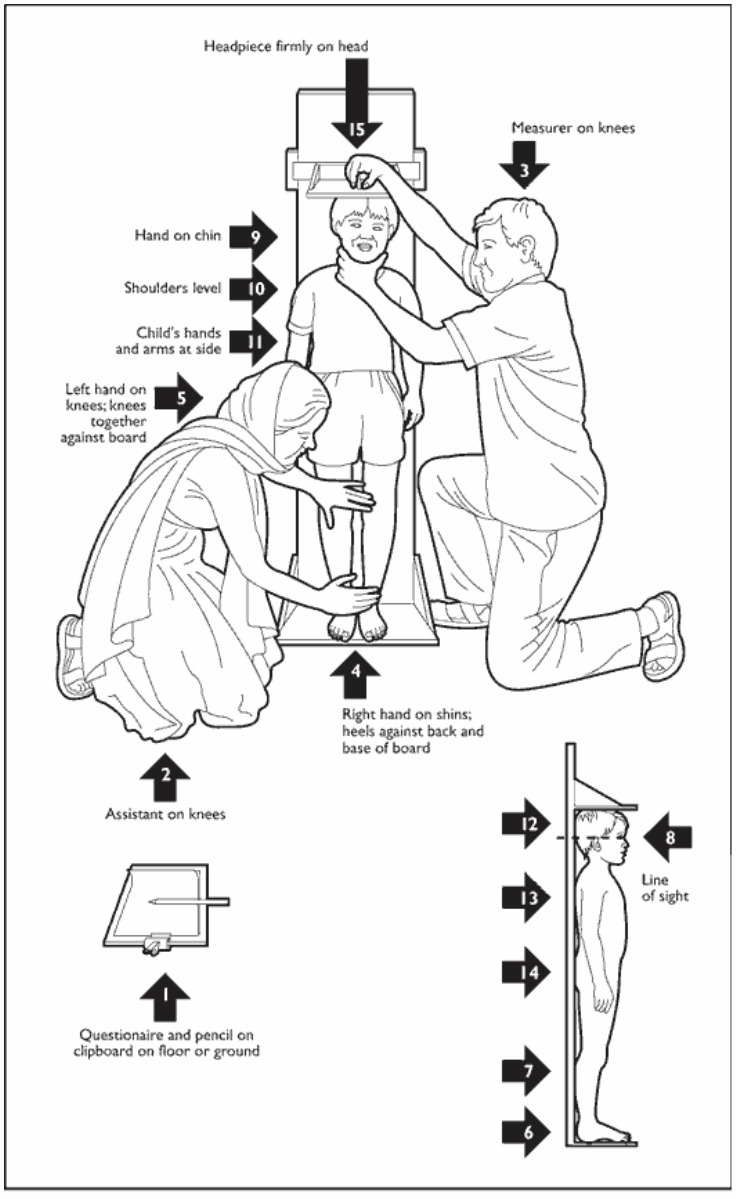
HEIGHT

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

Children aged 2 years or older are measured standing up, while those under 2 are measured lying down. If the age is difficult to assess, children at least 87 cm tall (World Health Organisation [WHO] standards) are measured standing, and those less than 87 cm are measured lying down. If children age 2 or older or at least 87 cm tall are measured lying down, 0.7 cm is subtracted from the measurement.

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

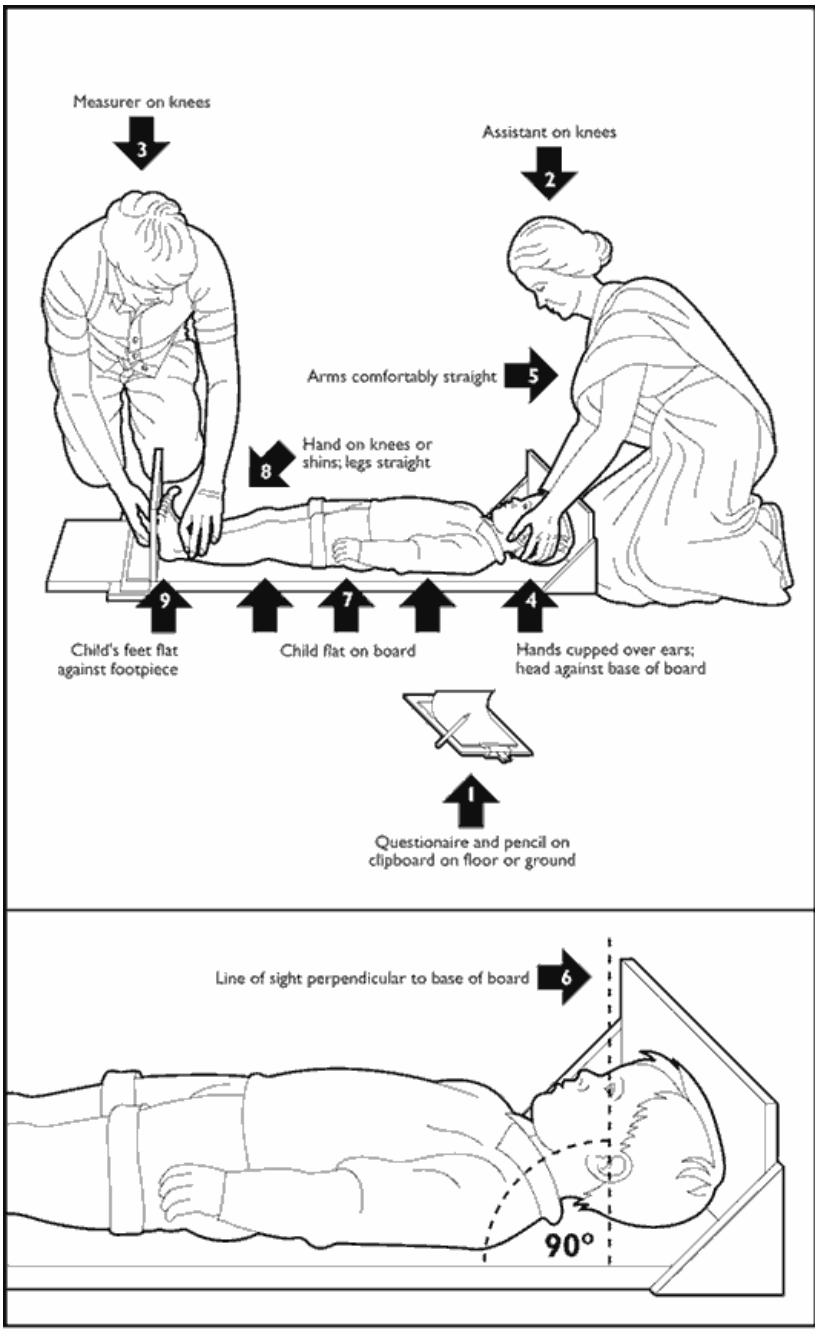
The child's shoes are removed. The child is placed on the height board, standing upright in the middle of the board with arms at his/her sides. The assistant firmly presses the child's ankles and knees against the board while the measurer holds the child's head straight. The child's head, shoulders, buttocks and heels should be touching the board, and his/her feet should be close together. The measurer positions the sliding board 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 health card.



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

For Children under 2 Years or under 87 cm Tall

The height board is placed on the ground. The child's shoes are removed. The child is gently placed on his/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 health card.



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

BODY MASS INDEX (BMI)

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 nutritional status would be expected to have body stores or BMI within a certain range.

The formula for BMI is the weight (in kg) divided by the height (in meters [m]) squared:

$$BMI = \text{weight} / (\text{height})^2$$

Example: A man 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 m) can then be calculated as follows:

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

The WHO classification of malnutrition in adults by BMI is as follows:[33]

Nutritional 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. The BMI look-up table is found in **Annex 4. Anthropometry Look-Up Tables**. [34]

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) and replaces the WHO previously recommended weight-for-height (WFH; National Centre for Health Statistics [NCHS] Reference) as indicator for wasting for children over 5 years. (The BMI-for-age [NCHS Reference] tables started at 9 years only). [35] [36]

The BMI-for-age indicator for severe wasting is expressed in a z-score below 3 standard deviations (SD) of the median and for moderate wasting below 2 SD of the median (WHO Reference). The BMI and BMI-for-age look-up tables for boys and girls are found in **Annex 4. Anthropometry Look-Up Tables**.

[33] WHO. 1999. *Management of severe malnutrition: A manual for physicians and other senior health workers.* Geneva: WHO.
[34] FANTA. 2003. *Anthropometric Indicators Measurement Guide*. Washington, DC: FANTA at AED.
[35] WHO. 2007. WHO Reference 2007, Growth reference data for 5-19 years. Geneva: WHO.
[36] De Onis, M, AW, Onyango, E Borghi, A Siyam, C Nishida, and J Siekmann. 2007. Development of a WHO growth reference for school-aged children and adolescents*. Bulletin of the World Health Organization* 85: 660-7.

Annex 4. Anthropometry Look-Up Tables

Weight-for-Length Look-Up Table, Children 6-23 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 above 86.9 cm if standing height cannot be measured.

Weight-for-Height Look-Up Table, 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 Tables

	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	
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	

BMI Look-Up Tables (continued)

	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	
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	56.3	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 Target Weight for Discharge

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

[a] Or weight free of oedema

[b] If weight on admission is pair, round the weight up with 0.1 kg. Example: weight on admission is 9.2 kg, use 9.3 kg as weight on admission.

Annex 6. Routine Medicines Protocols

Medicine/Supplement	When to Give	Age / Weight	Prescription	Dose
ANTIBIOTIC	On admission	All beneficiaries	**Amoxicillin** 50-100 mg/kg bodyweight/day	3 times a day for 5 days
ANTIMALARIAL (artemisinin-based combination therapy [ACT])	Test on admission; Repeat test later if initial test negative and malaria suspected. If no test, rely on symptoms.	All beneficiaries	**Artesunate** (AS) 50 mg and **Amodiaquine** (AQ) 153 mg: ½ AS and ½ AQ 1 AS and 1 AQ	Once a day for 3 days
ANTIHELMINTHIC DRUG*	After 1 week	< 12 months	DO NOT GIVE	NONE
		<10 kg	**Albendazole** 200 mg or **Mebendazole** 250 mg	Single dose
		≥10 kg	**Albendazole** 400 mg or **Mebendazole** 500 mg	
MEASLES VACCINATION**	Inpatient care: On admission and discharge Outpatient care: On week 4 (or upon discharge)	From 6 months	Standard	Single dose, or repeated dose**
VITAMIN A*** SUPPLEMENTATION	On week 4 (or upon discharge)	6 months ≥12 months	100,000 IU 200,000 IU	Single dose

* An antihelminthic drug can be given again after three months if signs of re-infection appear.
** In case of measles epidemic, a measles vaccination is given on admission and repeated on week four (or upon discharge). If the child receives a measles vaccination before the age of 12 months, a repeat vaccination is given at the age of 12 months.
***Children with bilateral pitting oedema should not be given vitamin A until discharged. In case there are signs of vitamin A deficiency, children are treated in inpatient care (see **Appendix**).

Note: Iron and folic acid should never be provided together with a malaria treatment. Malaria is treated first.

Iron and folic acid should not be given in outpatient care. In case severe anaemia is identified according to the national Integrated Management of Childhood Illness (IMCI) guidelines, the child is treated in inpatient care (see **Appendix**).

In inpatient care, if the child is on a therapeutic milk diet, he/she is given folic acid 5 mg on day one and 1 mg per day from day two onwards until discharge and iron 3 mg/kg bodyweight/day after two days on F100, when gaining weight. If the child is on a RUTF diet, neither folic acid nor iron is given.

Annex 7. Supplementary Medicines Protocols

Medicine/Supplement	Purpose	Prescription	Special Instructions
CHLORAMPHENICOL GENTAMYCIN	Given as second-line antibiotic for children not responding to amoxicillin for continued fever that is not due to malaria Child with SAM who needs second-line antibiotic is referred to inpatient care	See **Annex 8. Drug Doses**	Continue for 7 days
TETRACYCLINE EYE OINTMENT	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	Treatment of candida	100,000 units (1 ml) 4 times a day after food (use dropper; show caregiver how to use it)	Continue for 7 days
PARACETAMOL	For children with fever over 38.5°C	See **Annex 8. Drug Doses**	Single dose only—DO NOT give to take home
BENZYL BENZOATE	Treatment of scabies	Apply over whole body. Repeat without bathing on following day. Wash off 24 hours later.	Avoid contact with eyes. Do not use on broken or skin with secondary infection.
WHITFIELDS	Treatment of ringworm or fungal infections of the skin	Apply twice a day.	Continue treatment until condition has completely resolved.
GENTIAN VIOLET	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	Second-line antimalarial for children who have not responded to artemisinin-based combination therapy (ACT)	See **Annex 8. Drug Doses**	
FERROUS SULPHATE/FOLATE	Treatment of anaemia identified according to national Integrated Management of Childhood Illness (IMCI) guidelines	See **Annex 8. Drug Doses**	Given ONLY after 14 days in the programme
METRONIDAZOLE	For treatment of giardiasis and amoebiasis	See **Annex 8. Drug Doses**	Continue for 5 days

Annex 8. Drug Doses

SYSTEMATIC ANTIBIOTICS

Antibiotics should be given to every severely malnourished child even if he/she does 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 and inpatient care. If a second-line antibiotic is needed, the child with severe acute malnutrition (SAM) is referred to inpatient care.

Box 1. Antibiotic Regimen

First-Line
Oral Amoxicillin (if not available, use Ampicillin)

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:

- Frequently a systemic anti-fungal (Fluconazole) is added if there are signs of severe sepsis or systemic candidiasis.
- The first line antibiotics will be given with the prophylactic Cotrimoxazole as a preventative therapy for HIV-positive children .Cotrimoxazole is not active against small bowel bacterial overgrowth in SAM.

Box 2. Duration of Antibiotic Treatment

Inpatient Care
Daily in stabilisation phase plus more days as appropriate

Outpatient Care (if the child has not been in inpatient care)
Five days

Note: Paediatric antibiotic formulation is preferred.

Box 3. Administering Antibiotics

Whenever possible, antibiotics should be given orally or, in special circumstances by nasogastric tube (NGT). Infusions containing antibiotics should not be used because of the risk of inducing heart failure.

Indwelling cannulae should rarely be used. They can introduce antibiotic-resistant bacteria in immuno-compromised patients as the dressings get dirty easily. The cannulae often become colonised with candida, which can lead to fungal septicaemia. They also require fluid or anti-coagulants to keep the vein open, which could be harmful because children with SAM have impaired liver function that makes them sensitive to fluid overload. Misplacement of the cannula in the tissue or artery can cause necrosis.

Table 1. First-Line Antibiotic Treatment: Amoxicillin

	Dose: 3 times a day for 5 days (50-100mg/kg bodyweight/day)		
Child's Age (or Weight)	**Syrup 125 mg/5ml**	**Syrup 250 mg/5ml**	**Tablets 250 mg**
< 12 months (or < 10 kg)	125 mg or 5 ml	125 mg or 2.5 ml	125 mg or ½ tablet
1- < 10 years (or 10-30 kg)	250 mg or 10 ml	250 mg or 5 ml	250 mg or 1 tablet
10 years+ (or > 30 kg)	Give tablets	Give tablets	500 mg or 2 tablets

Table 2. Second-Line Antibiotic Treatment for Children With SAM

Child's Weight (kg)	**Gentamycin IM* 5 mg/kg bodyweight/day Dose: Once a day for 7-10 days**	**Chloramphenicol Oral** 50 mg/kg bodyweight/day Dose: 3 times a day for 7-10 days**	
	20 mg ampoule (10 mg/ml)	**Syrup – 125 mg**	**Tablets or capsules – 250 mg**
< 5	25 mg	62.5 mg	¼ capsule
5-10	25- 50 mg	125 mg	½ capsule
10-20	50-100 mg	250 mg	1 capsule
20-35	100- 175 mg	500 mg	2 capsules
> 35	175 mg	1,000 mg	4 capsules

* 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 infants under 2 months and should be used with caution in infants 2-6 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 replace depleted liver stores during treatment.

- Because of vitamin A's toxicity and the considerable amounts available in the therapeutic milk and RUTF, vitamin A is provided on week four (or on the day of discharge if before 4 weeks). For example, 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 (US) Recommended Daily Allowance (RDA) for such a child is 1,700 IU (0.5 mg) of vitamin A per day.
- Children with bilateral pitting oedema should not receive vitamin A while oedema is present.
- Vitamin A should never be give to a child who has received a dose in the last four months before admission, except in case of recent measles.
- Vitamin A is never given to infants under 6 months.

Table 3. Vitamin A Systematic Treatment

Age	**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)

Children with SAM are at high risk of developing blindness due to vitamin A deficiency, especially in areas with high baseline prevalence. If eye signs of vitamin A deficiency are identified, special care is required (See also in **Appendix**).

Table 4. Vitamin A Treatment if Eye Signs of Vitamin A Deficiency or Recent Measles

Child's Age	Vitamin A Oral Dose	Day 1	Day 2	Day 15
< 6 months	50,000 IU	1 dose	1 dose	1 dose
6-12 months	100,000 IU	1 dose	1 dose	1 dose
>12 months	200,000 IU	1 dose	1 dose	1 dose

MALARIA TREATMENT

All severely malnourished children should be systematically screened for malaria. If the results are in clinical doubt, the test should be repeated in the week 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 artemisinin-based combination therapy (ACT).

