

Ministry of Health Republic of South Sudan



GUIDELINES FOR INPATIENT MANAGEMENT OF SEVERE ACUTE MALNUTRITION

JANUARY 2018

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Acknowledgement

This Severe Acute Malnutrition (SAM) Inpatient Guidelines and training manuals have come out as result of efforts by many stakeholders and partners who have come together jointly to review the different components of these guideline and training packages for management of SAM with medical complications. This process has taken several months and involved review of various materials and experiences in management of SAM with medical complications in stabilization centres and hospitals in South Sudan by MoH, implementing partners and elsewhere globally in child health care, and a number of consultative meetings, workshops by the CMAM Technical Working Group and medical practitioners in Juba, and one to one in depth discussions.

All this process would not have been possible without the supports and direct involvement of a number of individuals and organizations. The Ministry of Health (MoH) is therefore, deeply indebted to the following who have made this process possible: WHO for providing technical support for development of the guideline and the training packages and for allowing adaption by MoH and other partners. Alsabab Children Hospital, Juba Teaching Hospital, UNICEF, WFP Save the children International (SCI), Action Against Hunger, Nutrition Cluster, International Medical Corps (IMC) and Ministry of health Nutrition Department, for their dedications in the reviews. In addition to the organizations and partners listed above, sincere appreciation to Dr. Elizabeth Kiboneka, the consultant who guided the process and has been involved in drafting, reviewing and editing these guidelines and training packages.

It is also a message of congratulation for all of us. We will ensure implementation and dissemination of these documents in a coordinated and collaborative manner in order to improve the management of SAM with medical complications which will result in reduction of the burden of malnutrition South Sudan.


for Dr. Makur M. Kariom 07/03/2018

Undersecretary,

MINISTRY OF HEALTH, RSS

Foreword

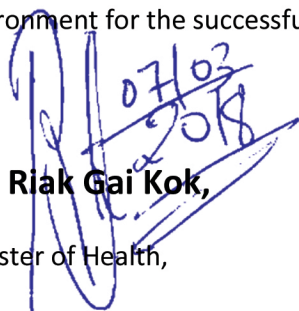
South Sudan has made some progress in improving Child Health Indicators but there still remains a huge gap as we usher in the Sustainable Development Goals (SDGs). Child health is a priority for the Government of South Sudan. Both the Health Policy and Basic Package for Health and Nutrition Services (BPHN) highly prioritize CMAM approach. With infant Mortality Rate 75/1000 Live Birth and Child Mortality Rate 105/1000 Live Birth, the country remains among the countries with the highest child mortality globally. With such a situation, the country requires a comprehensively focused and prioritized set of high impact interventions for accelerating reduction in child morbidity and mortality due malnutrition.

This Severe Acute Malnutrition Inpatient Guidelines and Training Packages come at an opportune time. A time when we know what works in saving lives of children and at a time when there is renewed energy and focus on Community Management of Acute Malnutrition (CMAM) both globally and in South Sudan. The guidelines and training packages are aligned to national documents such as the Health Strategic Plan, Health Policy as well as global commitments including the SDGs and the SUN (scaling up nutrition) movement.

These guidelines and training packages will assist, programme managers, state officials, county level officials as well as health workers, communities, NGOs and all other stakeholders on how to manage SAM with medical complications in hospitals and stabilization centres and tailor their training in a uniform manner in efforts to reduce under five morbidity and mortality

I wish therefore, to recommend these documents to all and it is my conviction that if they are followed and used strictly, the performance of our health care workers will considerably improve and the entire health sector, performance will equally be transformed.

As Ministry of Health, we commit to the stewardship, the leadership and to providing an enabling environment for the successful implementation of these SAM Inpatient guidelines and Training Packages.



Dr. Riak Gai Kok,

Minister of Health,

Ministry of Health, RSS

ACRONYMS AND ABBREVIATIONS

ACF	Action Contre la Faim (Action Against Hunger)
<	Less than
>	Greater than
µg	Microgram(s)
ACT	Artemisinin- based Combination Therapy
AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ART	Anti-Retroviral Therapy
AS	Artesunate
BHC	Boma Health Committee
BHT	Boma Health Team
BMI	Body Mass Index
BPHNS	Basic Package of Health and Nutrition Services
CBO	Community Based Organization
CCP	Critical Care Pathway
CHWs	Community Health Workers
CMAM	Community Management of Acute Malnutrition
CMAM TWG	Community Management of Acute Malnutrition Technical Working Group
CMV	Combined Mineral Vitamin Mix
CPD	Continuous Professional Development
EPI	Expanded Programme on Immunization
F100	Formula 100 therapeutic milk
F75	Formula 75 therapeutic milk
FAO	Food and Agriculture Organization
GOSS	Government of South Sudan
Hb	Haemoglobin
HFA	Height for Age
HHPs	Home Health Promoters
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
iCCM	Integrated Community Case Management
IDA	Iron Deficiency Anaemia
IDDs	Iodine Deficiency Disorders
IEC	Information, Education and Communication
IM	Intramuscular
IMNCI	Integrated Management of Newborn and Common Childhood Illnesses
ITP	Inpatient Therapeutic Programme
IU	International Unit
IV	Intravenous
IYCF	Infant and Young Child Feeding
kcal	Kilocalories
kg	kilograms
MAM	Moderate Acute Malnutrition
mg	Milligram
MIYCN	Maternal, Infant and Young Child Nutrition

ml	Millilitres
mm	Millimetres
mmol	Millimol
MOH	Ministry of Health
mosmol	Milliosmol(s)
MUAC	Mid Upper Arm Circumference
NGO	National non-Governmental Organization
NGT	Nasogastric tube
NHP	Nutrition Health Policy
OPD	Out Patient Department
ORS	Oral Rehydration Solution
ORT	Oral Rehydration therapy
OTP	Outpatient Therapeutic Programme
PCV	Packed Cell Volume
PHCC	Primary Health Care Centre
PHCU	Primary Health Care Unit
PLW	Pregnant and Lactating Women with infant less than 6 months of age
ReSoMal	Rehydration Solution for Malnourished
RUTF	Ready to Use Therapeutic Food
SAM	Severe Acute Malnutrition
SC	Stabilization Centre
SCI	Save the Children International
SD	Standard Deviation
SFP	Supplementary Feeding Programme
SMART	Standardized Monitoring and Assessment of Relief and Transitions
TB	Tuberculosis
ThG	Thematic Group
TSFP	Targeted Supplementary Food Programme
UNICEF	United Nations Children's Fund
US	United States
VAD	Vitamin A Deficiency
WFA	Weight For Age
WFH/L	Weight-for-height/ length
WFP	World Food Programme
WHO	World Health Organisation

Glossary of terms

Term	Definition
Acute malnutrition/ wasting	is defined by Mid-Upper Arm Circumference [MUAC] below 12.5 Cm or Weight-for-Height/Length [WFH/L]) below -2 WHZ score or the presence of bilateral pitting oedema. It is caused by a decrease in food consumption and/or illness resulting in sudden weight loss and /or bilateral pitting oedema.
Anthropometry	Refers to the use of body measurements to assess nutritional status in an individual. Body measurements include: mid upper arm circumference (MUAC), weight, and height/length. Though age, sex and bilateral pitting oedema (fluid retention) are not body measurements, they are important parameters in taking anthropometry.
Bilateral pitting Oedema	Swelling from excess fluid in tissues, it must appear on both feet, and leaves a pit on application of gentle pressure (with the thumb).
Cases with acute malnutrition	Any individual, whether child or adult that is undergoing treatment for acute malnutrition
Community Health Workers (CHWs)	These are cadres based at the PHCUs and PHCCs. They support both static and outreach OTP/TSFP services and are responsible for supervising activities of Home Health Promoters (HHPs), among other duties. Depending on context, CHWs may also support BSFP services.
Community Management of Acute Malnutrition (CMAM)	A community- facility linked approach for the treatment and rehabilitation of cases with severe and moderate acute malnutrition
Community Mobilization	Is defined as a capacity building process through which individuals, groups or organizations plan, carry out and evaluate activities on a participatory and sustainable basis to improve their health and other needs, either on their own initiative or stimulated by others (Howard G. and Snetro, 2004). As applied to nutrition services community mobilization is a term used to cover a range of activities that help nutrition program implementers (i.e. nutritionists, managers and health workers) build a relationship with the community and foster the uptake/use of nutrition services.
Community sensitization	Refers to a way to reach out and educate the people in the community on the causes, signs and symptoms of malnutrition, how to seek treatment opportunities; get involved in nutrition programmes for improved health and nutrition status.
Cured	A case that meets discharge criteria for “Cured” as defined for the Inpatient Therapeutic Programme (ITP) component
Defaulter	A case with acute malnutrition who misses 2 days while admitted in ITP/SC

Died	A case with acute malnutrition who dies while in ITP/SC
Emergency	Extraordinary, urgent and sudden situation that require immediate intervention to avert stress, morbidity and death.
Emergency nutrition interventions	Programmes set-up to manage malnutrition as well as provide food to a population that has been suddenly affected and does not have access to food.
Evaluation	A process that objectively determines the relevance, effectiveness, efficiency and impact of activities in light of specified objectives.
Global acute malnutrition (GAM)	A measurement of the nutritional status of a population that is often used in protracted refugee situations. GAM is an aggregate of moderate and severe acute malnutrition (i.e. the total of Severe Acute Malnutrition (SAM) cases + MAM cases) and is one of the basic indicators for assessing the severity of a humanitarian crisis.
Hypoglycemia	Low blood sugar (<3mmol/l)
Hypothermia	Low body temperature (<35.50° -axillary or <35.0° -rectal)
Ingredient	Is a substance that forms part of a mixture(in a general sense)
Inpatient care	- Health facility based care for patients with SAM with medical complications (e.g. ITP/SC) - Also health facility based care for MAM with medical complications (only for the treatment of the specific illness).
In-patients	Patients admitted to an in-patient facility for a specific period of time while on treatment.
Malnutrition	Is a condition that develops when the body does not get the right amount of the nutrients it needs to maintain healthy tissues and organ function. Malnutrition encompasses syndromes of over and under-nutrition.
MAM with medical complication	MAM with medical complications and/or with no appetite (determined from history taking) or with other Integrated Management of Newborn and Common Childhood Illnesses (IMNCI) danger signs requiring inpatient care
Mean	Average
Micronutrient deficiencies	Refer to forms of malnutrition due to lack of essential micronutrients (minerals and vitamins) required by the body for proper growth, development and performance of other body functions. The most common micronutrient deficiencies include Iron Deficiency Anemia (IDA), Vitamin A Deficiency (VAD) and Iodine Deficiency Disorders (IDDs).
Moderate Acute Malnutrition (MAM)	Description of under nutrition (wasting) level. For children 6-59 months, it encompasses children ≥ -3 Z- scores and < -2 Z- scores

	(WFH/L) or MUAC $\geq 11.5\text{cm}$ and $< 12.5\text{cm}$. Children with MAM have increased morbidity and mortality risk compared to well-nourished children.										
Monitoring	Periodic oversight of implementation of an activity which seeks to establish the extent to which inputs, work schedules and targeted outputs are proceeding according to plan.										
Mother/caregiver	Mother or guardian with responsibility for care for the child attending any nutrition programme.										
MUAC	MUAC stands for Mid Upper Arm Circumference. It is highly sensitive and specific indicator used to measure acute malnutrition and to determine SAM and MAM cases for admission to treatment. Very low MAUC ($< 11.5\text{cm}$ for children 6-59 months) is considered a high mortality risk.										
Non Respondent	Case with acute malnutrition who has not reached discharge criteria after a pre-defined length of time despite all investigations and transfer options.										
Nutrition	A broad term that refers to the processes involved in ingestion (taking in of food), digestion and utilization of food by the body for growth and development, reproduction, physical activity and maintaining health.										
Nutrition Education	Process of imparting knowledge, designed to increase knowledge/awareness, change attitudes and promote positive behaviors and practices for adequate health and nutrition of individuals and communities.										
Nutrition Emergency	is classified based on the severity of the emergency using GAM levels in the population as an indicator of stress as follows <table border="1"> <thead> <tr> <th>Severity</th><th>Prevalence of GAM</th></tr> </thead> <tbody> <tr> <td>Acceptable</td><td>$< 5\%$</td></tr> <tr> <td>Poor</td><td>5-9%</td></tr> <tr> <td>Serious</td><td>10-14%</td></tr> <tr> <td>Critical</td><td>$\geq 15\%$</td></tr> </tbody> </table> Source: WHO (2003)²	Severity	Prevalence of GAM	Acceptable	$< 5\%$	Poor	5-9%	Serious	10-14%	Critical	$\geq 15\%$
Severity	Prevalence of GAM										
Acceptable	$< 5\%$										
Poor	5-9%										
Serious	10-14%										
Critical	$\geq 15\%$										
Nutritional index	Compares an individual's body measurement with expected values. Nutritional indices are calculated by comparing an individual's measurements with that of a reference population. The nutritional indices commonly calculated for young children are: • Mid upper arm circumference (MUAC) - a measure of wasting or acute malnutrition;										

² WHO (2003): Management of Nutrition in Emergencies

	• Weight for height - also a measure of wasting or acute malnutrition; • Weight for Age - a measure of underweight or combination of wasting and stunting combined; • Height for Age - a measure of stunting or chronic malnutrition.
Nutritional status	Refers to a state of a person's health in terms of nutrients in the body. It is a measurement of the extent to which individual physiological needs for nutrients are met.
Oedema	Refers to the retention of fluid and sodium in the extra-cellular spaces
Out-patient Therapeutic Programme (OTP)	A nutrition program designed for nutritional treatment and medical care for SAM without medical complications at an outpatient care site.
Out-patients	Cases with acute malnutrition admitted to an outpatient care facility for treatment of acute malnutrition without medical complications. The treatment is managed at home, with regular follow up at an OTP/TSFP at a health facility or at a designated site in the community.
Ready to Use Therapeutic Food (RUTF)	Prepackaged energy and nutrient dense product designed for treatment for SAM without medical complications. Substitute to F100 (one packet of 92g =500kcal).
Recipe	Is a set of instructions for preparing a particular dish, including a list of ingredients required
Referral for Medical investigation (medical transfer)	Cases with acute malnutrition who are referred from CMAM programme to another health facility for medical investigation and care (not in any nutrition programme)
SAM with medical complications	SAM with medical complications and/or with no appetite (failed appetite test for RUTF) or with other IMNCI danger signs requiring inpatient care
Severe Acute Malnutrition (SAM)	Description of under nutrition level. For children 6-59 months, it encompasses children falling less than -3 Z- scores (WFH/L) or MUAC <11.5cm or presence of bilateral pitting oedema. Children with SAM have very high morbidity and mortality risks compared to well-nourished children.
Severe Anemia	Low hemoglobin levels < 4.0 g/dl (40g/l) or packed cell volume (PCV)<12%
Shock	A dangerous condition presenting with severe weakness, lethargy, or unconsciousness, cold extremities, weak or fast pulse
Inpatient Therapeutic Programme (ITP)	A nutrition program designed for provision of health facility based (inpatient) nutritional treatment and medical care for cases with SAM with medical complications and/or no appetite
Standard deviation (SD) or Z-score	The deviation of the anthropometric value (weight, height etc.) for an individual person from the median value of the reference population.

Stunting (or Chronic malnutrition)	Refers to a low height/length-for-age (H/LFA) of below -2z-score. It is a result of prolonged or repeated episodes of under-nutrition starting in early childhood, and leading to health problems later in life even if the individual later receives adequate nutrition. Other contributors to stunting include chronic or recurrent infections, sometimes in combination with intestinal parasites, low birth weight resulting from maternal factors (such as poor nutrition before and during pregnancy and lactation, short stature, infection ³) and in rare cases, psychosocial stress without nutritional deficiencies ⁴ .
Transfer	Cases with acute malnutrition who are transferred within the same CMAM components (but different sites) or between different components to continue treatment
Triage	Refers to the selection/ sorting of patients into priority groups depending on needs and resources available, with the aim of fast tracking treatment and increasing survival rates
Under nutrition	Is a consequence of a deficiency in energy and nutrient intake and/or absorption in the body. The different forms of under-nutrition that can appear isolated or in combination are chronic malnutrition (or stunting), underweight, acute malnutrition (wasting and/or bilateral pitting oedema) and micronutrient deficiencies. These forms can be moderate or severe. In the context of these guidelines, the term malnutrition relates exclusively to under-nutrition.
Underweight	Is defined by a low weight-for-age (WFA) of z-score below -2 SDs of the median (WHO standards). It is a composite form of under nutrition including elements of stunting and wasting. This indicator is commonly used in growth monitoring and promotion.

³ WHO (2013): WHO conceptual framework: Childhood stunting context, causes, and consequences

⁴ Skuse, D., Albanese, A., Stanhope, R., et al. A new stress-related syndrome of growth failure and hyperphagia in children, associated with reversibility of growth-hormone insufficiency. *The Lancet* (August 10, 1996) 348, 9024: 353–58.

CHAPTER 1

INTRODUCTION

1.0 Background

In-patient therapeutic programme (ITP) is an important component of the overall integrated approach of managing acute malnutrition in the country. These guidelines provide practical and easy-to-follow guidance based on current evidence and best practices in the integrated management of SAM. The guidelines focus on management of SAM in children 6-59 months with medical complications in inpatient care. Infants under 6 months with SAM follow a specific treatment protocol. A separate section 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, and adults over 18 years) and elderly in context of HIV/AIDS, Tuberculosis, Kala azar or malignancies. The guidelines will be used alongside those for Community Management of Acute Malnutrition (CMAM).

1.1 Introduction

Malnutrition comprises both under and over nutrition. 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 indicators⁵ and clinical signs.

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. 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

- **Non Oedematous malnutrition**, characterized by severe wasting of fat and muscle, which the body breaks down for energy, leaving 'skin and bones'
- **Oedematous malnutrition**, characterized essentially by bilateral pitting oedema (usually starting in the feet and legs) and may spread all over the body if not treated, accompanied by a skin rash and/or changes in hair colour (greyish or reddish)

1.2 Burden of Acute malnutrition at Global level

Malnutrition is one of the most important global child health problems and accounts for 11% of the global burden of disease⁶. It is estimated that undernutrition contributes to 45% (3.1 million) of the

⁵ Nutrition indicators are an interpretation of nutrition indices based on cut-off points. They measure the clinical phenomena of undernutrition and are used for making a judgment or assessment

⁶ Lancet Series 2013

deaths in children less than 5 years of age. The World Health Organization (WHO) estimated that 27% of children less than the age of 5 years from developing countries are malnourished and about 3.5% suffered from severe malnutrition. Severe acute malnutrition (SAM) afflicts an estimated 8.1 million under-five children causing nearly 0.6 million deaths. Globally, it is estimated that there are nearly 20 million children who are severely acutely malnourished. Most of them live in south Asia and in sub-Saharan Africa. Using existing studies of case fatality rates in several countries, WHO has extrapolated mortality rates of children suffering from severe acute malnutrition. The mortality rates reflect a 5–20 times higher risk of death compared to well-nourished children. Severe acute malnutrition can be a direct cause of child death, or it can act as an indirect cause by dramatically increasing the case fatality rate in children suffering from such common childhood illnesses as diarrhea and pneumonia. Current estimates suggest that about 1 million children die every year from severe acute malnutrition.³

Some severely malnourished children die at home, but even when hospital care is provided, case fatality rates may be high. Appropriate case management in health facilities, community referral systems and follow-up care following discharge, could save the lives of many children and dramatically lower case fatality rates.

1.3 Burden of Acute malnutrition in South Sudan

Child undernutrition is a significant public health problem in South Sudan. Among children aged 6-59 months, 31% are stunted, 28% are underweight, and nearly 23% are acutely malnourished of which 13% are estimated to suffer moderate acute malnourishment and 10% severe acute malnourishment⁷. Global acute malnutrition (GAM) rates vary seasonally and substantially across states; with peaks of up to 30 percent in some locations. Overall, South Sudan's nutrition situation is worrisome in the Greater Upper Nile, Northern Bahr el Ghazal and Warrap states with GAM persistently above the emergency threshold. Though data on micronutrient deficiencies is scanty, Vitamin A supplementation among children 6-59 months stood at only 2.6% in 2010, showing low uptake (SHHS, 2010).

Management of Severe Acute Malnutrition (SAM) and Moderate Acute Malnutrition (MAM) was previously guided through the Interim Guidelines for Integrated Management of Severe Acute Malnutrition (IM-SAM) (2009), and the Draft Guidelines for Management of MAM (2011). These guidelines provided a framework for early identification, referral, treatment, and prevention of acute malnutrition. Over the years, there have been various developments and lessons learnt through their use, namely:

- Both guidelines focused mainly on treatment of acute malnutrition in children under-five years, pregnant and lactating women with infants less than 6 months of age. Therefore there is a need to enhance the management of acute malnutrition in the context of HIV/AIDS, tuberculosis (TB), Kala Azar and other chronic conditions/illness.
- The implementation strategy's limited linkage with the primary health care system, led to limited linkage with other treatment and prevention services at the health facility level, such as the Integrated Management of Newborn and Common Childhood Illnesses (IMNCI), Integrated Community Case Management (iCCM), Expanded Programme on Immunization (EPI), Antenatal Care (ANC)/reproductive health, HIV and TB, among others.

⁷ Republic of South Sudan: The South Sudan House hold Survey (2010)

- Within the context of South Sudan these guidelines require to be aligned and adhere to the latest World Health Organization (WHO) and other global evidence based recommendations and best practices.

Cognizant of the above, The Ministry of Health (MOH) through the Department of Nutrition developed these comprehensive and standardized guidelines for in patient management of severe acute malnutrition alongside the CMAM guidelines. These guidelines were developed in collaboration with partners, through a consultative process involving international and national technical experts.

1.4 Purpose

The purpose of these guidelines is to provide a standardized model as an operational reference for inpatient management of severe acute malnutrition across all levels of the health care system, focusing on the following groups:

- Children under five years
- Older age group including children ≥ 5 years, adolescents, pregnant and lactating women (PLW), adults and elderly.

1.5 Specific objectives

These guidelines aim to:

- Provide a framework for treatment of severe acute malnutrition with medical complications there by reducing the associated mortality and morbidity among vulnerable groups.
- Build capacity of the MOH at all levels (health and nutrition staff at facilities), partner staff and other professionals in treatment of severe acute malnutrition with medical complications.
- Promote a multi- sectoral approach to prevention of acute malnutrition through strengthening linkages with other sectors.

1.6 Target and Usage of the Guidelines

- The Guidelines for in- patient management of severe acute malnutrition give useful and practical information for health and nutrition service providers at all levels of the healthcare system in the country. They are intended for use by:
 - Health and Nutrition programme Managers, physicians and other clinicians, nutritionists, nurses and midwives.
 - Training institutions in pre-service training of health and nutrition cadres. This contributes to standardization of treatment of acute malnutrition, particularly among new graduates joining the health and nutrition workforce.
- Appropriate care has been taken to make sure the recommendations outlined are consistent with other guidelines at the time of publication. The guidelines should always be implemented in consideration of the most recent recommendations from other relevant guidelines.
- Health and Nutrition service providers need to apply the guidelines while adapting them to their individual patients'/beneficiaries' situations and local context.
- The health and nutrition service providers should be supported by the required level of training and with adequate resources to perform their activities and deliver treatment in a safe and effective manner.

- The guidelines are intended to be a reference material for health and nutrition workers including nutritionists, medical staff (physicians/clinicians, nurses/mid-wives) and other health and nutrition service providers.
- Key protocols are provided in the annexes and are based on current national and international policies and protocols.

1.7 Fundamentals of the Management of Acute Malnutrition

1.7.1 Diagnosing acute malnutrition

To diagnose acute malnutrition, we need to:

- Assess age and sex;
- Assess for presence of bilateral pitting oedema;
- Measure MUAC, weight and height/length;
- Use the indices: bilateral pitting oedema or MUAC cut offs or weight for height/length (WFH/L), Body Mass Index (BMI) -for-age or BMI.

1.7.2 Pathophysiology and Treatment of Acute Malnutrition

Severe acute malnutrition can result in profound metabolic, physiological, and anatomical changes (see *annex 1 for details*). All organs and systems are involved in a “reductive adaptation” process due to nutrient shortage. Reductive adaptation is the physiological response of the body to undernourishment (i.e., systems slowing down to survive on limited macronutrient and micronutrient intake⁸).

The pathophysiological responses to nutrient depletion place individuals with SAM at increased risk of life-threatening complications that lead to increased risk of death. Therefore, successful management of SAM with medical complication requires both systematic medical treatment of underlying infections and nutritional treatment with therapeutic feeds (*for details refer to Chapter 2 on Inpatient Management of SAM with medical complications*).

1.8 Components of CMAM Program

In South Sudan the management of acute malnutrition has four main components: Community Mobilization, Supplementary Feeding Programme (SFP), Outpatient Therapeutic Programme (OTP), and Stabilization Centre (SC)/Inpatient Therapeutic Programme (ITP/SC) (*see figure 1*).

⁸ WHO (2011) Training Course on the Inpatient Management of Severe Acute Malnutrition

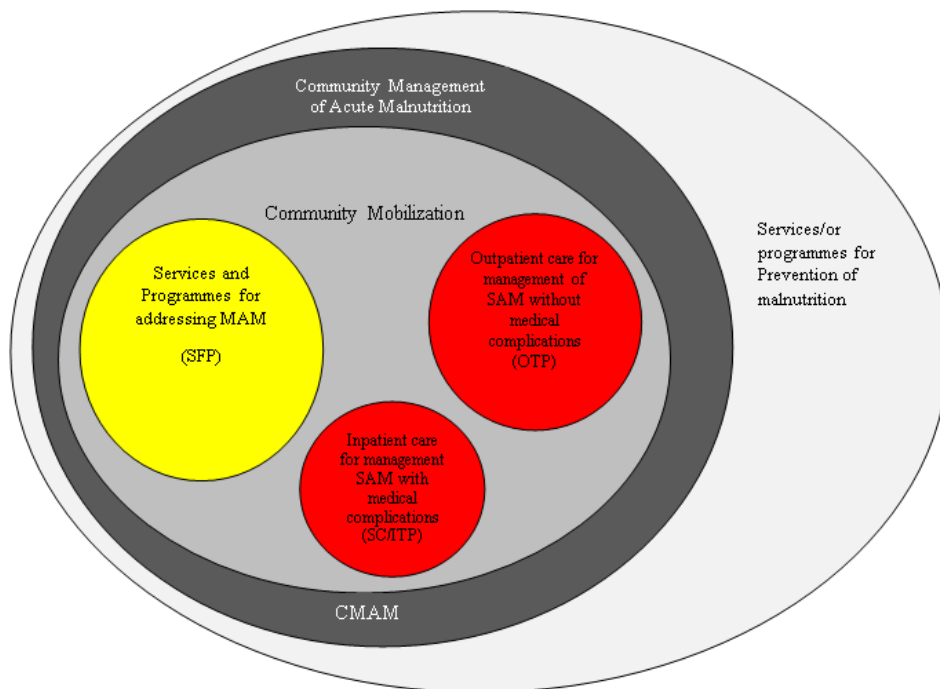


Figure 1: Components of CMAM

The role of each component is described below:

Community Mobilization

Community mobilization is an essential component of CMAM that involves active case-finding, identification, referral for treatment, care, education and sensitization on prevention of malnutrition, and following-up on treatment for children and PLW with acute malnutrition.

Supplementary Feeding Programme (SFP)

SFP aims to provide home-based treatment for cases with MAM without medical complications,

Outpatient Therapeutic Programme (OTP)

OTP provides home-based treatment for SAM cases that have good appetite, and don't have medical complications.

Inpatient Therapeutic Programme (ITP)

ITP/SC provides inpatient treatment for cases with severe acute malnutrition with medical complications and/or without appetite. These sites are primarily health facility based with 24-hr inpatient care services.

1.9 Objectives and Structure of inpatient management of SAM

The primary objectives of in patient management of severe acute malnutrition SAM are:

- To reduce mortality and morbidity risks in children under five due to acute malnutrition;
- To stabilize children with severe acute malnutrition and medical complications to a state of health in which they are able to sustain their recovery on transfer to outpatient care;

- Contribute to the treatment and prevention of severe acute malnutrition in young children in the critical 1000 day window⁹; and
- Treat and prevent micro-nutrient deficiency disorders associated with severe acute malnutrition among under five year old children, older age groups, adolescents, pregnant and lactating women and the elderly associated with severe acute malnutrition.

1.9.1 The Policy Framework

The national **Health Policy (2016-2025)** lays 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. The guidelines are based on international guidelines and best practices and reflect country-specific adaptations and lessons learned from early implementation of ITP/SC. Operational guidance booklets and job aids for the different levels of implementation of inpatient management of severe acute malnutrition will be developed and made available.

Health professionals and health care providers will need to undergo pre-service training for Inpatient Management of acute Malnutrition. However in the short term, in-service training and mentoring and other opportunities for learning using training materials adapted from internationally developed generic sources will gradually be made available.

1.9.2 Creation and Strengthening Linkages with other Programmes in MOH /other sectors

A number of measures will be undertaken to promote, strengthen, and integrate nutrition specific interventions in MOH's other activities as well as in the activities of other sectors and will include:

- Linkage to other components, Community mobilization, TSFP, and OTP in order to reduce cases of SAM and medical complications, hence reduce morbidity and mortality.
- Linkages of ITP/SC services with other health facility programmes such as IMNCI, iCCM, EPI, ANC/reproductive health, HIV/AIDS, Tb, Kalazar and malignancies to be able to identify cases of SAM with or without medical complications.
- Linking the individual monitoring and solving problems for the health facility ward to the overall health facility monitoring and evaluation system.

1.9.3 Referral System

The referral system will need to be strengthened to ensure active case finding of SAM cases within the health facility contact points, from community and from the other various components of the CMAM programme. Wherever possible, the community agent should fill in a standard referral slip (*see annex 24*) that carries their name and the child's name. This allows both the community health worker and health facility to track whether the referral has been successful.

⁹ Leading scientists, economists and health experts agree that improving nutrition during the critical 1,000 day window (between a woman's pregnancy and her child's 2nd birthday) can have a profound impact on a child's ability to grow, learn, and rise out of poverty and can shape a society's long-term health, stability and prosperity. It is one of the best investments we can make to achieve lasting progress in global health and development

Identified SAM clients are usually referred to the nearest health facility or appropriate acute malnutrition service, and in some cases they may be referred directly to inpatient management depending on the identification of medical complications. At the health facility the SAM cases will be re-assessed for admission. Patients who are stable will be referred to OTP to continue with nutrition rehabilitation, routine medications and follow up.

CHAPTER 2

IN PATIENT MANAGEMENT OF SEVERE ACUTE MALNUTRITION WITH MEDICAL COMPLICATIONS IN CHILDREN 6-59 MONTHS

2.0 Introduction

Inpatient therapeutic care (ITP) aim is to provide health facility based treatment and/or rehabilitation of severe acute malnutrition (SAM) with medical complications. This can be provided in a specialized unit in a health facility or in a children's ward at a health facility or a therapeutic feeding center with 24-hour care.

2.1 Basic Requirements for Establishing ITP/SC

There are certain basic requirements (*see annex 6*) that are required in order to set up a facility for inpatient management of severe acute malnutrition.

2.2 Scheduling of ITP/SC services

At the health facility (PHCU, PHCC and hospital levels), ITP/SC services should be offered **DAILY** through out a 24 hour coverage.

2.3 Admission criteria ITP/SC

Admission of patients with SAM to either ITP/SC or OTP is guided as illustrated in Table 1 below.

Table 1: Admission criteria for children with SAM and medical complications in ITP/SC

Admission for inpatient care if:	Admission for outpatient care if:
Bilateral pitting oedema + + + OR any grade of bilateral oedema with any of the following medical complications: - Hypoglycaemia - Hypothermia (< 35° C axillary and 35.50C for rectal - Infections - Severe dehydration - Shock - Very severe anaemia (<4g/dl) - Cardiac failure - Severe Dermatitis - Corneal ulceration - Anorexia, failed appetite test - Intractable vomiting - Convulsions - Lethargy, not alert - Unconsciousness - Inability to drink or breastfeed - High fever (> 39° C axillary and 38.5° C for rectal)	Bilateral pitting oedema + and + + Or Severe wasting MUAC < 11.5 cm <u>Or</u> Weight-for Height/Length < -3 Z-score and • Good Appetite • No medical complication/s • Child clinically well and alert.

2.4 Admission Procedure

The admission process to ITP/SC follows the following steps:

STEP 1: Triage

- Inform the mother/caretaker about the admission process and advise how to handle the patient gently.
- Conduct triage (*see annex 2*) to fast track critically ill patients. Triage means sorting out patients according to severity of illness and need for urgency.
- Give 50ml of sugar water (*see annex 3*) to treat hypoglycemia.
- Identify cases referred from the community, other ITP/SC, TSFP, OTP, and other contact points.

STEP 2: Reassess to confirm referred cases

- Determine age of the patient basing on patient child health card or recall from the mother/caregiver.
- Check for the presence of bilateral pitting oedema (*see annex 4*)
- Measure MUAC (*see annex 4*) for children 6 months and above and patients who cannot stand.
- Take weight of the child (*see annex 4*)
- Take length measurement for children less than 2 years (<87.0cm) or height measurement for children older than 2 years (>87.0cm) (*see annex 4*)
- Classify acute malnutrition (*see figure 2*).

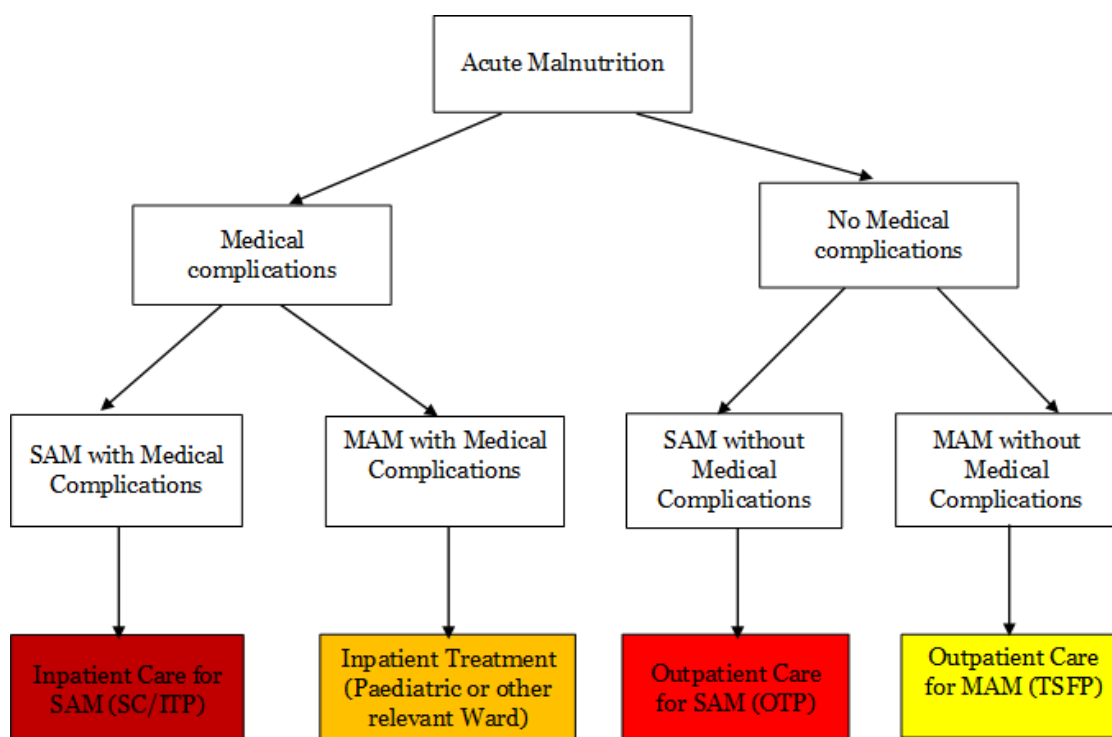


Figure 2: Algorithm for Classification of Acute Malnutrition¹⁰

¹⁰ Collins and Yates, 2003: The need to update the classification of Acute Malnutrition: The Lancet, 362, (93979), 2003:249

STEP 3: Clinical Assessment

The assessment entails the following to be done:

- Taking relevant medical history (current and past illnesses, drugs, medications etc.)
- Taking dietary history/feeding practices in terms of variety, amount, frequency, preparation, hygiene practices and whether active or passive feeding.
- Conducting physical examination (both general and systemic).
- Doing basic relevant investigations (Hb, blood sample for malaria, stool analysis, urinalysis, chest x-ray, TB screening (absence of these investigations should not delay admission)).
- HIV testing should be done in all patients according to Provider Initiated Testing and counselling.
- The medical and nutrition assessment information is recorded on the inpatient care treatment card or Critical Care Pathway (CCP) (*see Annex 8*)

Step 4: Admission/Registration in ITP/SC

Admission /registration is completed using the existing registration system

- Assign a number and record the child's information in the ITP/SC register book and on inpatient treatment card or CCP.

Admission categories include:

- **New Admissions:**
 - **New Cases:** are cases with SAM and medical complications who meet the admission criteria described in table 1 above and are directly admitted for SAM treatment in ITP/SC.
 - **Discharges :** are cases with SAM who are transferred from OTP after deterioration of nutritional status and meet admission criteria
- **Old Cases :**
 - **Returned Defaulters:** are cases previously exited from ITP/SC as “defaulters”, but return and still fulfil admission criteria for SAM with medical complications
 - **Transfers from other ITP/SCs:** are cases that started treatment for SAM at a different ITP/SC site and are transferred to a new site to continue treatment. Add ‘R’ to the registration number to indicate that the child is referred from another ITP/SC, e.g. **001R**
 - **Returned referrals:** are cases referred for medical investigation but return to continue treatment
 - **Relapses:** These are cases that were previously successfully stabilized in ITP/SC and transferred to OTP but again fulfil admission for ITP/SC criteria within a period of two months (have a new episode of SAM).

2.5 Treatment of SAM with medical complications

Medical treatment and nutrition rehabilitation treatment is done in three phases namely stabilization, transition and rehabilitation following an adapted WHO SAM treatment protocol¹¹.

¹¹ WHO Training Course on Management of Severe Malnutrition 2011

2.5.1 Stabilization Phase

As soon as the medical condition is stabilized, 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 stabilization for one to seven days.

2.6 The TEN Steps of General Routine Care

The process of successful inpatient management of patient with SAM involves the following steps:

- Step 1: Treat/prevent hypoglycemia
- Step 2: Treat/ prevent hypothermia
- Step 3: Treat/prevent dehydration
- Step 4: Correct electrolyte imbalances
- Step 5: Treat/prevent infections
- Step 6: Correct micronutrient deficiencies
- Step 7: Start cautious feeding
- Step 8: Achieve catch up growth
- Step 9: Provide sensory stimulation and emotional support
- Step 10: Prepare for follow up after recovery

Step1: Treat or prevent Hypoglycemia

Hypoglycemia is a low level of glucose in the blood. In severely malnourished children, the level is less than 3mmol /litre (or <54 mg/dl).

Signs of hypoglycemia are:

- Hypothermic (low temperature)
- Lethargy, limpness, and loss of consciousness

Treatment

- Perform dextrostix test before giving glucose or feeding.
- If hypoglycemia is suspected and no dextrostix are available or if it is not possible to get enough blood for test, give treatment without laboratory confirmation.
- If blood glucose is low or hypoglycemia is suspected, give the child a 50 ml bolus of 10% glucose or 10% sucrose orally (*see sugar water protocol, annex 3*).
- **If the child can drink**, give 50mls orally. If alert but not drinking, give 50mls by NG tube.
- **If the child is lethargic, unconscious, or convulsing**, give 5 ml/kg body weight of sterile 10% glucose by IV, followed by 50 ml of 10% glucose or sucrose by NG tube.* If the IV dose cannot be given immediately, give the NG dose first.

- *If the child will be given IV fluids for shock, there is no need to follow the 10% IV glucose with an NG bolus, as the child will continue to receive glucose in the IV fluids.*
- Give F-75 half an hour after giving glucose and give it every half-hour during the first 2 hours. For a hypoglycemic child, the amount to give every half-hour is $\frac{1}{4}$ of the 2-hourly amount shown on your F-75 Look Up Table (see annex13).
- Take a blood sample after 2 hours and check blood glucose again. If blood glucose is ≥ 3 mmol/l or higher, change to 2-hourly feeds of F-75. If still low, make sure antibiotics and F-75 have been given. Keep giving F-75 every half-hour.

Step: Treat or Prevent Hypothermia

Hypothermia is low body temperature. A severely malnourished child is hypothermic if the **rectal temperature is below 35.5°C (95.9°F)** or if the **axillary temperature is below 35°C (95.0°F)**. All hypothermic children should be treated for hypoglycemia and for infection as well.

Treatment

Actively re- warm a hypothermic child .This can be done using various techniques such as:

- Have the mother/caretaker hold the child with his skin next to her skin when possible (kangaroo technique) and cover both.
- Use a heater or incandescent lamp with caution. Use indirect heat (not too close). Monitor rectal temperature every 30 minutes to make sure the child does not get too hot. Stop re-warming when the child's temperature becomes normal.

To prevent hypothermia, the following measures are important:

- Cover the child, including his head.
- Keep the child covered at night
- Avoid leaving the child uncovered for long while being examined and weighed
- Stop draughts in the room. Move the child away from windows.
- Maintain room temperature of 25 – 30°C (77 – 86°F) if possible.
- Warm your hands before touching the child.
- Promptly change wet clothes or bedding.
- Dry the child thoroughly after bathing

Step 3: Treat or Prevent dehydration

Dehydration means too little fluid in the body. It occurs when a patient uses or loses more fluid than what is taken in such that the body does not have enough water and other fluids to carry on its normal functions.

Signs of dehydration are:

- thirst,
- hypothermia,
- sunken eyes,
- weak or absent radial pulse,

- cold hands and feet,
- reduced urine output.

Management of dehydration (watery diarrhea and/or vomiting)

Watery diarrhea and/or vomiting is managed by giving Rehydration Solution for Malnutrition ReSoMal (see table 2 below). ReSoMal is a modification of the standard Oral Rehydration Solution (ORS) recommended by WHO.

- ReSoMal contains less sodium, more sugar, and more potassium than standard ORS and is intended for severely malnourished patients with diarrhoea.
- Malnourished patients already have excess sodium in their cells, so sodium intake should be restricted.
- Do not give standard ORS to severely malnourished children except in case of profuse liquid diarrhoea, (e.g. cholera).

DO NOT GIVE IV FLUIDS TO MALNOURISHED CHILDREN EXCEPT IN SHOCK

Table 2: Degree of Dehydration, Signs and Treatment

Degree of dehydration	Signs	Treatment
No dehydration	Not enough signs to classify as some or severe dehydration	Plan A: ReSoMal, approx 50-100 ml (< 2years) and 100-200mls (> 2years), is given orally or by NG-tube after each diarrhoeal stool
Some dehydration	- Restless, irritable¹² - Sunken eyes^{13*} - Drinks eagerly, thirsty¹⁴ - Skin pinch goes back slowly^{15*}	Plan B: 5 ml ReSoMal/kg every 30 min for 2 hours, then 5-10 ml/kg alternate hours up to 10 hours. The amount offered in this range should be based on the child's willingness to drink and the amount of ongoing losses in the stool.
Severe dehydration	Signs* - Lethargic^{16c} or unconscious - Sunken eyes* - Not able to drink or drinking	F-75 is given in alternate hours during this period until the child is rehydrated.

¹² The child is restless and irritable all the time, or whenever he is touched or handled.

¹³ The eyes of a severely malnourished child may always appear sunken, regardless of the child's hydration status. Ask the mother if the child's eyes appear unusual

¹⁴ See if the child reaches out for the cup when you offer ReSoMal. When it is taken away, see if the child wants more

¹⁵ Using your thumb and first finger, pinch the skin on the child's abdomen halfway between the umbilicus and the side of the abdomen. Place your hand so that the fold of skin will be in a line up and down the child's body, not across the body. Firmly pick up all the layers of skin and tissue under them. Pinch the skin for one second and then release. If the skin stays folded for a brief time after you release it, the skin pinch goes back slowly. (Note: The skin pinch may always go back slowly in a wasted child.)

¹⁶ A lethargic child is not awake and alert when he should be. He is drowsy and does not show interest in what is happening around him.

	poorly - Skin pinch goes back very slowly*	
Shock	- lethargic or unconscious and has cold hands Plus either: - slow capillary refill (longer than 3 seconds) OR - weak or fast pulse	Plan C: IV-fluid: Half strength Darrow's solution or Ringer's lactate both with 5% glucose at 15 ml/kg the first hour, reassess, if improving give 15 ml/kg the second hour, if conscious continue with ReSoMal at 5-10 ml/kg in alternate hours with F-75 for up to 10 hours and NG-tube, Give Oxygen Keep warm if unconscious treat as septic shock

* For severely wasted children sunken eyes and skin pinch going back slowly are often observed all the time and therefore unreliable signs. Other signs of dehydration to look for in malnourished children are absence of tears and a dry mouth and tongue

Giving ReSoMal

If the child has already received IV fluids for shock and is switching to ReSoMal, omit the first 2-hour treatment and start with the amount for the next period of up to 10 hours.

Determine the child's target weight for rehydration (See Annex 9) for non- oedematous children

Determine the target weight as follows:

- * Weight of the child before the episode of diarrhea, if that weight is known
- * Otherwise, maximum 5% of the weight of the child before giving the ReSoMal

Give ReSoMal slowly, too much fluid, too quickly can cause heart failure

- Give ReSoMal by cup, spoon or syringe
- An NG tube should be used in weak or exhausted children, and in those who vomit, have fast breathing, or painful mouth sores.
- Stop giving ReSoMal when the child reaches the target weight for rehydration.

Monitor the child who is taking ReSoMal

Monitor the child's progress every half hour for the first two hours. Then monitor hourly, i.e. every time the child takes F-75 or ReSoMal. The **Signs to check are:**

- Child's weight
- Clinical signs of improvement
- Clinical signs of over hydration
- Respiratory rate – Count for a full minute.

- Pulse rate – Count for 30 seconds and multiply by 2.
- Urine frequency – Has the child urinated since last checked?
- Stool or vomit frequency – Has the child had a stool or vomited since last checked?

After rehydration, offer ReSoMal after each watery stool

- For children < 2 years, give 50-100 ml after each loose stool.
- For children 2 years and older, 100-200 ml after each loose stool.

Manage a Severely malnourished child with Shock

Shock is a dangerous condition caused by diarrhoea with severe dehydration, hemorrhage, burns, or sepsis.

Give oxygen, IV glucose, and IV fluids for shock

- Shock from dehydration and sepsis are likely to coexist in severely malnourished patient. They are difficult to differentiate on clinical signs alone. Patients with dehydration will respond to IV fluids. Those with septic shock and no dehydration will not respond.

To give IV fluids, check the starting respiratory and pulse rates and record them on the CCP. Also record the starting time.

- Infuse IV fluid at 15ml/kg over 1 hour using following solutions, listed in order of preference:
 Half-strength Darrow's solution with 5% glucose (dextrose)
 Ringer's lactate solution with 5% glucose*
 0.45% (half-normal) saline with 5% glucose*
 *If either of these is used, add sterile potassium chloride (20 mmol/l) if available.
- Observe the child and check respiratory and pulse rates every 10 minutes.
 - If the respiratory rate and pulse rate increase by 5 breaths /minute, stop the IV.
 - If respiratory rate and pulse rate are slower after 1 hour, repeat the same amount of IV fluids for another hour. Continue to check respiratory and pulse rates every 10 minutes.
- After 2 hours of IV fluids, switch to oral or nasogastric rehydration with ReSoMal.
 - Give 5 – 10 ml/kg ReSoMal in alternate hours with F-75 for up to 10 hours.

If no improvement with IV fluids, give blood transfusion

If the child fails to improve after the first hour of IV fluids, then assume that the child has septic shock.

- Give maintenance IV fluids (4 ml/kg/hour) while waiting for blood.
- When blood is available, stop all oral intake and IV fluids, give a diuretic (furosemide (1 mg/kg, given by iv) and then transfuse whole fresh blood at 10 ml/kg slowly over 3 hours.
- If there are signs of congestive heart **failure¹⁷**, **give packed cells at 5-7 ml/kg.**
- **Stop all oral intake during blood transfusion**

Management of severe anemia

Anemia is a low concentration of hemoglobin in the blood, and it can present as mild, moderate and severe form. Severe anemia is a hemoglobin concentration of < 4 g/dl (or packed cell volume <12%).

Signs of Anemia are:

- paleness of gums, lips, inner eyelids and palms and feet
- signs of heart failure

If haemoglobin <4 g/dl, give blood transfusion as describe above.

Do NOT give iron during stabilization phase. Iron can damage cell membranes and make infections worse.

Step 4: Correct electrolyte imbalance

Electrolyte imbalance refers to too little potassium and magnesium, and too much sodium

- The therapeutic feeds have enough electrolytes to correct the imbalance. Give F-75 and feed every 2 – 3 hours.

If using feeds that do not contain combined minerals and vitamins;

- **Give** potassium (4mmol/kg body weight) and magnesium (0.6mmol/kg)
- Add CMV or electrolyte/mineral solution or 10% potassium chloride solution to feeds and when preparing ReSoMal. If these are unavailable, give crushed Slow K ½ tablet/kg body weight daily.

Step 5: Treat or Prevent Infections

- Nearly all children with severe malnutrition have bacterial infections. However, as a result of reductive adaptation, the usual signs of infection may not be apparent, because the body does not

¹⁷ Signs of congestive heart failure such as fast breathing, respiratory distress, rapid pulse, engorgement of the jugular vein, cold hands and feet, cyanosis of the fingertips and under the tongue.

use its limited energy to respond in the usual ways, such as inflammation or fever. Assume that infection is present and treat all severe malnutrition admissions with broad spectrum antibiotics.

- **Give broad-spectrum antibiotics to all children starting on the first day (see table 3 below for selection) :**

Table 3: Antibiotics for Severely Malnourished Children

IF:	GIVE:	
NO COMPLICATIONS	Amoxicillin oral: 25 mg/kg every 12 hours for 5 days or until referral for outpatient care.	
COMPLICATIONS (shock, hypoglycaemia, hypothermia, dermatosis with raw skin/fissures, respiratory or urinary tract infections, or lethargic/sickly appearance)	Gentamicin ¹ IV or IM (5 mg/kg), once daily for 7 days, plus:	
	Ampicillin IV or IM (50 mg/kg), every 6 hours for 2 days	Followed by: Amoxicillin ² Oral: 25 mg/kg, every 12 hours for 5 days
If resistance to amoxicillin and ampicillin, and presence of medical complications:	If suspected staphylococcal infections: Add: cloxacillin (12.5 -50 mg / kg / dose four times a day, depending on the severity of the infection).	
If a specific infection requires an additional antibiotic, ALSO GIVE:	Specific antibiotics as guided by sensitivity pattern.	

¹If the child is not passing urine, gentamicin may accumulate in the body and cause deafness. Do not give the second dose until the child is passing urine. ²If amoxicillin is not available, give ampicillin, 50 mg/kg orally every 6 hours for 5 days.

The following practices are important to prevent infections:

- Keep severely malnourished patients in a separate room or area.
- Reduce overcrowding if possible.
- Wash hands before preparing feeds and before and after dealing with any child
- Give measles vaccine to unimmunized children over 6 months of age
- Practice good nursing care.

Metronidazole should not be used in routine treatment of SAM

Step 6: Correct Micronutrient deficiencies

Micronutrients (vitamins and minerals) are often low in a severely malnourished child and needed to be corrected.

Vitamin A:

- Give 5000 IU daily of Vitamin A throughout the treatment period as an integral part of therapeutic foods (F75, F100 or RUTF) or as part of a multi-micronutrient formulation.
- Give a high dose of vitamin A¹⁸ on admission if patients are given therapeutic foods that are not fortified as recommended in WHO specifications.

Folic Acid:

Folic acid is a vitamin of the B complex that is important for treating and preventing anaemia and repairing the damaged gut.

- Give each child, except infants less than 6 months, a large dose of Folic acid (5mg) on Day 1 and a smaller dose (1mg) on subsequent days, unless the patient is receiving F-75 and F-100 or feeds containing CMV (Combined Mineral Vitamin Mix).

Multivitamin:

- Give multivitamin drops daily (not including iron) if CMV is not used in preparing the therapeutic feeds.

Do not give iron in the stabilization phase and do not give iron if child receiving RUTF

Step 7: Cautious feeding in stabilization and transition phase

To prevent death, start feeding cautiously as soon as possible with small amounts of F-75, the “starter” formula until the child is stabilized.

F-75 is the "starter" formula to use during initial management of severe acute malnutrition.

F-75 contains 75 kcal and 0.9 g protein per 100 ml.

F-100 is used as a "catch-up" formula to rebuild wasted tissues.

F-100 contains more calories and protein: 100 kcal and 2.9 g protein per 100 ml.

- On the first day, give small amount of F-75 every 2 hours (12 feeds in 24 hours.). If the child is hypoglycemic, give ¼ of the 2-hourly amount every half-hour for the first 2 hours or until the child's blood glucose is at least 3 mmol/l. Feed also during the night.
- After the first day, give feeds every 3 hours or every 4 hours. Criteria for increasing the volume and decreasing the frequency of feeds (*see annex 13*).

¹⁸ Dose of Vitamin A: Age 6-12 months 100,000IUs, 12months – 59months ,200,000IUs

- Given the child's starting weight and the frequency of feeding, use a table to look up the amount needed per feed (*see annex 12 for F-75 Look Up table*).
- If no oedema/oedema grade + and ++ give F75 130 ml/kg/day of F75 (*see annex 13A*). This amount of F-75 will give the child 100 kcal/kg/day and 1 to 1.5 g protein/kg/day. This amount is appropriate until the child is stabilized.
- If with oedema is +++, give 100 ml/kg/day (*see Annex 13B*) for the amount of feed to give according to the patient's weight)

The front of the F75 reference card (see annex 20) of is for severely malnourished children with no oedema, or with mild or moderate oedema. The reverse side is only for children admitted with severe (+++) oedema.)

Feeding the child

- Each child's feeding plan should be recorded on a 24-Hour Food Intake Chart (*See annex 18*).
- Feed with a cup and a saucer (and spoon, if needed). Encourage the child to finish the feed.
- Feed a very weak child with a dropper or syringe. Do not use a feeding bottle.
- **Never leave the child alone to feed.**
- Encourage breastfeeding. Ensure that the child still gets the required feeds of F-75 even if breastfed.

Feeding children who have diarrhoea and vomiting

- If child vomits during or after a feed, estimate the amount vomited and offer that amount of feed again.
- If child keeps vomiting, offer half the amount of feed twice as often. For example, if the child is supposed to take 40 ml of F-75 every 2 hours, offer half that amount (20 ml) every hour until vomiting stops.

Nasogastric tube (NGT) feeding

- **Use NGT feeding** if child very weak, has painful mouth ulcers, does not take 80% of the feeds for 2-3 consecutive feeds, has pneumonia, has cleft lip/ palate or shows disturbed level of consciousness.
- At each feed, give the F-75 orally first, then give the remaining amount by NGT.
- Do not plunge F-75 through the NG tube; let it drop in, or use gentle pressure.
- If a hard distended abdomen develops with very little bowel sound, give 2 ml of a 50% solution of magnesium sulphate IM.
- **Remove the NG tube** when the child takes 80% of the day's amount orally or two consecutive feeds fully by mouth.
- **Record intake and output on a 24-Hour Food Intake Chart**

Adjusting feeding plan for the next day;

The total amount of F-75 given per day is based on the admission weight.

- Each day, review the child's 24-Hour Intake Chart to determine if the child is ready for larger, less frequent feeds.
- If vomiting, lots of diarrhoea, or poor appetite, continue 2-hourly feeds.
- If little or no vomiting, moderate diarrhoea (less than 5 watery stools per day), and finishing most feeds, change to 3-hourly feeds.
- After a day on 3-hourly feeds: If no vomiting, less diarrhoea, and finishing most feeds, change to 4-hourly feeds.
- Compare the total amount of F-75 taken for the day to the 80% column on the *F-75 Look Up Table* (see Annex 13A) to confirm that the child has taken enough.

Transition Phase

Transition prepares patients for the rehabilitation/catch up growth phase. During this phase, medical treatment is continued and the dietary treatment changes for children 6-59 months.