Notes:

- The malaria load in children with bilateral pitting oedema might be low at testing.
- The usual clinical signs and symptoms of malaria might be absent in a severely malnourished child as they might be unable to mount an acute phase inflammatory response because of patho-physiological changes in their bodies.
- Children with SAM should not be given IV infusions of quinine within two weeks of treatment.
- Children with SAM should be given insecticide-treated bed nets, especially in malaria-endemic areas.
- In case of malaria with pneumonia or dysentery, ACT can be combined with amoxicillin and nalidixic acid but not with cotrimoxazole.

Table 5. First-Line Antimalarial – ACT: Artesunate (AS) and Amodiaquine (AQ)*

Child's Age (or Weight)	Day 1 Initially	Day 2	Day 3	Total number of tablets
< 4 kg	Not recommended			
< 1 year (or 4-8 kg)	½ AS and ½ AQ	½ AS and ½ AQ	½ AS and ½ AQ	3
1-5 years (or 9-15 kg)	1 AS and 1 AQ	1 AS and 1 AQ	1 AS and 1 AQ	6
5-15 years (or 16-35 kg)	2 AS and 2 AQ	2 AS and 2 AQ	2 AS and 2 AQ	12
Adult (or >35 kg)	4 AS and 4 AQ	4 AS and 4 AQ	4 AS and 4 AQ	24

*Artesunate (AS) 50 mg tablet; Amodiaquine (AQ) 153 mg tablet

Table 6. Second-Line Antimalarial – ACT: Coartem* [Combination of Artemether (20 mg) and Lumefantrine (120 mg)]

Child's Age (or Weight)	Day 1 Initially	Day 1 8 hours	Day 2 morning	Day 2 evening	Day 3 morning	Day 3 evening	Total number of tablets
< 2 months (or < 5 kg)	Coartem is not recommended. Oral quinine (300 mg salt) is given instead: ¼ tablet 3 times a day for 7 days.						
2-24 months (or 5-14 kg)	1	1	1	1	1	1	6
2-8 years (or 15-24 kg)	2	2	2	2	2	2	12
8-12 years (or 25-34 kg)	3	3	3	3	3	3	18
> 12 (or > 35 kg)	4	4	4	4	4	4	24

* Coartem should be given with fatty meals to enhance absorption

Table 7. Second-Line Antimalarial: Intramuscular (IM) Quinine

Child's Age (or Weight)	300 mg/ml (quinine salt in 2 ml ampoules) at 10 mg/kg bodyweight /8 hours until child can take oral quinine to complete 7 days	
	Amount of undiluted quinine	Total diluted solution to administer (60 mg/ml)
< 4 months (or 5-6 kg)	0.2 ml	1.0 ml
-11 months (or 7-10 kg)	0.3 ml	1.5 ml
1-2 years (or 11-14 kg)	0.4 ml	2.0 ml
3-4 years (or 15-18 kg)	0.6 ml	3.0 ml
5-7 years (or 19-24 kg)	0.8 ml	4.0 ml
8-10 years (or 25-35 kg)	1.1 ml	5.5 ml
11-13 years (or 36-50 kg)	1.5 ml	7.5 ml
Adults (or > 50 kg)	2.0 ml	10 ml

Table 8. Second-Line Antimalarial: Oral Quinine

Child's Age (or Weight)	300 mg/ml tablets [quinine salt in 2 ml ampoules] for 7 days	
	Quinine	Frequency
3-12 months (or 5-10 kg)	¼ tablet	3 times daily
1-5 years (or 10-18 kg)	½ tablet	3 times daily
5-7 years (or 18-24 kg)	¾ tablet	3 times daily
7-12 years (or 24-35 kg)	1 tablet	3 times daily
10-15 years (or 35-50 kg)	1.5 tablets	3 times daily
Adults (or > 50 kg)	2 tablets	3 times daily

Note: IM injections must be done with caution to reduce risk of abscess. In addition, quinine given when hypovolaemia is present can lead to shock and renal failure. Vital signs and urine flow must be monitored carefully before and during quinine treatment.

DEWORMING TREATMENT

In inpatient care, Albendazole or Mebendazole should be given at the start of the rehabilitation phase. Children admitted directly to outpatient care receive the antihelminthic drug after one week in treatment (i.e., at the second visit to outpatient care).

Table 9. Antihelminthic Dose for Children With SAM

	Child's Age Less than 1 year	Child's Weight < 10 kg	Child's Weight ≥ 10 kg
Albendazole 400 mg tablet	Not given	200 mg (½ tablet) given once	400 mg (1 tablet) given once
Mebendazole 100 mg or 500 mg tablet	Not given	250 mg (2½ tablets or ½ tablet) given once	500 mg (5 tablets or 1 tablet) given once

MEASLES VACCINATION

All children 6 months and older should be vaccinated if they cannot provide evidence of previous vaccination (e.g., vaccination card).

- In inpatient care, measles vaccinations are given at admission and upon discharge.
- In outpatient care, measles vaccinations are given on week four of the treatment (or upon discharge if discharge before four weeks). Children referred from inpatient care should also be vaccinated on week four if they did not receive the second vaccination in inpatient care.
- Children under 12 months receiving a measles vaccine, receive a repeat vaccination when reaching 12 months of age.

Note: The measles vaccination given at admission in inpatient care often does not prompt a protective antibody response in a severely malnourished child. It ameliorates the severity of

incubating measles and partially protects from nosocomial measles. The second dose provokes protective antibodies.
In outpatient care, two vaccinations as is recommended in inpatient care, one at admission and one upon discharge, are usually unnecessary because there is limited risk of crowding and thus of transmission, except during a measles epidemic.

PARACETAMOL

Paracetamol is given as a single dose to children with fever, and antibiotic and/or malaria treatment are started immediately. Children with SAM with a fever over 38.5°C are referred to inpatient care.

Table 10. Paracetamol (Single Dose)

Child's Weight (kg)	Syrup (125 mg/5ml)	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)

RESOMAL

ReSoMal is a rehydration solution for children with SAM provided in inpatient care only, after careful diagnosis of dehydration based on the child's medical history and clinical signs. The child is closely monitored while ReSoMal is administered. If the child's respiratory rate rises, bilateral pitting oedema (e.g., of eyelids) increases or neck veins become distended, ReSoMal is stopped. The child is reassessed after one hour.

ReSoMal is always provided in controlled amounts and never given freely for use to the child and/or caregiver.

Table 11. ReSoMal for Children With Marasmus and Dehydration

Child's Weight (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

If a child with **bilateral pitting oedema** 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.

Do not use ReSoMal in case of **cholera or profuse watery diarrhoea**; use ORS instead.

For ReSoMal recipes, see **Annex 14. Alternative Recipes for F75, F100 and ReSoMal Using CMV**.

METRONIDAZOLE

Metronidazole is used to treat giardiasis and amaebiasis.

Table 12. Metronidazole*

Child's Weight (kg)	Metronidazole suspension 200 mg/5ml	Metronidazole tablet 200 mg
3-5.9	1 ml	50 mg (¼ tablet)
6-7.9	1.25 ml	100 mg (½ tablet)
8-10	1.5 ml	100 mg (½ tablet)

* 10 mg/kg bodyweight/day in 3 doses for 5 days

IRON OR FOLIC ACID

F75, F100 and RUTF contain sufficient iron and folic acid to treat mild anaemia and folate deficiency in a child with SAM.

A 10 kg child taking maintenance amounts of the therapeutic diet will receive 400 micrograms (µg) of folic acid per day. The Recommended Daily Allowance (RDA) for such a child is 80 µg per day.

Children diagnosed with anaemia according to Integrated Management of Childhood Illness (IMCI) are referred to inpatient care.

COTRIMOXAZOLE PROPHYLAXIS FOR CHILDREN WITH CONFIRMED OR SUSPECTED HIV INFECTION

Cotrimoxazole should be given to children starting at 4-6 weeks of age to:

- All infants born of mothers who are HIV-infected until HIV is definitively ruled out
- All infants <12 months with confirmed HIV infection or those with stage 2, 3 or 4 disease, or
- Asymptomatic infants or children with confirmed HIV infection (stage 1) if CD4 < 25%

Table 13. Cotrimoxazole Dosage – Single Dose Per Day

Child's Age	5 ml syrup 40 mg/200 mg	Single strength adult tablet 80 mg/400 mg	Single strength paediatric tablet 20 mg/100 mg
0-6 months	2.5 ml	¼ tablet	1 tablet
6-59 months	5 ml	½ tablet	2 tablets
5-14 years	10 ml	1 tablet	4 tablets
>15 years	Not given	2 tablets	-

OTHER NUTRIENTS

F75, F100 and RUTF contain all the essential Type 1 and Type 2 nutrients required to treat and correct pathophysiological changes in a child with SAM. Additional potassium, magnesium or zinc should not be given to these children because a double dose could be toxic.

Annex 9. Sugar Water Protocol

SUGAR WATER 10 PERCENT DILUTION

Water	Sugar	
100 ml	10 g	2 heaped teaspoons
200 ml (average cup)	20 g	4 heaped teaspoons
500 ml (small bottle)	50 g	10 heaped teaspoons
1 litre	100 g	20 heaped teaspoons

- Take clean drinking water (slightly warm if possible to help dilution)
- Add the required amount of sugar to clean drinking water and shake or stir vigorously.

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. 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**.)

Give sugar water immediately to all children refusing ready-to-use therapeutic food (RUTF) or being referred to inpatient care. If possible, especially when it is very hot, give to all children awaiting treatment in outpatient care.

Annex 10. 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:

- The appetite test is conducted in a quiet separate area to give the caregiver and child time to get accustomed to the ready-to-use therapeutic food (RUTF).
- The test's purpose and procedure are explained to the caregiver.
- The caregiver is advised to:
    - Wash hands before giving the RUTF.
    - Sit with the child in his/her lap and gently offer the RUTF.
    - Encourage the child to eat the RUTF without force-feeding.
    - Offer the child plenty of clean water, to drink from a cup, while the child eats the RUTF.
- 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.

The child is observed for 30 minutes and then the health care provider determines whether the child passes or fails the test:

Pass	**Fail**
Child eats at least one third of a 92g packet of RUTF or three teaspoons from a pot.	Child does NOT eat one third of a 92g packet of RUTF or three teaspoons from a pot.

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

Annex 11. Dietary Treatment

OVERVIEW

F75	75 kcal/100 ml Use: Inpatient care during stabilisation phase Diet: 100 kcal/kg bodyweight/day
F100	100 kcal/100 ml Use: Inpatient care during transition and rehabilitation phases Diet: 150 and 200 kcal/kg bodyweight/day
F100-Diluted	100 kcal/135 ml or 66 kcal/100 ml (add 35 ml water per 100 ml of F100) Use: Infants under 6 months (no oedema) in inpatient care during stabilisation phase, to complement breastfeeding Diet: 130 kcal/kg bodyweight/day Note: Infants with oedema in stabilisation phase start with F75 and change to F100 Diluted when the oedema is resolved.
RUTF	500 kcal/92g Use: Outpatient care; Inpatient care during transition and rehabilitation phases Diet: 200 kcal/kg bodyweight/day

Table 1. Overview of Use of Therapeutic Foods in Inpatient Care for Children Under 5

Diet	Use
F75	Stabilisation phase
F100 (no iron added)	Transition phase
F100 (iron added)	Rehabilitation phase
F100-Diluted	All phases children under 6 months or under 4 kg without bilateral pitting oedema
RUTF	Transition phase, before referral to outpatient care (if child upon admission to inpatient care has appetite, RUTF is offered from the start)

Table 2. Overview of Dietary Treatment in Inpatient Care for Children 6-59 Months

	Stabilisation Phase	Transition Phase	Rehabilitation Phase
Objective	Stabilising medical complication(s) and electrolyte and micronutrient deficiencies	Recovering metabolism and organ functions	Restoring body function
Condition	Child has poor appetite or is clinically unwell.	Child has appetite and is alert and clinically well.	Child catches up weight.
Duration of stay	2-7 days	2-3 days Referred to outpatient care as soon as appetite test is passed	(1-4 weeks) Referred to outpatient care as soon as appetite test is passed; some rare cases remain in inpatient care until full recovery
Therapeutic food	F75	RUTF and/or F100	RUTF or F100
Amount	130 ml/kg bodyweight/day of F75 in 8 meals	130 ml/kg bodyweight/day of F100 or RUTF in 8 meals	200 ml/kg bodyweight/day of F100 or RUTF in 5-6 meals
Energy	100 kcal/kg bodyweight/day	150 kcal/kg bodyweight/day	200 kcal/kg bodyweight/day
Expected Weight gain	None	Average 5 g/kg bodyweight/day	Substantial ≥10 g/kg bodyweight/day

THERAPEUTIC MILK

F75 and F100 are therapeutic products that are available commercially as powder formulations. They can also be prepared using basic ingredients of milk, sugar, cereal flour, vegetable oil and combined mineral and vitamin mix (CMV) for SAM (see **Annex 14. Alternative Recipes for F75, F100 and ReSoMal Using CMV**).

F75

- F75 provides **75 kilocalories (kcal) per 100 millilitres (ml)** and has the correct balance of Type 1 and Type 2 nutrients, a greater nutrient density and bioavailability, and lower osmolarity and renal solute load.
- It is designed to restore hydration and electrolyte and metabolic balance, and provide the necessary calories and nutrients for maintenance needs and for starting the restoration of adequate immune function.
- The amount of F75 given in the stabilisation phase is **100 kcal/130 ml/kg bodyweight/day**.
- F75 is provided in inpatient care during the stabilisation phase ONLY.

F100

- F100 provides **100 kcal/100 ml** and has the correct balance of Type 1 and Type 2 nutrients and a greater nutrient density and bioavailability.
- It is designed to provide adequate calories and nutrients to promote catch-up growth in children recovering from SAM.
- The amount of F100 given in the transition phase is **130 kcal/130 ml/kg bodyweight/day**.
- The amount given in the rehabilitation phase is **200 kcal/200 ml/kg bodyweight/day**,
- F100 is provided in inpatient care during the transition and rehabilitation phases. It should NEVER be given in outpatient care or for use at home.

F100-Diluted

- F100-Diluted has **74 kcal/100 ml**, as one-third more water is added to the F100 mixture.
- It provides adequate calories and nutrients with lower osmolarity and renal solute load then F75 and F100 which is better adapted for immature organs.
- The amount of F100-Diluted given in the initial phase is **100 kcal/130 ml/kg bodyweight/day** and gradually increases in the weight gain phase to **150 kcal/200ml/kg bodyweight/day**.
- 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, as it provides adequate calories and nutrients to restore electrolyte and metabolic balance, and promotes catch-up growth in infants recovering from SAM when given in higher quantities.

Table 3. Therapeutic Milk Specifications

Constituent	F75 Amount in 100 ml	F100 Amount in 100 ml	F100 Amount in 100 ml (approximation)
Energy	75 kcal	100 kcal	74 kcal
Proteins	0.9 g	2.9 g	2.1 g
Lactose	1.3 g	4.2 g	3.1 g
Potassium	3.6 mmol	5.9 mmol	4.1 mmol
Sodium	0.6 mmol	1.9 mmol	1.4 mmol
Magnesium	0.43 mmol	0.73 mmol	0.54 mmol
Zinc	2.0 mg	2.3 mg	1.7 mg
Copper	0.25 mg	0.25 mg	0.1 mg
% of energy from protein	5 %	12 %	12 %
% of energy from fat	32 %	53 %	53 %
Osmolarity	333 mOsmol/L	419 mOsmol/L	310 mOsmol/L

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 eat, and it requires no preparation and no mixing with water or other foods. It has a 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. It 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 500 kcal packets weighing 92 g. RUTF can also be produced locally with dried skim milk, sugar, oil, CMV and peanut paste.

Table 4. RUTF Protocol, Based on 200 Kcal/kg Bodyweight/Day

Child's Weight (kg)	Packets per Week (500 kcal/92 g packet)	Packets per Day
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

* Infants < 4 kg are referred to inpatient care

RUTF Specifications

See **Annex 16. RUTF Specifications**.

COMBINED MINERAL VITAMIN MIX (CMV)

CMV or vitamin and mineral mix complies with the recommendations for vitamin and mineral enrichment in the dietetic treatment of SAM. It is used to prepare F100, F75 and ReSoMal (from the current ORS [WHO formula] + sugar + water). It comes in an airtight metallic tin with a red measuring scoop that holds 6.35 g of mix, enough to prepare 2 L of F75, F100 or ReSoMal. CMV has a shelf life of 24 months from manufacturing date.

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.

CMV Specifications

Table 5. Nutritional Value of Commercial CMV (per 6.35 g or 1 levelled scoop)

Vitamins	Minerals
Biotin: 0.2 mg	Vitamin D: 60 µg
Folic acid: 700 µg	Vitamin E: 44 mg
Niacin: 20 mg	Vitamin K: 80 µg
Pantothenic acid: 6 mg	
	Copper: 5.7 mg
Vitamin A: 3,000 µg	Iodine: 154 µg
Vitamin B1: 1.4 mg	Iron: 0 mg
Vitamin B12: 2 µg	Magnesium: 146 mg
Vitamin B2: 4 mg	Potassium: 2,340 mg
Vitamin B6: 1.4 mg	Selenium: 94 µg
Vitamin C: 200 mg	Zinc: 40 mg

Annex 12. Therapeutic Feeds Look-Up Tables[37]

F-75 LOOK-UP TABLES

Volume of F-75 for Children with Severe Wasting

Weight of Child (kg)	Volume of F-75 per feed (ml)[a]			Daily total (130 ml/kg)	80% of daily total [a] (minimum)
	Every 2 hours[b] (12 feeds)	Every 3 hours[c] (8 feeds)	Every 4 hours (6 feeds)		
2.0	20	30	45	260	210
2.2	25	35	50	286	230
2.4	25	40	55	312	250
2.6	30	45	55	338	265
2.8	30	45	60	364	290
3.0	35	50	65	390	310
3.2	35	55	70	416	335
3.4	35	55	75	442	355
3.6	40	60	80	468	375
3.8	40	60	85	494	395
4.0	45	65	90	520	415
4.2	45	70	90	546	435
4.4	50	70	95	572	460
4.6	50	75	100	598	480
4.8	55	80	105	624	500
5.0	55	80	110	650	520
5.2	55	85	115	676	540
5.4	60	90	120	702	560
5.6	60	90	125	728	580
5.8	65	95	130	754	605
6.0	65	100	130	780	625
6.2	70	100	135	806	645
6.4	70	105	140	832	665
6.6	75	110	145	858	685
6.8	75	110	150	884	705
7.0	75	115	155	910	730
7.2	80	120	160	936	750
7.4	80	120	160	962	770
7.6	85	125	165	988	790
7.8	85	130	170	1014	810
8.0	90	130	175	1040	830
8.2	90	135	180	1066	855
8.4	90	140	185	1092	875
8.6	95	140	190	1118	895
8.8	95	145	195	1144	915
9.0	100	145	200	1170	935
9.2	100	150	200	1196	960
9.4	105	155	205	1222	980
9.6	105	155	210	1248	1000
9.8	110	160	215	1274	1020
10.0	110	160	220	1300	1040

[a] Volumes in these columns are rounded to the nearest 5 ml.
[b] Feed two-hourly for at least the first day. Then, when the child has little or no vomiting, modest diarrhoea (< 5 watery stools per day), and is finishing most feeds, change to three-hourly feeds.
[c] After a day on three-hourly feeds: If no vomiting, less diarrhoea, and finishing most feeds, change to four-hourly feeds.

[37] WHO. 2002. *Training course on the management of severe malnutrition*. Geneva: WHO.

Volume of F-75 for Children with Severe (+++) Bilateral Pitting Oedema

Weight with +++ oedema (kg)	Volume of F-75 per feed (ml)[a]			Daily total (100 ml/kg)	80% of daily total[a] (minimum)
	Every 2 hours[b] (12 feeds)	Every 3 hours[c] (8 feeds)	Every 4 hours (6 feeds)		
3.0	25	40	50	300	240
3.2	25	40	55	320	255
3.4	30	45	60	340	270
3.6	30	45	60	360	290
3.8	30	50	65	380	305
4.0	35	50	65	400	320
4.2	35	55	70	420	335
4.4	35	55	75	440	350
4.6	40	60	75	460	370
4.8	40	60	80	480	385
5.0	40	65	85	500	400
5.2	45	65	85	520	415
5.4	45	70	90	540	430
5.6	45	70	95	560	450
5.8	50	75	95	580	465
6.0	50	75	100	600	480
6.2	50	80	105	620	495
6.4	55	80	105	640	510
6.6	55	85	110	660	530
6.8	55	85	115	680	545
7.0	60	90	115	700	560
7.2	60	90	120	720	575
7.4	60	95	125	740	590
7.6	65	95	125	760	610
7.8	65	100	130	780	625
8.0	65	100	135	800	640
8.2	70	105	135	820	655
8.4	70	105	140	840	670
8.6	70	110	145	860	690
8.8	75	110	145	880	705
9.0	75	115	150	900	720
9.2	75	115	155	920	735
9.4	80	120	155	940	750
9.6	80	120	160	960	770
9.8	80	125	165	980	785
10.0	85	125	165	1000	800
10.2	85	130	170	1020	815
10.4	85	130	175	1040	830
10.6	90	135	175	1060	850
10.8	90	135	180	1080	865
11.0	90	140	185	1100	880
11.2	95	140	185	1120	895
11.4	95	145	190	1140	910
11.6	95	145	195	1160	930
11.8	100	150	195	1180	945
12.0	100	150	200	1200	960

[a] Volumes in these columns are rounded to the nearest 5 ml.
[b] Feed two-hourly for at least the first day. Then, when the child has little or no vomiting, modest diarrhoea (< 5 watery stools per day), and is finishing most feeds, change to three-hourly feeds.
[c] After a day on three-hourly feeds: If no vomiting, less diarrhoea, and finishing most feeds, change to four-hourly feeds.

F-100 LOOK-UP TABLE

Range of Volumes for Free-Feeding With F-100

Weight of Child (kg)	Range of volumes per four-hourly feed of F-100 (6 feeds daily)		Range of daily volumes of F-100	
	Minimum (ml)	Maximum (ml) [a]	Minimum (150 ml/kg/day)	Maximum (220 ml/kg/day)
2.0	50	75	300	440
2.2	55	80	330	484
2.4	60	90	360	528
2.6	65	95	390	572
2.8	70	105	420	616
3.0	75	110	450	660
3.2	80	115	480	704
3.4	85	125	510	748
3.6	90	130	540	792
3.8	95	140	570	836
4.0	100	145	600	880
4.2	105	155	630	924
4.4	110	160	660	968
4.6	115	170	690	1012
4.8	120	175	720	1056
5.0	125	185	750	1100
5.2	130	190	780	1144
5.4	135	200	810	1188
5.6	140	205	840	1232
5.8	145	215	870	1276
6.0	150	220	900	1320
6.2	155	230	930	1364
6.4	160	235	960	1408
6.6	165	240	990	1452
6.8	170	250	1020	1496
7.0	175	255	1050	1540
7.2	180	265	1080	1588
7.4	185	270	1110	1628
7.6	190	280	1140	1672
7.8	195	285	1170	1716
8.0	200	295	1200	1760
8.2	205	300	1230	1804
8.4	210	310	1260	1848
8.6	215	315	1290	1892
8.8	220	325	1320	1936
9.0	225	330	1350	1980
9.2	230	335	1380	2024
9.4	235	345	1410	2068
9.6	240	350	1440	2112
9.8	245	360	1470	2156
10.0	250	365	1500	2200

[a] Volumes per feed are rounded to the nearest 5 ml.

RUTF LOOK-UP TABLES: AMOUNTS OF RUTF TO GIVE TO A CHILD PER DAY

RUTF Dose of 150 kcal/kg Bodyweight/Day Using 92 g Packets Containing 500 kcal

Child's Weight (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

RUTF Dose of 200 kcal/kg Bodyweight/Day Using 92 g Packets Containing 500 kcal

Child's Weight (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

Annex 13. Danger Signs for Inpatient Care

Danger Signs Related to Pulse, Respirations and Temperature

Alert a physician if these occur.

	Danger sign:	Suggests:
Pulse and Respirations	Confirmed increase in pulse rate of 25 or more beats per minute **along with** Confirmed increase in respiratory rate of 5 or more breaths per minute	Infection or Heart failure (possibly from overhydration due to feeding or rehydrating too fast)
Respirations Only	Fast breathing: • 50 breaths/minute or more in child 2 months up to 12 months old* • 40 breaths/ minute or more in child 12 months up to 5 years	Pneumonia
Temperature	Any sudden increase or decrease Rectal temperature below 35.5°C (95.9°F)	Infection Hypothermia (possibly due to infection, a missed feed, or child being uncovered)

In addition to watching for increasing pulse or respirations and changes in temperature, watch for other danger signs such as:

- Anorexia (loss of appetite)
- Change in mental state (e.g., becomes lethargic)
- Jaundice (yellowish skin or eyes)
- Cyanosis (tongue/lips turning blue from lack of oxygen)
- Difficult breathing
- Difficulty feeding or waking (drowsy)
- Abdominal distention
- New oedema
- Large weight changes
- Increased vomiting
- Petechiae (bruising)

Normal Ranges of Pulse and Respiratory Rates

Age	Normal ranges (per minute):	
	Pulse	**Respirations**
2 months up to 12 months	80 up to 160	20 up to 60*
12 months up to 60 months (5 years)	80 up to 140	20 up to 40

*Some children 2-12 months of age will normally breathe fast (i.e., 50-60 breaths per minute) without having pneumonia. However, unless the child's normal respiratory rate is known to be high, he/she should be assumed to have either overhydration or pneumonia. Careful evaluation, taking into account prior fluid administration, will help differentiate the two conditions and plan appropriate treatment.

Annex 14. Alternative Recipes for F75, F100 and ReSoMal Using CMV

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 cooled 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 for about 10 minutes before the other ingredients are added.

To prepare F75, add the milk or eggs, sugar, cereal powder and oil to one litre (L) water and mix. Boil for 5-to-7 minutes. Allow to cool, add the combined mineral and vitamin mix (CMV) and mix again. Make up the volume to 2,000 millilitres (ml) with cooled boiled water.

F100 FORMULA

Type of milk or eggs	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 cooled 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, add the milk or eggs, sugar, and oil to one litre water and mix. Boil for 5-to-7 minutes. Allow to cool, add the CMV and mix again. Make up the volume to 2,000 ml with cooled boiled water.

RESOMAL

Ingredient	Amount
Standard WHO ORS	1 L package
CMV	1 red scoop (6.35 g)
Sugar	50 g
Water	Up to 2,000 ml

Ingredient	Amount
Low Osmolarity WHO ORS	1 L package
CMV	1 red scoop (6.35 g)
Sugar	40 g
Water	1,700 ml

Ingredient	Amount
Low Osmolarity WHO ORS	1/2 L package
CMV	1/2 red scoop (3.18 g)
Sugar	20 g
Water	850 ml

To prepare ReSoMal from oral rehydration solution (ORS), add CMV and sugar to one package of ORS, and add cooled boiled water following the above recipes.

To prepare ReSoMal from commercial sachets, add one sachet of 84g to 2 L water and mix.

ReSoMal Specifications

Per 1 L constituent	ReSoMal Amount
Sodium	45 mmol
Chloride	70 mmol
Potassium	40 mmol
Citrate	7 mmol
Glucose	55 mmol
Saccharose	73 mmol
Magnesium	3 mmol
Zinc	300 µmol
Copper	4 µmol
Osmolarity	294 mmol/L

Standard and Reduced Osmolarity ORS Specifications

Per 1 L constituent	Standard ORS Amount	Per 1 L constituent	Reduced ORS Amount
Sodium	90 mmol	Sodium	75 mmol
Chloride	80 mmol	Chloride	65 mmol
Potassium	20 mmol	Potassium	20 mmol
Citrate	10 mmol	Citrate	10 mmol
Glucose	111 mmol	Glucose	75 mmol
Osmolarity	251 mmol/L	Osmolarity	245 mmol/L

Annex 15. Use of Home-Modified Cow Milk for Replacement Feeding in Case of No Access to Infant Formula[38]

Modifying animal milk for feeding infants under 6 months raises difficult technical challenges. First, the currently recommended recipe would need an increased essential fatty acid content. This involves adding daily small amounts of seven vegetable oils in quantities that would need to be adjusted to their essential fatty acid composition and to the child's weight. 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 a 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 the supplement contains iron.

In view of both the technical difficulties of formulating and preparing a nutritionally adequate recipe for home-modified animal milk and the lack of data on 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

[38] WHO. 2006. *Home-Modified Animal Milk for Replacement Feeding: Is It Feasible and Safe?* Consultation background document. Geneva: WHO.

Annex 16. RUTF Specifications

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 treatment centres. RUTF is an energy-dense mineral/vitamin enriched food that is equivalent to F100.

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. Their products have similar nutritional quality as F100 and have been shown to be physiologically similar to 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 while they consume ready-to-eat therapeutic spread. The product should be given only to children who can express their thirst.

Recommendations for Use

It is recommended to use the product in the rehabilitation phase in the dietetic management of SAM. In the stabilisation phase, a milk-based diet is used (F75). However, Plumpy'nut® is contraindicated for children who are allergic to cow milk, proteins or peanut and for people with asthma due to risk of allergic response.

Storage and Packaging

Plumpy'nut® has a shelf life of 24 months from manufacturing date and should be stored in a cool and dry place. It comes in a 92g packet that contains 500 kcal. A carton (around 15.1 kg) contains 150 packets.

Table 1. Mean Nutritional Value of Plumpy'Nut®

	Amount			Amount	
Nutrients	**For 100 g**	**Per sachet of 92 g**	**Nutrients**	**For 100 g**	**Per sachet of 92 g**
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 sugar, dried skim milk, oil and a vitamin and mineral supplement. 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 nutritional quality (protein, energy and micronutrients), RUTF should have the following attributes:

- Taste and texture suitable for young children
- No need for additional processing such as cooking before consumption
- Resistant to contamination by microorganisms and a long shelf life without sophisticated packaging
- Ingredients that are low cost and readily available in developing countries

RUTF Specifications[39]

Nutrient	Amount
Moisture content	2.5% maximum
Energy	520-550 kcal/100 g
Proteins*	10 to 12% total energy
Lipids	45 to 60% total energy
Sodium	290 mg/100 g maximum
Potassium	1100 to 1400 mg/100 g
Calcium	300 to 600 mg/100 g
Phosphorus (excluding phytate)	300 to 600 mg/100 g
Magnesium	80 to 140 mg/100 g
Iron**	10 to 14 mg/100 g
Zinc	11 to 14 mg/100 g
Copper	1.4 to 1.8 mg/100 g
Selenium	20 to 40 µg
Iodine	70 to 140 µg/100 g
Vitamin A	0.8 to 1.1 mg/100 g
Vitamin D	15 to 20 µg/100 g
Vitamin E	20 mg/100 g minimum
Vitamin K	15 to 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% to 10% of total energy
n-3 fatty acids	0.3 to 2.5% of total energy

*At least half of the proteins contained in the product should come from milk products.
** Iron is already added to RUTF, in contrast to F100.

Safety

The food must be kept free from objectionable matter. It must not contain any substance originating from microorganisms or any other poisonous or deleterious substances like anti-nutritional factors, heavy metals or pesticides in amounts that might represent a hazard to health of severely malnourished patients.

[46] 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.

Table 2. RUTF Safety Specifications

Aflatoxin level	5 ppb maximum
Microorganism 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.

More information on how to produce RUTF is available at:
http://www.who.int/child-adolescent health/New_Publications/NUTRITION/CBSM/tbp_4.pdf.

Annex 17. 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 has returned from inpatient care or refuses 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, < 54 mg/dl	
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 2-12 months	
	≥ 40 respirations/minute from 1-5 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 three consecutive visits	
	Static weight for three consecutive visits	
REQUEST	Mother/caregiver requests treatment of child in inpatient care for social reasons (decided by supervisor)	
NOT RESPONDING	Child that is not responding to treatment is referred to inpatient care or hospital for further medical investigation.	

* Integrated Management of Childhood Illness (IMCI) danger signs

Annex 18. Key Messages Upon Admission to Outpatient Care

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 the child 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 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 19. Health and Nutrition Education Messages**).

Annex 19. Health and Nutrition Education Messages

1. KEY BEHAVIORS TO PROMOTE[40]

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 anaemia 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 faeces, before preparing food, before feeding children, before eating
- Safe disposal of faeces
- Proper storage and handling of food to prevent contamination

Other Care Practices

- Antenatal care attendance, including: at least four visits, tetanus toxoïd 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

2. IMPORTANCE OF BREASTFEEDING

Importance of Breastfeeding for the Infant/Young Child

Breast Milk:

- Saves infants' lives
- Is a whole food for the infant, and contains balanced proportions and sufficient quantity of all the needed nutrients for the first 6 months
- Promotes adequate growth and development, thus preventing stunting
- Is always clean
- Contains antibodies that protect against diseases, especially against diarrhoea and respiratory infections
- Is always ready and at the right temperature
- Is easy to digest; nutrients are well absorbed
- Protects against allergies; breast milk antibodies protect the baby's gut preventing harmful substances to pass into the blood
- Contains enough water for the baby's needs (87% of water and minerals)
- Helps jaw and teeth development; suckling develops facial muscles
- Provides frequent skin-to-skin contact between mother and infant, which leads to better psychomotor, affective and social development of the infant

[40] Adapted from: Ghana Sustainable Change Project. 2008. *Priority Nutrition Messages*. Accra, Ghana: AED.