The duration of treatment in the transition phase is two-to-three days on average and involves:

- **Recognizing readiness for transition** by return of appetite (easily finishes 4-hourly feeds of F-75), reduced / minimal oedema (+ /++).
- **Beginning giving RUTF slowly and gradually by performing an acceptance test¹⁹.**
- **Transitioning children from F-75 to RUTF , using any of the two approaches:**

Approach 1:

- At the beginning of the day, give the mother the amount of RUTF which the child is expected to receive for the day.
- Counsel the mother to start feeding by giving ready-to-use therapeutic food as prescribed for the transition phase (see Annex 15A-RUTF Look Up Table).
- Let the child drink safe water freely.
- If the child does not take the prescribed amount of ready-to-use therapeutic food, then top up the feed with F-75.
- Increase the amount of ready-to-use therapeutic food over 2–3 days until the child takes the full requirement of ready-to-use therapeutic food.

Approach 2:

- Counsel the mother to give the child the prescribed amount of ready-to-use therapeutic food for the transition phase.
- Let the child drink safe water freely.
- If the child does not take at least half the prescribed amount of ready-to-use therapeutic food in the first 12 hours, then stop giving the ready-to-use therapeutic food and give F-75 again in the same amount as at the end of stabilization every 3-4 hours.

¹⁹ RUTF is considered acceptable if the child has eaten at least 30g(one third of the satchet of 92g

- Retry the same approach after another 1–2 days until the child takes the appropriate amount of ready-to-use therapeutic food to meet energy needs.

If the RUTF is not available or if the child does not accept it, give F100 (see Annex 17):

- The transition is spread over three days during which the F-100 is administered.
- If the child is being breastfed, encourage mothers to breastfeed between F-100 rations.

F100 should never be given to take home.

Individual Monitoring during transition

- Take and record the patient's, temperature, respiratory and pulse rate every 4 hours.
- Take and record weight daily on the CCP daily.
- Examine and record degree of bilateral pitting oedema (0 to +++)
- Review medical history; diarrhoea, vomiting, cough and examine the liver size, eyes, ears, skin lesions, refusal to feed and whether child is fed by NGT or is given an IV infusion or transfusion.
- Call a clinician if any danger signs develop.

Transfer from Transition back to Stabilization phase if;

- Re-occurrence/deteriorating of medical complications
- Loss of appetite and not taking 80% of the prescribed feeds
- Increasing /development of oedema
- Significant re-feeding diarrhoea resulting in weight loss

Progression from Transition to OutPatient Care (OTP)

The criteria for transfer from transition to Phase II or OTP is based on improvements in the child's condition. For children 6-59 months **referral to outpatient care** to continue treatment until full recovery the following is considered:

- Good appetite (if the patient passes the acceptance test and takes more than 80 percent of the daily ration of RUTF)
- Reduced/minimal/no oedema (++/+ /no oedema)
- Medical complications have been resolved
- Clinically well and alert

Step 8: Achieve 'Catch Up Growth'

This phase is marked by increased feeding to recover weight loss: or "Catch-up growth" and should take place in OTP.

If an outpatient programme on management of severe malnutrition is in place:

- Transfer patient to nearest OTP, close to where she lives for rehabilitation when taking the entire amount of RUTF proposed during transition (at least 150 kcal / kg / day).

- Before leaving, give a ration of RUTF for a week to the caregiver.

If no program for outpatient management of severe acute malnutrition is available:

- **Feed freely with F-100 (see Annex 17) during rehabilitation** for at least 150 kcal/kg/day to an upper limit of 220 kcal/kg/day .
- Base the starting amount on the last amount taken in F75 feeds during the previous day.
- Feed every 4 hours within the range shown on the *F-100 Look Up Table*.
- Use child's **current** weight to determine the appropriate range of F-100 for each day.
- Do not exceed the maximum range for the child's current weight.
- Record each feed on the 24-Hour Food Intake Chart.

Important things NOT to do and why

- Do not give diuretics to treat oedema. The oedema is partly due to potassium and magnesium deficiencies that may take about 2 weeks to correct. The oedema will go away with proper feeding including a mineral mix containing potassium and magnesium. Giving a diuretic will worsen the child's electrolyte imbalance and may cause death.
- **Do not give iron during the initial feeding phase.** Add iron only after the **child has been on F-100 for 2 days (usually during week2)**. As described earlier, giving iron early in treatment can have toxic effects and interfere with the body's ability to resist infection.
- **Do not give high protein formula** (over 1.5 g protein per kg body weight daily). Too much protein in the first days of treatment may be dangerous because the severely malnourished child is unable to deal with the extra metabolic stress involved. Too much protein could overload the liver, heart, and kidneys and may cause death.
- **Do not give IV fluids routinely.** IV fluids can easily cause fluid overload and heart failure in a severely malnourished child.

Personnel in the emergency treatment area of the hospital should know the important things NOT to do, as well as what to do.

Failure to respond to inpatient care

Criteria defining failure to respond in inpatient care is given in table 4 below

Table 4: Criteria for Defining Failure to Respond in In- Patient Care *

Criteria to Respond	Time after admission
Primary Failure to Respond	

Failure to re gain appetite	Day 4
Failure to start to lose bilateral pitting oedema	Day 4
Bilateral pitting oedema still present	Day 10
Failure to gain at least 5g/kg/day	After feeding freely on F-100 for 3 consecutive days
Secondary Failure to respond	
Failure to gain at least 5g/kg body weight	During inpatient rehabilitation phase for 2 successive days
Static weight	For 3 successive days

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

Box A: Examples of frequent causes of failure to respond to 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 (amoebiasis, giardiasis, dysentery)
- Other infections such as pneumonia, TB, urinary tract infection/otitis media, malaria, HIV, schistosomiasis, kala-azar/leishmaniasis, hepatitis/cirrhosis
- Other serious underlying disease: congenital abnormalities (e.g., Down's syndrome), neurological damage (e.g., cerebral palsy), inborn errors of metabolism

Action required when a child fails to respond to treatment in Inpatient care:

The following should be done:

- Examine the child for common causes of failure to respond (see Box A)
- Review and evaluate adherence to treatment protocol.
- Review case management practices
- Record failure to respond to treatment on the individual treatment card (CCP) and 24 hour feed intake chart
- Have the child seen by a more experienced staff (it could be done by an external evaluator)

Step 9: Stimulate emotional and sensorial development:

Emotional and physical stimulation through play programmes that start during rehabilitation and continue after discharge can substantially reduce the risk of permanent mental retardation and emotional impairment.

This can be achieved through (see annex 35 for details) :

- Provision of tender loving care
- Helping and encouraging mothers to comfort, feed, and play with their children
- Giving structured play when the child is well enough.

Step 10: Prepare for discharge/transfer to OTP

The following actions should be taken:

- Complete a referral slip to OTP including a summary of medical intervention and treatment given to the patient while in ITP/SC.
- Ensure caregiver understands importance of completing nutrition rehabilitation process of the patient in OTP
- Inform the mother/caregiver where and on which day to go for the OTP.
- Give mothers/caretakers key messages on RUTF and basic hygiene
- The mother/caregiver should be given instructions to continue medications at home
- On transferring the patient to OTP or if early discharge (before stabilization is unavoidable, it is critical for mother/ caretaker to be able to recognize the danger signs (see Annex 7) that would make her/him return the child to health facility for immediate care.
- Where and when a child should be taken for growth monitoring and promotion on monthly basis up to 2 years.
- When and where to go for next immunization , Vitamin A and deworming
- How to continue stimulating the child at home with play activities.
- Provide feedback to the caregiver on the final outcome of treatment
- Record the discharge outcome in ITP/SC register and inpatient treatment card (CCP)

Percentage weight gain should not be used as a discharge criterion

Exit Criteria

The various forms of exiting children from ITP/SC are listed in Table 5 below:

Table 5: Exit Criteria for ITP/SC

Category of Discharge	Discharge Criteria	Action
Cured (for patients that remain in rehabilitation in ITP/SC)	Acute medical conditions have been resolved The patient is eating well (can eat family foods) No bilateral pitting oedema for two weeks Clinically well and alert WFL/H=-3z-scores (infants, children and adolescents) MUAC =11.5cm(children 6 to59 months)	Transfer to OTP if accessible/available to complete the rehabilitation process
Transfer to OTP	Acute medical conditions have been resolved Clinically well and alert Passed appetite test to RUTF Oedema if present has reduced to +/Grade 1 or ++/Grade 2	Transfer to nearest functional OTP if available
Died	Died while on programme	Complete card and file appropriately.
Defaulted	Absent for two consecutive days	May re-enter the ITP/SC if patient meets the admission criteria Re-admit with the old registration number
Non -respondent	Child failed to respond (see criteria above)	Record outcome in the ITP/SC register book as “non-respondent” Re assess, treat appropriately

Transfer out	Child referred to another ITP/SC	Record outcome in the ITP/SC register book as “Transfer out” Fill a referral slip (include treatment given and the reason for transfer)
Medical Transfer	Child referred to another ward within the hospital or another health facility.	Record outcome in the ITP/SC register book as “Medical Transfer” Fill a referral slip (include treatment given and the reason for transfer)

2.7 ROUTINE MEDICAL TREATMENT

Routine medicines and supplements should follow the schedule as prescribed in Table 6 below.

Table 6: Routine Medicines and Supplements

Medication	What to give / use	Frequency
Iron supplement	Ferrous Sulphate 300mgs/day (3 mg elemental Fe/kg/day) throughout rehabilitation phase. Do not give iron if the child receives RUTF Note: Even if the patient is anaemic, he should not be given iron until he is recovering and has been on F-100 for two days (i.e. after two days of transition). If given earlier, iron can have toxic effects and reduce resistance to infection.	2 divided doses
De-worm²⁰	Mebendazole >1 year: 500mg Albendazole ≥1year: 200mgs Albendazole >2years: 400mgs	Single dose after 2 days on F-100 or RUTF
Measles	9 months (up to 5 years) if no record that it has	Single dose as soon as the

²⁰ Report of the WHO Informal Consultation on the use of Praziquantel during Pregnancy/Lactation and Albendazole/Mebendazole in Children under 24months

immunization ²¹	been given before	child is stable
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²¹ Management of severe Malnutrition: A manual for physicians and other health workers, WHO 1998

CHAPTER 3

INPATIENT MANAGEMENT OF SEVERE ACUTE MALNUTRITION FOR INFANTS LESS THAN 6 MONTHS

3.0 Introduction

Infants under 6 months with Severe Acute malnutrition (SAM) should be treated within the context of IYCF recommendations (see *annex 19*) and should always be treated in ITP/SC until discharge.

The objectives of ITP/SC are to:

- Establish or re-establish and improve, effective exclusive breastfeeding;
- Provide temporary or longer-term appropriate therapeutic feeding for the infants; and
- Provide nutrition, psychological, and if needed medical care for the caregivers.

3.1 Admission Criteria

Infants who are less than six months of age are considered SAM if they have :

- Weight-for-length less than -3 Z-scores and or bilateral pitting oedema.
- Recent weight loss or failure to gain weight.
- Ineffective feeding (poor attachment and positioning and ineffective suckling) observed for 15-20 minutes.
- Any medical or social issue needing more detailed assessment or intensive support (e.g. disability, depression of caregiver, or other adverse social circumstance)
- Any serious clinical condition or medical complication as outlined for infants 6 months of age or older with severe acute malnutrition.
- Poor weight gain and have not responded to nutrition counselling and support.

Infants less than 6 months with SAM are not given RUTF because the reflex of swallowing semi – solids is not yet present and are recommended to exclusively breastfeed for the first six months.

Note: Low birth weight infants are not usually severely wasted or edematous and so are unlikely to meet the criteria for SAM. Therefore, they should be managed according to the WHO guidelines specifically for “Low birth weight babies”²².

Management of severely malnourished infants less than 6 months of age follows the outline in table 7 below

Table 7: Outline for the management for severely malnourished infants under six months of age.

Initial assessment and Treatment	Weigh and take length of the infant, diagnose and treat complications (such as hypothermia, hypoglycemia, dehydration,
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²² Management of Low Birth Weight Babies – GMCH by WHO

	infections and septic shock.)
Give the infant initial re-feeding	Feed the infant with appropriate milk feeds for initial recovery and metabolic stabilization
Feed and care for the Mother	If the mother is available, feed and care for her physically and psychologically, to help restore her health, her ability to produce milk, and her ability to respond to her baby.
Keep mother and infant together	Keep mother and infant together, to help the mother care for and respond to the baby, and to give skin-to-skin contact (Kangaroo care) to warm the baby.
Continue and improve or re-establish breastfeeding	Breastfeeding is an integral part of management. Continue and improve or start to re-establish breastfeeding as soon as possible from the beginning of treatment, if necessary using the supplemental suckling technique. A mother may need to express breast milk, if the infant is too weak to suckle. Show her how to do this.
Feed the infant for catch-up growth	As the infant starts to recover, feed him/her to achieve rapid catch-up growth, (nutrition rehabilitation). Give supplementary milk feeds using a breastfeeding supplement if needed, as long as necessary, until exclusive breastfeeding is re-established.
Give adequate breast milk substitute if breastfeeding impossible	If breastfeeding is not possible, give adequate breast milk substitute in accordance with the Maternal Infant Young Child Nutrition (MIYCN) guideline.
To prevent hypernatremia in hot climates	Give sips of water or 10 percent sugar-water solution (see Annex 3) in addition to the milk diet until the thirst of the child is satisfied.
Discharge when weight gain on either exclusive breastfeeding or replacement feeding is satisfactory	Discharge the infant from the ITP/SC when gaining weight more than 5g/kg/day for at least 3 successive days or when gaining weight for 5 days on breastfeeding alone (regardless of original body weight) or when the infant has changed completely to adequate breast milk substitute when breastfeeding is not possible.

3.2 Feeding the infant if there is prospect of breastfeeding

There are three main phases namely stabilization, transition and rehabilitation.

3.2.1 Stabilization:

The main objective of stabilization is to restore exclusive breastfeeding by;

- Complementing breastfeeding with therapeutic milk,
- Stimulating the production of breast milk.

If the infant is able to suckle:

- Support the mother to breastfeed at least every 2- 3 hours for at least 20 minutes or on demand.
- Give therapeutic milk ½ hr. to 1 hr. after breastfeeding, using a supplemental suckling method (see figure below). Therapeutic milk used must be diluted ²³F100 for infants without oedema and F75 for those with oedema or use a breast milk substitute (infant formula).
 - Give 8 to 12 feeds a day (see amounts in *annex 20A*)
 - Monitor the child's weight: weigh daily with a precision balance of 10 g or 20 g.
- If the baby loses weight or has a static weight on three consecutive days, but continues to be hungry and takes all therapeutic feeds, add 5 ml more at each feed.
- If the infant does not finish all the prescribed therapeutic feeds, but continues to gain weight, this means that breast milk is increasing and the baby is receiving sufficient quantities to meet his/her needs.
- Record breastfeeding times their duration and therapeutic feeds taken (quantities and times).

Giving therapeutic milk with a breastfeeding supplement (supplemental suckling technique):

Supplemental Suckling Technique (SST) is recommended to re-establish breastfeeding as well as to provide maintenance amounts of diluted F100/ or F75/or infant formula for infants with SAM.

Steps of SST

The mother holds a cup containing therapeutic feed. The tip of a nasogastric tube (size No. 8) is placed in the cup and the other end of the tube is placed on the nipple of the breast.

The cup is placed 5-10 cm below the nipple to facilitate breastfeeding. When the baby suckles more strongly, the cup can be lowered to 30 cm.

If baby is too weak to suckle effectively, use supplementary suckling with the cup held as high as the baby's mouth. The milk should drip slowly into the baby's mouth as the baby gains strength, lower the cup.

²³ Diluted F-100 is obtained by adding 30% water to the F-100



Figure 3: Using Supplemental Suckling Technique

3.2.2 Transition

When the infant begins to gain weight (at least 20 g per day) for 2 to 3 days:

- Decrease the amount of therapeutic milk by one third; maintain this amount for 2 to 3 days
- If the baby continues to gain weight satisfactorily (20 g per day), further reduce the amount of therapeutic milk, in the same proportions, until when you stop giving completely.
- If weight gain is not satisfactory while reducing the volume of the therapeutic milk revert to the previous volume for 2 days and try again.

3.2.3 Rehabilitation:

During this phase do not give therapeutic milk, give only breast milk. Prepare the mother to be able to breastfeed the baby after discharge and to continue until the age of 6 months before introducing the baby to diversified complementary foods.

Discharge criteria:

Discharge breastfed infants from an ITP/SC when infant ;

- Has gained a minimum of 20g/day on breastfeeding alone for 5 days,
- Has gained more than 5g/kg/day on either exclusive breastfeeding or replacement feeding for at least 3 successive days,
- Is clinically well and alert,
- Has been checked for immunization,

Mother or caregiver is linked with community based follow up and support.

3.3 Feeding the infant in case there is no prospect of breastfeeding

The following is done during the different phases namely stabilization, transition and rehabilitation.

3.3.1 Stabilisation

- Give F75 or infant formula if there is oedema;

- Give diluted F100 or infant formula if no oedema
 - Prepare infant formula as directed on the package
 - Give amounts according to the weight of the infant on admission (*see Annex 20A*).
 - Feed every 2 hours for 24 hours with a cup or NGT
 - Continue giving feeds until signs of recovery:
 - Loss of all oedema
 - Improved appetite

Weight gain is not expected during stabilisation.

3.3.2 Transition

The transition phase should continue for 4-5 days.

- Give diluted F100 or infant formula (see amounts to give in *annex 20B*).
- Increase the volume by 30% as shown in *annex 20B*.
- Monitor the infant's weight. Weigh every day.

3.3.3 Rehabilitation

Give adequate and appropriate replacement feeds such as infant formula applicable when the mother is unavailable(died or child abandoned) .

Increase the volume of milk rations for another 30% after 4-5 days (*see annex 20C*)

Give more feeds if infant still hungry after finishing the feed, increase the feeds by 5 ml per feed, Feed infant using a cup and a saucer and train the mother /caregiver to correctly prepare the feeds, amounts to give, hygiene, and to continue the same way at home after discharge.

3.3.4 Discharge criteria:

Discharge a non-breast fed infant when:

- Caregiver for the infant is confident to prepare and give the breast milk substitute correctly
- Baby has gained at least 20g per day for 5 days.
- All immunizations have been checked.
- Is clinically well and alert

Link the mother or caregiver to community based follow up and support.

Box B: F100-Diluted for infants

Infants less than 6 months of age should not receive F100 full strength as the consistency is unsuitable. Prepared F100 should be further diluted by adding 30% safe water

If F100 is not readily available, infants can be fed with the same quantities of infant formula diluted according to the instructions on the tin. However, If there is a range of formula milk to choose from, use a formula designed for pre mature infants.

Micronutrient supplementation

Give the following micronutrients supplements:

Vitamin A:

- Give a dose of 50,000 IU to every infant at the time of discharge from ITP/SC.

Note: Infants less than 6 months of age with SAM should be given a dose of 50,000IU of Vitamin A on admission **only if** they are given therapeutic milk that is not fortified as recommended in WHO specifications and Vitamin A is not part other daily supplements

Iron:

- Give Iron, 3 mg /kg / day into two divided doses, when infant starts to gain weight and continue throughout rehabilitation phase.

3.4 Individual monitoring

The following parameters are monitored daily and recorded on the critical care pathway chart:

- Total intake of supplementary milk feeds and/or number of breastfeeds per 24 hours.
- Weight gain, urinary output and activity level.

Monitoring weight gain

- Weigh daily using appropriate scales, with an accuracy to 20g.
- Calculate weight gain as grams per kilogram body weight per day (*see annex 22*). The minimum acceptable weight gain during catch-up growth in young infants is 20g every day.

Monitoring urine frequency

- Frequent urination (six or more wet nappies daily for babies aged less than six months) of pale, dilute urine, indicates adequate fluid intake in the exclusively milk-fed infant.

Monitoring infant's level of activity

- Ask about the infant's level of activity.

3.5 Care of the mother or caregiver

- A mother of an infant less than 6 months of age with SAM needs to be fed with high-quality food and adequate fluids
- A mother in difficult situation such as an emergency need to be listened to; let her talk about situations that affect her ability to breastfeed and to take care of her child.
- Keep the mother and infant together to encourage breastfeeding, care and warmth for the infant

3.6 Plan feeding for the ward

Planning feeding for the entire ward is important so that the staff knows the amount of feeds to prepare and how much to serve at each feed.

The following needs to be done;

- Determine a schedule for feeding and other related activities (such as weighing, bathing, play , taking vitals, review of patients, preparing feeds,planning, shift changes) in the ward
- Prepare a Daily Ward Feed Chart (*see annex 21*) to use in preparing feeds

- Plan staff assignments related to feeding children
- Prepare staff to do assigned feeding tasks

3.7 Discharge from all Care

Infants who are less than 6 months of age can be discharged from all care when:

- Breast feeding effectively or feeding well with replacement feeds
- Have adequate weight gain and have a weight for length ≥ -2 Z score checked for all immunizations, other routine interventions
- Mothers or caregivers are linked to community based follow-up and support.

CHAPTER FOUR

INPATIENT MANAGEMENT OF SEVERE ACUTE MALNUTRITION IN OLDER AGE GROUPS IN CONTEXT OF HIV/AIDS, TUBERCULOSIS, KALA AZAR AND MALIGNANCIES

4.0 Introduction

People of older age groups consisting of children aged 5 years and above, adolescents, adults, pregnant and lactating and the elderly (≥ 60 years) with SAM are often admitted to an inpatient facility for treatment. This section addresses this older group of persons in context of common chronic diseases in South Sudan namely, HIV/AIDS, tuberculosis, KALAZAR²⁴ and malignancies. People infected with these diseases are at an increased risk of acute malnutrition due to increased energy and nutrient requirements coupled with reduced food intake. In Older age groups, SAM occurs as a primary disorder in extreme conditions or in association with other illnesses. Both the primary illness and the acute malnutrition must be treated.

Management of SAM in ITP/SC in the context of HIV/AIDS, TB, KALAZAR and malignancies in children 6-59 months follows the same protocols for children 6-59 months who are not infected with HIV/AIDS, TB, KALAZAR and malignancies.

4.1 Screening for Acute Malnutrition) in the Context of HIV/AIDS/TB/KALAZAR and the Elderly

- All persons infected/exposed/suspected to be infected with HIV/AIDS, TB, KALAZAR and malignancies should be screened for acute malnutrition (*for details see Annex 4*), at all contact points in the health facility as follows:
 - Determine the age of the person (those 5-19 years and those > 19 years)
 - Check for presence of bilateral pitting oedema;
 - Take anthropometry (MUAC, weight, height/length)

4.2 Admission and Discharge criteria

4.2.1 Admission criteria for children ≥ 5 years, adolescents and adults with SAM and HIV/TB, KALAZAR or malignancies in ITP/SC

All children ≥ 5 years, adolescents, and adults with SAM who are infected with HIV/AIDS, TB, Kala Azar or malignancies and meet the criteria in Table 8 below should be admitted and managed as inpatients.

²⁴ **Kala-azar** also known as “visceral leishmaniasis (VL),” or black fever, is a disease endemic to South Sudan, particularly in Upper Nile, Jonglei, Unity and Eastern Equatoria States. Most affected patients (70%) are children aged under 15 years who already suffer from concurrent malnutrition and other secondary illnesses

Table 8: Admission and Discharge criteria for Adolescents, Adults, and Children ≥ 5 years, with SAM and HIV/TB, Kala Azar or malignancies in ITP/SC

Category	Admission Criteria	Discharge Criteria
5 to 19years	▪ Bilateral pitting oedema²⁵ +++ OR ▪ BMI-for-age < -3 Z-score OR ▪ MUAC <13.5 if 5-9years* ▪ MUAC < 16.0cm if 10-14 years * AND ▪ Failed appetite test) ▪ With medical complications ALSO ▪ Transfers in from OTP if condition deteriorates to SAM with medical complications	Stabilized (No medical complications) Clinically Well and Alert OR ▪ bilateral pitting oedema +,++
Adults (>19years)	▪ Bilateral pitting oedema +++** OR MUAC < 19.0cm* OR ▪ BMI < 16 kg/m² AND ▪ Failed appetite Test (for RUTF) ▪ With medical complications ALSO ▪ Transfers in from OTP if condition deteriorates to SAM with medical complications	Stabilized (No medical complications) Clinically Well OR ▪ bilateral pitting oedema +,++

Note: There is currently no agreement for the measurement and interpretation of MUAC cut offs in children ≥ 5 years, adolescents and adults. These MUAC cut offs were adapted for detection of acute malnutrition in clients with HIV/AIDS from guidelines in the region and will be used for detection of acute malnutrition in HIV/TB/Kala Azar cases until new evidence is available.

***Source:** Consolidated Clinical Guidelines on Use of Antiretroviral Drugs for HIV Treatment and Prevention (MOH, 2014)

****Bilateral pitting oedema or severe wasting (acute weight loss) depending on history and thorough examination**

²⁵ Oedema in adults and the older persons is most often due to medical conditions and should be interpreted with caution. Refer to a clinician for investigation to rule out medical causes to exclude secondary malnutrition

4.2.2 Admission and Discharge criteria for elderly (≥60 years) with SAM in ITP/SC

All the elderly (≥60 years) with SAM, who meet the criteria in Table 9 below, should be admitted and managed as in patient. See *section 4.1.4* for special considerations at admission

Table 9: Admission and Discharge criteria for older persons (≥60years) with SAM in ITP/SC

ADMISSION CRITERIA	DISCHARGE
▪ Bilateral pitting oedema +++ <u>OR</u> ▪ MUAC is < 18.5 cm <u>AND</u> ▪ Failed appetite (failed test for RUTF) (see annex 13...) <u>ALSO</u> ▪ Transfers in from OTP if condition deteriorates to SAM with medical complications	▪ Clinically well and alert

Note: Cases discharged from ITP/SC are referred to OTP to continue nutrition treatment

IMPORTANT NOTES:

✓ Nutritional screening, treatment and support should be an integral component of HIV/AIDS, TB, Kala Azar and malignancies, prevention, care, treatment and support programmes;

The exit criteria for **defaulters, non-respondents, died and transfer** from ITP/SC is similar irrespective of age category and HIV/AIDS, TB, Kala Azar and malignancies status (see *section 4.5*).

4.3 Admission procedures

Triage

This take place in the waiting area of the Inpatient

- Conduct triage and fast track critically ill patients (annex 2)
- Give 50ml of sugar water (1 tea spoon of glucose/sugar in 50ml of safe water =3 table spoons of water) to any cases with SAM suspected to be at risk of hypoglycaemia (see *Annex3*)
- Identify cases referred from health facility contact points, OTP and the community

History Taking

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

Physical Examination :

Do a thorough clinical examination to exclude secondary malnutrition

Bilateral Pitting Oedema

Examine adults' ankles and lower legs for bilateral pitting oedema. Non-nutritional²⁶ causes of oedema can readily be identified by the history, physical examination and investigations eg. urinalysis, liver function test etc

Admission/Registration in ITP/SC (see chapter 2, admission procedure, step 4)

Admission /registration is completed using the existing registration system

- Assign a number and record the patients's information in the ITP/SC register book and on inpatient treatment card (or CCP).

4.3.1 Special Considerations at admission

At admission special considerations for the older age groups in context of HIV/AIDS, TB, KALAZAR or malignancies should include the following:

- Feeling of confidentiality, safety, and respect for privacy;
- A thorough examination should be conducted to exclude conditions that give rise to secondary malnutrition.
- Blood sugar should be tested to exclude diabetes mellitus among adults and elderly
- Treat hypothermia and hypoglycemia, as adults and adolescents are susceptible to them. Hypoglycemia is managed as described for children (see **Protocol Appendix 1**).
- Clear instructions and explanations about routine medications and nutritional treatment;
- Transfer to other services for specialized medical care as needed.

4.3.2 Health and Nutrition Education

At admission, explain the following under health and nutrition education

- Reasons why the patient has been admitted to ITP/SC.
- The principles for treatment while in inpatient.
- Encourage patient to return to the health facility at any time if their condition deteriorates.
- Ensure that the information given is clearly understood by asking some simple questions
- In addition to the usual health and nutrition education sessions held for SAM cases and their caregivers, organize nutritional counselling related to the specific needs of these groups. For example:
 - In the context of HIV/AIDS/TB/Kala Azar, the following topics can be discussed:
 - Dietary management of conditions that may increase nutrient loss (e.g. diarrhea and vomiting);
 - Conditions that impair ingestion of food (e.g., oral candidiasis).
 - The older people can be counselled on recommended nutrition and lifestyle interventions in relation to physiological changes due to aging.
- While conducting the educational sessions for the older people, you should take into account the level of literacy as well as the difficulties faced with vision and hearing, which can impact their ability to take in new information quickly.