- Provides the infant with benefits from the colostrum, which protects him/her from diseases; the amount is perfect for newborn stomach size
- Promotes brain development; increased Intelligence Quotient (IQ) scores

Importance of Breastfeeding for the Mother

- Putting the baby to the breast immediately after birth facilitates the expulsion of placenta because the baby's suckling stimulates uterine contractions
- Reduces risks of bleeding after delivery
- When the baby is immediately breastfed after birth, breast milk production is stimulated
- Breastfeeding is more than 98% effective as a contraceptive method during the first 6 months provided that breastfeeding is exclusive and amenorrhea persists
- Immediate and frequent suckling prevents engorgement
- Reduces the mother's workload (no time is involved in boiling water, gathering fuel, preparing milk)
- Breastmilk is available at anytime and anywhere, is always clean, nutritious and at the right temperature
- It is economical
- Stimulates bond between mother and baby
- Reduces risks of breast and ovarian cancer

Importance of Breastfeeding for the Family

- The child receives the best possible quality of food, no matter what the family's economic situation
- No expenses in buying formula, firewood or other fuel to boil water, milk or utensils; the money saved can be used to meet the family's other needs
- No medical expenses due to sickness that formula could cause; the mothers and their children are healthier
- As illness episodes are reduced in number, the family encounters few emotional problems associated with the baby's illness
- Births are spaced thanks to the contraceptive effect
- Time is saved
- Feeding the baby reduces work because the milk is always available and ready

Importance of Breastfeeding for the Community

- Not importing formula and utensils necessary for its preparation saves hard currencies that could be used for something else
- Healthy babies make a healthy nation
- Savings are made in the health area; a decrease in the number of child illnesses leads to decreased national medical expenses
- Improves child survival; reduces child morbidity and mortality
- Protects the environment (trees are not used for firewood to boil water, milk and utensils, thus protecting the environment); breast milk is a natural renewable resource

3. RECOMMENDED IYCF PRACTICES[41]

Recommended Breastfeeding Practices and Possible Points of Discussion for Counselling

Recommended Breastfeeding Practice	Possible Points of Discussion for Counselling (choose most relevant to mother's situation)
Put infant skin-to-skin with mother immediately after birth.	• Skin-to-skin with mother keeps newborn warm. • Skin-to-skin with mother helps stimulate brain development.
Initiate breastfeeding within the first hour of birth.	• This first milk 'local word' is called colostrum. It is yellow and full of antibodies which help protect your baby. • Colostrum provides the first immunization against many diseases. • Breastfeeding from birth helps the milk 'come in' and ensures plenty of breast milk.
Exclusively breastfeed (no other food or drink) for 6 months.	• Breast milk is all the infant needs for the first 6 months. • Do not give anything else to the infant before 6 months, not even water • Giving water will fill the infant and cause less suckling; less breast milk will be produced.
Breastfeed frequently, day and night.	• Breastfeed the baby often, at least 8-12 times for a newborn and 8 or more times after breastfeeding is well-established, day and night, to produce lots of breast milk. • More suckling (with good attachment) makes more breast milk.
Breastfeed on demand (or cue) every time the baby asks to breastfeed.	• Crying is a late sign of hunger. • Early signs that baby wants to breastfeed: – Restlessness – Opening mouth and turning head from side to side – Putting tongue in and out – Sucking on fingers or fists
Let infant finish one breast and come off by him/herself before switching to the other breast.	• Switching back and forth from one breast to the other prevents the infant from getting the nutritious 'hind milk'. • The 'fore milk' has more water content and quenches infant's thirst; the 'hind milk' has more fat content and satisfies the infant's hunger.
Continue breastfeeding until 2 years of age or longer.	• Breast milk contributes a significant proportion of energy and nutrients during the complementary feeding period and helps protect babies from illness. • In the first year, breastfeed before giving foods to maintain breast milk supply.
Mother needs to eat and drink to satisfy hunger and thirst.	• No one special food or diet is required to provide adequate quantity or quality of breast milk. • Breast milk production is not affected by maternal diet. • No foods are forbidden. • Mothers should be encouraged to eat supplemental foods where they are accessible.
Avoid feeding bottles.	• Foods or liquids should be given by a spoon or cup to reduce nipple confusion and the possible introduction of contaminants.

[41] IFE Core Group. 2009. *Integration of IYCF support into CMAM.* Facilitator's Guide and Handouts. Oxford, UK: ENN.

Recommended Complementary Feeding Practices

Age	Frequency (per day)	Amount of food an average child will usually eat at each serving* (in addition to breast milk)	Texture (thickness/ consistency)	Variety
6-8 months	2-3 times food	2-3 tablespoons 'Tastes' up to ½ cup (250 ml)	Thick porridge/pap Mashed/ pureed family foods**	Breastfeeding + staples (porridge, other local examples) Legumes (local examples) Vegetables/fruits (local examples) Animal foods (local examples)
9-11 months	4 times foods and snacks	½ cup/bowl (250 ml)	Finely chopped family foods Finger foods Sliced foods	
12-23 months	5 times foods and snacks	¾ -1 cup/bowl (250 ml)	Family foods Sliced foods	
Note: If baby is not breastfed	Add 1-2 extra times food and snacks			Add 1-2 cups of milk per day
Responsive/active feeding		Be patient and actively encourage your baby to eat.		
Hygiene		• Feed your baby using a clean cup and spoon, never a bottle, as this is difficult to clean and may cause your baby to get diarrhoea. • Wash your hands with soap and water before preparing food, eating and feeding young children.		

*Adapt the chart to use a suitable cup/bowl to show the amount. The amounts assume an energy density of 0.8 – 1 kcal/g.
** Use iodized salt in preparing family foods.

Recommended Complementary Feeding Practices and Possible Points of Discussion for Counselling

Recommended Complementary Feeding Practice	Possible Points of Discussion for Counselling (choose most relevant to mother's situation)
At 6 months of age, add complementary foods (e.g., thick porridge 2-3 times a day) to breastfeeds.	• Give local examples of first types of complementary foods.
As baby grows older, increase feeding frequency, amount, texture and variety.	• FATV: Gradually increase the frequency (F), amount (A), texture (T) (thickness/consistency) and variety (V) of foods.
From 6-8 months of age, breastfeed plus give 2-3 servings of foods.	• Start with 2-3 tablespoonfuls of cooked porridge or mashed foods (give examples of cereals and family foods). • At 6 months, these foods are more like 'tastes' than actual servings. • Increase gradually to ½ cup (250 ml cup). Show amount in cup brought by mother.
From 9-11 months of age, breastfeed plus give 4 servings of food or snacks per day.	• Give finely chopped, mashed foods and finger foods. • Increase gradually to ½ cup (250 ml cup). Show amount in cup brought by mother.
From 12-23 months of age, give 5 servings of food or snacks per day, plus breastfeed.	• Give family foods. • Give ¾ to one cup (250 ml cup/bowl). Show amount in cup brought by mother. • Other solid foods (snacks) can be given as many times as possible each day and can include [give examples]. • Foods given to the child must be stored in hygienic conditions to avoid diarrhoea and illness.
Give baby 2-3 different family foods: staple, legumes, vegetables/fruits, and animal foods at each serving.	• Try to feed different foods at each serving.
Continue breastfeeding until 2 years of age or longer.	• During the first and second years, breast milk is an important source of nutrients for your baby. • During the first year, breastfeed first to maintain breast milk supply.

Be patient and actively encourage baby to eat all his/her food.	• At first, baby may need time to get used to eating foods other than breast milk. • Use a separate plate to feed the child to make sure he/she eats all the food given.
Wash hands with soap and water before preparing food, eating and feeding young children.	• Foods given to the child must be stored in hygienic conditions to avoid diarrhoea and illness.
Feed baby using a clean cup and spoon.	• Cups are easy to keep clean.

4. RECOMMENDED FOODS FOR INFANTS AND CHILDREN 6 MONTHS TO 5 YEARS[42]

Examples from Ghana are to be adapted for use in Southern Sudan.

Key Points

1. At 6 months, babies need more nutrients than breast milk alone can provide. They are also physically ready to eat foods.
   - They can sit, hold their heads up and steady.
   - They can swallow food more easily without spitting.
   - Their stomachs have matured enough to digest foods properly.
2. Babies sometimes reject food because the new taste and texture are different from the breast milk they are used to.
   - Mothers need to take time to teach babies to eat 'new' food by continuing to offer it to them. You will have to be patient and keep trying until the baby likes the food. It sometimes takes more than five times before the baby likes a food.
3. Forcing your baby to eat might cause feeding problems such as the baby constantly rejecting food.
4. Keeping your hands clean when preparing food or feeding your baby is essential. Wash your hands with soap and water to prevent diarrhoea-causing germs to get to your baby.
5. Babies at this age often put their hands in their mouths. Washing their hands with soap and water helps them stay healthy.
6. Babies should be fed from their own bowls. Don't give leftovers to the baby.
7. Cooked foods should not be saved from one day to the next unless they are refrigerated.
   - Foods should always be reheated to boiling and cooled before serving.
   - Cooked food should not be given to the baby after two days in the refrigerator.

Meeting Your Baby's Food Needs Starting at 6 Months

1. At 6 months, breast milk alone is not enough for the health and growth of your baby.
2. Babies like a variety of foods, just like adults. There are many foods that babies like, such as Koko, rice, corn-soy blend (CSB), beans, yams and sweet potatoes.
3. A small spoon makes it easier for a child to learn how to swallow food.
4. As a baby gets older, the thickness of foods should increase.
5. Thicker foods mean the baby will get more nutrients in each spoonful and feeding will take less time for you.
6. Your baby has a small stomach. When food is thin and watery, they are getting water but less of the nutrients they need.
7. Frequent breastfeeding continues to provide protection from disease and nourishment to your baby.

Helping Your Baby to Grow Strong

1. From 6 months on, babies need more than one type of food at each feeding to maintain their health and grow well.
2. Fats/oil should be added to each meal. Any fat you have at home is OK for the baby. A small amount such as 1 teaspoonful of fat/oil is packed with energy.
3. Babies accept fats easily at 6 months.

[42] Ghana Sustainable Change Project. 2008. *Priority Nutrition Messages*. Accra, Ghana: AED.

4. Beans, fish, eggs, fish powder and meats help babies grow. Babies who eat those one-to-two times per day have good blood and are protected from illness.
5. All mothers and/or caregivers are concerned about the cost of feeding their family, but luckily babies only need a small amount of animal protein. As part of a feeding, include a matchbox-size amount (or at least one tablespoonful) of mashed or chopped meat, egg or fish every other day to help your baby grow.
6. The same amount of mashed beans, ground nuts or fish powder is needed on the days you don't give animal protein.
7. Remember that frequent breastfeeding is still very important for your baby

Vegetables and Fruits: Protecting Your Baby From Illness

1. From 6 months on, babies need more than one type of food at each feeding to maintain their health and grow well.
2. Many families think that fruits are not good for babies because they cause diarrhoea. This is not true. Babies need small quantities of fruits at a time, and the fruits should be washed very well.
    - Many fruits contain nutrients that are essential for good health. In fact they protect babies from getting sick.
3. Fruits that are orange like mangoes or pawpaw are especially high in needed vitamins. They are also plentiful and inexpensive.
4. Babies love the sweet taste of fruits.
5. Vegetables also add variety, vitamins and minerals to your baby's meals. Cooked greens, pumpkins, squash or orange sweet potato will give important vitamins.
6. Babies need fruits one-to-two times each day and also need vegetables one-to-two times per day.
7. Frequent breastfeeding is still very important for your baby.

How Much and How Often?

6 Months of Age

1. One soup ladle of porridge at a meal
2. Baby should be fed two times each day
3. Frequent breastfeeding day and night

7-8 Months of Age

1. Babies at this stage have learned about eating and can start to eat more at each meal and eat more frequently.
2. Baby should eat three times per day.
3. Each meal should contain the following:
    - 1 soup ladle of a thick porridge with 1 teaspoon of oil/groundnut paste and fish powder/egg/soya bean powder or
    - ½ soup ladle of staple (e.g., yam, rice) and 1 stew ladle of stew/thick soup containing 1 tablespoon of mashed fish, meat or beans, And
    - 2 tablespoon of mashed fruits or vegetables
4. Frequent breastfeeding day and night.

9 Months to 1 Year of Age

1. Most babies have some teeth and like to start chewing.
2. Baby still needs to be fed three times a day but now also needs a snack.
3. At least one snack each day is important for babies at this age.
4. Snacks should be chosen wisely so they are not too sweet. Fruits, buttered bread, doughnuts are good choices of snacks.
5. Babies eat better if a variety of foods are fed to them each day.
6. The amount increases to:
    - 2 soup ladles of a thick porridge with 1 teaspoon of oil/groundnut paste and fish powder/egg/soya bean powder or
    - 1 soup ladle of staple (e.g., yam, rice) and 1 stew ladle of stew/thick soup containing 1 tablespoon of mashed fish, meat or beans, And
    - 2 tablespoon of mashed fruits or vegetables
7. Frequent breastfeeding is still very important for your baby.

Annex 20. 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 with 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 treatment 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.

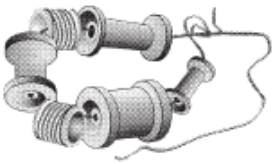
Community outreach workers (e.g., community health workers, volunteers) can also develop play activities in the community that can keep children in the outpatient care active. Activities should be selected to develop both motor and language skills, and new activities and materials should be introduced 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, and tossing and chasing a ball. The duration and intensity of physical activities should increase as the child's nutritional and general health improves.

TOYS

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.

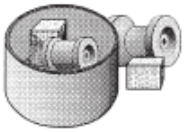


Rattle (from 12 months)
Cut long strips of plastic from coloured plastic bottles. Place them in a small transparent plastic bottle and glue the top on firmly.

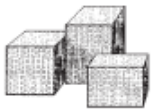
Drum (from 12 months)
Any tin with a tightly fitting lid.

Mirror (from 18 months)
A tin lid with no sharp edges.

In-and-out toy (from 9 months)
Any plastic or cardboard container and small objects (not small enough to be swallowed).



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).



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

Annex 21. Failure to Respond to Treatment in Inpatient Care

Some children undergoing inpatient care might fail to respond to treatment or exhibit deterioration in 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 Failure to Respond to Treatment in Inpatient Care*

Criteria	Time after Admission
Primary failure to respond	
Failure to regain appetite	4 - 7 days
Oedema is not reducing	4 - 7 days
Oedema still present	10 days
Failure to gain at least 5 g/kg bodyweight	10 days
Secondary failure to respond	
Failure to gain at least 5 g/kg bodyweight Static weight	During inpatient rehabilitation phase: for 2 successive days 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 severe acute malnutrition (SAM) and 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 (medical history, physical examination and/or laboratory investigations of urine and stool samples). The overall management of these cases should be reviewed, e.g., evaluation of adherence to treatment protocol and 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 management of SAM while ensuring that treatment protocols are followed and that staff receives adequate supervision.

CARE FOR CHILDREN WHO FAIL TO RESPOND TO TREATMENT

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 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

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 tuberculosis; do a chest x-ray.[43] Examine stool for blood; look for trophozoites or cysts of giardia; culture stool for bacterial pathogens. Test for HIV, hepatitis and malaria. Culture and examine the cerebrospinal fluid (CSF).

Secondary Failure to Respond

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. Children with SAM 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 whilst they are being fed by the caregiver to ensure that the correct feeding technique is 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 or 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 (e.g., sudden enlargement of a cervical abscess or development of a sinus) could occur 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 a severely malnourished child’s rate of recovery. The same can occur at home when the child is given family food or traditional complementary foods that are inadequate in Type 1 and Type 2 nutrients.

ACTION REQUIRED WHEN A CHILD FAILS TO RESPOND TO TREATMENT

- 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, the child’s age, sex, date of admission, mid-upper arm circumference (MUAC), weight-for-height (WFH; or length) on admission, principal diagnosis, treatment and, where applicable, date, time 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 to rectify the problems.
- If these actions are not immediately successful, then an external evaluation by someone experienced with 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.
- Re-calibrate scales (and height/length boards).

[43] 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 of food
- 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), errors of metabolism

Annex 22. Community Assessment Questionnaire and Tools

COMMUNITY ASSESSMENT QUESTIONNAIRE

The following topics and questions should be reviewed and adapted and next explored in a community assessment for IM-SAM:

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 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 county, 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 nutrition educators, primary health acre cadres, vaccinators, village midwives, health extension workers, 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 county
   - Explore the usual methods of disseminating information to the community in the county, 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 IM-SAM
   - 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 IM-SAM.

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 IM-SAM

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 IM-SAM.

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 IM-SAM. Identify potential ways to appropriately address the identified key issues.

5. Matrix of potential community outreach workers for IM-SAM

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

6. Matrix of community actors selected for community participation and outreach for IM-SAM

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 23. Referral Slip Community Screening

Child name			
Family name			
Name of mother/caregiver			
Place of origin		Referral health facility	
Date of community outreach			
Bilateral pitting oedema	Yes No	MUAC	mm
Other findings			
Name of community outreach worker			
Signature			

Annex 24. Home Visit Record Form

Reason for Home Visit:	Absence	Y / N	Defaulter	Y / N	Dead	Y / N	Other	
Registration No.					Date			
Site		Community			County			
Child's name		Age			Sex			
Family name		Name of caregiver						
Address								
Date of visit								
Findings								
Outreach Worker's Name		Signature						

Annex 25. Checklist for Home Visits

Name of Community Outreach Worker	
Date of Visit	
Name of Child	

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 26. Community Outreach Reporting Sheet

County Name		State Name	
Reporting Period		Date	
Supervisor/coordinator (name and position)			
Catchment Area			
Number of Children Under 5			
Expected Number or Children Under 5 with SAM			
Number of IM-SAM Outpatient Sites			
Number of IM-SAM Inpatient Sites			
Number of communities in catchment area			

Key Indicators:

Human resources:
- Number of community outreach workers –MOH staff
- Number of community outreach volunteers

Training:
- Number of community outreach workers including volunteers trained and active
- Number of community representatives oriented

Community mobilization:
- Number of communities targeted and involved
- Number of communities meetings

Community outreach:
- Number of community screening sessions conducted
- Number of children with SAM identified and referred for treatment
- Number of community home visits for problem cases
- Number of community health and nutrition education sessions held

Coverage of IM-SAM	
Reasons for absentees and defaulting	
Reasons for non-response to treatment	
Causes of death	
Barriers to access	

Reasons Why Areas Are Not Covered	
Success Stories	
Identified Problems	
Planned Activities	

Annex 27. Inpatient Care Treatment Card [44]

[44] Adapted from: "Critical Care Pathway-CCP" in: WHO. 2002. *Training course on the management of severe malnutrition*. Geneva: WHO.

Name: _____ Male/Female Date of Birth/Age:_____ Date of Admission:_____ Time of Admission:_____ ID Nr:_____

INITIAL MANAGEMENT Comments on pre-referral and/or emergency treatment already given:

SIGNS OF MALNUTRITION

Severe wasting? Yes No
Bilateral 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 no test, treat as if hypoglycaemia
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 **MEASLES:** Yes No
Vaccination on admission:_____
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 on week four in treatment or upon discharge.
Record on Comments/Outcome page.

Oral doses Vitamin A	< 6 months*	50 000 IU
*If eye signs/recent measles: on Day 1, 2, 15	6 – 12 months* **	100 000 IU
**Single dose on week 4 or upon discharge	>12 months* **	200 000 IU

HIV test Yes No Date: Outcome: (If + give Cotrimoxazole)

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 weight) = _____ml

	Start:	Monitor every 10 minutes					*2nd hr	Monitor every 10 minutes					
Time							*						
Resp. rate							*						
Pulse rate							*						

If respiratory and 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 diarrhoea? 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:
For first 2 hours, give ReSoMal. Every 30 minutes, 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 and resp. rates Jugular veins engorged Increase in oedema, e.g., puffy eyelids
** If bilateral pitting oedema, give ReSoMal 30 ml only after each watery stool

ANTIBIOTICS (All received) 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 bodyweight)	*Calculate if on RUTF/F100*																				
Bilateral pitting oedema O + ++ +++																					
Diarrhoea (D)/Vomit (V) 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 drug)																					
FOLIC ACID (if not on RUTF) daily	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*													*Never give Vitamin A when child has bilateral pitting oedema*					
ANTIHELMINTHIC (note drug)	*Give on week two, single dose*																				
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 + ++ +++																					
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).

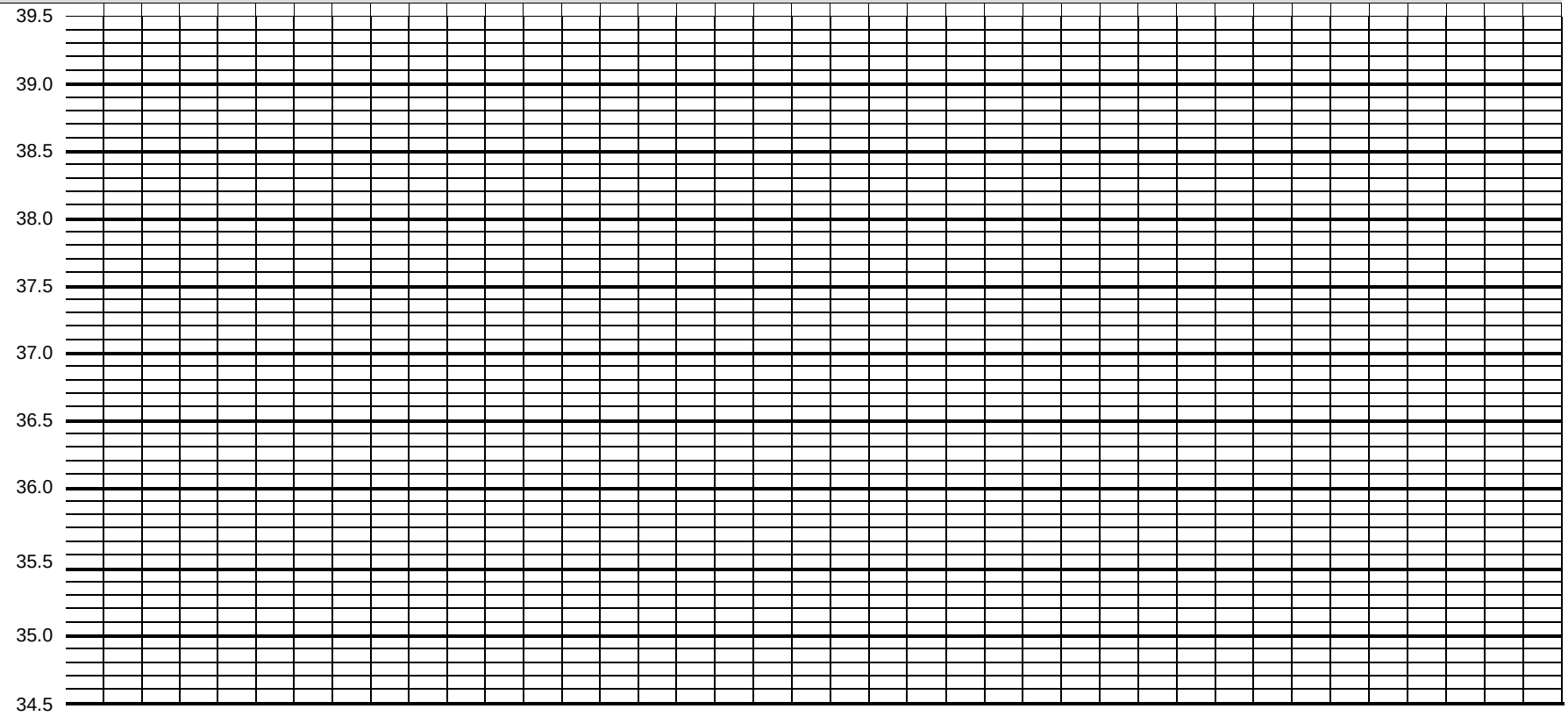
RESPIRATORY RATE

Breaths/ minute

PULSE RATE

Beats/ minute

TEMPERATURE



Date/time:

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 (see Danger Signs in Inpatient Care)

Name: _____ Page ____ of _____

24-HOUR FOOD INTAKE CHART

Complete one chart for every 24-hour period.

Admission weight (kg): _____ Today's weight (kg): _____ Oedema: 0 + ++ +++

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:

If child is ready for transition, test appetite. **Appetite test:** Failed Passed

Total volume taken over 24 hours = amount taken orally (c) + amount taken by NG (d) – total amount vomited (e) = _____ml

Name: _____ Page ____ of _____

WEIGHT CHART

Weight on admission: _____kg

MUAC on admission: _____mm

Height / length
on admission:_____ cm

Bilateral pitting oedema on admission:
0 + ++ +++
Weight free of oedema: _____kg

Desired weight
based on 15% weight change:
_____ kg

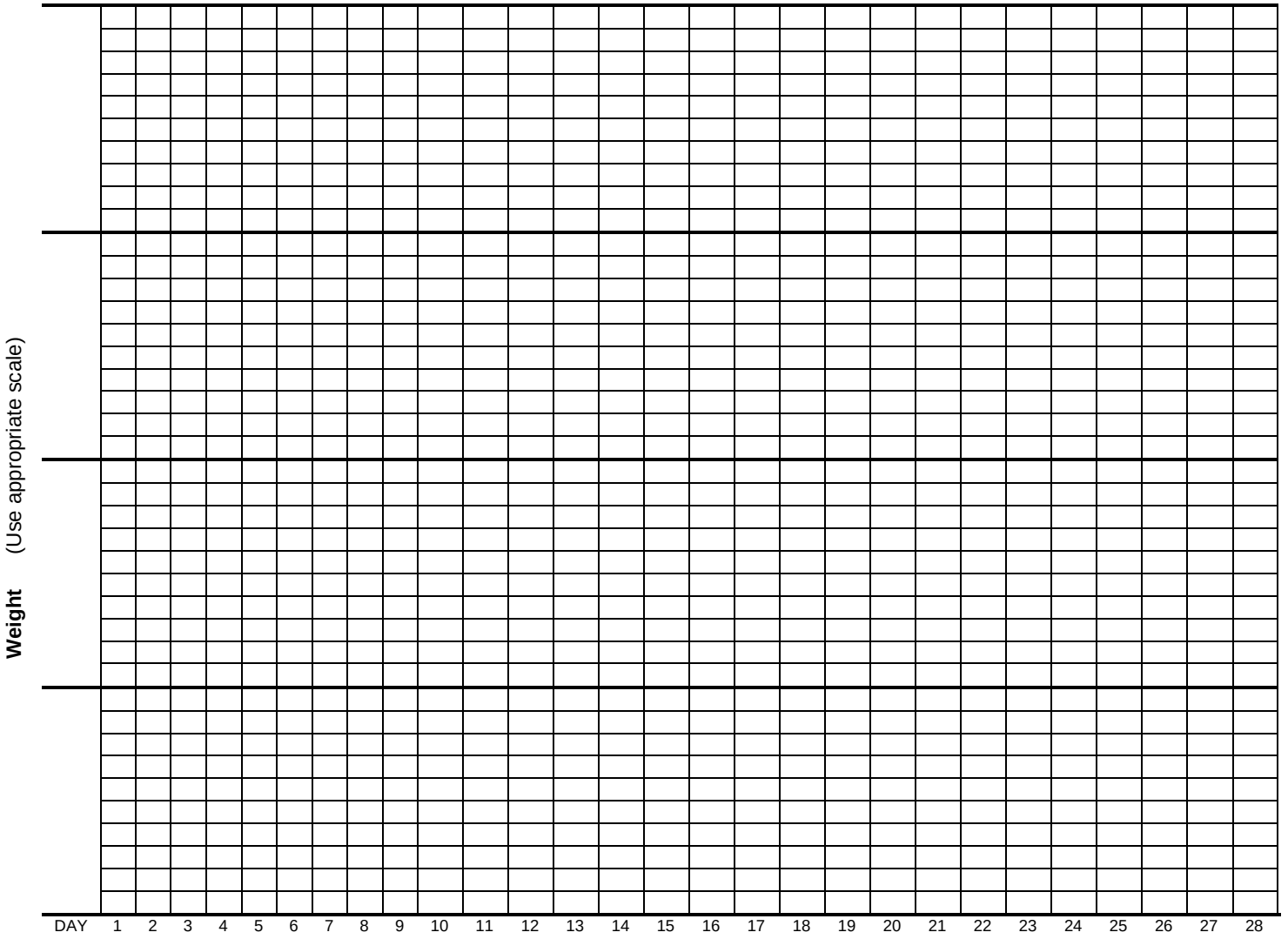
[Desired weight based on weight for height -1 z-score:
_____kg]

Weight at referral to outpatient care:
_____ kg

MUAC at referral to outpatient care:
_____ mm

Weight at discharge if treatment until full recovery in inpatient care
_____ kg

MUAC at discharge if treatment until full recovery in inpatient care
_____ mm



COMMENTS/OUTCOME

COMMENTS

SPECIAL DISCHARGE AND FOLLOW-UP INSTRUCTIONS

TRAINING GIVEN TO PARENTS/ CAREGIVERS

IMMUNIZATIONS

Immunization card? Yes No

Circle immunizations given. Initial and date by any given 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	Upon discharge		

PATIENT OUTCOME

Referral to Outpatient Care	DATE	Comment
In case of treatment in **Inpatient Care Until Full Recovery** or unexpected discharge, *indicate outcome*:		
Discharge based on 15% weight change (Discharged cured)		Discharge weight ≥15% weight gain: Y N MUAC: _____mm
Early departure or defaulting (Discharged defaulted)		
Non response to treatment (Discharged non-responded)		
Referral for non response to treatment or medical investigation		
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 28. Daily Feeds Chart

DAILY FEEDS CHART

DATE:_____ **WARD:** _____

Name of Child	F-75			F-100		
	Number feeds	Amount/ feed (ml)	Total (ml)	Number feeds	Amount/ feed (ml)	Total (ml)
	F-75 (total ml) needed for 24 hours			F-100 (total ml) needed for 24 hours		

Name of Child	RUTF	
	Number feeds	Packets per day
	RUTF total (sachets) for 24 hours	

Annex 29. Outpatient Care Treatment Card

FRONT

ADMISSION INFORMATION

Name				Reg. N°	/ /
Age (months)		Sex	Male Female	Date of admission	
Community, County				Time to travel to site	
House location				Father alive	Yes/ No	Mother alive	Yes/ No
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 (axillary)	^{0}C					Palmer Pallor	Normal	Pale
Eyes	Normal	Sunken	Discharge	Conjunctiva/ Cornea		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

ADMISSION: Amoxicillin	Dosage:		Date:		Malaria test	Positive / Negative	Date	
WEEK TWO: Antihelminthic	Yes	No			Malaria symptoms	Yes No		
WEEK FOUR: Measles vaccination	Yes	No			Malaria treatment	Drug/Dosage:		Date:
Vitamin A	Yes	No			Fully immunised	Yes No		

Other medicines

Drug	*Date*	*Dosage*	*Drug*	*Date*	*Dosage*

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																	
15% Target Weight																	
Bilateral Pitting Oedema **(+ ++ +++)**																	
MUAC **(mm)**																	
Weight **(kg)**																	
Weight loss * ***(Y/N)***				*													
If no weight gain or losing weight do a 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 card front)***																	
Name examiner																	
OUTCOME **																	

** OK=**Continue Treatment** A=**Absent** D=**Defaulted** (after 2 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 30. Referral Form for Inpatient Care/Outpatient Care

Referral to							
Date		Time					
Name							
Age		Weight		MUAC		Temperature	
Reason of Referral							
Treatment Given before Referral							
Vaccinations				Dose of Vitamin A			
Name or Responsible							
Location							
Signature							

Annex 31. Site Tally Sheet

SITE TALLY SHEET

Community, Payam, County, State

SITE: Outpatient care / Inpatient care

MONTH

Date of weeks						
Total start of week (A)						TOTAL MONTH
New Cases SAM: Children 6-59 months (B1)						
Other New Cases SAM: Adults, adolescents, children > 5 y, infants < 6 m (B2)						
Old Cases SAM: Referred from Outpatient or Inpatient care; or Returned defaulter (C)						
TOTAL ADMISSIONS (D) (D=B1+B2+C)						
Discharged Cured (for children 6-59 months only) (E1)						
Discharged Died (for children 6-59 months only) (E2)						
Discharged Defaulted (for children 6-59 months only) (E3)						
Discharged Non-Recovered (for children 6-59 months only) (E4)						
TOTAL DISCHARGES (for children 6-59 months only) (E) (E= E1+E2+E3+E4)						
Referrals to Outpatient care or Inpatient care (F)						
TOTAL EXITS (G) (G= E+F) (+ add other age groups)						
Total end of week (A+D-G)						
GENDER NEW ADMISSIONS Children 6-59 months (B1) MALE						
FEMALE						

Annex 32. Site Reporting Sheet

MONTHLY SITE REPORT IM-SAM

SITE		IMPLEMENTED BY	*MOH* *Other: _____*
Payam		MONTH / YEAR	
County		TYPE	*Inpatient Care* / *Outpatient Care*
State		ESTIMATED TARGET <5 y with SAM*	*(WFH <-3 z-score)* / *(MUAC<115 mm)* / (Oedema)

Total beginning of the month (A)	New Cases (B)		Old Cases (C)	TOTAL ADMISSIONS (D) (B+C=D)	Discharges children 6-59 months** (E)				Referrals (F)	TOTAL EXITS (G) (E+F=G)	Total end of the month (H) (A+D-G=H)
	Children 6-59 m (B1)	**Other (adult, adolescent, child > 5 y, infant < 6 m)** (B2)	**Referrals or Returned defaulters**		**Discharged CURED** (E1)	**Discharged DIED** (E2)	**Discharged DEFAULTED** (E3)	**Discharged NON-RECOVERED** (E4)			
				Children 6-59 months	**%** **E1/E*100**	**%** **E2/E*100**	**%** **E3/E*100**	**%** **E4/E*100**			
				TARGETS Sphere minimum standards	>75%	-	<15%				

E1: Discharged Cured = met discharge criteria
E2: Discharged Died = died while in treatment
E3: Discharged Defaulted = absented for three consecutive visits in outpatient care/two days in inpatient care
E4: Discharged Non-recovered = did not meet discharge criteria after four months in outpatient care/ after two months in inpatient care

GENDER NEW ADMISSIONS children 6-59 months		
	MALE	
	FEMALE	

*Estimated target population under 5 = 20%, using the 2008 Census data; Estimated target population under 5 with SAM, expressed in numbers (WFH <-3 z score or MUAC<115 mm, and bilateral pitting oedema), based on latest survey data or admission data.
** Fill in a separate report for other age groups if a considerable number of cases from other age group are being admitted for treatment.

Annex 33. Monthly County/State Reporting Sheet

MONTHLY REPORT IM-SAM (Sites Combined)

PAYAM(S)				IMPLEMENTING PARTNER(S)	
COUNTY		NUMBER OF OUTPATIENT CARE SITES			
STATE		NUMBER OF INPATIENT CARE SITES		REPORTING PERIOD	
		NUMBER OF COMMUNITIES			
		ESTIMATED TARGET <5 y with SAM*	*(WFH <-3 z-score)*	*(MUAC<115 mm)*	(Oedema)

Total beginning of the period (A)	New Cases (B)		TOTAL ADMISSIONS (B)	Discharges children 6-59 months** (E)				TOTAL DISCHARGED (E)	Total end of the month (H) (A+B-E=H)
	Children 6-59 m (B1)	**Other (adult, adolescent, child> 5 y, infant< 6 m)** (B2)		**Discharged CURED** (E1)	**Discharged DIED** (E2)	**Discharged DEFAULTED** (E3)	**Discharged NON-RECOVERED** (E4)		
			Children 6-59 months	**%** **E1/E*100**	**%** **E2/E*100**	**%** **E3/E*100**	**%** **E4/E*100**		
			TARGETS Sphere minimum standards	>75%	<10%	<15%			

E1: Discharged Cured = met discharge criteria
E2: Discharged Died = died while in treatment
E3: Discharged Defaulted = absented for three consecutive visits in outpatient care/two days in inpatient care
E4: Discharged Non-recovered = did not meet discharge criteria after four months in outpatient care/ after two months in inpatient care

GENDER NEW ADMISSIONS children 6-59 months	**MALE**	
	FEMALE	

** Fill in a separate report for other age groups if a considerable number of cases from other age group are being admitted for treatment.