²⁶ Non nutritional causes of oedema include among other causes in adults pre-eclampsia in pregnant women, severe proteinuria (nephritic syndrome), nephritis, acute filariasis (the limb is hot and painful), heart failure and wet beriberi

- Grandparents (particularly grandmothers) are often the caregivers of the children and should be targeted for education activities.

4.4 Medical and Nutrition Treatment

4.4.1 Routine Medications

Give routine medications. The routine medications are the same regardless of HIV/AIDS, TB, Kala Azar or malignancies status or age category (refer to Chapter 2, section 2.6). Medicines should be administered in age and/or weight appropriate doses. In addition to the routine medications for ITP/SC, when there is a need to treat certain illnesses, specific medicines for such illnesses may be given according to treatment protocols (HIV /AIDS,Tb, kalazar or malignancies).

4.4.2 Dietary Treatment²⁷:

- Give the same dietary treatment as children 6-59 months with F75 and F100, but with adapted amounts as illustrated in table 10 below. 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.
- The recommended dietary amounts for different ages in Table 10 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.

Table 10: Dietary Requirements²⁸ of Adolescents and Adults in the Stabilization Phase

Age in Years	Daily energy requirement*	Volume of Diet Required			
In years	kcal /kg body weight	F75 ml/kg/hr.	F75 ml/kg body wt. 8 feed in a day	F100 ml/kg/hr	F100 ml/kg body wt. 8 feed in 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	16.0	1.5	12.0

*Individual needs may vary by up to 30 percent from these figures. After Stabilization, the patient is transferred to OTP

²⁷ WHO. 1999. *Management of severe malnutrition: A manual for physicians and other senior health workers*. Geneva: WHO

²⁸ GOSS Interim guidelines integrated management of severe acute malnutrition ,2009

4.5 Failure to Respond to Treatment

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

Re – assessment and investigations are carried out, and treatment instituted accordingly.

4.6 Exit Criteria

Adolescents and adults can exit as 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.

CHAPTER FIVE

MONITORING, SUPERVISION, REPORTING AND EVALUATION

5.0 Introduction

Monitoring, supervision, reporting, and evaluation (M & E) of ITP/SC activities, inputs, outputs and outcomes are important to ensure quality nutrition service delivery. A well-designed M& E system for ITP/SC identifies gaps in implementation and provides information for ongoing needs assessment, advocacy, planning, programming, accountability, and continuous improvement.

Monitoring and Evaluation for in patient therapeutic care comprises of;

- Individual patient monitoring,
- Monitoring Practices and Procedures
- Programme monitoring to assess the effectiveness and efficiency of the ITP/SC Programme,
- Monitoring of inputs such as nutrition therapeutic supplies, anthropometric equipment, data collection tools, IEC materials and staffing

5.1 Monitoring of individual patient

Many types of problems may occur while delivering inpatient nutrition services. There may be problems with an individual patient's progress or care, such as failure to gain weight or respond to treatment of infection. It is therefore important to monitor patient progress, weight gain and care.

5.1.1 Monitoring vital signs

Patient Progress can be done by monitoring vital signs such as pulse, respirations and temperature every 4 hours

The vital signs can be used to identify the danger when:

- Pulse rate increase by 25 or more beats / min
- Respiratory rate increase by 5 or more breaths/min
- Temperature drops below 35°C axillary
- Temperature increases suddenly to > 37.5°C axillary

5.1.2 Monitoring weight gain

The patient weight is done by:

- Weighing patient at the same time each day
- Recording daily weights on weight gain tally sheet (see annex 22) and calculating the child's daily weight gain in grams per kilogram body weight (g/kg/day) and judging whether the weight gain is as recommended
- Indicating on CCP where F100 began

5.1.3 Monitoring weight gain in the ward

Monitoring weight gain on the ward is done as follows:

- Compile data on weight gain on the ward
- Once a month, review records for the ward for a given week (for example, the first week of the month)
- Compile data on a Weight Gain Tally Sheet for the Ward(See annex 22 for blank tally sheet)

5.1.4 Failure to Respond to treatment

- Monitoring individual progress can identify the patient failing to respond (see table 11below)
- The individual failure to respond may be due to several reasons (see Chapter 2 Box A on page 21 of this guideline):

Table 11: Criteria for Failure to Respond

Criteria	Approximate time after admission
Failure to regain appetite	Day 4
Failure to start to lose oedema	Day 4
Oedema still present	Day 10
Failure to gain at least 5 g/kg/day for 3 successive days after feeding freely on F-100	After feeding freely on F-100

Note: HIV/AIDS patients may not respond as those who are HIV negative

5.2 Monitoring practices and procedures

Periodically, or to investigate causes of problems, you need to monitor:

- Case management practices
- Feed preparation
- Ward procedures, and/or
- Hygiene.

Monitoring Checklists for use during ward visits are provided (see *annex23*).

5.2.1 Calculating Case fatality rate for ITP/SC ward

In a big ITP/SC ward (for example, with 100 admissions per month), calculate the case-fatality rate once each month. Also calculate the case-fatality rate monthly in any ITP/SC where the current rate is poor or unacceptable. This will allow improvements to be seen rapidly.

In a small ITP/SC ward (for example, 10 cases per month), or in a ward where the case-fatality rate is moderate or better, the case fatality rate may be calculated less often (e.g., every 3 months).

This is done as follows:

- Determine the number of patients admitted to the ITP/SC in the past month(s).
- Determine the number of those patients who died. (Wait to count deaths until the outcomes for the patients are known. For example, wait until mid-November to count deaths among patients admitted in October.)
- Divide the number of deaths by the number of patients and express the result as a percentage (see table 12 below).

Table 12: Case fatality rate for the ward

Case fatality Rate	Remark
>20%	Un acceptable
11-20%	Poor
5-10%	Moderate
<5%	Acceptable

NB: Carefully review the circumstances of deaths and identify and solve related problems in order to reduce the case-fatality rate.

The objective of an ITP/SC is to achieve a case fatality rate of less than 5%

5.3 Programme Monitoring

- Programme monitoring involves regular collection of health facility/nutrition site data and the performance indicators.
- Performance Indicators:** are indicators used to assess programme effectiveness and efficiency. These performance indicators include: cure rate, defaulter rate, non-respondent rate and death rate (Table 13).

Table13: Definition of Performance Indicators, where a patient is treated throughout the rehabilitation process in ITP/SC

Indicator	Description	Formula	Units
Cure rate	Proportion of discharges from programme as cured	Total number cured / Total number of discharges x 100	%
Defaulter rate	Proportion of discharges from programme as defaulters	Total number of defaulters / Total number of discharges x 100	%
Non-respondent rate	Proportion of discharges from programme as non-respondents	Total number of non-respondents/ Total number of discharges x 100	%
Death rate	Proportion of discharges from programme as deaths	Total number of deaths/ Total number of discharges x 100	%

- Note:** Total discharges = Total (Cured +Defaulters + Death + Non respondents).

▪ **Minimum standards**

Reference values (*Table 14*) were developed by the SPHERE project for use in emergency settings; however they are also used in non-emergency settings. The standards provide a benchmark against which to interpret the function of individual programmes under average conditions.

Table 14: Indicators for Monitoring Therapeutic Feeding Programmes

Indicator	Acceptable	Alarming
	ITP/SC	ITP/SC
Cure rate	>75%	< 50%
Death rate	<10%	> 15%
Defaulter rate	<15%	> 25%
Coverage	Rural: >50%; Urban: >70% ; Camp: >90 %	< 40%

5.4 Programme Supervision

The responsibility for supervision of the ITP/SC programme is established during the planning stages. Supervisors should perform regular supportive supervision visits and depending on context, the nutrition programme staff conducts weekly or bi-weekly coaching and mentorship visits.

The facility staff should hold monthly meetings to discuss any programme issues and answer any questions that may arise such as:

- Any issues in ITP/SC programme management including a review of the caseload number in comparison to the staffing levels, and any expected increases/decreases in the caseload due to seasonal changes or sudden population influx;
 - Case management practices
 - Feed preparations, ward procedures and hygiene
 - Issues in the community that may affect access and factors that may affect attendance;
 - Supplies, logistics and staff related issues;
 - A review of adverse outcome from the programme (deaths, defaulters, and non-respondents);
 - A review of transfers to ensure effective tracking;
 - Issues on reporting.
- Supportive supervisory checklists (*Annexes 31-32*) cover specific job functions and are used systematically, to assess and address service performance.

A supervision visit entails the following:

- Discussion with health and nutrition staff at the ITP/SC health facility.
- Review of records including register books, stock cards, reports and if possible, to check whether:
 - Admissions and discharges are made according to protocols;
 - Routine medications and nutritional treatment are given correctly;
 - Any deterioration in condition is identified and acted upon;

- Absentees and defaulters are traced/followed up;
 - Stock records of routine medications, nutrition supplies/equipment, and prevention items are kept correctly (stores are visited for observation);
 - Quantitative data on the outcome, including standard performance, is collected correctly.
 - Investigating and solving problems on the ITP/SC ward
 - Investigating causes of problems on the ward is correctly done
 - Determining solutions appropriate for the cause
 - Conducting a problem-solving session with a group.
 - Documenting and reporting is carried out
- The Supervisors use the opportunity to provide support (both technical and non-technical) to the health and nutrition service providers based on the identified gaps/needs;
 - Additional qualitative information can be obtained through holding discussions with mothers/caregivers of the acutely malnourished cases and other key community members;
 - The findings are discussed in a feedback meeting with health and nutrition service providers so that improvements can be made;
 - Where gaps are identified, training should be organized according to need (e.g. holding Continuous Professional Development (CPDs) on job training, refresher training etc.).

5.5 Programme Evaluation

This involves assessing the impact of the ITP/SC programme through careful appraisals and studies conducted at pre-planned intervals e.g. annually, mid-term, and end of programme.

- The evaluation plan should set schedules, methodology, resources and the type of indicators. An evaluation will address the following issues related to the programme:
 - Relevance/appropriateness;
 - Coherence;
 - Effectiveness;
 - Efficiency;
 - Impact;
 - Coverage.
- Programme evaluation will be performed using specific evaluation studies²⁹, and be conducted at different periods of the programme's implementation e.g. baseline, midterm and end of the programme.

²⁹ The detailed studies and techniques are beyond the scope of these guidelines and require specialized training for conducting the surveys. Further reference can be made to Coverage and Monitoring Network(CMN) Guidelines

5.6 Data Collection Tools for ITP/SC

- These include tools used for recording and reporting ITP/SC data at individual and programme level (*see table 15*)
- Standardized M&E forms and tools are used to collect and aggregate the inpatient care monitoring data. This will facilitate comparability of data across different sites as well as aggregate data at the various administrative levels.

Table 15: Data Collection Tools for ITP/SC

Tool	Purpose
Health Facility/Nutrition Site Level	
A: Individual data collection tools	
Treatment card/CCP	- A record of basic information on an individual case's progress during treatment in ITP/SC (clinical condition, health issues and other medications given). - Kept at the health facility as a record of the beneficiary's progress.
24 hour feed Intake Chart	- A record of basic information on individual feed intake
Weight Gain Tally Sheet	A record of basic information on weight gain for patients on at least 2 days of F100 feeding.
Referral slip for SC/ITP/SC/OTP/TSFP	- Used by health and nutrition staff at facility level to refer cases between programmes/sites.
ITP/SC Register Books	- Record of detailed information on cases admitted in ITP/SC programme. - Tracks follow up information (anthropometry, routine treatment) - Record of exit outcome. - Kept at the health facility/nutrition site. - Data from registers is used for compiling monthly reports.
B: Programme data collection	
Site Tally Sheet	The site tally sheet (<i>see annex 25</i>) indicates the name of the health facility and type of IMAM 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. -
Monthly report forms (ITP/SC) (Annex 27)	- Record of cases enrolled in programme each month at different levels of health care (site, county, SMOH and MOH). - Track programme performance through monitoring programme outcomes vis-à-vis standard cut offs (SPHERE standards).
Weekly/Bi-weekly, Monthly and Quarterly Supervision Checklists (annex 23)	- Used by Supervisors for weekly/biweekly, monthly and quarterly supportive supervision visits aimed at improving nutrition service delivery.
Nutrition supplies and equipment order forms (annex 29)	- Used for placing orders /requisitions for supplies and equipment.
Stock cards	- For tracking quantity and utilization of nutrition supplies.
Monthly Nutrition Stock Report	- Breakdown of stock movement including commodity type,

Tool	Purpose
forms (annex 30)	opening stocks, receipts, distributed quantities, returns, losses, closing balances and reasons for loss.

5.7 Programme Reporting

- Programme data collected from static and outreach nutrition sites in the community and health facility is used to compile site reports (*Annexes 25 and 26*). A minimum reporting guidance is given in *annex 34*

Figure 4 shows flow of reports from ITP/SC sites to MOH

5.7.1 Monthly Site Report

Using site reporting sheet (see *annex 26*), 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.

5.7.2 County/State Report

The **County/State report sheet** (see *annex 27*) is completed monthly with inputs from all the site reports combining inpatient care and outpatient care.

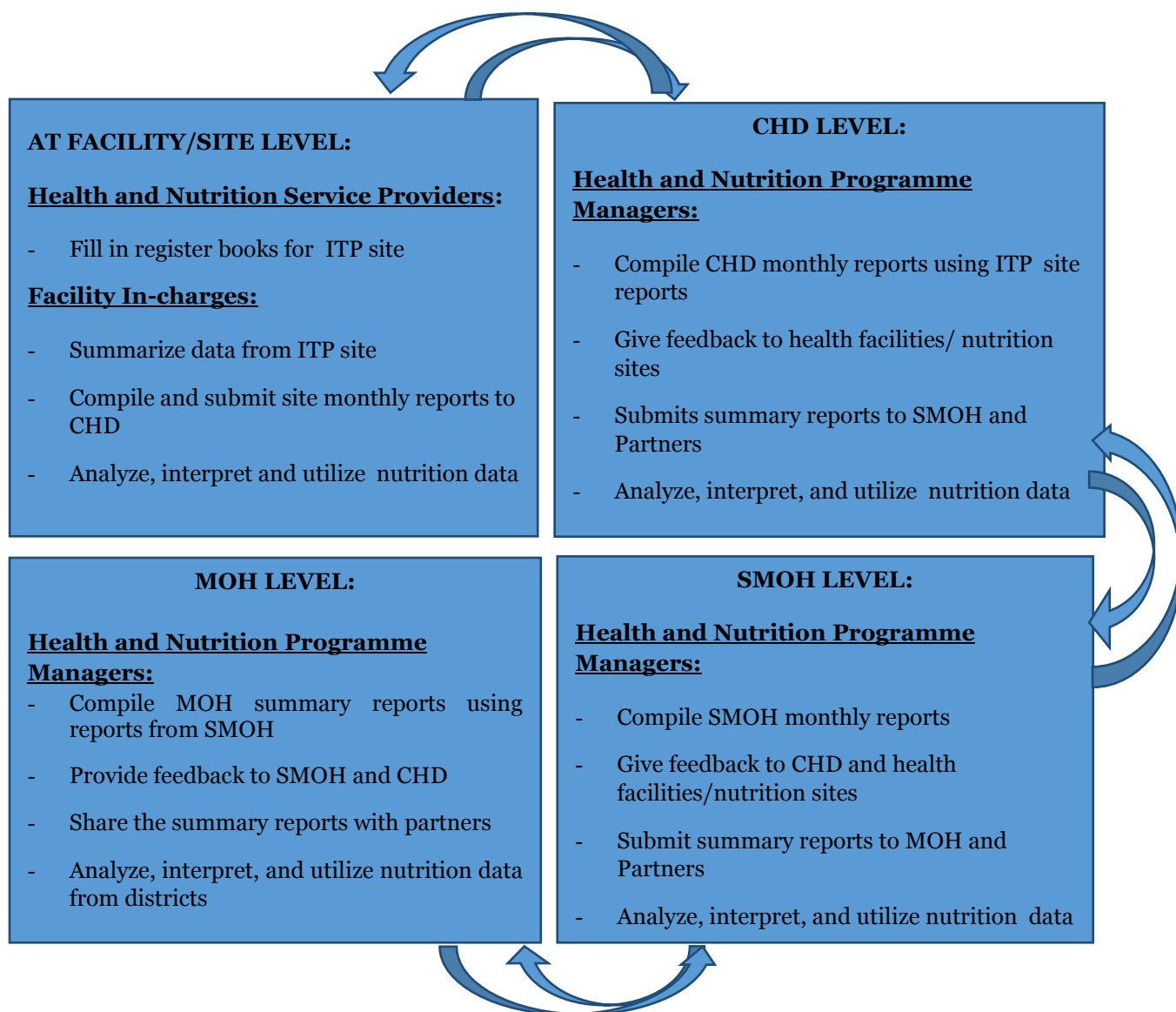


Figure 4 : Flow of reports from ITP/SC sites to MOH

CHAPTER SIX

SUPPLIES MANAGEMENT AND STOCK CONTROL

6.0 Introduction

To provide quality ITP/SC services, it is critical to have a reliable supply chain for delivering basic nutrition supplies and equipment. An efficient system for ordering and managing nutrition supplies and equipment prevents stock-outs and reduces time loss, thereby building confidence in service management. If appropriate, efforts should be made to utilize existing channels for ordering and management of other supplies, equipment, and consumables at different levels of health care system. A detailed list of supplies and equipment required for ITP/SC (*see Annex6.*)

6.1 Ordering for Nutrition Supplies and Equipment

The amount to order depends on the following:

- Caseloads or expected cases based on trends of acute malnutrition;
- Amount of stock normally used;
- Frequency of ordering;
- Existing storage capacity.

6.1.1 Estimating requirements

- Decide what supplies and equipment you need, and then calculate or estimate what quantities of each of these items is required. In order to do this:
 - Check the stock records to find out the stock balance and decide what items, and how much of each item, you need to order;
 - Calculate stock needed based on caseloads (number of cases on programme) or expected cases depending on the seasonal trends of acute malnutrition
 - Add emergency stock (**buffer stock**) for unexpected situations. **Buffer stock** is defined as reserve supplies to safeguard against unforeseen shortages or demands. It is stock used over and above the actual stock needed to run the program, and is equivalent to 2 months stock or 10% of the stock required to run the programme.

6.1.2 Placing an order

- Place your order using an order form.
- Put each item in its own row, with a full and clear description, including the size, quantity, etc.
- Place orders for complete packs or cartons. For example, if you need 3,000 sachets of F- 75 1 carton contains 150 sachets, $3200/150 = 21.3$ cartons, order for 22cartons.
- The ordering forms in Microsoft excel (*see Annex 29*) are used to automatically quantify the supply requirements.
- For rations needed for a period of 1- 3 months, , orders/requisitions are made to the store keeper (or staff assigned this responsibility).
- For ITP/SC, verify each Friday that supplies will be enough to feed the patients throughout the weekend or holiday.

6.2 Storage and Stock control

6.2.1 Organizing the store

- Routine medicines, non-bulky nutrition supplies such as RUTF, anthropometric equipment and other materials are kept in the health facility general stores, from which they are issued when needed.
- Proper storage conditions are important to protect stock from deterioration and damage. The store should be:
 - Kept in good condition. The structure including the roof, ceiling, walls and the floor should be maintained and well lit.
 - Secure: to ensure security, keep the store locked at all times when not in use;
 - Kept clean and tidy;
 - Free of pests and equipped with rodent traps;
 - Dry and not too hot or cold. (Room temperature of 25-30°C)
 - Well ventilated with enough space to put all nutrition supplies on shelves or pallets, at least 10 cm from the wall;
 - Not exposed to direct sunlight
- Rotate stock according to the expiry date using the SLFO (Shortest Life First Out) rule. Use FIFO (First In First Out) rule for items without an expiry date and mark these with the date of receipt.
- Put a red star, or similar mark, on the labels of all items that have an expiration date within the current year.
- Remove items that are expired, damaged, or no longer in use from the shelves. Store them separately pending disposal. Report expired commodities to the CHD for disposal following the MOH methods for non-hazardous medical waste disposal such as burning or incineration.

6.2.2 Stock control and store records

- Stock control is about managing supplies in a health facility
 - Keeping accurate and reliable records of stock received and issued;
 - Stock taking (checking stocks on a regular basis);
 - Carrying out an inventory of stock at least once a year.
- A stock control system uses tools such as **stock cards** and **stock control ledgers**.
- A **stock card** is a useful tool for preventing shortages and over-stocking. It tracks quantities of supplies received, issued and in stock at any time
- A **stock control ledger** summarizes data from stock cards.

6.3 Receiving Supplies

- Make sure at least two people receive and check new deliveries at the facility or warehouse before you put them away in the store. The following simple checks are made:
 - Check the delivery note, packing list and contents against a copy of the order;
 - Check the contents and number of boxes against the packing list;
 - Check the outer and inner packaging for any signs of damage, for example, spots, breakages, leaks, missing labels, etc.;
 - Check if labels are legible and include complete information, for example, the approved name, storage instructions, manufacturer's details, and expiry date;

- For equipment, check that all spare parts, accessories, instruction manuals, and warranty documents are included;
 - Check the shelf life and expiry date. Do not accept items if the expiry date has passed. Only accept items nearing the end of their shelf life if you are sure you can use them before they expire.
- Note any inconsistencies and report them to the staff in charge of the facility, who should inform the CHD and SMOH.
 - The summary of inconsistency should be immediately notified to the designated agency by SMOH and Nutrition Department in the MOH.
 - If the correct amount and condition of goods matches the invoice, sign the invoice, assure that the driver signs it, and keep a copy for your records. File delivery documents with the order forms.
 - Place the supplies in your storage rooms as soon as possible. An integrated storage system is recommended (i.e. use the existing storage system for drugs and other supplies/equipment)
 - When you unpack supplies, enter the details on the stock card and enter new items in the inventory.

6.4 Issuing supplies

- Using an issue book or issue voucher, record all supplies being issued out.
- Give a copy of the issue voucher to the recipients for their records.

6.5 Stock Taking

- A stock take involves physically counting what is in stock and then comparing the counted figures with the balance figures on the stock cards, checking expiry dates, and noting the condition of stock.
- If there is a difference between the counted figures and the balance figures on the stock cards, you need to find out why. For example, stock may have been received or issued without being recorded, or may have been stolen.
- Stock taking is carried out monthly at the warehouse (A warehouse should ideally have sufficient stocks for **six** months. This allows a **four** months emergency stock to be kept in case of interruptions to the supply or an increase in needs)
- At the health facility, you should carry out stock taking before ordering for more supplies. .
- If it is not possible to take stock before each order because you order stocks very frequently, carry out a stock take at least three times a year
- Depending on storage space, a health facility should ideally have sufficient stocks for **four** months. This allows **two** months of emergency stock.

6.6 Inventory of stock

- An **inventory** is a list of non-expendable supplies and equipment that are kept at the health facility.
- The staff in charge of the health facility should keep a master copy of all items, and update this list each time an item is received and issued.
- An inventory should be carried out at regular intervals (at least once a year) to check the condition, location of supplies and equipment in stock, those in use, and to identify purchasing requirements.
- It is important to have a set time or times each year for inventory checking.

6.7 Stock Reporting

Stock utilization is reported monthly using the nutrition stock report format (see *Annex 30*)

6.8 Quality assurance

- Quality assurance shall be maintained at all levels across the supply chain, as per MOH requirements.

CHAPTER 7

EMERGENCY NUTRITION RESPONSE

7.0 Introduction

Emergencies may be either man-made disaster, such as an exacerbation of an on-going conflict with population displacement, or due to environmental issues such as a serious drought or severe flooding/landslides. The local infrastructure may not have the capacity to respond due to limited resources particularly financial, human, logistics and/or structural limitations. Geographical isolation may further affect ability to respond. When situations such as this occur especially if there is a substantial proportion of the population affected, this often results in food shortages and impairs the nutritional status of affected communities, in particular infants, children and adolescents, but also adults, especially pregnant and lactating women and elderly persons. There is a need to rapidly respond to prevent increased and/or excessive morbidity and mortality.

Nutritional Emergency

Nutritional emergency occurs when there is an abnormally high rate of acute malnutrition resulting from a crisis event.

- Global acute malnutrition rate >10% or
- Crude mortality rate >1 death/10,000 persons per day or
- Under-five mortality rates >2 deaths/10,000 under-fives per day (SPHERE, 2011)

Emergency Nutrition Response: An intervention that primarily aims to prevent individuals with mild and moderate malnutrition from becoming severely malnourished and to treat all forms of acute malnutrition during nutritional emergencies.

There are three main nutrition relief responses:

- General food distributions for all the affected households*
- Supplementary Feeding Programme³⁰ (SFP) aims to treat cases with moderate acute malnutrition (MAM) and to prevent acute malnutrition (SAM and MAM).
- Therapeutic feeding programme (TFP) for severely malnourished individuals*

For more information on these refer to relevant sections of the CMAM guideline³¹

³⁰ SFP is categorized into two types of nutrition interventions: **Targeted Supplementary Feeding Programme (TSFP)**: aims to treat cases with MAM without medical complications through the provision of outpatient treatment, consisting of high energy and nutrient dense supplementary food rations, routine medications, and a prevention package. **Blanket Supplementary Feeding Programme (BSFP)**: aims primarily to prevent a deterioration in the nutritional status and to reduce the prevalence of acute malnutrition among vulnerable groups through the provision of energy and nutrient dense supplementary food rations, micronutrient supplements, and a prevention package to all members of the at-risk groups.

³¹ Refer to Chapters 3 (SFP) and Chapter 4 (OTC)

Emergency nutrition interventions require substantial resources to be set-up and monitored. Non-governmental organisations (NGOs) often support the Ministry of Health (MoH) with collaborative implementation.

7.1 General requirements for Emergency Nutrition Response

Personnel

- When implementing emergency nutrition interventions the appropriate staff and staffing levels are vital. There is a need for managers/administration, logistics support, technical staff (clinicians, nutritionists, nurses, records person, etc) and support staff (security guards, cleaners etc) and community health workers .
- Where possible prioritize recruitment of qualified local staff as they understand the context, speak the local language and understand the culture of the population.
- All the staff must be trained and orientated prior to commencing the relief programmes. They should have clear job descriptions with clear roles and responsibilities.

Supply Provision

In any emergency response, it is important to have a good logistics system to ensure there is no break in the system. These programmes need to run continuously and not be affected by lack of commodities. Buffer stocks should be in place especially where insecurity is an issue.

7.2 Steps for Emergency Nutrition Response

Step 1: Coordination and information sharing

Coordination of all the emergency activities at all levels and among all implementing partners is key to ensure effectiveness. This prevents duplication of programmes and also identifies gaps that have not been met in each sector.

Step 2: Conduct Rapid Nutrition Assessment

- Jointly plan and conduct an initial assessment to understand the situation and identify the extent of the threat to people's lives, their coping strategies and access to services such as health, safe drinking water/sanitation and basic diet using national standardized tools or guidelines.
- Conduct a multi-sectoral assessment, to understand the different factors affecting malnutrition i.e. the immediate, underlying and basic causes. This will ensure a holistic approach to the management of acute malnutrition.
- Review existing interventions where an existing humanitarian response is in place but there is deterioration in the situation, and identify needs required to increase capacity to meet the demands of a deteriorating situation.
- Carry out on-going nutrition surveys periodically during the programme to monitor effectiveness of response.

Step 3. Selecting appropriate emergency nutrition responses

- When the emergency assessment reports indicate that the nutrition needs are unmet, and/or there are increasing/high levels of acute malnutrition, appropriate responses are identified. A decision chart (Figure 13) can be used for guidance on the type of response required.
- The under-five age-group, pregnant and lactating women are usually the primary target in emergency nutrition interventions. Other identified vulnerable groups such as the elderly and chronically ill especially People Living with HIV/AIDS (PLWHA) and TB patients should be targeted.

- The nutrition status of under 5 age group is usually taken as the proxy indicator of the nutrition status of the community to inform nutrition planning in emergency situations.

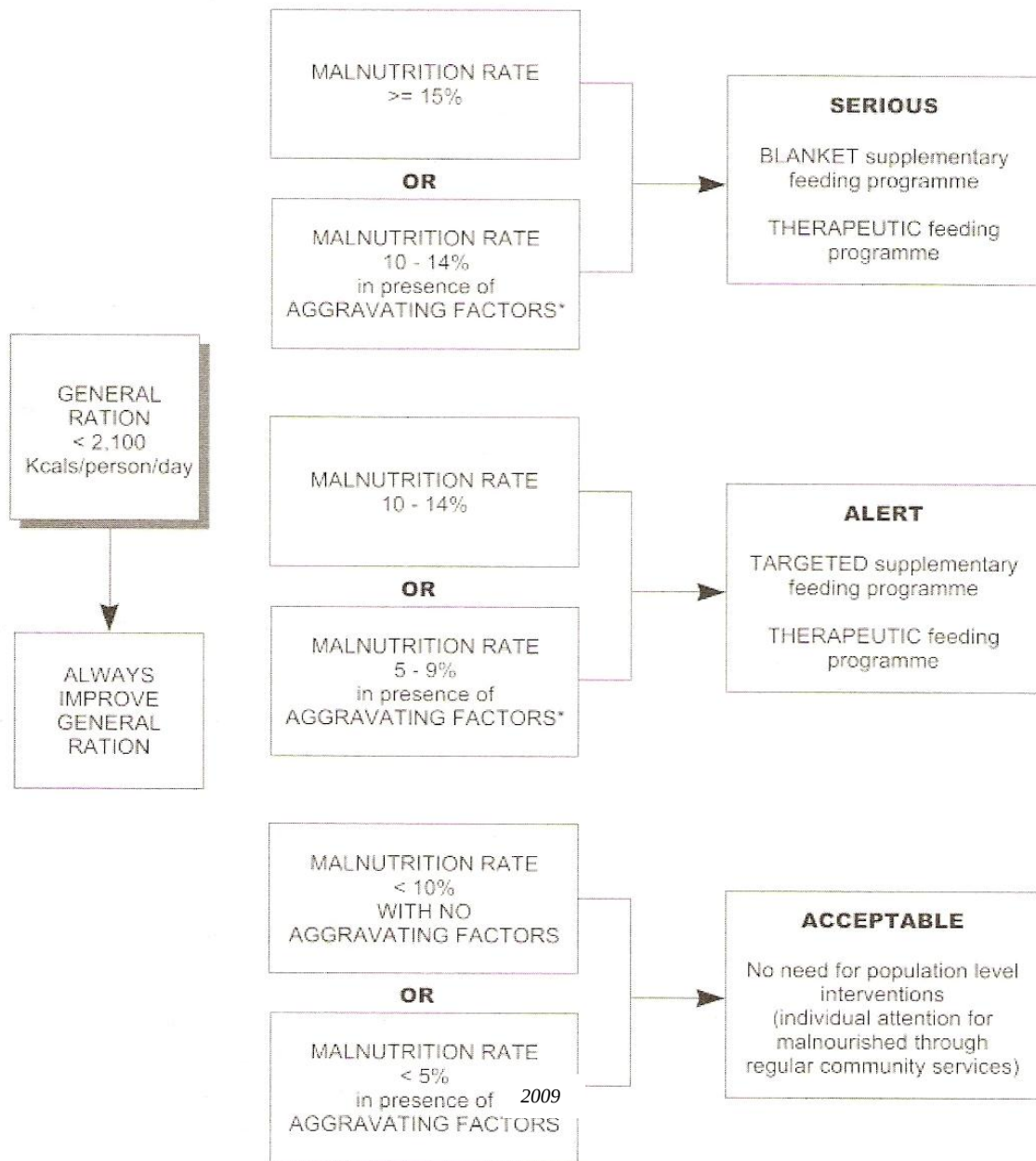
Step 4: Planning an emergency nutrition response

These responses should include

- Establishing an emergency response team (refer to section 6.2 below) with defined roles and responsibilities.
- Selecting nutrition programme sites. Programme sites are identified depending on the population size affected, the planned geographical coverage and accessibility. The size of the programme will depend on the population needs and the capacity of the implementing partner. The area can be defined by using administrative boundaries.
- Integrating screening and referral for acute malnutrition at all health facility and community contact points. Ensure medical-nutritional follow-up of patients with MAM and SAM without medical complications (See CMAM guidelines) and management of those having SAM with medical complications as in-patients (see details in Chapter 3 of this guideline).
- Maximizing positive impact and limiting harm (be aware of competition for scarce resources/increased resources, misuse or misappropriation of supplies) and providing equitable humanitarian services

Decision making framework for implementation of feeding programmes

(ref. Nutrition guidelines, MSF 1995; Management of nutrition in major emergencies, WHO (in press))



Aggravating Factors

General food ration below the mean energy requirements
Crude mortality rate > 1 per 10,000 per day
Epidemic of measles or whooping cough
High prevalence of respiratory or diarrhoeal diseases

Malnutrition rate

Proportion of child population (6 months to 5 years) who are:
- below 80% weight for height or
- below -2 Z-score weight for height

UNHCR/WFP Guidelines on Selective Feeding Programme

Figure 5: Decision Tree for the Implementation of Selective Feeding Programmes

7.3 Programme Linkages for Prevention and Management of Acute Malnutrition in Emergencies

Preventing and addressing under nutrition requires multi-sectoral action and other programme linkages for prevention and management of acute malnutrition in emergencies. These interventions include infant and young child feeding in emergencies (IYCF-E), health, water, sanitation and hygiene and food security.

i) **Acute malnutrition**

- The management of MAM should be linked with the management of SAM wherever possible.
- Linkages at the health facility and community levels are essential in emergencies to take care of the increased numbers of acutely malnourished children.
- Referral mechanisms between prevention and management of acute malnutrition activities are also very important and should be established as part of the nutrition response.

ii) **Infant and Young Child Feeding in emergencies (IYCF-E)**

- It is important to address IYCF-E as part of the prevention of acute malnutrition, particularly to emphasize exclusive and continued breastfeeding and optimal complementary feeding in children 6-23 months of age.
- It is also important to include basic information on infant and young child feeding in an HIV context.

iii) **Health and Water/Sanitation**

- Early and accelerated management of sanitation, hygiene, water sources, and health programs for common childhood illness (e.g., diarrhoea, measles) should augment the management of acute malnutrition during an emergency.
- Feeding centres and distribution sites should include access to safe water for drinking and for hand-washing.

iv) **Food Security and Livelihood Programmes**

- Where food insecurity is a result of an emergency or exists prior to the emergency, resources should be spent on nutrition interventions for prevention and treatment of acute malnutrition.

7.5 Exit Strategy for Emergency Nutrition Response (ENR)

An exit strategy should be developed right at the beginning of the ENR programme through strong involvement of the district health teams and/or staff of the relevant health facilities. The exit strategy indicates when an emergency intervention should be phased out or closed down.

Consider the following factors in order to exit an ENR:

- Levels of acute malnutrition have reduced (<10% with no aggravating factors⁹)
- Crude mortality rates <1/10,000/day.
- Food security improved and no other aggravating factors such as **severe** climatic conditions and inadequate shelter.
- Net reduction in the number of children attending the centres (through improvement in the nutritional status or the displacement of the population etc.)
- Depletion of food stock without being renewed
- End of or lack of financial funding

Programme closure must be done gradually over a period of 3-6 months. It is desirable to start with a reduction in the rations, stopping new admissions, establishing hand-over solutions, and training of identified focal person(s) for the specific programmes.

Monitoring and Evaluation

Monitoring and evaluation of an emergency nutrition response helps to ensure that the ENR is effective at preventing increased /and or excessive morbidity and mortality related to acute malnutrition.

The following need to be monitored (using the detailed requirements in the above section 6.2) :

- Personnel
- Supplies and logistics
- Service linkages for prevention and management of acute malnutrition
- Aggravating factors
-

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ANNEXES

ANNEX 1: PYHSIOLOGICAL BASIS FOR TREATMENT OF SEVERE ACUTE MALNUTRITION.

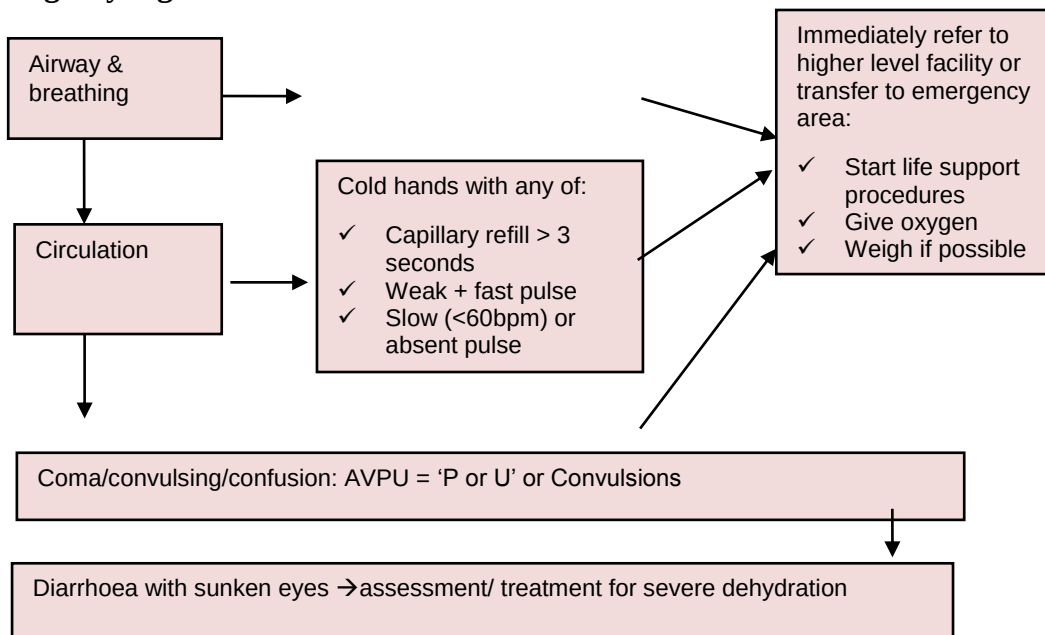
Affected Area or Organ	Effects	Treatment
Cardiovascular system	Cardiac output and stroke volume are reduced Infusion of saline may cause an increase in venous pressure Any increase in blood volume can easily produces acute heart failure; any decrease will further compromise tissue perfusion Blood pressure is low Renal perfusion and circulation time are reduced Plasma volume is usually normal and red cell volume is reduced	If the child appears dehydrated give: ReSoMal or F-75 diet; do not give fluids intravenously unless the child is in shock Restrict blood transfusion to 10 ml/kg and give a diuretic.
Liver	Synthesis of all proteins is reduced Abnormal metabolites of amino acids are produced Capacity of liver to take up, metabolize and excrete toxins is severely reduced Energy production from substrates such as galactose and fructose is much slower than normal Gluconeogenesis is reduced, which increases the risk of hypoglycaemia during infection Bile secretion is reduced	Do not give the child large meals Ensure that the amount of protein given does not exceed the metabolic capacity of the liver, but is sufficient to support synthesis of proteins (1–2 g/kg per day) Reduce the dosage of drugs that depend on hepatic disposal or are hepatotoxic Ensure that sufficient carbohydrate is given to avoid the need for gluconeogenesis Do not give iron supplements, which may be dangerous because transferrin levels are reduced
Genito -Urinary system	Glomerular filtration rate is reduced Capacity of kidney to excrete excess acid or a water load is greatly reduced Urinary phosphate output is low Sodium excretion is reduced. Urinary tract infection is common	Prevent further tissue break down by treating any infections and providing adequate energy (80–100 kcals or 336–420 kJ/kg per day) Do not give the child more protein than is required to maintain tissues Ensure that high-quality proteins are given, with balanced amino acids Avoid nutrients that give an acid load, such as magnesium chloride Restrict dietary sodium Ensure that water intake is sufficient but not excessive
Gastro Intestinal Tract System	Production of gastric acid is reduced	Give the child small, frequent feeds

	Intestinal motility is reduced Pancreas is atrophied and production of digestive enzymes is reduced Small intestinal mucosa is atrophied; secretion of digestive enzymes is reduced Absorption of nutrients is reduced when large amounts	If absorption is poor, increase the frequency and reduce the size of each feed If there is malabsorption of fat, treatment with pancreatic enzymes may be useful
Immune System	All aspects of immunity are diminished Cell-mediated (T-cell) immunity is severely depressed IgA levels in secretions are reduced. Complement components are low Phagocytes do not kill ingested bacteria efficiently Tissue damage does not result in inflammation or migration of white cells to the affected area Acute phase immune response is diminished Typical signs of infection, such as an increased white cell count and fever, are frequently absent.	Treat all children with broad-spectrum antimicrobials Because of the risk of transmission of infection, ensure that newly admitted children are kept apart from children who are recovering from infection
Endocrine System	Insulin levels are reduced and the child has glucose intolerance. Insulin growth factor 1 (IGF-1) levels are reduced, although growth hormone levels are increased Cortisol levels are usually increased	Give the child small, frequent feeds Do not give steroids.
Circulatory System	Basic metabolic rate is reduced by about 30%. Energy expenditure due to activity is very low There is both heat generation and heat loss Hypothermic in a cold environment .	Keep the child warm to prevent hypothermia; dry the child quickly and properly after washing and cover with clothes and blankets, ensure that windows are kept closed at night and keep the temperature of the living environment at 25–30 C If a child has fever, cool the child by undressing them (<i>never</i> alcohol rubs)
Cellular function	Sodium pump activity reduced and cell membrane more permeable than normal, which leads to an increase in intracellular sodium and a decrease in intracellular potassium and magnesium. Protein synthesis is reduced	Give large doses of potassium and magnesium to all children Restrict sodium intake
Skin, muscles and glands	The skin and subcutaneous fat are atrophied, which leads to loose folds of skin Many signs of dehydration are unreliable; eyes may be sunken because of loss of subcutaneous fat in	

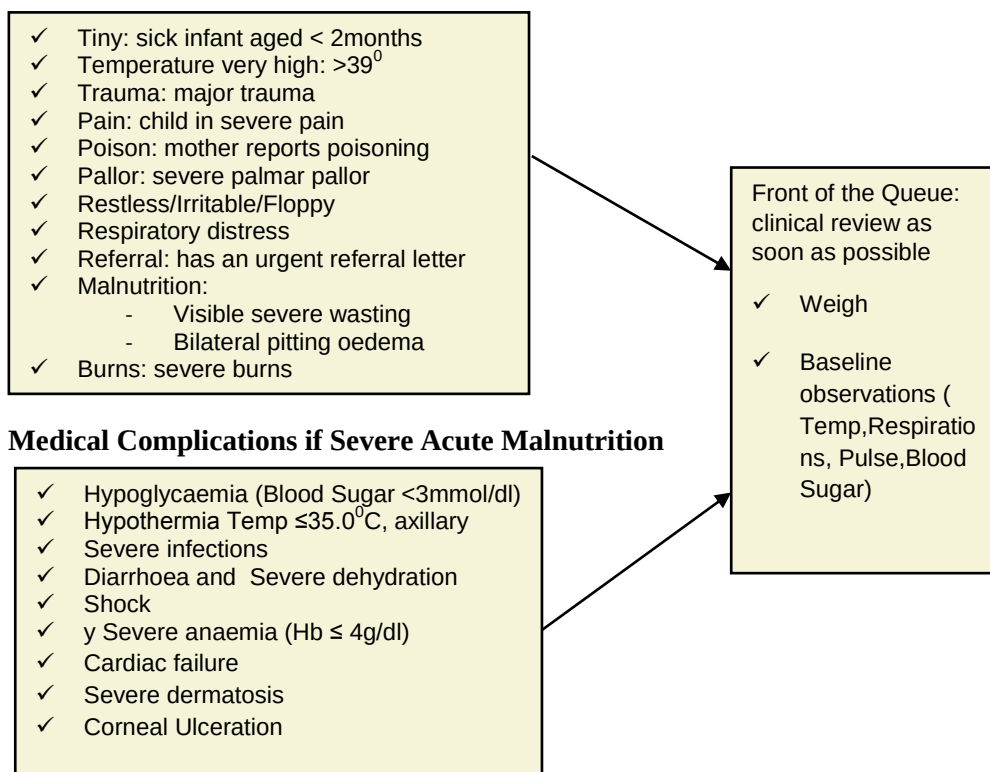
	the orbit. Many glands, including the sweat, tear and salivary glands, are atrophied; the child has dryness of the mouth and eyes and sweat production is reduced. Respiratory muscles are easily fatigued.	
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ANNEX 2: TRIAGE OF SICK CHILDREN

Emergency Signs:



Priority signs



ANNEX 3: SUGAR WATER PROTOCOL

Children with SAM can develop hypoglycaemia (low blood sugar <3mmol/l or <54mg/dl). This could be due to inadequate intake of food as a result of poor appetite, infrequent feeding, traveling long distance without food, waiting too long for admission, or due to excessive vomiting. Hypoglycaemia should be prevented or treated promptly and appropriately to prevent deaths, especially in critically sick children with SAM.

SUGAR WATER 10% DILUTION (Ingredients):

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

Preparation:

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

How to give:

Give 50ml of 10% sugar water to:

- All children with SAM who have travelled for long distances without feeding. This should be done immediately on arrival at the health facility.
- All children with SAM who have waited a long time for attention.
- Children with SAM who have hypothermia (low body temperature [$<35.0^{\circ}\text{C}$ axillary or $<35.5^{\circ}\text{C}$ rectal]). A hypothermic child is most probably also hypoglycaemic.

Note: If possible, especially when it is very hot, give sugar water to all children awaiting treatment in the OTP.

ANNEX 4: ANTHROPOMETRIC MEASUREMENTS

Anthropometric refers to physical measurement of body parts in comparison to reference standards. It includes (but is not limited to) the following measurements: **Mid upper Arm Circumference** (MUAC), **body weight**, **length** (for children less than 2 years or less than 87.0cm) and **height** (for children older than 2 years or ≥ 87.0 cm, adolescents, and adults).

Building blocks of anthropometry (4 variables) include: age, sex, weight and height. When taking anthropometry, first assess age and examine for bilateral pitting oedema.

A: ASSESSING BILATERAL PITTING OEDEMA

Bilateral pitting oedema, (formerly known as kwashiorkor), is swelling from excess fluid in the tissues. It can be verified by applying thumb pressure on top of both feet for three seconds, which 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, in severe cases it progresses to the upper limbs and face.

To check for bilateral pitting oedema:

- ✓ Hold both feet so that they rest in your hands with your thumb on top of the feet;
- ✓ Press your thumbs gently for about 3 seconds. This can be estimated by counting 1001, 1002, 1003;
- ✓ The child has oedema if a pit (dent) remains on both feet when you lift your thumb;
- ✓ If the swelling is only in one foot, it is not related to malnutrition.

Grades of Bilateral Pitting Oedema

There are three grades of bilateral pitting oedema. When there is no bilateral pitting oedema, it is “o” or “absent.” Grades of bilateral pitting oedema are classified by plus signs as follows:

Observation	Classification
Bilateral oedema in both feet (below the ankles)	+ / (Grade 1) mild
Bilateral oedema in both feet and legs, (below the knees) hands or lower arms	++ / (Grade 2) moderate
Bilateral oedema observed on both feet, legs, arms, face	+++ / (Grade 3) severe

Note: It is important to interpret oedema with caution, especially in adults, as it may be a sign of underlying medical condition (e.g. nephrotic syndrome, severe anaemia, high blood pressure, other renal or heart conditions) or physiological changes such as in pregnancy. A clinician should take detailed history, physical examination and where possible biochemical tests.

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.	

Source: WHO (2011). Training Course on the Inpatient Management of Severe Acute Malnutrition

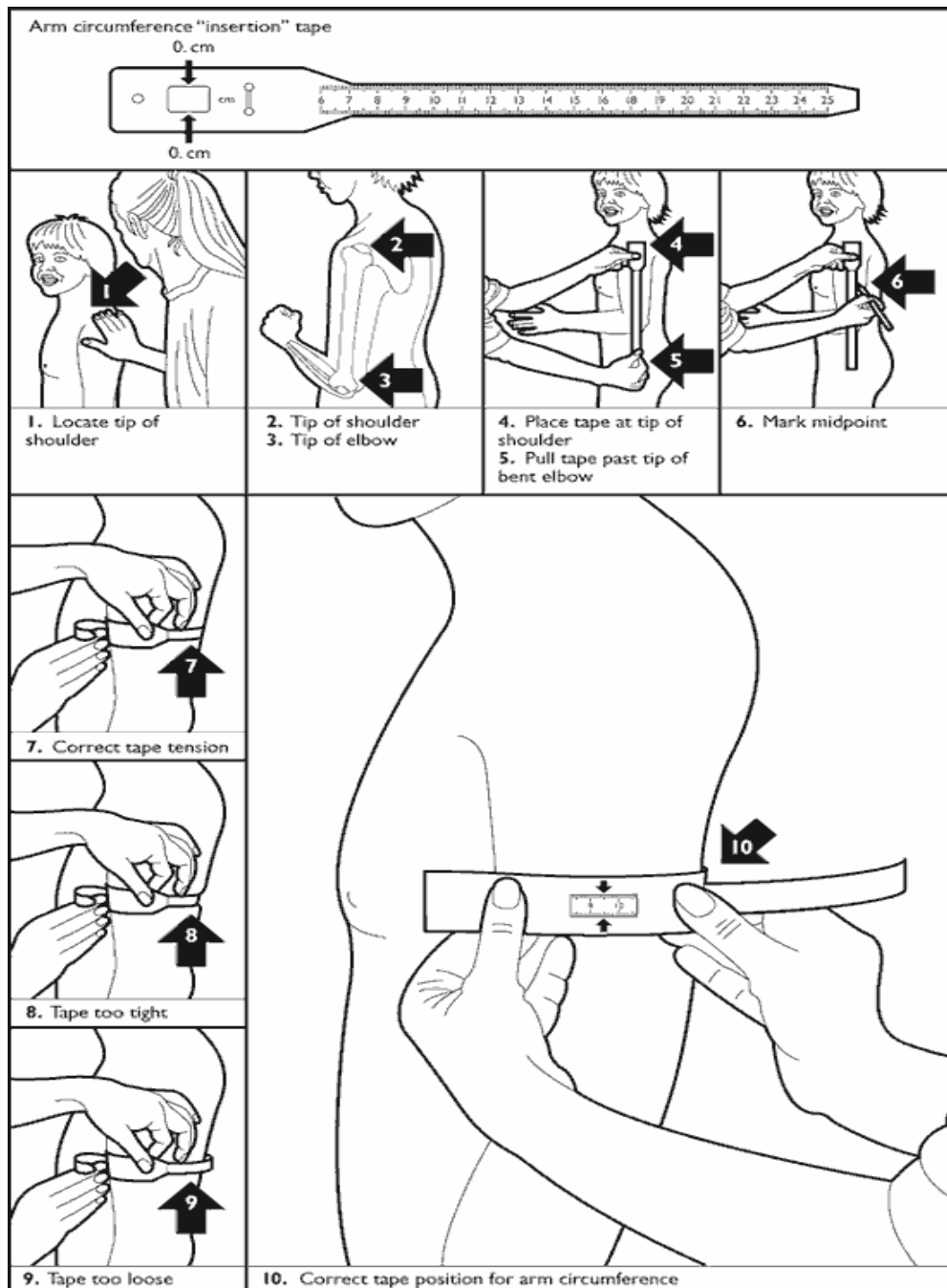
B: MEASURING MID-UPPER ARM CIRCUMFERENCE OR MUAC

MUAC is used to measure wasting and should be performed for all the vulnerable groups of people at key contact points. The measurement is well correlated with muscle mass and therefore with the nutritional reserves of the body. It has a significant correlation with the risk of death.

It is essential to use the age limit of 6 months for arm circumference because there are no standard measurements for infants below six months of age. Be sure to use age appropriate MUAC tapes when measuring MUAC.

How to measure MUAC:

- ✓ Rule out bilateral pitting oedema
- ✓ MUAC is always taken on the left upper arm (or the less active arm).
- ✓ Locate the tip of the shoulder (acromion) and elbow (olecranon) on the left (or less active), arm. To locate the correct point for measurement, the patient's elbow is flexed at 90° (see picture below).
- ✓ 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, feed the end of the tape down through the first opening and up through the third opening, slide the end through the first opening and then through the second opening such that all of it is in contact with the child's skin. It should be neither too tight nor too loose.
- ✓ For the simple three-color coded tape (red, yellow, green), read the colour that shows through the window at the point where the arrows point inward. For the numbered tapes, read the actual measurement and record it in cm. MUAC can be recorded with a precision of 0.1 centimetre (cm).



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

C: MEASURING 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 0.1 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 the health facility, 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 when weighing 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.

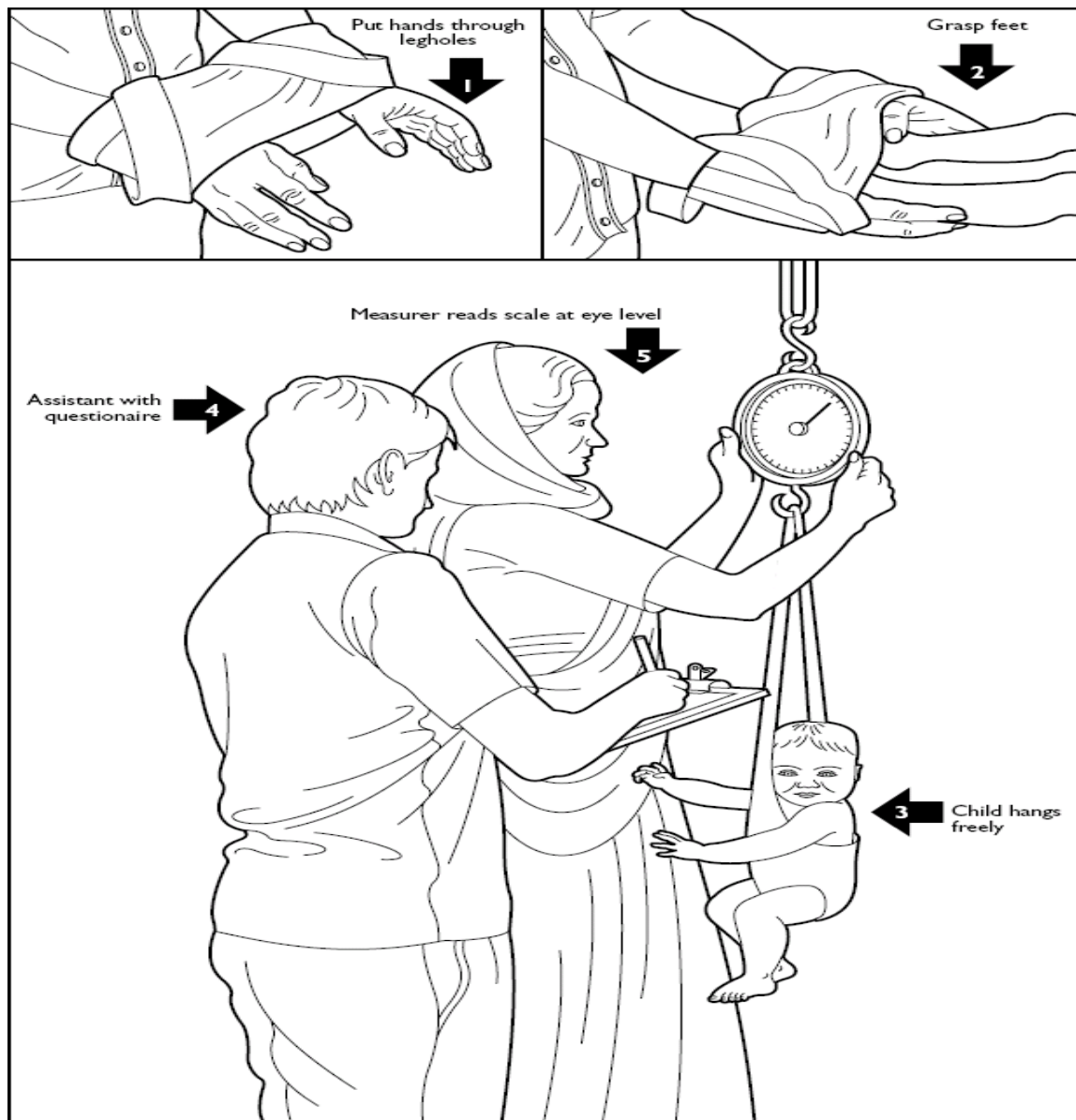
How to use the Salter Scale:

- ✓ Before weighing the child, ask the mother/caregiver take off the child's clothes.
- ✓ 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 secured 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 pointer 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 then records it on the treatment card. The child is then dressed.
- ✓ The scale should be checked daily against a known standard 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”

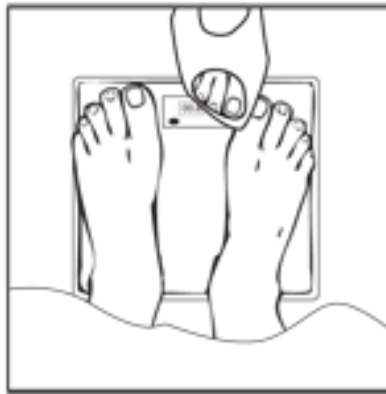
“Tared weighing” means that the scale can be re-set to zero (“tared”) with the person just weighed still on it.