Annex 34. Minimal Reporting Guidance for IM-SAM

Minimal Reporting Guidance for IM-SAM

Introduction

- Author of report
- Date and period of reporting
- Geographical catchment area and population
- Name of health facilities with outpatient care and/or inpatient care
- Starting date of services

Performance, Process and Output Indicators

- Number of new admissions
- Number of discharges
- Number of beneficiaries in treatment
- Number and percentage discharged cured
- Number and percentage discharged died
- Number and percentage discharged defaulted
- Number and percentage discharged non-recovered
- Number of referrals for non-response to treatment and/or medical complications
- Number of sites
- Number of staff trained (e.g., health managers, health care providers, community health workers [CHWs])
- Number of volunteers trained
- Number of villages mobilized
- Causes of Death
- Reasons of Absentee, Defaulting
- Barriers to Access

Some information may be collected monthly or periodically from sites if considered useful, calculated on all or a sample of treatment cards from discharged cured beneficiaries in a particular month

- Average length of stay (LOS) (expressed in days)
- Average daily weight gain (expressed in g/kg bodyweight/day)
- Referral rate
- Categories of admission: bilateral pitting oedema, severe wasting -MUAC or WFH z-score

Figures

- 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 length of stay (LOS) and average weight gain (AWG) per category of admission criteria
- Figure (pie chart) with distribution of admission criteria
- Figure (pie chart) with distribution of discharge categories

Interpretation of Overall Progress

- Discuss performance
- Interpret findings on performance and coverage and any qualitative information that was obtained through community meetings, focus group discussions, etc.; then, triangulate the information.
- Discuss 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
- Discuss challenges, opportunities, lessons learned.
- Add success stories.
- Provide action plan for next month and support needed/planned to be given

Annex 35. Checklists for Supportive Supervision

COMMUNITY OUTREACH (Example)

Communities of Health Facility:_____ Date:_____

Question/Issue	Why?
Coordination of 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 integrated management of severe acute malnutrition (IM-SAM).
Has the job of the outreach worker (case-finder) been clearly defined, including his/her 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 severe acute malnutrition (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 IM-SAM 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 (Example)

Communities of Health Facility:_____ Date:_____

	Quality **1 – Done correctly** **2 – Done but needs work** **3 – Not done or done incorrectly**	**Discussed Supervisor (Y/N)**	**Comment**
All absentees/defaults from previous week followed up			
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___						
Mid-upper arm circumference (MUAC) measured accurately	Total MUAC checks observed___						
Weight measured accurately	Total weighings observed___						
Height measured accurately	Total measurements observed___						
Weight-for-height (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 ready-to-use therapeutic food (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 CHW/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[45] (Example)

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			

[45] Adapted from: WHO. 2002. *Training Course on the Management of Severe Malnutrition*. Geneva: WHO.

Is the room kept between 25 and 30 degrees Celsius (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 standardised weekly?			
Are children weighed at about the same time each day?			
Are children weighed about one hour before a feed (to the extent possible)?			
Do staff adjust the scale to zero before weighing?			
Are children consistently weighed without clothes?			
Do staff correctly read weight to the nearest division of the scale?			
Do staff immediately record weights to the nearest division of the scale?			
Do staff immediately record weights on the child's 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, does staff immediately make a notation on the treatment card?			
Is vitamin A given according to schedule?			
After children are on F100 for two days, is the correct dose of iron given twice daily and recorded on the 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
Handwashing			
Are there working handwashing facilities in the ward?			
Do staff consistently wash hands thoroughly with soap?			
Are their nails clean?			
Do they wash hands before handling food?			
Do they wash hands between each patient?			
Mothers' cleanliness			
Do mothers have a place to bathe, and do they use it?			
Do mothers wash hands with soap after using the toilet or changing diapers?			
Do mothers wash hands before feeding children?			
Bedding and laundry			
Is bedding changed every day or when soiled/wet?			
Are diapers, soiled towels and rags, etc. stored in bag, then washed or disposed of properly?			
Is there a place for mothers to do laundry?			
Is laundry done in hot water?			
General maintenance			
Are floors swept?			
Is trash disposed of properly?			
Is the ward kept as free as possible of insects and rodents?			
Food storage			
Are ingredients and food kept covered and stored at the proper temperature?			
Are leftovers discarded?			
Dishwashing			
Are dishes washed after each meal?			
Are they washed in hot water with soap?			
Toys			
Are toys washable?			
Are toys washed regularly, and after each child uses them?			

Annex 36. 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) and 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 ward) at a hospital or health facility with bed capacity. In emergencies, a semi-permanent structure can be set up. In all cases, the health facility should have qualified and experienced staff, equipment and supplies, and a permanent supply of clean water for drinking, food preparation and sanitation.

Experience shows that, on average, 10 to 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 the 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, storekeepers 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 complications and for children who have been referred from inpatient care after they have recovered appetite or their medical complications resolved. Outpatient care can be set up in a health facility or 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 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 to 20 per session to several hundreds. When too many children are attending on the same day, it might be 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 size) has sufficient skills to run outpatient care. Health care providers must be trained and able to identify danger signs and decide whether referral for inpatient care is necessary. They should be able to identify anorexia and assess children's progress, calculate indicators for monitoring and evaluating patients (weight-for-height [WFH] z-score, weight gain, mid-upper arm circumference [MUAC]), fill in registration books and 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 time. One mobile team can visit up to five sites a week, providing services once a week in each site.

Annex 37. Checklist of Materials for Inpatient Care

For guidance and information, consult the medical kits[46] below and other supply and equipment lists.

Note: Always check the health facility's drug and equipment list to identify items that are needed in addition to their regular supply.

MEDICAL 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 / ReSoMal	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	tubes
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	pieces
Elastic bandage 7.5 cm x 5m	20	pieces
Nail brush	10	pieces
Gauze compresses 10*10 cm, sterile	700	pieces
Gauze compresses 10*10 cm, non sterile	1,500	pieces
Cotton 400 g	10	pieces
Examination gloves, medium, disposable	800	pieces
Blade for surgical knives, size 22	100	pieces
Bags for medicines	2,000	pieces
Adhesive tape 5cmx 5cm	20	pieces
Thermometer	100	pieces
Gauze bandage	200	pieces
Adhesive tape 2.5 cm	16	rolls

[46] Adapted from: Action Contre la Faim (ACF). [no date] Kits for opening new therapeutic care programmes.

MEDICAL 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	vials
Ceftriaxone 250 mg	300	amps
Chloramphenicol 1 g	400	vials
Dextrose 50%/20 ml	25	vials
Digoxine 0,25 mg/ml 2 ml vial	100	amps
Water for injectable preparations	1,700	amps
Furosemide 20 mg	100	amps
Gentamicin 80 mg/2 ml	400	amps
Quinine 600 mg/2 ml	100	amps
DRIPS		
Dextrose 5% in water, 500 ml without set	40	bags
Ringer-lactate solution, 500 ml without set	60	bottles
RENEWABLE EQUIPMENT		
Needle 18 g preparation	1,000	pieces
Needle 21 g IM	1,200	pieces
Needle 25 g subcutaneous	1,000	pieces
Urine test strips (glucose, protein, PH)	100	pieces
Catheter 22 g	200	pieces
Catheter 24 g	200	pieces
Butterfly 21 g	100	pieces
Butterfly 25 g	100	pieces
Tourniquet	4	pieces
Haemoglobin scale 557 tallquist booklet (250)	1	piece
Infusion giving set w/air inlet & needle	100	pieces
Blood lancets	200	pieces
Safety box	6	pieces
Syringe, disposable, 0.5 ml	200	pieces
Syringe, disposable, 2 ml	1,000	pieces
Syringe, disposable, 5 ml	1,000	pieces
Syringe, disposable, 10 ml	400	pieces
Syringe, disposable, 20 ml	600	pieces
Feeding tube ch. 5, disposable	200	pieces
Feeding tube ch. 8, disposable	400	pieces
Feeding tube ch. 10, disposable	100	pieces

LABORATORY RESOURCES

- TB tests (x-ray, culture of sputum, Mantoux)
- Urinalysis
- Stool culture
- Blood culture
- Cerebrospinal fluid culture

IMMUNIZATION RESOURCES

- Measles vaccines, plus other vaccines as per national expanded programme of immunisation (EPI)

FEEDING EQUIPMENT AND SUPPLIES

- Therapeutic food: F75, F100 and RUTF
- CMV in case of no access to F75, F100, or ReSoMal
- Anthropometric equipment: Weighing scales for small children, Salter scale and Uniscale, MUAC tapes, height/length board
- Feeding cups and saucers
- Kitchen equipment for preparation of therapeutic milk: Dietary scales able to weigh to 5 g, whisks, large containers or buckets with lid, ladles, measuring cylinders, 1 and 2 litre jugs

OTHER WARD EQUIPMENT AND SUPPLIES

- Adult beds with mattress
- Bed sheets
- Blankets or wraps
- Insecticide treated nets
- Safe toys
- Heater (if appropriate)
- Clean water supply
- Hygienic equipment for children: wash basins, potties, soap
- Kitchen equipment and food for caregivers
- Hygiene equipment for caregivers
- Method for safe disposal of trash
- Availability of toilets and bathroom

FORMS AND CHECKISTS

Renewable supplies, to keep topped off:

- Inpatient care treatment cards
- Daily feeds chart
- Road to Health card
- Referral form
- Site tally sheet
- Site reporting sheet
- Supervision checklist
- Ordering forms for supplies

JOB AIDS

- National guidelines
- National guidelines for inpatient care – brief version
- Laminated cards
  - Anthropometric measurements: Weight, MUAC, height/length
  - Admission and discharge criteria
  - Appetite test
  - Look-up table for WFH
  - Guidance table target weight for discharge
  - Routine medicines protocol
  - Supplementary medicines protocols
  - Look-up tables for F75
  - Look-up table for F100
  - Look-up tables for RUTF for inpatient care
  - Danger signs in inpatient care
  - Alternative recipes
  - Entry and exit categories
  - Health and nutrition education messages and ENA job aids
  - Toys
- Others to develop and/or obtain:
  - List of outpatient care sites with service days with contacts
  - List of inpatient care sites with contacts
  - Filing system for treatment cards
  - Job descriptions

Annex 38. Checklist of Materials for Outpatient Care[47]

The materials below suggest a start-up quantity for a period of three months, for 10 children being treated in Outpatient Care on average. The needs per site will then be adjusted according to current and projected case load.

Note: Always check the health facility's drug and equipment list to identify items that are needed in addition to their regular supply.

MEDICINES AND DRESSING

Item	Quantity (in units)	Unit
Amoxicillin 250 mg	750	tabs
Cotrimoxazole 120 mg	75	tabs
Mebendazole 100 mg	100	tabs
Paracheck	30	test
ACT	50	treatment dose
Metronidazole 250 mg	50	tabs
Nystatin 100,000 IU	50	tabs
Paracetamol 100 mg	50	tabs
Vitamin A 100 000 IU	50	gel
Vitamin A 200 000 IU	50	gel
Benzyl benzoate 90% 1L	0.5	L
Tetracycline HCl 1% eye ointment 5 g	30	tubes
Witfields ointment	30	tubes
Gentian violet crystals 25 g	1	pot of 25 g
Zinc oxide 10% ointment	1	tube of 100 g
Nystatin ointment 100,000 IU/g	25	tube of 30 g
Betadine solution	2	bottle
Cotton wool	3	Rolls
Examination gloves, medium, disposable	30	pieces
Bags for medicines	50	pieces
Thermometer	10	pieces
Gauze	20	packets
Small bandage	10	pieces
Tape	2	pieces
Normal saline for wounds 100 ml	5	pieces
Dressing scissors	2	pieces

EQUIPMENT

Item	Quantity
File for admission cards	1 per clinic
Markers, pens	2
Clipboards	2
Stapler and box of staples	1
Pens	3
Scissors	1 pair
Notebook	1
Calculator	1
Small clock with second hand	1
Bucket with lid	2
Soap for handwashing	3 bars

[47] Adapted from: Valid International. 2006. *Community-based Therapeutic Care (CTC): A Field Manual*. Oxford, UK: Valid International.

Small bowl	1
Small jug	1
Hand towels	2
Water jug (with lid)	2
Plastic cups	20
Metal spoons	2
Teaspoons or medicine cups	6
Thermometer	5
Salter scale (25 kg) plus weighing pants	1
Uniscale	1
Height board	1
MUAC tape	10
Nail clippers	1

SUPPLIES TO KEEP IN STOCK

Item	Quantity
Bags for carrying RUTF (if required)	50
Drinking water	1 jerry can
Sugar to make 10% sugar solution	500 g
Soap for distribution	20 bars

RUTF

Monthly calculation:

Number of beneficiaries (A)
Monthly sachet consumption per child 80 (or 20 sachets per child per week)
Monthly sachet consumption per outpatient care site: A x 80
Monthly carton consumption: A x 80/150 (or 150 sachets in one carton)

FORMS AND CHECKISTS

Renewable supplies, keep topped off at 30:

- Outpatient care treatment card
- Road to Health card
- Referral form
- Home visit record
- Community outreach report
- Site tally sheet
- Site reporting sheet
- Ordering form for supplies
- Supervision checklist

JOB AIDS

- National guidelines
- National guidelines for outpatient care – brief version
- Laminated cards:
  - Anthropometric measurements: Weight, MUAC, height/length
  - Admission and discharge criteria
  - Look-up table for WFH
  - Guidance table target weight for discharge
  - Appetite test
  - Routine medicines protocol
  - Supplemental medicines protocol
  - Look-up table for RUTF for outpatient care
  - Action protocol
  - Entry and exit categories
  - Health and nutrition education messages and ENA job aids
  - Toys
- Others to develop and/or obtain:
  - List of outpatient care sites with service days
  - List of communities in catchment area, with community leaders with contact
  - List of community outreach workers per community with contact
  - Filing system for treatment cards
  - Job descriptions

Annex 39. Forecasting Nutrition Product Needs

FORECASTING THERAPEUTIC 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 SAM with medical complications (or less than 1 percent of all children with severe acute malnutrition [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 THERAPEUTIC 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 to 40 g/kg bodyweight/day for 60 days. This is equivalent to 15 kg per treatment of a child with SAM, which can be used for planning purposes.

Note that the total requirement of RUTF depends on the treatment's duration and the child's weight at the beginning of treatment.

Monthly calculation of RUTF needs in outpatient care (including loss and rounding):

If number of beneficiaries in outpatient care is A
Monthly sachet consumption per child in outpatient care is 80 (20 sachets per child per week)
Monthly sachet consumption per outpatient care site is A x 80
Monthly carton consumption is A x 80/150 (150 sachets in one carton)

Table 1. Estimated Quantities of Nutritional Products for Management of SAM (sites combined)

Therapeutic food	When needed	Proportion of children with SAM needing the product	Duration of treatment	Quantity needed to treat 1 child (kg)	Quantity needed to treat 100 children with SAM (kg)
F75	Inpatient care (stabilisation phase)	15%	5-10 days	2	200 (x 15%)
F100	Inpatient care (rehabilitation phase)	< 5%	4-6 weeks	12-15	1,500 (x 5%)
RUTF	Outpatient and inpatient care (transition/rehabilitation phase)	> 95%	6-8 weeks	12	1,200 (x 95%)
ReSoMal	Inpatient care	20%		0.084	17 (x 20%)
CMV	Inpatient care	Keep always one pot in reserve as backup			

ESTIMATING CASE LOAD FOR IM-SAM

In the absence of case load figures for services in similar locations (e.g., a similar neighbouring county or state), use the following steps to estimate SAM case load for planning purposes for a 12-month period:

If

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 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 40. Staff Needs, and Roles and Responsibilities

STAFF NEEDS

Community Outreach

Each health facility should have established links with:

- A community outreach coordinator
- A team of community outreach workers (e.g., community health workers [CHWs]and/or volunteers), covering the communities in the health facility's catchment area

Training on community mobilisation, community screening and health and nutrition education should be provided to all health care providers (for orientation, supervision, 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

Appoint in each health facility (and plan rotations if appropriate):

- A qualified health care provider (nurse or medical assistant)
- One assistant (if needed due to caseload)

Inpatient Care[48]

- Qualified clinician, at least one per shift for 24-hour care (nurse, medical assistant, physician, paediatrician)
- Nutrition assistant or assistant cook
- Support staff
- Liaison staff

Notes:

- Recommended staff-to-bed ratio is 1:7.
- Experienced staff who are experts in the treatment of severe acute malnutrition (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 health facility. Loss of experienced staff must be avoided wherever possible. Disruption of ongoing services should not happen.

ROLES AND RESPONSIBILITIES

State and County Health Manager and/or Nutrition Director and/or Focal Point

- Resource mobilisation and allocation (human resources, infrastructure, supplies, transportation, training)
- Planning of services
- Supportive supervision
- Monitoring and reporting (M&R) on services
- Strengthening capacities of health care providers and community outreach workers

State and County Community Outreach Coordinator

- Community assessment and community mobilisation (e.g., community meetings)
- Training of community outreach workers

[48] If outpatient care is functioning well, the inpatient caseload should be low (normally five-to-10 patients per county in inpatient care, depending on the catchment area and prevalence of SAM).