Explain the tared weighing procedure to the mother, stressing 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. For a scale that is solar powered, ensure there is enough light to operate the scale. Scales that use batteries are sensitive to direct sunlight and humidity and should be protected accordingly.



Mother's weight alone



Taring the scale



Baby's weight appears on display.

- ✓ To turn on a solar powered scale, cover the solar panel for a second. When the number 0.0 appears, the scale is ready. To turn on a scale powered by batteries, press the start button once.
- ✓ 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. This can be done by covering the solar panel for a second (for solar powered scales) or by pressing the 2 in 1 button for scales that use batteries. 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.

If the child is 2 years or older, you weigh the child alone if he/she child can stand still.

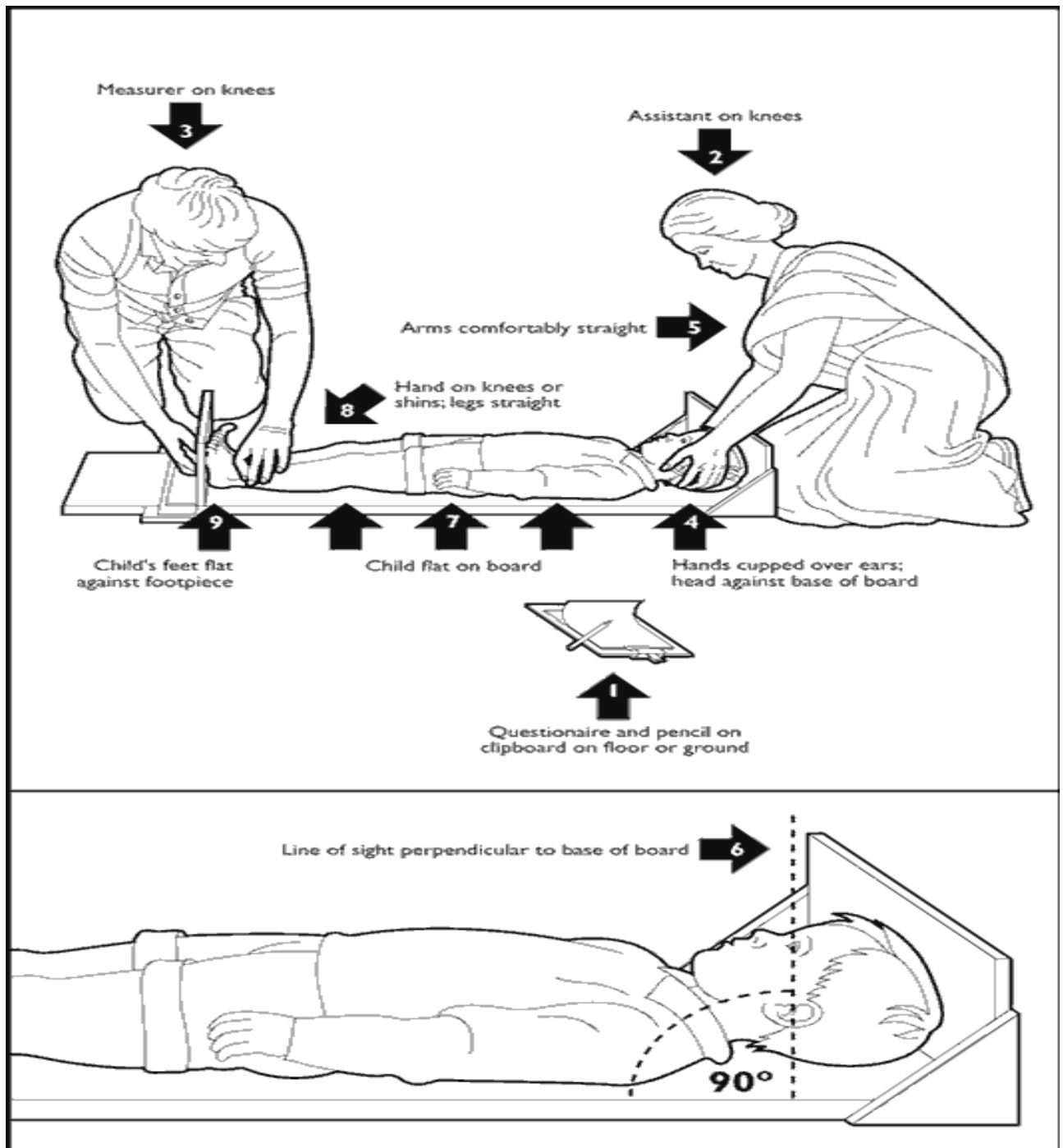
D. MEASURING LENGTH/HEIGHT

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 (WHO standards) are measured standing, and those less than 87 cm are measured lying down. If children aged 2 or older or at least 87 cm tall are measured lying down, 0.7 cm is subtracted from the measurement. If children aged less than 2 years or shorter than 87 cm are measured standing up, 0.7 cm is added to the measurement to convert it to length.

For Children under 2 Years or under 87 cm Tall

Measure **length**. The height board is placed on the ground or a firm flat surface such as a table. 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 shoulder blades, buttocks, and heels touching the surface of the height board. Knees should be fully straight, arms stretched on the child's 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 then records it on the medical form or health card.

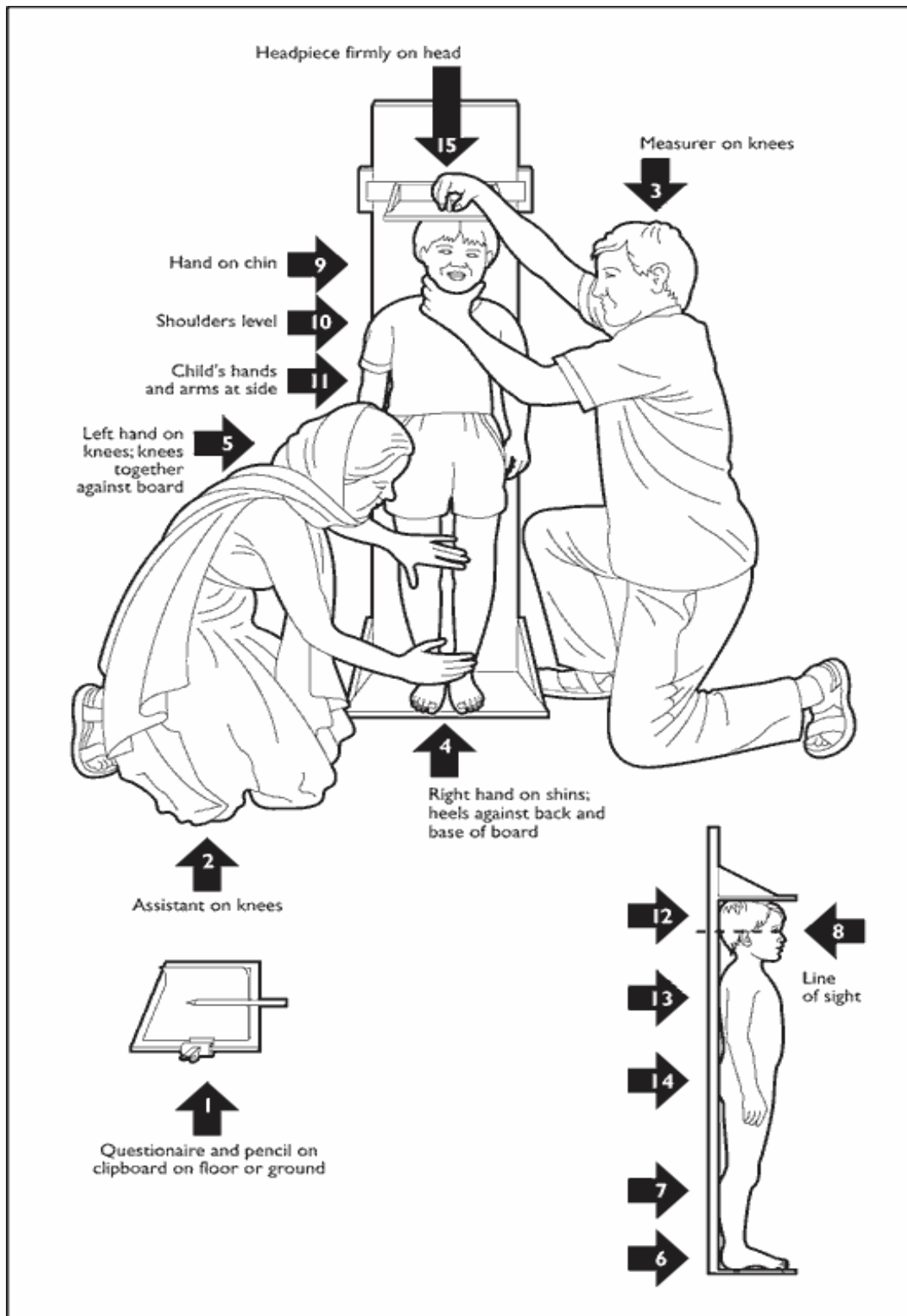


Source: How to Weigh and Measure Children: Assessing the Nutritional Status of Young Children, UN 1986.

Measuring Length

For Children 2 Years or Older or with a Height of 87 cm or Greater, Measure height.

When measuring height the child's shoes are removed. The height board is placed upright on the ground, supported vertically by a firm surface e.g. a wall. 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 then records it on the medical form or health card.



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

Measuring height

EXPLANATION OF Z-SCORES (SD-SCORES)

What does a Z-score tell us?

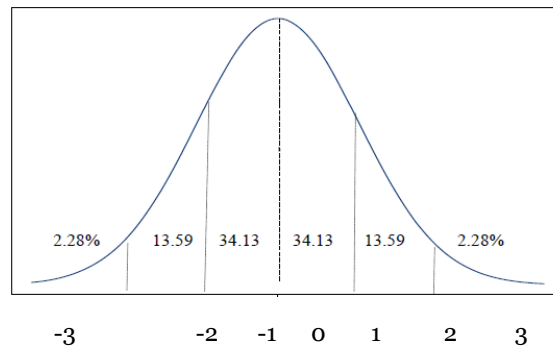
The reference lines on the growth charts are called z-score lines which are based on z-scores, also known as standard deviation (SD) scores. Z-scores are used to describe how far a measurement is from the median (or average). For example a weight-for-height z-score of - 2.33 means that the child's weight is 2.33 SDs below the expected median weight of children of the same height. The child has a lower weight for his/her height compared to the standard and s/he is classified as "wasted". A positive z-score indicates that the child's weight is to the right of the median, i.e. the child is heavier compared to the standard.

The z-scores are calculated differently for measurements that are distributed normally and non-normally in the reference population.

Normally distributed measurements

The concept of a normal distribution is helpful for understanding what a z-score is. In a normal distribution, most values are grouped around the middle as shown below.

Normal bell-shaped curve cut into z-score



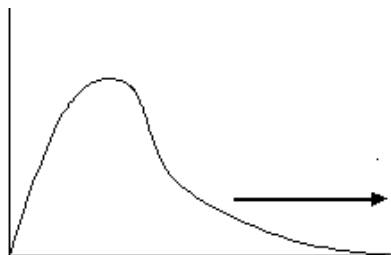
The distribution of heights of all boys or girls of a given age forms a bell-shaped curve, or a normal (or almost normal) distribution. Each segment on the horizontal axis represents one standard deviation or z-score, and the z-scores -1 and 1 are at equal distances in opposite directions from the median. The distance from the median to 1 is half of the distance to 2 .

The z-score of an observed point in this distribution is calculated as follows:

$$\text{Z-score} = \frac{(\text{observed value}) - (\text{median reference value})}{\text{Z-score of the reference population}}$$

Non-normally distributed measurements

Unlike the distribution of height, the distribution of weight has a shape when graphed that looks like a “deformed” bell whose right side is longer than the left and is described as right-skewed (not normal):



It is more difficult to calculate z-scores for weight-based indicators. Unlike in a normal distribution, distances between adjacent z-scores are not constant.

Calculating the z-score of an observed point involves a series of mathematical calculations that take into account the non-normal distribution of measurements in the reference population. The following formula is used:

$$\text{z-score} = \frac{(\text{observed value} \div M)^L - 1}{L \times S}$$

In this formula, M , L and S are values for the reference population. M is the reference median value which estimates the population mean. L is the power needed to transform the data in order to remove skewness (i.e. to normalize the data). S is the coefficient of variation (or equivalent).

This formula (sometimes called the LMS formula) is used to calculate z-scores for weight-for-age, weight-for-length/height, and BMI-for-age.

To select children for interventions if they are below specified weight-for-height cut-offs based on the WHO standards, the simplified field tables should be used (see: WHL/H Look up tables).

How do Z-scores relate to percent-of-median?

In the past, the percent of median was derived based on the NCHS reference and described the ratio, for example, of a child's weight to the average (median) weight of a child of the same height in the reference,

expressed as percentage.

The percent-of-median classification system had the following main drawbacks:

- ✓ The indicators are age dependent, i.e. 60% weight-for-age suggests severe malnutrition in infants but only moderate malnutrition in school children.
- ✓ There are different cut-off levels that indicate severity depending on the indicator. While 60% weight-for-age suggests severe malnutrition, 60% weight-for-height is incompatible with life.

The WHO child growth standards do not present percentages of the median figures. WHO recommends using the z-score classification system figures, which are comparable across ages and heights, and among different indicators.

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 in 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)^{1 2}.

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).

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:

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

Example: A man who weighs 55.5 kg with a height of 162.5 cm would have a BMI of $(55.5 / (1.625 \times 1.625)) = 20.9 \text{ kg/m}^2$.

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 follows³:

Nutritional Status	BMI (kg/m ²)
Obese	≥30
Over weight	≥25-29.9
Normal	≥ 18.5-24.9
Mild under-nutrition	17.0 – 18.4
Moderate under-nutrition	16.0 – 16.9
Severe under-nutrition	< 16.0

While these categories are suggested, there is difficulty in using them to compare across populations. This is due to 1) a lack of understanding of the functional significance of these categories, and 2) the influence of body shape when interpreting BMI⁴.

¹ WHO,2007. WHO Reference 2007, Growth reference data for 5-19 years. Geneva: WHO.

² 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.

³ WHO,1999. *Management of severe malnutrition: A manual for physicians and other senior health workers*. Geneva: WHO.

⁴ FANTA,2003. *Anthropometric Indicators Measurement Guide*. Washington, DC: FANTA at AED

ANNEX 5A: WEIGHT FOR LENGTH LOOK UP TABLES (0 – 23 months)

BOYS (Weight)			Length	GIRLS (Weight)		
-1SD	-2SD	-3SD		-3SD	-2SD	-1SD
2.2	2	1.9	45	1.9	2.1	2.2
2.3	2.1	1.9	45.5	2	2.1	2.3
2.4	2.2	2	46	2	2.2	2.4
2.5	2.3	2.1	46.5	2.1	2.3	2.5
2.5	2.3	2.1	47	2.2	2.4	2.5
2.6	2.4	2.2	47.5	2.2	2.4	2.6
2.7	2.5	2.3	48	2.3	2.5	2.7
2.8	2.6	2.3	48.5	2.4	2.6	2.8
2.9	2.6	2.4	49	2.4	2.6	2.9
3	2.7	2.5	49.5	2.5	2.7	3
3	2.8	2.6	50	2.6	2.8	3
3.1	2.9	2.7	50.5	2.7	2.9	3.1
3.2	3	2.7	51	2.8	3	3.2
3.3	3.1	2.8	51.5	2.8	3.1	3.3
3.5	3.2	2.9	52	2.9	3.2	3.5
3.6	3.3	3	52.5	3	3.3	3.6
3.7	3.4	3.1	53	3.1	3.4	3.7
3.8	3.5	3.2	53.5	3.2	3.5	3.8
3.9	3.6	3.3	54	3.3	3.6	3.9
4	3.7	3.4	54.5	3.4	3.7	4
4.2	3.8	3.6	55	3.5	3.8	4.2
4.3	4	3.7	55.5	3.6	3.9	4.3
4.4	4.1	3.8	56	3.7	4	4.4
4.6	4.2	3.9	56.5	3.8	4.1	4.6
4.7	4.3	4	57	3.9	4.3	4.7
4.9	4.5	4.1	57.5	4	4.4	4.9
5	4.6	4.3	58	4.1	4.5	5
5.1	4.7	4.4	58.5	4.2	4.6	5.1
5.3	4.8	4.5	59	4.3	4.7	5.3
5.4	5	4.6	59.5	4.4	4.8	5.4
5.5	5.1	4.7	60	4.5	4.9	5.5
5.6	5.2	4.8	60.5	4.6	5	5.6
5.8	5.3	4.9	61	4.7	5.1	5.8
5.9	5.4	5	61.5	4.8	5.2	5.9
6	5.6	5.1	62	4.9	5.3	6
6.1	5.7	5.2	62.5	5	5.4	6.1
6.2	5.8	5.3	63	5.1	5.5	6.2
6.4	5.9	5.4	63.5	5.2	5.6	6.4
6.5	6	5.5	64	5.3	5.7	6.5
6.6	6.1	5.6	64.5	5.4	5.8	6.6
6.7	6.2	5.7	65	5.5	5.9	6.7
6.8	6.3	5.8	65.5	5.5	6	6.8
6.9	6.4	5.9	66	5.6	6.1	6.9
7	6.5	6	66.5	5.7	6.2	7
7.1	6.6	6.1	67	5.8	6.3	7.1
7.2	6.7	6.2	67.5	5.9	6.4	7.2
7.3	6.8	6.3	68	6	6.5	7.3
7.5	6.9	6.4	68.5	6.1	6.6	7.5
7.6	7	6.5	69	6.1	6.7	7.6
7.7	7.1	6.6	69.5	6.2	6.8	7.7
7.8	7.2	6.6	70	6.3	6.9	7.8
7.9	7.3	6.7	70.5	6.4	6.9	7.9
8	7.4	6.8	71	6.5	7	8
8.1	7.5	6.9	71.5	6.5	7.1	8.1
8.2	7.6	7	72	6.6	7.2	8.2
8.3	7.6	7.1	72.5	6.7	7.3	8.3

BOYS (Weight)			Length	GIRLS (Weight)		
-1SD	-2SD	-3SD		-3SD	-2SD	-1SD
8.4	7.7	7.2	73	6.8	7.4	8.4
8.5	7.8	7.2	73.5	6.9	7.4	8.5
8.6	7.9	7.3	74	6.9	7.5	8.6
8.7	8	7.4	74.5	7	7.6	8.7
8.8	8.1	7.5	75	7.1	7.7	8.8
8.8	8.2	7.6	75.5	7.1	7.8	8.8
8.9	8.3	7.6	76	7.2	7.8	8.9
9	8.3	7.7	76.5	7.3	7.9	9
9.1	8.4	7.8	77	7.4	8	9.1
9.2	8.5	7.9	77.5	7.4	8.1	9.2
9.3	8.6	7.9	78	7.5	8.2	9.3
9.4	8.7	8	78.5	7.6	8.2	9.4
9.5	8.7	8.1	79	7.7	8.3	9.5
9.5	8.8	8.2	79.5	7.7	8.4	9.5
9.6	8.9	8.2	80	7.8	8.5	9.6
9.7	9	8.3	80.5	7.9	8.6	9.7
9.8	9.1	8.4	81	8	8.7	9.8
9.9	9.1	8.5	81.5	8.1	8.8	9.9
10	9.2	8.5	82	8.1	8.8	10
10.1	9.3	8.6	82.5	8.2	8.9	10.1
10.2	9.4	8.7	83	8.3	9	10.2
10.3	9.5	8.8	83.5	8.4	9.1	10.3
10.4	9.6	8.9	84	8.5	9.2	10.4
10.5	9.7	9	84.5	8.6	9.3	10.5
10.6	9.8	9.1	85	8.7	9.4	10.6
10.7	9.9	9.2	85.5	8.8	9.5	10.7
10.8	10	9.3	86	8.9	9.7	10.8
11	10.1	9.4	86.5	9	9.8	11
11.1	10.2	9.5	87	9.1	9.9	11.1
11.2	10.4	9.6	87.5	9.2	10	11.2
11.3	10.5	9.7	88	9.3	10.1	11.3
11.4	10.6	9.8	88.5	9.4	10.2	11.4
11.5	10.7	9.9	89	9.5	10.3	11.5
11.6	10.8	10	89.5	9.6	10.4	11.6
11.8	10.9	10.1	90	9.7	10.5	11.8
11.9	11	10.2	90.5	9.8	10.6	11.9
12	11.1	10.3	91	9.9	10.7	12
12.1	11.2	10.4	91.5	10	10.8	12.1
12.2	11.3	10.5	92	10.1	10.9	12.2
12.3	11.4	10.6	92.5	10.1	11	12.3
12.4	11.5	10.7	93	10.2	11.1	12.4
12.5	11.6	10.7	93.5	10.3	11.2	12.5
12.6	11.7	10.8	94	10.4	11.3	12.6
12.7	11.8	10.9	94.5	10.5	11.4	12.7
12.8	11.9	11	95	10.6	11.5	12.8
12.9	12	11.1	95.5	10.7	11.6	12.9
13.1	12.1	11.2	96	10.8	11.7	13.1
13.2	12.2	11.3	96.5	10.9	11.8	13.2
13.3	12.3	11.4	97	11	12	13.3
13.4	12.4	11.5	97.5	11.1	12.1	13.4
13.5	12.5	11.6	98	11.2	12.2	13.5
13.6	12.6	11.7	98.5	11.3	12.3	13.6
13.7	12.7	11.8	99	11.4	12.4	13.7
13.9	12.8	11.9	99.5	11.5	12.5	13.9
14	12.9	12	100	11.6	12.6	14

ANNEX 5B: WEIGHT FOR HEIGHT LOOK UP TABLES (24 – 59 months)

BOYS (Weight)			Height	GIRLS (Weight)		
-1SD	-2SD	-3SD		-3SD	-2SD	-1SD
6.9	6.3	5.9	65	5.6	6.1	6.6
7	6.4	6	65.5	5.7	6.2	6.7
7.1	6.5	6.1	66	5.8	6.3	6.8
7.2	6.6	6.1	66.5	5.8	6.4	6.9
7.3	6.7	6.2	67	5.9	6.4	7
7.4	6.8	6.3	67.5	6	6.5	7.1
7.5	6.9	6.4	68	6.1	6.6	7.2
7.6	7	6.5	68.5	6.2	6.7	7.3
7.7	7.1	6.6	69	6.3	6.8	7.4
7.8	7.2	6.7	69.5	6.3	6.9	7.5
7.9	7.3	6.8	70	6.4	7	7.6
8	7.4	6.9	70.5	6.5	7.1	7.7
8.1	7.5	6.9	71	6.6	7.1	7.8
8.2	7.6	7	71.5	6.7	7.2	7.9
8.3	7.7	7.1	72	6.7	7.3	8
8.4	7.8	7.2	72.5	6.8	7.4	8.1
8.5	7.9	7.3	73	6.9	7.5	8.1
8.6	7.9	7.4	73.5	7	7.6	8.2
8.7	8	7.4	74	7	7.6	8.3
8.8	8.1	7.5	74.5	7.1	7.7	8.4
8.9	8.2	7.6	75	7.2	7.8	8.5
9	8.3	7.7	75.5	7.2	7.9	8.6
9.1	8.4	7.7	76	7.3	8	8.7
9.2	8.5	7.8	76.5	7.4	8	8.7
9.2	8.5	7.9	77	7.5	8.1	8.8
9.3	8.6	8	77.5	7.5	8.2	8.9
9.4	8.7	8	78	7.6	8.3	9
9.5	8.8	8.1	78.5	7.7	8.4	9.1
9.6	8.8	8.2	79	7.8	8.4	9.2
9.7	8.9	8.3	79.5	7.8	8.5	9.3
9.7	9	8.3	80	7.9	8.6	9.4
9.8	9.1	8.4	80.5	8	8.7	9.5
9.9	9.2	8.5	81	8.1	8.8	9.6
10	9.3	8.6	81.5	8.2	8.9	9.7
10.1	9.3	8.7	82	8.3	9	9.8
10.2	9.4	8.7	82.5	8.4	9.1	9.9
10.3	9.5	8.8	83	8.5	9.2	10
10.4	9.6	8.9	83.5	8.5	9.3	10.1
10.5	9.7	9	84	8.6	9.4	10.2
10.7	9.9	9.1	84.5	8.7	9.5	10.3
10.8	10	9.2	85	8.8	9.6	10.4
10.9	10.1	9.3	85.5	8.9	9.7	10.6
11	10.2	9.4	86	9	9.8	10.7
11.1	10.3	9.5	86.5	9.1	9.9	10.8
11.2	10.4	9.6	87	9.2	10	10.9

BOYS (Weight)			Height	GIRLS (Weight)		
-1SD	-2SD	-3SD		-3SD	-2SD	-1SD
11.3	10.5	9.7	87.5	9.3	10.1	11
11.5	10.6	9.8	88	9.4	10.2	11.1
11.6	10.7	9.9	88.5	9.5	10.3	11.2
11.7	10.8	10	89	9.6	10.4	11.4
11.8	10.9	10.1	89.5	9.7	10.5	11.5
11.9	11	10.2	90	9.8	10.6	11.6
12	11.1	10.3	90.5	9.9	10.7	11.7
12.1	11.2	10.4	91	10	10.9	11.8
12.2	11.3	10.5	91.5	10.1	11	11.9
12.3	11.4	10.6	92	10.2	11.1	12
12.4	11.5	10.7	92.5	10.3	11.2	12.1
12.6	11.6	10.8	93	10.4	11.3	12.3
12.7	11.7	10.9	93.5	10.5	11.4	12.4
12.8	11.8	11	94	10.6	11.5	12.5
12.9	11.9	11.1	94.5	10.7	11.6	12.6
13	12	11.1	95	10.8	11.7	12.7
13.1	12.1	11.2	95.5	10.8	11.8	12.8
13.2	12.2	11.3	96	10.9	11.9	12.9
13.3	12.3	11.4	96.5	11	12	13.1
13.4	12.4	11.5	97	11.1	12.1	13.2
13.6	12.5	11.6	97.5	11.2	12.2	13.3
13.7	12.6	11.7	98	11.3	12.3	13.4
13.8	12.8	11.8	98.5	11.4	12.4	13.5
13.9	12.9	11.9	99	11.5	12.5	13.7
14	13	12	99.5	11.6	12.7	13.8
14.2	13.1	12.1	100	11.7	12.8	13.9
14.3	13.2	12.2	100.5	11.9	12.9	14.1
14.4	13.3	12.3	101	12	13	14.2
14.5	13.4	12.4	101.5	12.1	13.1	14.3
14.7	13.6	12.5	102	12.2	13.3	14.5
14.8	13.7	12.6	102.5	12.3	13.4	14.6
14.9	13.8	12.8	103	12.4	13.5	14.7
15.1	13.9	12.9	103.5	12.5	13.6	14.9
15.2	14	13	104	12.6	13.8	15
15.4	14.2	13.1	104.5	12.8	13.9	15.2
15.5	14.3	13.2	105	12.9	14	15.3
15.6	14.4	13.3	105.5	13	14.2	15.5
15.8	14.5	13.4	106	13.1	14.3	15.6
15.9	14.7	13.5	106.5	13.3	14.5	15.8
16.1	14.8	13.7	107	13.4	14.6	15.9
16.2	14.9	13.8	107.5	13.5	14.7	16.1
16.4	15.1	13.9	108	13.7	14.9	16.3
16.5	15.2	14	108.5	13.8	15	16.4
16.7	15.3	14.1	109	13.9	15.2	16.6
16.8	15.5	14.3	109.5	14.1	15.4	16.8
17	15.6	14.4	110	14.2	15.5	17

ANNEX 5C: BMI FOR AGE LOOK UP TABLES (5 to 19 YEARS)

BOYS				AGE		GIRLS			
-3SD	-2SD	-1SD	Median	Year: Months	Months	Median	-1SD	-2SD	-3SD
12.1	13.0	14.1	15.3	5:1	61	15.2	13.9	12.7	11.8
12.1	13.0	14.1	15.3	5:2	62	15.2	13.9	12.7	11.8
12.1	13.0	14.1	15.3	5:3	63	15.2	13.9	12.7	11.8
12.1	13.0	14.1	15.3	5:4	64	15.2	13.9	12.7	11.8
12.1	13.0	14.1	15.3	5:5	65	15.2	13.9	12.7	11.7
12.1	13.0	14.1	15.3	5:6	66	15.2	13.9	12.7	11.7
12.1	13.0	14.1	15.3	5:7	67	15.2	13.9	12.7	11.7
12.1	13.0	14.1	15.3	5:8	68	15.3	13.9	12.7	11.7
12.1	13.0	14.1	15.3	5:9	69	15.3	13.9	12.7	11.7
12.1	13.0	14.1	15.3	5:10	70	15.3	13.9	12.7	11.7
12.1	13.0	14.1	15.3	5:11	71	15.3	13.9	12.7	11.7
12.1	13.0	14.1	15.3	6:0	72	15.3	13.9	12.7	11.7
12.1	13.0	14.1	15.3	6:1	73	15.3	13.9	12.7	11.7
12.2	13.1	14.1	15.3	6:2	74	15.3	13.9	12.7	11.7
12.2	13.1	14.1	15.3	6:3	75	15.3	13.9	12.7	11.7
12.2	13.1	14.1	15.4	6:4	76	15.3	13.9	12.7	11.7
12.2	13.1	14.1	15.4	6:5	77	15.3	13.9	12.7	11.7
12.2	13.1	14.1	15.4	6:6	78	15.3	13.9	12.7	11.7
12.2	13.1	14.1	15.4	6:7	79	15.3	13.9	12.7	11.7
12.2	13.1	14.2	15.4	6:8	80	15.3	13.9	12.7	11.7
12.2	13.1	14.2	15.4	6:9	81	15.4	13.9	12.7	11.7
12.2	13.1	14.2	15.4	6:10	82	15.4	13.9	12.7	11.7
12.2	13.1	14.2	15.5	6:11	83	15.4	13.9	12.7	11.7
12.3	13.1	14.2	15.5	7:0	84	15.4	13.9	12.7	11.8
12.3	13.2	14.2	15.5	7:1	85	15.4	13.9	12.7	11.8
12.3	13.2	14.2	15.5	7:2	86	15.4	14.0	12.8	11.8
12.3	13.2	14.3	15.5	7:3	87	15.5	14.0	12.8	11.8
12.3	13.2	14.3	15.6	7:4	88	15.5	14.0	12.8	11.8
12.3	13.2	14.3	15.6	7:5	89	15.5	14.0	12.8	11.8
12.3	13.2	14.3	15.6	7:6	90	15.5	14.0	12.8	11.8
12.3	13.2	14.3	15.6	7:7	91	15.5	14.0	12.8	11.8
12.3	13.2	14.3	15.6	7:8	92	15.6	14.0	12.8	11.8
12.4	13.2	14.3	15.7	7:9	93	15.6	14.1	12.8	11.8
12.4	13.3	14.4	15.7	7:10	94	15.6	14.1	12.9	11.9
12.4	13.3	14.4	15.7	7:11	95	15.7	14.1	12.9	11.9
12.4	13.3	14.4	15.7	8:0	96	15.7	14.1	12.9	11.9
12.4	13.3	14.4	15.8	8:1	97	15.7	14.1	12.9	11.9
12.4	13.3	14.4	15.8	8:2	98	15.7	14.2	12.9	11.9
12.4	13.3	14.4	15.8	8:3	99	15.8	14.2	12.9	11.9
12.4	13.4	14.5	15.8	8:4	100	15.8	14.2	13.0	11.9
12.5	13.4	14.5	15.9	8:5	101	15.8	14.2	13.0	12.0
12.5	13.4	14.5	15.9	8:6	102	15.9	14.3	13.0	12.0
12.5	13.4	14.5	15.9	8:7	103	15.9	14.3	13.0	12.0
12.5	13.4	14.5	15.9	8:8	104	15.9	14.3	13.0	12.0
12.5	13.4	14.6	16.0	8:9	105	16.0	14.3	13.1	12.0
12.5	13.5	14.6	16.0	8:10	106	16.0	14.4	13.1	12.1
12.5	13.5	14.6	16.0	8:11	107	16.1	14.4	13.1	12.1
12.6	13.5	14.6	16.0	9:0	108	16.1	14.4	13.1	12.1
12.6	13.5	14.6	16.1	9:1	109	16.1	14.5	13.2	12.1
12.6	13.5	14.7	16.1	9:2	110	16.2	14.5	13.2	12.1
12.6	13.5	14.7	16.1	9:3	111	16.2	14.5	13.2	12.2
12.6	13.6	14.7	16.2	9:4	112	16.3	14.6	13.2	12.2
12.6	13.6	14.7	16.2	9:5	113	16.3	14.6	13.3	12.2
12.7	13.6	14.8	16.2	9:6	114	16.3	14.6	13.3	12.2
12.7	13.6	14.8	16.3	9:7	115	16.4	14.7	13.3	12.3
12.7	13.6	14.8	16.3	9:8	116	16.4	14.7	13.4	12.3
12.7	13.7	14.8	16.3	9:9	117	16.5	14.7	13.4	12.3

BOYS				AGE		GIRLS			
-3SD	-2SD	-1SD	Median	Year: Months	Months	Median	-1SD	-2SD	-3SD
12.7	13.7	14.9	16.4	9:10	118	16.5	14.8	13.4	12.3
12.8	13.7	14.9	16.4	9:11	119	16.6	14.8	13.4	12.4
12.8	13.7	14.9	16.4	10:0	120	16.6	14.8	13.5	12.4
12.8	13.8	15.0	16.5	10:1	121	16.7	14.9	13.5	12.4
12.8	13.8	15.0	16.5	10:2	122	16.7	14.9	13.5	12.4
12.8	13.8	15.0	16.6	10:3	123	16.8	15.0	13.6	12.5
12.9	13.8	15.0	16.6	10:4	124	16.8	15.0	13.6	12.5
12.9	13.9	15.1	16.6	10:5	125	16.9	15.0	13.6	12.5
12.9	13.9	15.1	16.7	10:6	126	16.9	15.1	13.7	12.5
12.9	13.9	15.1	16.7	10:7	127	17.0	15.1	13.7	12.6
13.0	13.9	15.2	16.8	10:8	128	17.0	15.2	13.7	12.6
13.0	14.0	15.2	16.8	10:9	129	17.1	15.2	13.8	12.6
13.0	14.0	15.2	16.9	10:10	130	17.1	15.3	13.8	12.7
13.0	14.0	15.3	16.9	10:11	131	17.2	15.3	13.8	12.7
13.1	14.1	15.3	16.9	11:0	132	17.2	15.3	13.9	12.7
13.1	14.1	15.3	17.0	11:1	133	17.3	15.4	13.9	12.8
13.1	14.1	15.4	17.0	11:2	134	17.4	15.4	14.0	12.8
13.1	14.1	15.4	17.1	11:3	135	17.4	15.5	14.0	12.8
13.2	14.2	15.5	17.1	11:4	136	17.5	15.5	14.0	12.9
13.2	14.2	15.5	17.2	11:5	137	17.5	15.6	14.1	12.9
13.2	14.2	15.5	17.2	11:6	138	17.6	15.6	14.1	12.9
13.2	14.3	15.6	17.3	11:7	139	17.7	15.7	14.2	13.0
13.3	14.3	15.6	17.3	11:8	140	17.7	15.7	14.2	13.0
13.3	14.3	15.7	17.4	11:9	141	17.8	15.8	14.3	13.0
13.3	14.4	15.7	17.4	11:10	142	17.9	15.8	14.3	13.1
13.4	14.4	15.7	17.5	11:11	143	17.9	15.9	14.3	13.1
13.4	14.5	15.8	17.5	12:0	144	18.0	16.0	14.4	13.2
13.4	14.5	15.8	17.6	12:1	145	18.1	16.0	14.4	13.2
13.5	14.5	15.9	17.6	12:2	146	18.1	16.1	14.5	13.2
13.5	14.6	15.9	17.7	12:3	147	18.2	16.1	14.5	13.3
13.5	14.6	16.0	17.8	12:4	148	18.3	16.2	14.6	13.3
13.6	14.6	16.0	17.8	12:5	149	18.3	16.2	14.6	13.3
13.6	14.7	16.1	17.9	12:6	150	18.4	16.3	14.7	13.4
13.6	14.7	16.1	17.9	12:7	151	18.5	16.3	14.7	13.4
13.7	14.8	16.2	18.0	12:8	152	18.5	16.4	14.8	13.5
13.7	14.8	16.2	18.0	12:9	153	18.6	16.4	14.8	13.5
13.7	14.8	16.3	18.1	12:10	154	18.7	16.5	14.8	13.5
13.8	14.9	16.3	18.2	12:11	155	18.7	16.6	14.9	13.6
13.8	14.9	16.4	18.2	13:0	156	18.8	16.6	14.9	13.6
13.8	15.0	16.4	18.3	13:1	157	18.9	16.7	15.0	13.6
13.9	15.0	16.5	18.4	13:2	158	18.9	16.7	15.0	13.7
13.9	15.1	16.5	18.4	13:3	159	19.0	16.8	15.1	13.7
14.0	15.1	16.6	18.5	13:4	160	19.1	16.8	15.1	13.8
14.0	15.2	16.6	18.6	13:5	161	19.1	16.9	15.2	13.8
14.0	15.2	16.7	18.6	13:6	162	19.2	16.9	15.2	13.8
14.1	15.2	16.7	18.7	13:7	163	19.3	17.0	15.2	13.9
14.1	15.3	16.8	18.7	13:8	164	19.3	17.0	15.3	13.9
14.1	15.3	16.8	18.8	13:9	165	19.4	17.1	15.3	13.9
14.2	15.4	16.9	18.9	13:10	166	19.4	17.1	15.4	14.0
14.2	15.4	17.0	18.9	13:11	167	19.5	17.2	15.4	14.0
14.3	15.5	17.0	19.0	14:0	168	19.6	17.2	15.4	14.0
14.3	15.5	17.1	19.1	14:1	169	19.6	17.3	15.5	14.1
14.3	15.6	17.1	19.1	14:2	170	19.7	17.3	15.5	14.1
14.4	15.6	17.2	19.2	14:3	171	19.7	17.4	15.6	14.1
14.4	15.7	17.2	19.3	14:4	172	19.8	17.4	15.6	14.1
14.5	15.7	17.3	19.3	14:5	173	19.9	17.5	15.6	14.2
14.5	15.7	17.3	19.4	14:6	174	19.9	17.5	15.7	14.2
14.5	15.8	17.4	19.5	14:7	175	20.0	17.6	15.7	14.2
14.6	15.8	17.4	19.5	14:8	176	20.0	17.6	15.7	14.3
14.6	15.9	17.5	19.6	14:9	177	20.1	17.6	15.8	14.3

BOYS				AGE		GIRLS			
-3SD	-2SD	-1SD	Median	Year: Months	Months	Median	-1SD	-2SD	-3SD
14.6	15.9	17.5	19.6	14:10	178	20.1	17.7	15.8	14.3
14.7	16.0	17.6	19.7	14:11	179	20.2	17.7	15.8	14.3
14.7	16.0	17.6	19.8	15:0	180	20.2	17.8	15.9	14.4
14.7	16.1	17.7	19.8	15:1	181	20.3	17.8	15.9	14.4
14.8	16.1	17.8	19.9	15:2	182	20.3	17.8	15.9	14.4
14.8	16.1	17.8	20.0	15:3	183	20.4	17.9	16.0	14.4
14.8	16.2	17.9	20.0	15:4	184	20.4	17.9	16.0	14.5
14.9	16.2	17.9	20.1	15:5	185	20.4	17.9	16.0	14.5
14.9	16.3	18.0	20.1	15:6	186	20.5	18.0	16.0	14.5
15.0	16.3	18.0	20.2	15:7	187	20.5	18.0	16.1	14.5
15.0	16.3	18.1	20.3	15:8	188	20.6	18.0	16.1	14.5
15.0	16.4	18.1	20.3	15:9	189	20.6	18.1	16.1	14.5
15.0	16.4	18.2	20.4	15:10	190	20.6	18.1	16.1	14.6
15.1	16.5	18.2	20.4	15:11	191	20.7	18.1	16.2	14.6
15.1	16.5	18.2	20.5	16:0	192	20.7	18.2	16.2	14.6
15.1	16.5	18.3	20.6	16:1	193	20.7	18.2	16.2	14.6
15.2	16.6	18.3	20.6	16:2	194	20.8	18.2	16.2	14.6
15.2	16.6	18.4	20.7	16:3	195	20.8	18.2	16.2	14.6
15.2	16.7	18.4	20.7	16:4	196	20.8	18.3	16.2	14.6
15.3	16.7	18.5	20.8	16:5	197	20.9	18.3	16.3	14.6
15.3	16.7	18.5	20.8	16:6	198	20.9	18.3	16.3	14.7
15.3	16.8	18.6	20.9	16:7	199	20.9	18.3	16.3	14.7
15.3	16.8	18.6	20.9	16:8	200	20.9	18.3	16.3	14.7
15.4	16.8	18.7	21.0	16:9	201	21.0	18.4	16.3	14.7
15.4	16.9	18.7	21.0	16:10	202	21.0	18.4	16.3	14.7
15.4	16.9	18.7	21.1	16:11	203	21.0	18.4	16.3	14.7
15.4	16.9	18.8	21.1	17:0	204	21.0	18.4	16.4	14.7
15.5	17.0	18.8	21.2	17:1	205	21.1	18.4	16.4	14.7
15.5	17.0	18.9	21.2	17:2	206	21.1	18.4	16.4	14.7
15.5	17.0	18.9	21.3	17:3	207	21.1	18.5	16.4	14.7
15.5	17.1	18.9	21.3	17:4	208	21.1	18.5	16.4	14.7
15.6	17.1	19.0	21.4	17:5	209	21.1	18.5	16.4	14.7
15.6	17.1	19.0	21.4	17:6	210	21.2	18.5	16.4	14.7
15.6	17.1	19.1	21.5	17:7	211	21.2	18.5	16.4	14.7
15.6	17.2	19.1	21.5	17:8	212	21.2	18.5	16.4	14.7
15.6	17.2	19.1	21.6	17:9	213	21.2	18.5	16.4	14.7
15.7	17.2	19.2	21.6	17:10	214	21.2	18.5	16.4	14.7
15.7	17.3	19.2	21.7	17:11	215	21.2	18.6	16.4	14.7
15.7	17.3	19.2	21.7	18:0	216	21.3	18.6	16.4	14.7
15.7	17.3	19.3	21.8	18:1	217	21.3	18.6	16.5	14.7
15.7	17.3	19.3	21.8	18:2	218	21.3	18.6	16.5	14.7
15.7	17.4	19.3	21.8	18:3	219	21.3	18.6	16.5	14.7
15.8	17.4	19.4	21.9	18:4	220	21.3	18.6	16.5	14.7
15.8	17.4	19.4	21.9	18:5	221	21.3	18.6	16.5	14.7
15.8	17.4	19.4	22.0	18:6	222	21.3	18.6	16.5	14.7
15.8	17.5	19.5	22.0	18:7	223	21.4	18.6	16.5	14.7
15.8	17.5	19.5	22.0	18:8	224	21.4	18.6	16.5	14.7
15.8	17.5	19.5	22.1	18:9	225	21.4	18.7	16.5	14.7
15.8	17.5	19.6	22.1	18:10	226	21.4	18.7	16.5	14.7
15.8	17.5	19.6	22.2	18:11	227	21.4	18.7	16.5	14.7
15.9	17.6	19.6	22.2	19:0	228	21.4	18.7	16.5	14.7

This BMI for age look-up table has been constructed using the WHO reference tables for BMI-for-age z-scores for 5 to 19 years.

ANNEX 5D: BMI CHART FOR ADULTS

BODY MASS INDEX (ADULTS) (=W/H²) Wt in kg and height in metres.

Height (cm)	BMI					
	18,5	18	17,5	17	16,5	16
Weight in Kg						
140	36,3	35,3	34,3	33,3	32,3	31,4
141	36,8	35,8	34,8	33,8	32,8	31,8
142	37,3	36,3	35,3	34,3	33,3	32,3
143	37,8	36,8	35,8	34,8	33,7	32,7
144	38,4	37,3	36,3	35,3	34,2	33,2
145	38,9	37,8	36,8	35,7	34,7	33,6
146	39,4	38,4	37,3	36,2	35,2	34,1
147	40,0	38,9	37,8	36,7	35,7	34,6
148	40,5	39,4	38,3	37,2	36,1	35,0
149	41,1	40,0	38,9	37,7	36,6	35,5
150	41,6	40,5	39,4	38,3	37,1	36,0
151	42,2	41,0	39,9	38,8	37,6	36,5
152	42,7	41,6	40,4	39,3	38,1	37,0
153	43,3	42,1	41,0	39,8	38,6	37,5
154	43,9	42,7	41,5	40,3	39,1	37,9
155	44,4	43,2	42,0	40,8	39,6	38,4
156	45,0	43,8	42,6	41,4	40,2	38,9
157	45,6	44,4	43,1	41,9	40,7	39,4
158	46,2	44,9	43,7	42,4	41,2	39,9
159	46,8	45,5	44,2	43,0	41,7	40,4
160	47,4	46,1	44,8	43,5	42,2	41,0
161	48,0	46,7	45,4	44,1	42,8	41,5
162	48,6	47,2	45,9	44,6	43,3	42,0
163	49,2	47,8	46,5	45,2	43,8	42,5
164	49,8	48,4	47,1	45,7	44,4	43,0

Height (cm)	BMI					
	18,5	18	17,5	17	16,5	16
Weight in Kg						
165	50,4	49,0	47,6	46,3	44,9	43,6
166	51,0	49,6	48,2	46,8	45,5	44,1
167	51,6	50,2	48,8	47,4	46,0	44,6
168	52,2	50,8	49,4	48,0	46,6	45,2
169	52,8	51,4	50,0	48,6	47,1	45,7
170	53,5	52,0	50,6	49,1	47,7	46,2
171	54,1	52,6	51,2	49,7	48,2	46,8
172	54,7	53,3	51,8	50,3	48,8	47,3
173	55,4	53,9	52,4	50,9	49,4	47,9
174	56,0	54,5	53,0	51,5	50,0	48,4
175	56,7	55,1	53,6	52,1	50,5	49,0
176	57,3	55,8	54,2	52,7	51,1	49,6
177	58,0	56,4	54,8	53,3	51,7	50,1
178	58,6	57,0	55,4	53,9	52,3	50,7
179	59,3	57,7	56,1	54,5	52,9	51,3
180	59,9	58,3	56,7	55,1	53,5	51,8
181	60,6	59,0	57,3	55,7	54,1	52,4
182	61,3	59,6	58,0	56,3	54,7	53,0
183	62,0	60,3	58,6	56,9	55,3	53,6
184	62,6	60,9	59,2	57,6	55,9	54,2
185	63,3	61,6	59,9	58,2	56,5	54,8
186	64,0	62,3	60,5	58,8	57,1	55,4
187	64,7	62,9	61,2	59,4	57,7	56,0
188	65,4	63,6	61,9	60,1	58,3	56,6
189	66,1	64,3	62,5	60,7	58,9	57,2
190	66,8	65,0	63,2	61,4	59,6	57,8

ANNEX 6: MINIMUM REQUIREMENTS FOR ESTABLISHING AN ITP

		Quantity	ITP
	Job aids		
1	Anthropometric Measurements	5	X
2	Admission and Discharge Criteria	5	X
3	Look Up Table Weight-for-Length	5	X
4	Look Up Table Weight-for-Height	5	X
5	Routine Medicines Protocols	4	X
6	Appetite Test	4	X
7	Danger Signs in Inpatient Care	3	X
8	Look Up Tables RUTF for Inpatient Care	3	X
9	Look Up Tables F75	5	X
10	Look Up Table F100	5	X
11	Entry and Exit Categories	2	X
12	Child friendly spaces (Toys)	various	X
13	National CMAM Guidelines	2	X
14	Guidelines for Inpatient Management of Severe Acute malnutrition	3	
15	List of Sites with Catchment Area and Service Day (if appropriate)	2	X
16	ITC Training Materials Package	2	X
17	Respective Job Descriptions	various	X
18	Drug dosages	3	X
19	Definitions	3	X
	Monitoring and reporting sheets renewable supplies		
1	Inpatient Care Treatment Card (CCP)		X
2	Daily Feeds Chart		X
3	Referral Form for ITP		X
4	Site Tally Sheet		X
5	Monthly Site Report		X
6	Register books		X
7	Checklists for Supportive Supervision		X
8	Supply Checklists		X

	Equipment and other supplies	Quantity	ITP
1	MUAC tapes under five	50	X
2	Adult MUAC tapes	50	
3	Salter scale - 25kg	2	X
4	Baby scales	2	X
5	Digital scale	2	X
6	Weighing pants	10	X
7	Digital thermometer	2	X
8	BP apparatus	1	X
9	Stethoscope	1	X
10	ARI Timer	1	X
11	Height board	2	X
12	Height sticks (87.0cm for U2 and 110.0cm for U5)	10	X
	Stationery		
1	Marker pens	1 pack	X
2	Ball point pens	1 pack	X

3	Ruler 30cm	2 pcs	X
4	Calculator	1 pc	X
5	Note books hard covers A4	2	X
6	Box files	10	X
7	Paper punch	1	X
8	Stapler & staples	1	X
9	Eraser	5	X
10	Pencils	1 pack	X
11	Scissors	2	X
Ward requirements for hygiene			
1	Latrine	2	X
2	Hand washing stations	2	X
3	Bar soap	2	X
4	Container for drinking water	2	X
5	Plastics cups	20	X
6	Teaspoon & medicine cups	10	X
7	Bucket and lid	4	X
8	Incinerator	1	X
9	Trash bin	2	X
10	Brooms	2	X
11	Scrubbing brush	2	X
12	Cleaning bucket	2	X
13	Plastic gloves	2	X
14	Mop	2	X
15	Powder or liquid detergent	2	X
16	Cob web brush	2	X
17	Plastic boots	2	X
Furniture and Space availability			
1	Tables	3	X
2	Chairs	5	X
3	Plastic Mats	5	X
4	Benches	2	X
5	Plastic sheets	5	
6	Shelter/ Waiting bay		X
7	Store for supplies		X
8	Screening and triage area.		X
9	Consultation room		X
Staffing requirement			
S1	Qualified clinician ¹ / nurse/ nurse assistant		1
S2	Nutrition assistants		4
S3	Support staff		2

NOTE: This is guidance during the establishment of site which is subject for change depending on the case load /need

¹Qualified clinician, at least one per shift for 24-hour care

MEDICAL KIT 1 (to cover Inpatient Care, 400 children for 3 months)

Name	Needs in units	Units
DRUGS		
Folic acid 5mg	5000	tabs
Amoxicillin 250mg	30,000	tabs
Chloramphenical 250mg	4000	Tabs
Co trimoxazole 120mg	3000	Tabs
Mebendazole 100mg	4000	Tabs
Metronidazole 250mg	2000	Tabs
Nystatin 100,000 IU	2000	tabs
ReSoMal	300	sachets
Paracetamol 100mg	2000	Tabs
Quinine 300mg	1000	Tabs
Vitamin A 200,000 IU	2000	Gel
Vitamin A 50,000IU	1000	Gel
EXTERNAL USE		
Benzyl benzoate 90% 1L	4	L
Cetrimide 15%+chlorhexidine gluconate 1.5% 1L	5	L
Tetracycline hydrochloride1% eye ointment 5g	300	Tubes
Benzoic acid + salicylic acid 3%	50	Tube of 40g
Gentian violet crystals 25 g	12	Pot of 25g
Zinc oxide 10% ointment 20 tube of 100 g	20	Tube of 100g
Nystatin ointment 100,000IU/g	100	Tube of 30g
Supplies		
Tongue depressor,wood,15*18	400	Pieces
Elastic bandage7.5cms 5m	20	Pieces
Nail brush	10	Pieces
Gauze compresses 10*10, sterile	700	pieces
Gauze compresses 10*10 , non sterile	1500	pieces
Cotton 400g	10	Pieces
Examination gloves, medium, disposable	800	Pieces
Blade for surgical knives ,size 22	100	Pieces
Bags for medicines,	2000	pieces
Adhesive tape 5cmx 5cm 20 pieces	20	pieces
Thermometer	100	Pieces
Gauze bandage	200	Pieces
Adhesive tape 2.5cm	16	rolls
MEDICAL KIT 2 (to cover Inpatient Care :400 children for 3 months in addition to medical kit 1)		
Name	Needs(in unit)	Unit
INJECTABLES		
Ampicillin 1g	300	Vials
Ceftriaxone250mg	300	Amps
Chloramphenical1g	400	Vials
Dextrose 50%/20ml	25	Vials
Digoxin 0.25mg/mlvial	100	amps
Water for injectable preparations	1700	Amps
Gentamicin 80mg/2l	100	Amps

DRIPS		
Dextrose 5%in water,500ml without set	40	Bags
Ringer –lactate solution ,500ml with out set	60	bottles
RENEWABLE EQUIPMENT		
Needle 18 g preparation	1000	pieces
Needle 21g IM	1200	pieces
Needle 25g subcutaneous	1000	pieces
Urine test strips (glucose, protein, PH	100	pieces
Catheter 22g	200	Pieces
Catheter 24 g	200	pieces
Butterfly 21g	100	pieces
Butterfly 25g	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,0.5ml	200	Pieces
Syringe ,disposable,2ml	1000	Pieces
Syringe ,disposable,5ml	1000	pieces
Syringe ,disposable,10ml	400	Pieces
Syringe ,disposable,20ml	600	pieces
Feeding tube ch,disposable	200	Pieces
Feeding tube ch. 8, disposable	400	Pieces
Feeding tube ch.10, disposable	100	Pieces

ANNEX 7: DANGER SIGNS

Danger signs related to pulse, respirations, 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 over hydration 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 or Axilla temperature below 35.0	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 age 2 months up to 12 months 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 should be assumed to have either over hydration or pneumonia. Careful evaluation, taking into account prior fluid administration, will help differentiate the two conditions and plan appropriate treatment.*

ANNEX 8: CRITICAL CARE PATHWAY (CCP)

NAME _____ M F DATE OF BIRTH OR AGE _____ DATE OF ADMISSION _____ TIME _____ HOSP. ID NUMBER _____

INITIAL MANAGEMENT

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

SIGNS OF SEVERE MALNUTRITION	Severe wasting?	Yes	No
Oedema?	0 + ++ +++		
Dermatosis?	0 + ++ +++ (raw skin, fissures)		
Weight(kg):	Height/length (cm):		
SD score:	or % of median:		

TEMPERATURE _____°C	rectal	axillary
If rectal <35.5°C (95.9°F), or axillary <35°C (95°F), actively warm child. Check temperature every 30 minutes.		

BLOOD GLUCOSE (mmol/l):		
If <3mmol/l and alert, give 50 ml bolus of 10% glucose or sucrose (oral or NG). If <3 mmol/l and lethargic, unconscious, or convulsing, give sterile 10% glucose IV: 5 ml x ____ kg (child's wt) = ____ ml Then give 50 ml bolus NG.		
Time glucose given:	Oral	NG IV
HAEMOGLOBIN (Hb) (g/l):	or Packed cell vol (PCV):	Blood type:
If Hb <40 g/l or PCV<12%, transfuse 10 ml/kg whole fresh blood (or 5-7 ml/kg packed cells) slowly over 3 hours. Amount: Time started: Ended:		

EYE SIGNS	None	Left	Right	MEASLES	Yes	No
Bitot's spots	Pus/Inflammation	Corneal clouding	Corneal ulceration			
If ulceration, give vitamin A & atropine immediately. Record on Daily Care page.						
Oral doses vitamin A:	<6 months	50 000 IU				
	6 - 12 months	100 000 IU				
	>12 months	200 000 IU				

FEEDING	Begin feeding with F-75 as soon as possible. (If child is rehydrated, reweigh before determining amount to feed. New weight: ____ kg)	
Amount for 2-hourly feedings:	____ ml F-75*	Time first fed: ____
* If hypoglycaemic, feed ¼ of this amount every half hour for first 2 hours; continue until blood glucose reaches 3 mmol/l.		
Record all feeds on 24-hour Food Intake Chart.		

SIGNS OF SHOCK	None	Lethargic/unconscious	Cold hand	Slow capillary refill(>3 seconds)	Weak/fast pulse
-----------------------	------	-----------------------	-----------	-----------------------------------	-----------------

If lethargic or unconscious, plus cold hand, plus either slow capillary refill or weak/fast pulse, give oxygen. Give IV glucose as described under Blood Glucose (left). Then give IV fluids:

Amount IV fluids per hour: 15 ml x ____ kg (child's wt) = ____ ml

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

*If respiratory & pulse rates are slower after 1 hour, repeat same amount IV fluids for 2nd hour; then alternate ReSoMal and F-75 for up to 10 hours as in right part of chart below. If no improvement on IV fluids, transfuse whole fresh blood. (See left, Haemoglobin.)