- Supportive supervision of community outreach workers
- M&R on community outreach

Health Care Provider (Medical Officer, Nurse) in Inpatient Care

- Evaluation of child's medical condition and nutrition status (life saving procedures, anthropometry, medical history, physical examination, appetite test)
- Treatment of medical complications
- Treatment of SAM (prescription and administration of medicines and therapeutic food)
- Daily intensive care monitoring of danger signs
- Monitoring progress of children
- Update vaccination status
- Health and nutrition counselling
- Referral to outpatient care after stabilisation
- Referral to tertiary level in case of non-response to treatment
- M&R of service (site tally sheets and monthly reporting)
- Monitoring of equipment and supplies
- Linking with outpatient care services and community outreach workers

Health Care Provider (Medical Assistant, Nurse) in Outpatient Care

- Evaluation of child's medical condition and nutrition status (triage, anthropometry, medical history, physical examination, appetite test)
- Admission
- Referral to inpatient care in case of medical complications upon admission, if developing danger signs during treatment or if non-response to treatment (action protocol)
- Treatment of SAM (prescription of medicines and ready-to-use therapeutic food [RUTF])
- Monitoring progress of children
- Health and nutrition counselling
- Update vaccination status
- Organisation and supervision of outpatient care admission and follow-up sessions
- Discharge of children at end of treatment
- M&R of service (site tally sheets and monthly reporting)
- Monitoring of equipment and supplies
- Linking with community outreach workers
- Linking with other health, nutrition and livelihoods initiatives

Community Outreach Workers (e.g., CHW)

- Community mobilisation
- Health and nutrition education based at health facility
- Community-based health and nutrition education and individual counselling
- Community screening and referral
- Home visits for problem cases
- Training of volunteers

Volunteers

- Community mobilisation
- Community-based health and nutrition education and individual counselling
- Community screening and referral
- Home visits for problem cases

Table 1. Outpatient Care Staff Detailed Responsibilities

Position	Responsibilities
Health care providers ***Note:*** *One health care provider should be responsible for overall supervision and case management at the site.*	Organise outpatient care setup and ensure smooth flow of patients
	Do anthropometry
	Investigate medical history through caregiver interview
	Carry out initial physical examination
	Record admission information on treatment card
	Do appetite test
	Refer children for further medical care/inpatient care if necessary
	Prescribe routine and additional medicines according to protocol
	Prescribe RUTF and advice (key messages)
	Review child's growth and health at each follow-up session
	Identify non-responders for follow-up and further medical investigation
	Identify absentees and defaulters for home visit
	Link mother/caregiver to the nearest outreach worker
	Council caregiver and give health and nutrition education
	Supervise outpatient care staff and allocate duties
	Manage logistics (stock management, transport for referrals, storage and supply of RUTF)
	Maintain good filing system
	Track children between and across services
	Review accuracy of treatment cards at the end of the outpatient care session
	Fill site tally sheets and monthly reports and send to the County health office
	Monitor performance indicators at the health facility level
Community health workers at the health facility and/or in the community	Provide health and nutrition education sessions to caregivers in outpatient care
	Weigh, measure mid-upper arm circumference (MUAC) and check for oedema for all children attending outpatient care sessions
	Distribute RUTF ration
	Discuss cases for home visits with assigned volunteer/outreach worker
	Review home visit checklists and report results to County health office
	Coordinate regular meetings with volunteers/outreach workers to refresh training, share information, discuss performance
	Give feedback to community leaders or committee on performance of SAM services and of volunteers
	Involve influential community groups in case-finding (women's groups, community-based organisations [CBOs], religious groups)
Community outreach worker	Conduct community sensitisation meetings
	Do early case-finding in the community based on presence of bilateral pitting oedema and low MUAC
	Refer cases to the nearest outpatient care site
	Visit absentee or defaulter at home and encourage them to return to outpatient care/inpatient care
	Follow-up with children who are not responding at home; investigate issues and offer advice
	Record home visits and report to outpatient care site on a timely basis
	Give monthly feedback to community leaders or health committees on issues such as number of beneficiaries and cure, default and death rates

Annex 41. List of Job Aids

COMMUNITY OUTREACH

- [Planning for community assessment and outreach, including mapping, list of communities in catchment area, list of outreach workers, list of outpatient care sites]
- IM-SAM guidelines
- Messages for Community Outreach
- Anthropometric measurements
- Health and nutrition education messages
- Job descriptions

Forms: Community assessment questionnaire and tools, referral slip community screening, home visit record, community outreach report, checklist home visits, supportive supervision checklist

INPATIENT CARE

- [Planning for inpatient care, including list of materials and equipment, forecasting of supply and equipment needs, list of outpatient care sites, list of communities in catchment area, list of outreach workers]
- IM-SAM guidelines
- Anthropometric measurements
- Admission and discharge criteria
- Appetite test
- Look up table WFH
- Guidance table for target weight for discharge
- Routine medicines protocol
- Supplementary medicines protocols
- Danger signs in inpatient care
- Look-up tables for F75
- Look-up table for F100
- Look-up tables for RUTF for inpatient care
- Entry and exit categories
- Health and nutrition education messages (see also ENA job aids)
- Toys
- List of sites with catchment area, service day and name community outreach worker
- Job descriptions

Forms: Inpatient care treatment card, daily feeds chart, Road to Health card, referral form, site tally sheet, site reporting sheet, filing system, supportive supervision checklist, ordering forms for supplies

OUTPATIENT CARE

- [Planning for outpatient care, including list of materials and equipment, forecasting of supply needs, list of outpatient care sites, list of communities in catchment area, list of outreach workers]
- IM-SAM guidelines
- Anthropometric measurements
- Admission and discharge criteria
- Appetite test
- Look-up table for WFH
- Routine medicines protocol
- Drug dosages
- Look-up table for RUTF for outpatient care
- Action protocol
- Guidance table target weight for discharge
- Entry and exit categories
- Health and nutrition education messages (see also ENA job aids)

- Toys
- List of sites with catchment area, service day and name community outreach worker
- Job descriptions

Forms: Outpatient care treatment card, Road to Health card, referral form, home visit record, site tally sheet, site reporting sheet, filing system, supportive supervision checklist, ordering forms for supplies

County Health Department/State Ministry of Health (MOH)

- [Planning for outpatient care, including list of materials and equipment, forecasting of supply needs, list of outpatient care sites, list of communities in catchment area, list of outreach workers]
- IM-SAM guidelines
- Packages of job aids and M&R tools
- List of sites with catchment area, service days
- State data repository for the community-based management of SAM
- Report filing system
- Job descriptions

Forms: Community assessment questionnaire and tools, referral slip community screening, home visit record, community outreach report, checklist home visits, inpatient care treatment card, daily feeds chart, outpatient care treatment card, home visit record, Road to Health card, referral form, site tally sheet, site reporting sheet, filing system, supportive supervision checklists, ordering forms for supplies.

Government of Southern Sudan (GOSS) MOH

- IM-SAM guidelines
- National data repository for IM-SAM
- Capacity strengthening strategy and annual workplan for the IM-SAM support team
- Terms of reference (TOR) of technical working groups
- Adapted job descriptions of MOH staff involved in IM-SAM

Appendix. Clinical Management of SAM with Medical Complications in Inpatient Care[49]

All children with severe acute malnutrition (SAM) 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.

HYPOGLYCAEMIA

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 Hypoglycaemia

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/her eyes slightly open.

Management of Hypoglycaemia

- If a child sleeps with his/her eyes slightly open, then he/she should be woken up and given sugar solution to drink.
- Children 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.
- Children losing consciousness should be given 50 ml (or 5-10 ml/kg bodyweight) of sugar water by nasogastric tube (NGT) immediately. When consciousness is regained, give milk feed frequently.
- Unconscious children should be given sugar water by NGT. They should also be given glucose as a single intravenous (IV) injection (approximately 5 ml/kg bodyweight of a sterile 10 percent glucose solution).
- All children 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 child does not respond in this way, then there IS another cause giving rise to the clinical condition that has to be identified and treated.

HYPOTHERMIA

Children with SAM are highly susceptible to hypothermia (rectal temperature below 35.5°C or axillary temperature below 35°C).

Diagnosis of Hypothermia

- Check the temperature of the room (it should be 28-32ºC).
- Check if the child sleeps with his/her caregiver.

[49] Adapted from: Golden, MH, and Y Grellety. 2006. *Guidelines for the management of the severely malnourished*. Draft.

- Check the temperature of the child: rectal temperature < 35.5ºC; axillary temperature < 35ºC.

Management of Hypothermia

- Care should be taken not to bathe children with SAM on admission. Bathing should be done after the child has stabilised. Bathe children during the warmest part of the day using warm water. Drying of children 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 of the room for children with SAM 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.

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 <u>not</u> 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 <u>not</u> 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 refeeding 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 children.

- 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.
  <u>Do NOT use the skin pinch test to diagnose dehydration in malnourished children</u>.
- Eyes of marasmic children are normally sunken[50] without there being any dehydration.
  <u>Do NOT assume that children with SAM with sunken eyes have dehydration</u>.

[50] 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.

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. (See **Box 1**.)

BOX 1. DIAGNOSIS OF DEHYDRATION IN THE MARASMIC CHILD

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 Child

- 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, cool or cold hands and feet (check with back of hand gently), or slow capillary refill (over three seconds), the child 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 child is semiconscious or cannot be aroused.

Note:

- There are other causes of shock in the severely malnourished child. In particular: 1) toxic shock,[51] 2) septic shock, 3) liver failure and 4) cardiogenic shock.
- Treatment of cardiogenic shock or liver failure based on the assumption that the child has shock due to dehydration is very dangerous and the treatment itself may then lead to death.

Treatment of Dehydration in the Marasmic Child

Whenever possible, a dehydrated child with SAM should be rehydrated orally. IV 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.[52] The basin hangs close to the ground and is easily cleaned. The children should be weighed naked. (See **Box 2**.)

Monitoring Rehydration in the Marasmic Child

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

[51] 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.

[52] 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.

- Record the respiration rate

In addition, the following can be recorded on the treatment card if staff has the necessary skill:

- Record the heart sounds (presence or absence of gallop rhythm)
- Record the pulse rate on the treatment card

BOX 2. REHYDRATION IN THE MARASMIC CHILD

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 bodyweight or 5 percent bodyweight).
- Begin rehydration therapy with a volume of 5 ml/kg bodyweight given at 30-minute intervals for the first two hours orally or by NGT or 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 aged 6-24 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 Child

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 child 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 underhydration to overhydration, 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 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.

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 two-to-three hours of starting rehydration. See figure 1.

Treatment of Shock from Dehydration in the Marasmic Child

If there is definite dehydration (e.g., a history of fluid loss, a change in the appearance of the eyes) and the child is semiconscious or unconscious AND has a rapid weak pulse AND has cold hands and feet, the child should be treated with IV 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 of Shock from Dehydration

(See **Figure 2**)

- 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 bodyweight IV over the next hour. Continue until there is weight gain with the infusion. (15 mg/kg bodyweight is 1.5 percent of bodyweight, so the expected weight gain after two 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 bodyweight/hour of ReSoMal. Continue with the protocol (see second bullet 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 1. Rehydration in the Marasmic Child

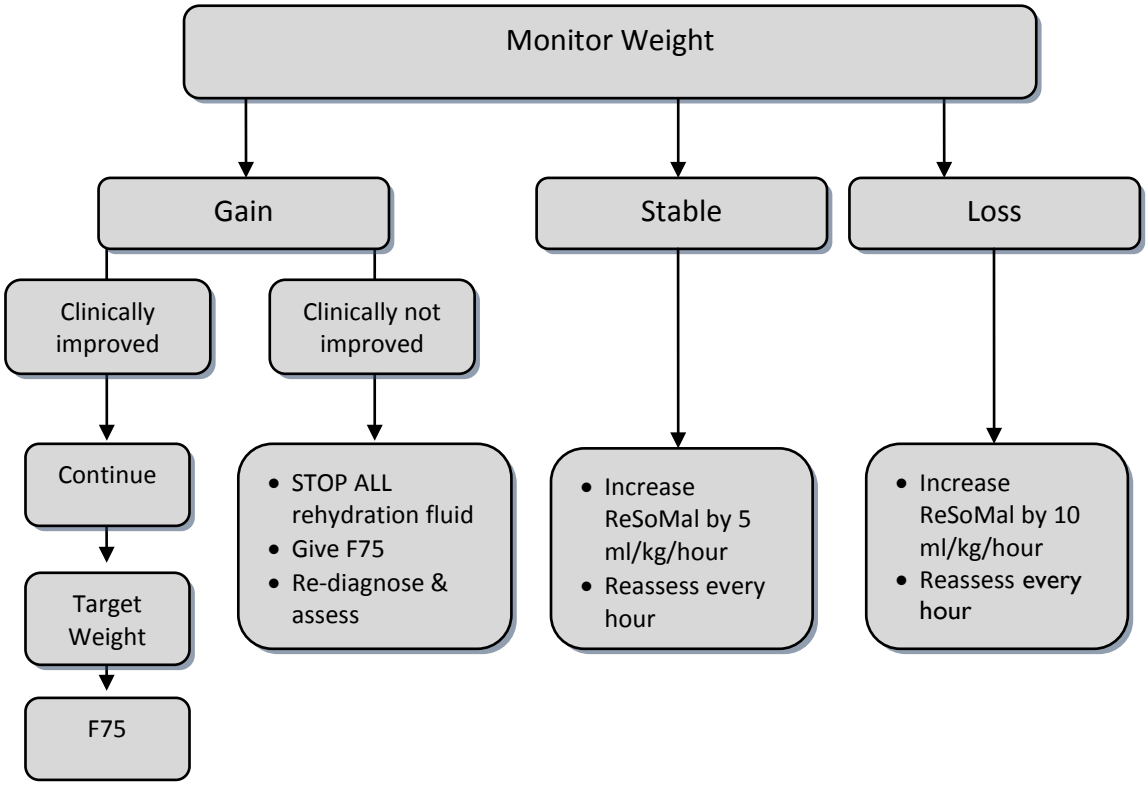
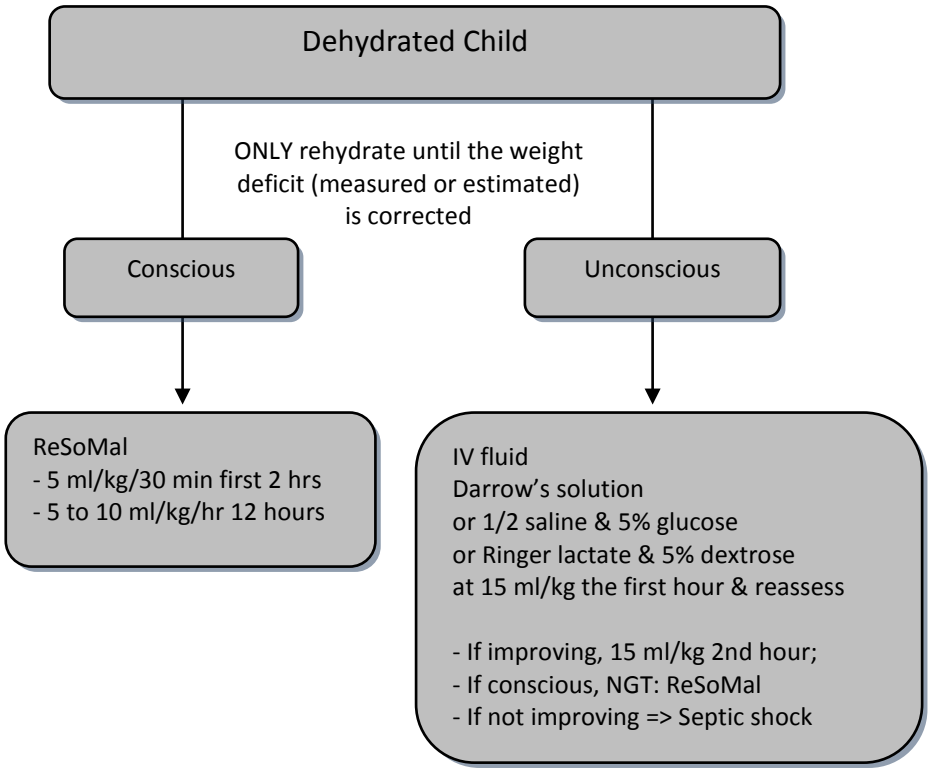


Figure 2. Treatment of Dehydration in the Marasmic Child



Monitoring Rehydration in the Marasmic Child

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 centimetre (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 children 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.

Treatment of Dehydration in the Child 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.

The treatment of hypovolaemia in kwashiorkor is the same as the treatment for *septic shock*.

HYPERNATRAEMIC DEHYDRATION[53]

Hypernatraemic dehydration is common in areas with a low relative humidity (very dry atmosphere), particularly if there is also a high temperature.[54] 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;[55] 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/she has a very low renal-concentrating ability and a high surface area relative to his/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.

[53] 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.
[54] 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.
[55] 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 millimoles per litre (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 bodyweight/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.[56]
- 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,[57] which is equivalent to 2.5 ml/kg bodyweight/hour of plain water. This amount should not be exceeded until the child is awake and alert.

[56] 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/she has a high fever. In one study in Chad (daytime climate of 43˚ C with 15 percent humidity), the turnover of water in malnourished children was one-third of body water per day (250 ml/kg bodyweight/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.

[57] The extracellular fluid volume is about 250 ml/kg bodyweight, 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, 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

- If the child is conscious or semi-conscious and there is no diarrhoea, put down a NGT and start 2.5 ml/kg bodyweight/hour of a 10 percent sugar-water solution.[58] 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 two 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 children 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

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 bodyweight/day, which equals 2.5 ml/kg bodyweight/hour.

[58] 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 child 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 bodyweight over at least three hours – nothing should be given orally during the blood transfusion

OR

- 10 ml/kg bodyweight/hour for two 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 overhydration and heart failure, including:

- Increasing respiratory rate, development of grunting respiration
- Increasing liver size
- Vein engorgement

As soon as the child 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 intramuscular (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 bodyweight 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 IV 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 not be more than 2 to 4 ml/kg bodyweight/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 aged 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[59] (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.

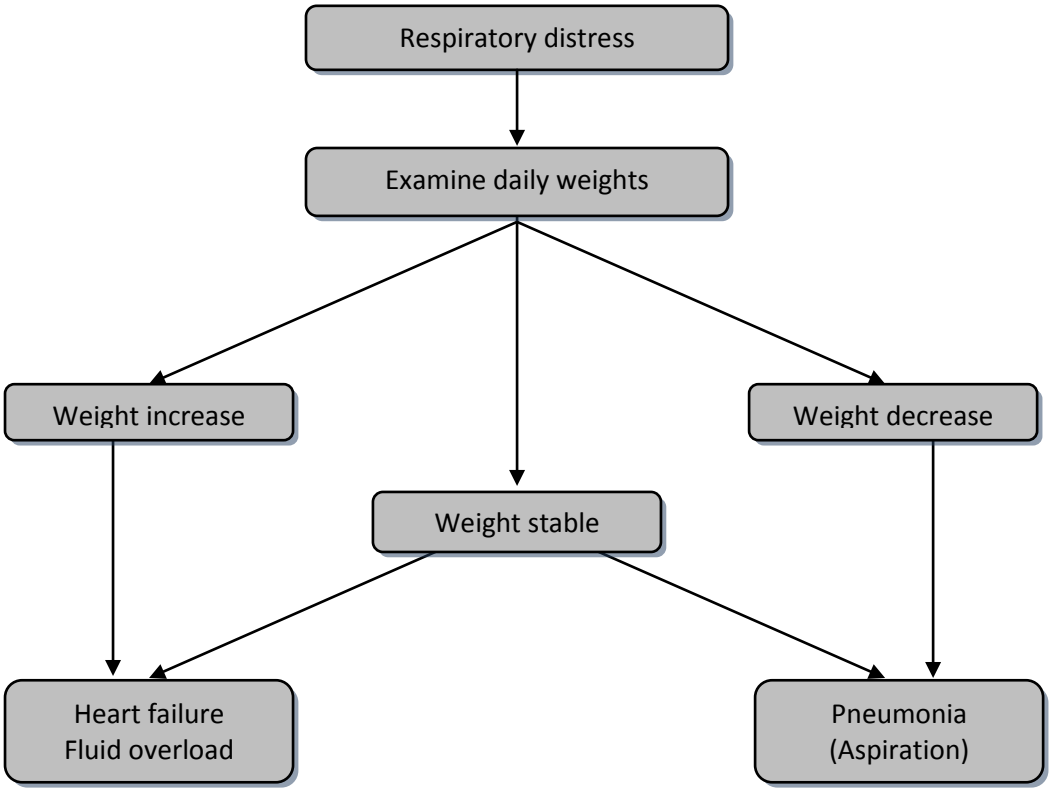
Heart failure is usually preceded by weight gain. As heart failure usually starts after treatment, there is nearly always a record of the weight of the child that was taken before the onset of heart failure. Heart failure and pneumonia are clinically similar and very difficult to tell apart. If there 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.

[59] 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.

As oedema fluid is mobilised (in children with kwashiorkor) 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.

Figure 3. Diagnosis of Heart Failure



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 bodyweight).
- Digoxin can be given in single dose (5 micrograms per kilogram bodyweight [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 child 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

SEVERE ANAEMIA

Diagnosis of Severe Anaemia

A child has very severe anaemia if the Hb concentration is less than 40 grams per litre (g/L) or the packed-cell volume is less than 12 percent in the first 24 hours after admission.

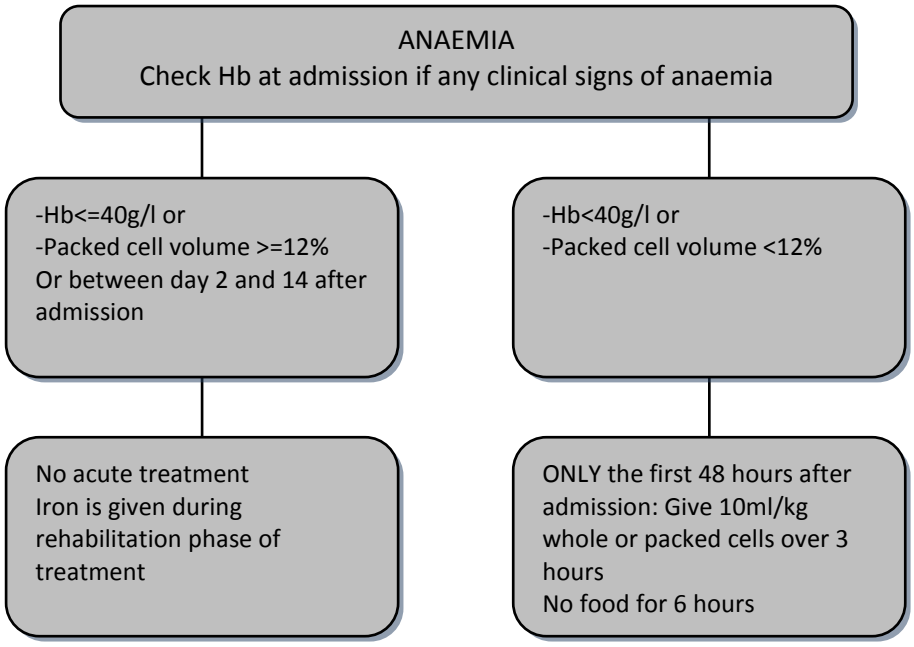
Management of Severe Anaemia

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 child 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 children should never be given a straight transfusion of blood or even packed cells.

Figure 4. Diagnosis of Anaemia



EYE SIGNS OF VITAMIN A DEFICIENCY

Corneal Ulceration[60]

Corneal ulceration is a break in the surface of the cornea (eye's surface). The eye may be extremely red or bleeding, or the child may keep the eye shut. Corneal ulceration is very dangerous. If there is an opening in the cornea, the lens of the eye can extrude (push out) and cause blindness.

- Give vitamin A immediately (see Table 1 for doses). Oral treatment with vitamin A is preferred, except for initial treatment of children with severe anorexia, oedematous malnutrition or septic shock. IM treatment is preferred for these children for the first dose. For oral administration, an oil-based formulation is preferred. For IM treatment, only water-based formulations should be used. The IM dosage is 100,000 IU (water-based) except for children under age 6 months, who should be given 50,000 IU.
- Instill one drop atropine (1 percent) into the affected eye(s) to relax the eye and prevent the lens from pushing out.
- Give chloramphenicol or tetracycline eye drops and bandaging, but this may wait until later in the day. If the child falls asleep with his eyes open, close them gently to protect them. See **Table 2**for a summary on use of eye drops in case of eye signs.

Table 1. Vitamin A Treatment if Eye Signs of Vitamin A Deficiency

Child's age	Oral Vitamin A	Day 1	Day 2	Day 15
< 6 months	50,000 IU	1 dose	1 dose	1 dose
6-12 months	100,000 IU	1 dose	1 dose	1 dose
>12 months	200,000 IU	1 dose	1 dose	1 dose

Eye Infection[61]

- Give chloramphenicol or tetracycline (1 percent) eye drops for treating eye infection or possible eye infection: 1 drop, 4 times daily for 7 days and until eye signs are gone.
- Give atropine (1 percent) eye drops to relax the eye when there is corneal involvement (i.e., corneal clouding or ulceration): 1 drop, 3 times daily.
- In some cases, both types of eye drops may be needed. If both types of drops are needed, they may be given at the same time for convenience. For example, give tetracycline 4 times daily and during 3 of those times also give atropine.
- Use special care and tenderness in examining the eyes and instilling eye drops. To avoid spreading infection, use a separate dropper and bottle for each child. Also be sure to wash hands before and after treating each child.
- Bandage the affected eyes for 3-5 days until inflammation and irritation subside. Use eye pads soaked in 0.9 percent saline solution, held in place with gauze bandages. The damp pads and bandages will cool the soreness, prevent the child from scratching his/her eyes and promote healing. Change pads and bandages whenever drops are given. To bandage the eyes:
    - Wash hands.
    - Soak eye pads with 0.9 percent saline solution.
    - Place a pad over each affected eye.
    - Wrap a gauze bandage over the pads and around the head (not too tight, just tightly enough to hold in place).

Table 2. Summary of Eye Drops Needed for Eye Signs

If the child has:	Then:
Bitot's spots only (no other eye signs)	No eye drops needed
Pus or inflammation	Give chloramphenicol or tetracycline (1%) eye drops
Corneal clouding or Corneal ulceration	Give both: - chloramphenicol or tetracycline (1%) eye drops - atropine (1%) eye drops

[60] WHO. 2002. *Training course on the management of severe malnutrition*. Geneva: WHO.

SAM AND HIV

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 Tuberculosis (TB): Always consider diagnosis of TB[61] in HIV-infected patients. The signs are the same as those in children without HIV infection (see SAM and TB, below).
- 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 routine antibiotics for treatment of SAM.
- 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
- Infants with SAM of HIV-positive mothers are treated for SAM according to the national guidance on the prevention of mother to child transmission (PMTCT).
- 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 IM-SAM
- 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 IM-SAM

Until such a time where the evidence base is established, it is advised to treat SAM in HIV-infected patients with the standard treatment protocol for SAM, combined with a prophylactic treatment (Cotrimoxazole) and start antiretroviral therapy (ART) after initial recovery of the nutritional status.

SAM AND TUBERCULOSIS[61]

The diagnosis of TB in children relies on careful and thorough assessment of all the evidence derived from a careful history, clinical examination and relevant investigations. Most children with TB have pulmonary TB. The decision to treat a child should be carefully considered, and once such a decision is made, the child should be treated with a full course of therapy.

TB in children with SAM is often missed and/or over diagnosed. The presence of three or more of the following key features should strongly suggest a diagnosis of TB in children:

1. Careful history:
    a. Contact, and
    b. Chronic symptoms suggestive of TB: e.g., prolonged fever (+ 2 weeks), chronic

[61] WHO. 2006. *Guidance for national tuberculosis programmes on the management of tuberculosis in children.* Geneva: WHO.

cough (non-remitting for 2-3 weeks), weight loss or failure to thrive (i.e., if SAM no response to treatment)

2. Clinical examination:
    a. Physical signs highly suggestive of extrapulmonary TB: e.g., gibbus, especially of recent onset, or non-painful enlarged cervical lymphadenopathy with fistula formation, and
    b. Physical signs requiring investigation to exclude extrapulmonary TB: e.g.,, meningitis not responding to antibiotic treatment, distended abdomen with ascitis
3. A positive tuberculin skin test (Mantoux method): i.e., reading after 48 hours with ≥ 5 mm diameter of induration in high risk children (HIV infected and/or with SAM) and ≥ 10 mm in all other children
4. Chest X-ray suggestive of TB: e.g., persistent opacification in the lung together with enlarged hilar or subcarinal lymph glands

For TB treatment, consult the national treatment protocol for TB in children.

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 children 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 children 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 child 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 possible. Ivermectin or other drugs that are dangerous if they cross the blood-brain barrier should never be given to children with bilateral pitting oedema.

References

Action Contre la Faim (ACF). [no date] Kits for opening new therapeutic care programmes.

Ashworth, Ann. 2001. Treatment of severe malnutrition. *Journal of Pediatric Gastroenterology and Nutrition* 32(5): 516-8. www.jpgn.org.

Ashworth, A, S Khanum, A Jackson, and C Schofield. 2003. *Guidelines for the inpatient treatment of severely malnourished children*. Geneva: WHO. http://www.who.int/nutrition/publications/severemalnutrition/guide_inpatient_text.pdf.

Black, RE, LH Allen, ZA Bhutta, LE Caulfield, M de Onis, M Ezzati, C Mathers, and J Rivera. 2008. Maternal and child undernutrition: Global and regional exposures and health consequences. *The Lancet* 371(9608): 243-260.

Collins, Steve. 2004. *Community-based therapeutic care: A new paradigm for selective feeding in nutritional crisis*. HPN Network Paper 48. London, UK: HPN at ODI. http://www.odihpn.org/report.asp?id=2685.

Concern Worldwide, FANTA, UNICEF and Valid International. 2008. *Training guide for community-based management of acute malnutrition (CMAM)*. Washington, DC: Food and Nutrition Technical Assistance Project (FANTA) at AED. http://fantaproject.org/cmam/training.shtml.

De Onis, M, AW Onyango, E Borghi, A Siyam, C Nishida, and J Siekmann. 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.

FAO and WFP. *Crop and Food Supply Assessment Mission to Sudan, 1 February 2007*. Rome: FAO and WFP.

FANTA. 2003. *Anthropometric indicators measurement guide*. Washington, DC: FANTA at AED. http://www.fantaproject.org/publications/anthropom.shtml

Ghana Sustainable Change Project. 2008. *Priority Nutrition Messages*. Accra, Ghana: AED.

Golden, MH. 1996. Severe malnutrition. *Oxford Textbook of Medicine*. 3rd edition. pp 1278-96. Oxford, UK: Oxford University Press.
Note: later editions of the *Oxford Textbook of Medicine* do not include this chapter.

Golden, MH, and Y Grellety. 2006. *Guidelines for the management of the severely malnourished*. Draft.

Government of Southern Sudan (GOSS) Ministry of Health (MOH). 2007. *Health Policy 2007-2011*. Juba, Southern Sudan: GOSS.

---. 2009. *National policy for health promotion*. Draft. Juba, Southern Sudan: GOSS.

---. 2009. *Basic package of health and nutrition services for Southern Sudan*. Draft. Juba, Southern Sudan: GOSS.

GOSS MOH, Central Bureau of Statistics (BCS) and Southern Sudan Commission for Census, Statistics and Evaluation (SSCCSE). 2007. *Sudan Household Health Survey (SHHS) 2006*. Juba, Southern Sudan: SSCCSE. http://www.bsf-south-sudan.org/documents/shhs.

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. www.thelancet.com.

IFE Core Group. 2009. *Integration of IYCF support into CMAM*. Facilitator's Guide and Handouts. Oxford, UK: ENN. http://fex.ennonline.net/37/integration.aspx

---. 2007. *Infant and Young Child Feeding in Emergencies: Operational Guidance for Emergency Relief Staff and Programme Managers.* Version 2.1. Oxford, UK: ENN. http://www.ennonline.net/pool/files/ife/ops-guidance-2-1-english-010307.pdf.

Pelletier, DL, and EA Frongillo. 2003. Changes in child survival are strongly associated with changes in malnutrition in developing countries. *Journal of Nutrition* 133: 107-19. http://jn.nutrition.org/cgi/content/abstract/133/1/107

Teaching-Aids at Low Cost (TALC). 2000. Topics in international health. London, UK: The Wellcome Trust. www.talcuk.org/cd-roms/topics-in-international-health-nutrition.htm.

The Sphere Project. 2010. *Humanitarian Charter and Minimum Standards in Disaster Response*. Draft. Geneva: The Sphere Project.

---. 2004. *Humanitarian Charter and Minimum Standards in Disaster Response*. Oxford, UK: Oxfam. http://www.sphereproject.org/component/option,com_docman/task,cat_view/gid,70/Itemid,203

United Nations Children's Fund (UNICEF). 2009. Women and children in Sudan: health and nutrition. Fact Sheet. http://www.unicef.org/sudan/UNICEF_Sudan_health_and_nutrition_fact_sheet_2009.pdf.

United Nations Population Fund (UNFPA). 2006. Briefing note on Southern Sudan. Juba, Southern Sudan. http://sudan.unfpa.org/docs/UNFPA%20Southern%20Sudan.pdf.

Valid International. 2006. *Community-based therapeutic care: A Field Manual.* First edition. Oxford, UK: Valid International. http://www.fantaproject.org/ctc/manual2006.shtml.

WHO. (Pending). *Guideline on community-based management of severe acute malnutrition*. (Draft)

---. 2009. *Rapid advice: Revised WHO principles and recommendations on infant feeding in the context of HIV*. Geneva: WHO. http://www.who.int/child_adolescent_health/documents/9789241598873/en/index.html.

---. 2007. WHO reference 2007, Growth reference data for 5-19 years. Geneva: WHO. http://www.who.int/growthref/en/.

---. 2006, *Guidance for national tuberculosis programmes on the management of tuberculosis in children.* Geneva: WHO. http://whqlibdoc.who.int/hq/2006/WHO_HTM_TB_2006.371_eng.pdf

---. 2006. *Management of the child with a serious infection or severe malnutrition: Guidelines for care at the first-referral level in developing countries*. Geneva: WHO. http://www.who.int/child_adolescent_health/documents/fch_cah_00_1/en/

---. 2006. *Home-Modified Animal Milk for Replacement Feeding: Is It Feasible and safe? Consultation background document*. Geneva: WHO. http://whqlibdoc.who.int/HQ/2006/a91064.pdf.

---. 2004. *Guiding principles for feeding infants and young children in emergencies.* Geneva: WHO. http://whqlibdoc.who.int/hq/2004/9241546069.pdf.

---. 2002. *Training course on the management of severe malnutrition*. Geneva: WHO. http://www.who.int/nutrition/publications/malnutrition/en/index.html

---. 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. http://whqlibdoc.who.int/hq/2000/WHO_FCH_CAH_00.1.pdf.

---. 1999. *Management of severe malnutrition: A manual for physicians and other senior health workers.* Geneva: WHO. http://www.who.int/nutrition/publications/severemalnutrition/9241545119/en/.

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. http://www.who.int/nutrition/publications/severemalnutrition/9789241598163/en/index.html

---. 2003. *Global Strategy for Infant and Young Child Feeding*. Geneva: WHO. http://www.who.int/nutrition/publications/infantfeeding/9241562218/en/index.html.

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. http://www.who.int/nutrition/publications/severemalnutrition/978-92-806-4147-9/en/index.html

---. 2006. Informal consultation on the community-based management of severe malnutrition in children. *Food and Nutrition Bulletin* 27(3): Supplement. Geneva: WHO. http://www.fantaproject.org/publications/fnb27.shtml.