DIARRHOEA	Watery diarrhoea? Yes No	If diarrhoea, circle signs present:	Skin pinch goes back slowly
	Blood in stool? Yes No		Restless/irritable Lethargic Thirsty
	Vomiting? Yes No		Sunken eyes Dry mouth/tongue No tears
If diarrhoea and/or vomiting, give ReSoMal. Every 30 minutes for first 2 hours, monitor and give:*		For up to 10 hours, give ReSoMal and F-75 in alternate hours. Monitor every hour. Amount of ReSoMal to offer:*	
5 ml x ____ kg (child's wt) = ____ ml ReSoMal		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		F-75

*Stop ReSoMal if: Increase in pulse & resp. rates Jugular veins engorged Increasing oedema, e.g., puffy eyelids

ANTIBIOTICS (All receive)	Drug / Route	Dose / Frequency / Duration	Time of 1 st dose

ANNEX 8B: DAILY CARE



DAILY CARE

Week 1

Week 2

Week 3

DAYS IN HOSPITAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Date																					
Daily weight (kg)																					
Weight gain (g/kg)	Calculate daily after on F-100.																				
Oedema 0 + ++ +++																					
Diarrhoea/vomit 0 D V																					
FEED PLAN: Type feed																					
# feeds daily																					
Total volume taken (ml)																					
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.																				
FOLIC ACID	5mg	1mg																			
VITAMIN A	*		*Give Day 1 routinely unless evidence of dose in past month & no eye sign. Give Day 2 & Day 15 if															child admitted with eye sign or recent measles.			
Multivitamin (if not in feed)																					
Drug for worms (Note type of worm)																					
IRON	Begin iron after 2 days on F-100.																				
2 X daily																					
FOR EYE PROBLEMS:																					
Tetracycline or Chloramphenical																					
1 drop 4 X daily																					
Atropine																					
1 drop																					
Dermatosis 0 + ++ +++																					
Bathing, 1% permanganate																					
OTHER																					

ANNEX8C: MONITORING RECORD

page ____ of ____

MONITORING RECORD

Monitor respiratory rate, pulse rate, and temperature 4-hourly until after transition to F-100 and patient is stable. Then monitoring may be less frequent (e.g., twice daily).

Respiratory rate

Breaths/
minute[illegible]

Pulse rate

Beats/
minute[illegible]

Temperature

39.0

[illegible]

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 listed on back of F-100 Reference Card. Normal ranges of pulse and respiratory rates are also listed on back of F-100 Reference Card.

ANNEX 8D: WEIGHT CHART

WEIGHT CHART

Name: _____

Weight on admission: _____ kg

Height / length: _____ cm

Oedema on admission: 0 + ++ +++

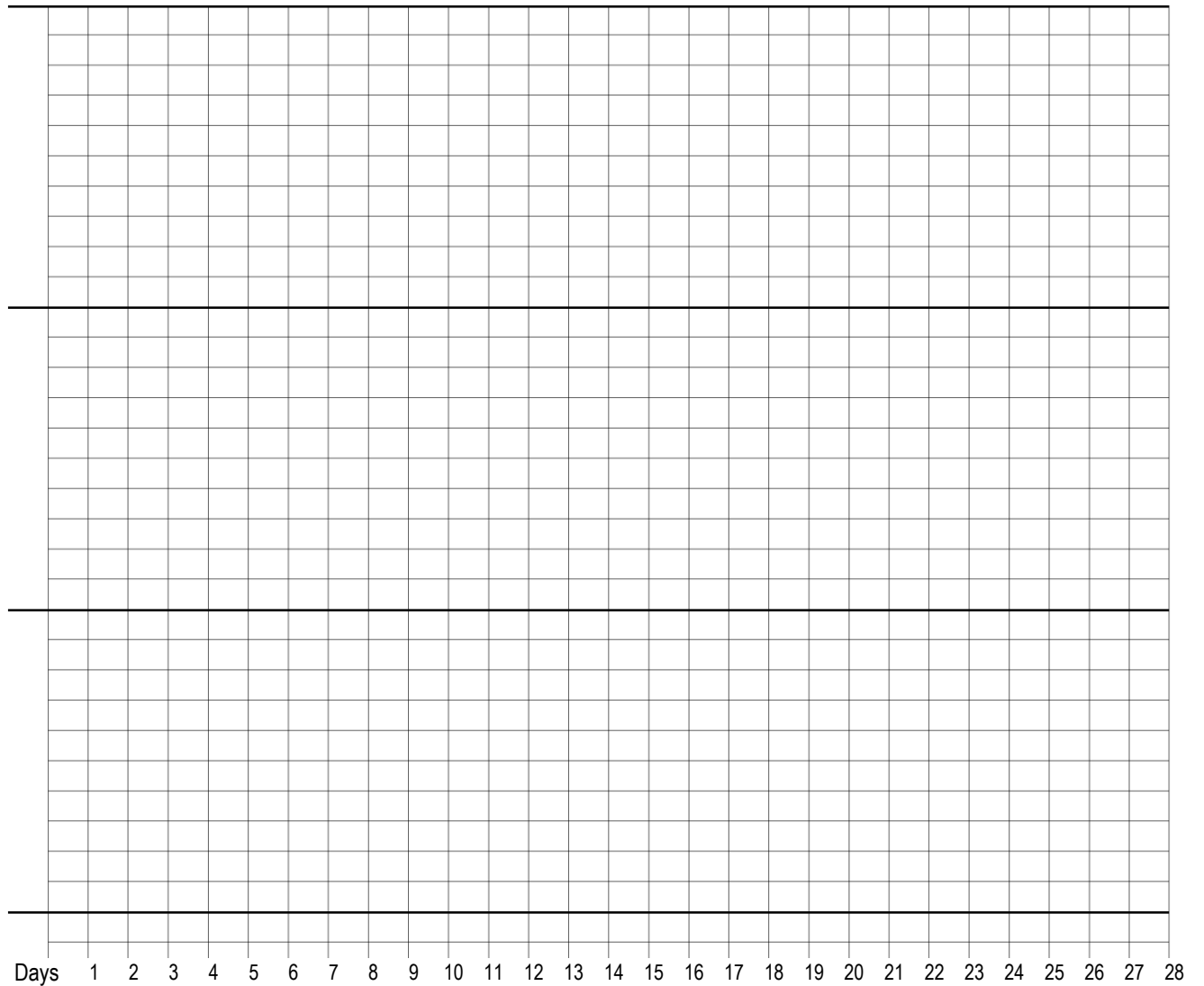
Desired weight at discharge
(-2SD weight for height): _____ kg

Actual weight at discharge: _____ kg

Enter likely range of weights on the vertical axis in an appropriate scale (e.g., each row representing 0.1 kg). Allow rows below the starting weight in case weight decreases; weight may decrease by as much as 30% if the child has severe oedema.

Draw a bold horizontal line across the graph to show the desired discharge weight.

Weight (Use appropriate scale.)



ANNEX 8E: COMMENTS/OUTCOME

COMMENTS / OUTCOME

COMMENTS:

TRAINING GIVEN TO PARENTS / CAREGIVERS:

IMMUNIZATIONS

Immunization card? Yes No *Circle immunizations already given.
Initial and date by any given in hospital.*

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	6 or 9 months	—	—	—

SPECIAL DISCHARGE AND FOLLOW-UP INSTRUCTIONS:

PATIENT OUTCOME

Circle outcome:	DATE	CIRCUMSTANCES / COMMENTS
Discharge at –1SD (90% weight for height)		
Early departure (against advice)		SD score (or %): _____
Early discharge		SD score (or %): _____
Referral		SD score (or %): _____
Death		Number of days after admission (circle): <24 hrs 1-3 days 4-7 days >7 days Approximate time of death: _____ Day _____ Night Apparent cause(s): _____ Had child received IV fluids? Yes No

ANNEX 9: TARGET WEIGHT FOR REHYDRATION

TARGET WEIGHT FOR REHYDRATION (DO NOT EXCEED)		
Weight before rehydration	Target weight	
	Lowest	Highest
2.0	2.04	2.10
2.1	2.14	2.21
2.2	2.24	2.31
2.3	2.35	2.42
2.4	2.45	2.52
2.5	2.55	2.63
2.6	2.65	2.73
2.7	2.75	2.84
2.8	2.86	2.94
2.9	2.96	3.05
3.0	3.06	3.15
3.1	3.16	3.26
3.2	3.26	3.36
3.3	3.37	3.47
3.4	3.47	3.57
3.5	3.57	3.68
3.6	3.67	3.78
3.7	3.77	3.89
3.8	3.88	3.99
3.9	3.98	4.10
4.0	4.08	4.20
4.1	4.18	4.31
4.2	4.28	4.41
4.3	4.39	4.52
4.4	4.49	4.62
4.5	4.59	4.73
4.6	4.69	4.83
4.7	4.79	4.94
4.8	4.90	5.04
4.9	5.00	5.15
5.0	5.10	5.25
5.1	5.20	5.36
5.2	5.30	5.46
5.3	5.41	5.57
5.4	5.51	5.67
5.5	5.61	5.78
5.6	5.71	5.88
5.7	5.81	5.99
5.8	5.92	6.09
5.9	6.02	6.20

6.0	6.12	6.30
6.1	6.22	6.41
6.2	6.32	6.51
6.3	6.43	6.62
6.4	6.53	6.72
6.5	6.63	6.83
6.6	6.73	6.93
6.7	6.83	7.04
6.8	6.94	7.14
6.9	7.04	7.25
7.0	7.14	7.35
7.1	7.24	7.46
7.2	7.34	7.56
7.3	7.45	7.67
7.4	7.55	7.77
7.5	7.65	7.88
7.6	7.75	7.98
7.7	7.85	8.09
7.8	7.96	8.19
7.9	8.06	8.30
8.0	8.16	8.40
8.1	8.26	8.51
8.2	8.36	8.61
8.3	8.47	8.72
8.4	8.57	8.82
8.5	8.67	8.93
8.6	8.77	9.03
8.7	8.87	9.14
8.8	8.98	9.24
8.9	9.08	9.35
9.0	9.18	9.45
9.1	9.28	9.56
9.2	9.38	9.66
9.3	9.49	9.77
9.4	9.59	9.87
9.5	9.69	9.98
9.6	9.79	10.08
9.7	9.89	10.19
9.8	10.00	10.29
9.9	10.10	10.40
10.0	10.20	10.5
10.1	10.30	10.61
10.2	10.40	10.71
10.3	10.51	10.82
10.4	10.61	10.92
10.5	10.71	11.025

10.6	10.81	11.13
10.7	10.91	11.24
10.8	11.02	11.34
10.9	11.12	11.45
11.0	11.22	11.55
11.1	11.32	11.66
11.2	11.42	11.76
11.3	11.53	11.87
11.4	11.63	11.97
11.5	11.73	12.08
11.6	11.83	12.18
11.7	11.93	12.29
11.8	12.04	12.39
11.9	12.14	12.50
12.0	12.24	12.60

ANNEX 10: ANTIBIOTIC REFERENCE CHART

10A: DRUG DOSES FOR SPECIFIC FORMULATIONS

ANTIBIOTIC	ROUTE / DOSE/ FREQUENCY/DURATION	FORMULATION
Amoxicillin	Oral: 25 mg/kg every 12 hours for 5 days	Tablet, 250 mg
		Syrup, 125 mg/5ml
Ampicillin	Oral: 50 mg/kg every 6 hours for 5 days	Tablet, 250 mg Syrup, 200 mg SMX + 40 mg TMP per 5 ml
	IV/IM: 50 mg/kg every 6 hours for 2 days	Vial of 500 mg mixed with 2.1 ml sterile water to give 500 mg /2.5 ml
Metronidazole	Oral: maximum 5 mg/kg twice a day for a maximum of 4 days	Suspension, 40 mg / ml
	IV/IM	500 mg / 100 ml
Benzyl- penicillin	IV or IM: 50 000 units / kg every 6 hours for 5 days	IV: vial of 600 mg mixed with 9.6 ml sterile water to give 1 000 000 units /10 ml
		IM: vial of 600 mg mixed with 1.6 ml sterile water to give 1 000 000 units /2ml

10B: DOSES FOR SELECTED ANTIBIOTICS FOR SPECIFIC FORMULATIONS AND BODY WEIGHTS

ANTIBIOTIC	ROUTE / DOSE FREQUENCY/DURATION	FORMULATION	DOSES FOR SPECIFIC BODY WEIGHTS (<i>Use closest weight</i>)									
Gentamicin	IV or IM: 5 mg/kg once daily for 7 days	IV/IM: vial containing 20 mg (2 ml at 10mg/ml), undiluted	3kg	4kg	5kg	6kg	7kg	8kg	9kg	10kg	11kg	12kg
		IV/IM: vial containing 80 mg (2 ml at 40 mg/ml) mixed with 6 ml sterile water to give 80 mg/ 8 ml	2.25 ml	3ml	3.75 ml	4.5ml	5.25 ml	6ml	6.75ml	7.5ml	8.25ml	9ml
		IV/IM: vial containing 80 mg (2 ml at 40 mg/ml), undiluted	0.5ml	0.75 ml	0.9 ml	1.1ml	1.3ml	1.5ml	1.7ml	1.9ml	2ml	2.25 ml

ANNEX 10C: DOSES OF IRON SYRUP FOR A COMMON FORMULATION

Weight of child	Dose of Iron Syrup: Ferrous Fumarate 100 mg per 5 ml (20 mg elemental iron per ml)
3 up to 6 kg	0.5 ml
6 up to 10 kg	0.75 ml
10 up to 15kg	1 ml

ANNEX 11: DIETARY TREATMENT

11A: USE OF THERAPEUTIC FOODS IN ITP FOR CHILDREN UNDER 5 YEARS

Diet	Use
F75	Stabilization phase
F100 (no iron added)	Transition phase
F100(iron added)	Rehabilitation phase
F100 - Diluted ⁵	All phases for 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)

11B: DIETARY TREATMENT IN ITP FOR CHILDREN 6-59 MONTHS

	Stabilization Phase	Transition Phase	Rehabilitation Phase
Objective	Stabilizing medical complication(s) and electrolyte and micronutrient deficiencies	Recovering metabolism and organ functions	Restoring body functions
Condition	Child has poor appetite or is clinically unwell.	Child has appetite and is clinically well and alert	Child catches up weight
Duration of stay	2 – 7 days	2-3 days Referred to outpatient care as soon as clinically stable and appetite test for RUTF is passed.	1-4 weeks rehabilitation where no OTP
Therapeutic food	F75	F75 , F75 /RUTF RUTF and/or F100	RUTF/F100
Amount	100ml/kg (if with oedema) 130 ml/kg bodyweight/day in non oedematous Start with 2hry feeding then 3 hry feeding)	130 ml/kg bodyweight/day of F75 or RUTF (135kcal/kg) in 8 meals	200 ml/kg bodyweight/day of F100 or RUTF in 5-6 meals
Energy	100 kcal/kg bodyweight/day	130 ml/kg bodyweight/day of F100 or RUTF in 8 meals	Up to 200 kcal/kg bodyweight/day
Weight gain where no OTP	None	Average 5g/kg body weight /day	Substantial = or >10 g/kg bodyweight/day

⁵ 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 osmolality and renal solute load . 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 **150kcal/200ml/kg bodyweight/day**. F100-Diluted is provided in ITP 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.

11C: THERAPEUTIC MILK SPECIFICATIONS

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

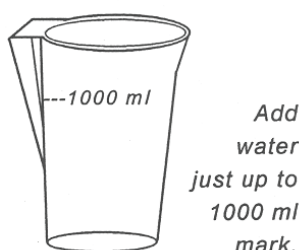
ANNEX 12: ALTERNATE RECIPES FOR F75 AND F100

Use one of the following recipes for F-75 (Note that cooking facilities are needed):		
Alternatives	Ingredient	Amount for F-75
If you have dried whole milk	Dried whole milk	35 g
	Sugar	70 g
	Cereal flour	35 g
	Vegetable oil	20 g
	Complex Mineral and Vitamin mix*	½ levelled scoop
	<i>Water to make 1000 ml</i>	<i>1000 ml**</i>
If you have fresh cow's milk, or full-cream (whole) long life milk	Milk	300 ml
	Sugar	70 g
	Cereal flour	35 g
	Vegetable oil	20 g
	Complex Mineral and Vitamin mix*	½ levelled scoop
	<i>Water to make 1000 ml</i>	<i>1000 ml**</i>
Use one of the following recipes for F-100:		
If you have fresh cow's milk, or full-cream (whole) long life milk	Fresh cow's milk, or full-cream (whole) long life milk	880 ml
	Sugar	75 g
	Vegetable oil	20 g
	Complex Mineral and Vitamin mix*	½ leveled scoop
	<i>Water to make 1000 ml</i>	<i>1000 ml**</i>
If you have dried	Dried whole milk	110 g

whole milk	Sugar	50 g
	Vegetable oil	30 g
	Complex Mineral and Vitamin mix*	½ leveled scoop
	Water to make 1000 ml	1000 ml**

* Where CMV is not available, a mineral mix should be used (20 ml for one liter of preparation). Contents of mineral mix are given in Introduction Module Annex 3*

****Important note about adding water:** Add just the amount of water needed to make 1000 ml of formula. (This amount will vary from recipe to recipe, depending on the other ingredients.) Do not simply add 1000 ml of water, as this will make the formula too dilute. A mark for 1000 ml should be made on the mixing container for the formula, so that water can be added to the other ingredients up to this mark.



ANNEX 12A: DIRECTIONS FOR MAKING COOKED F-75 WITH CEREAL FLOUR

You will need a 1-litre electric blender or a hand whisk (rotary whisk or balloon whisk), a 1-litre measuring jug, a cooking pot, and a stove or hot plate. Amounts of ingredients listed above. Cereal flour may be maize meal, rice flour, or whatever is the staple cereal in the area.

If using an electric blender:

1. Put 200 ml of the boiled, cooled water into the blender. (If using liquid milk instead of milk powder, omit this step.)
2. Add the flour, milk or milk powder, sugar, oil and blend.
3. Add boiled, cooled water to the 1000 ml mark and blend at a high speed.
4. Transfer the mixture to a cooking pot and boil gently for 4 minutes while stirring continuously.
5. Some water will evaporate while cooking, so transfer the mixture back to the blender after cooking and add enough boiled, cooled water to make 1000 ml. Add the CMV and blend again.

If using a hand whisk:

1. Mix the flour, milk or milk powder, sugar and oil in a 1-litre measuring jug. (If using milk powder, this will be a paste.)
2. Slowly add boiled, cooled water up to 1000 ml mark.
3. Transfer to cooking pot and whisk the mixture vigorously.
4. Boil gently for 4 minutes while stirring continuously.
5. Some water will evaporate while cooking, so transfer the mixture back to the measuring jug after cooking and add enough boiled cooled water to make 1000 ml. Add the CMV and whisk again.

12B: DIRECTIONS FOR MAKING NON –COOKED F-100 RECIPES

If using an electric blender:

1. Put 200 ml of the boiled, cooled water into the blender. (If using liquid milk instead of milk powder, omit this step.)
2. Add the required amounts of milk or milk powder, sugar, oil, and CMV.
3. Add boiled cooled water to the 1000 ml mark and blend at high speed.*

If using a hand whisk:

1. Mix the required amounts of milk powder and sugar in a 1-litre measuring jug; add the oil and stir well to make a paste (If you use liquid milk, mix the sugar and oil, and then add the milk.)
2. Add CMV, and slowly add boiled, cooled water up to 1000 ml mark, while stirring all the time⁶.*
3. Whisk vigorously.

If CMV is not available, use Mineral mix

Mineral mix is included in each recipe for F-75 and F-100. It is also used in making ReSoMal. The contents of the mineral mix are listed in Annex D. The mix contains potassium, magnesium, and other essential minerals. It **must** be included in F-75 and F-100 to correct electrolyte imbalance. The mineral mix may be made in the pharmacy of the hospital

Vitamins

Vitamins are needed in or with the feed. Recommended vitamins to be included in the multivitamin preparation are listed in Annex D. The multivitamin preparation should **not** include iron. If CMV is used, separate multivitamin drops are not needed.

⁶ Whether using a blender or a whisk, it is important to measure up to the 1000 ml mark before blending/whisking. Otherwise, the mixture becomes too frothy to judge where the liquid line is.

ANNEX 13 : F-75 LOOK UP TABLE

ANNEX 13A : VOLUME OF F-75 TO GIVE TO CHILDREN 6- 59 MONTHS OF DIFFERENT WEIGHTS

See reverse for adjusted amounts for children with severe (+++) oedema.

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

^aVolumes in these columns are rounded to the nearest 5 ml.

^bFeed 2-hourly for at least the first day. Then, when little or no vomiting, modest diarrhoea (<5 watery stools per day), and finishing most feeds, change to 3-hourly feeds.

^cAfter a day on 3-hourly feeds: If no vomiting, less diarrhoea, and finishing most feeds, change to 4-hourly feeds.

ANNEX 13B: VOLUME OF F-75 FOR CHILDREN 6- 59 MONTHS WITH SEVERE (+++) OEDEMA

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

^aVolumes in these columns are rounded to the nearest 5 ml.

^bFeed 2-hourly for at least the first day. Then, when little or no vomiting, modest diarrhoea (<5 watery stools per day), and finishing most feeds, change to 3-hourly feeds.

^cAfter a day on 3-hourly feeds: If no vomiting, less diarrhoea, and finishing most feeds, change to 4-hourly feeds.

ANNEX 14: APPETITE TEST FOR RUTF

An appetite test for RUTF forms one of the most important criteria for deciding whether a patient with SAM should be treated as an outpatient or inpatient. The pathophysiological responses to nutrient depletion in children with SAM are such that the hepatic (liver) and metabolic system are impaired 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 poor appetite and SAM at a higher risk of death.

- Conduct the appetite test for RUTF at admission to ITP.
- Conduct the appetite test in a quiet separate area.
- Explain the purpose and procedure of the appetite test to the caregiver.
- Advise the caregiver to:
 - o Wash hands before giving the RUTF
 - o Wash the hands and face of the child
 - o Sit with the child in lap and gently offer the RUTF
 - o Encourage the child to eat the RUTF without force-feeding
 - o Offer plenty of safe drinking water to child when eating the RUTF
- Observe the child eating the RUTF
- Decide if he/she passes or fails the test
 - o The child passes if he/she completes the RUTF test amount in 30 minutes
 - o The child fails if he/she fails to complete the RUTF test amount in 30 minutes.

Quantities of RUTF for Appetite Test:

Weight (kg)	Pass Appetite Test	Fail Appetite Test
Less than 4kg	Eats at least 1/4 sachet	Eats less than 1/4 sachet
4kg and above	Eats at least 1/3 sachet	Eats less than 1/3 sachet

Notes:

- If necessary, arrange a quiet corner where the child and caregiver can take their time to get accustomed to eat the RUTF.
- A child who fails the appetite test should be referred to ITP for stabilization

ANNEX 15: RUTF LOOK UP TABLES

ANNEX 15A: RUTF LOOK UP TABLE IN TRANSITION for 6- 59 months

Child's weight	Daily weight of RUTF (g)	Number of RUTF sachets per day (if one sachet = 0.2g)
3	83	1
3.2	88	1
3.4	94	1
3.6	99	1.2
3.8	105	1.2
4.0	110	1.5
4.2	116	1.5
4.4	121	1.5
4.6	127	1.5
4.8	132	1.5
5	138	1.5
5.2	144	1.5
5.4	149	1.75
5.6	155	1.75
5.8	160	1.75
6	166	1.75
6.2	171	2
6.4	177	2
6.6	182	2
6.8	188	2
7	193	2.2
7.2	199	2.2
7.4	204	2.2
7.6	210	2.5
7.8	215	2.5
8	221	2.5
8.2	226	2.5
8.4	232	2.5
8.6	237	2.75
8.8	243	2.75
9	248	2.75
9.2	254	2.75
9.4	259	3
9.6	265	3
9.8	270	3
10	276	3

ANNEX 15B: LOOK UP TABLE FOR RUTF FOR REHABILITATION PHASE (92g Sachets)

<i>Weight (kg)</i>	<i>Sachets/day</i>	<i>Sachets/week</i>	<i>Sachets/2 weeks</i>
3.0 - 3.9	1.5	11	22
4.0 - 4.9	2.0	14	28
5.0 - 6.9	2.5	18	35
7.0 - 8.4	3.0	21	42
8.5 - 9.4	3.5	25	49
9.5 - 10.4	4.0	28	56
10.5 - 11.9	4.5	32	64
≥12.0	5	35	70

ANNEX 16 : RUTF SPECIFICATIONS⁷

PLUMPY'NUT®

Plumpy'Nut® is a commercial type of RUTF. 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 a mineral and vitamin complex.

Plumpy'Nut® is designed to be used:

In dietary treatment of severe malnutrition: The nutritional value of Plumpy'Nut® is similar to that of NUTRISET® therapeutic milk F100. The recommended dose varies up to 200 Kcal/body weight/day. Plumpy'Nut® is available in individual sachets of 500 Kcal (92 g) and is ready-to-eat (It can be used simply by opening the sachet and eating it no cooking or diluting is necessary).

Instructions for Use

Safe 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 this 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 peanuts, 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.

⁷The Mother and Child Health and Education Trust (2011). Management of Severe Acute Malnutrition in Children Under Five Years: Ready-to-Use Therapeutic Food (RUTF).

Nutritional Value:

92g packet	100g packet
Macro nutrients	
Energy (500kcal*), Proteins (12.5g), Lipids (32.86g)	Energy (545Kcal*), Proteins (13.6g), Lipids (35.7g)
Micronutrients	
Vitamins: Vit A (840 µg), vit D (15 µg), vit E (18.4 mg), vit C (49 mg), vit B1 (0.55 mg), vit B2 (1.66 mg), vit B6 (0.55 mg), Vit B12 (1.7 µg), vit K (19.3 µg), biotin (60µg), folic acid (193 µg), pantothenic acid (2.85 mg), niacin (4.88 mg)	Vitamins: Vit A (910 µg), vit D (16 µg), vit E (20 mg), vit C (53 mg), vit B1 (0.6 mg), vit B2 (1.8 mg), vit B6 (0.6 mg), Vit B12 (1.8 µg), vit K (21 µg), biotin (65µg), folic acid (210 µg), pantothenic acid (3.1 mg), niacin (5.3 mg).
Minerals: Calcium (320 mg), phosphorus (394mg), potassium (1,111 mg), magnesium (92mg), zinc (14 mg), copper (1.78 mg), iron (11.53 mg), iodine (110 µg), sodium (< 290 mg), selenium (30 µg).	Minerals: Calcium (276 mg), phosphorus (276mg), potassium (1,022 mg), magnesium (84.6mg), zinc (12.9 mg), copper (1.6 mg), iron (10.6 mg), iodine (92 µg), sodium (< 267 mg), selenium (27.6 µg).

*10% of the Kilocalories are from proteins and 59% from lipids

In addition to good nutritional quality (protein, energy and micronutrients), RUTF has the following attributes:

- Taste and texture is 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 are low cost and readily available in developing countries

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.

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
Yeasts	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.

ANNEX 17: F-100 LOOK UP TABLE

RANGE OF VOLUMES FOR FREE FEEDING WITH F-100

Weight of Child (kg)	Range of volumes per 4-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.

ANNEX 18 : 24-HOUR FEED INTAKE CHART

Name: _____ Hospital ID number _____ Admission weight (kg) _____ Today's weight (kg) _____

DATE: _____		TYPE OF FEED: _____		GIVE: _____ feeds of _____ ml		
Time	a. Amount offered (ml)	b. Amount left in cup (ml)	c. Amount taken orally (a-b)	d. Amount taken by NG, if needed (ml)	e. Estimated amount vomited (ml)	f. Watery diarrhoea (if present, yes)
Column totals			c.	d.	e.	Total yes:
Total volume taken over 24 hours = amount taken orally (c) + amount taken by NG (d) – total amount vomited (e) = ____ ml						

ANNEX 19. RECOMMENDED IYCF PRACTICES

ANNEX 19A: RECOMMENDED BREAST FEEDING 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
Breast feed 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 every time the baby asks to breastfeed	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 Crying is a late sign of hunger
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. 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.

19B:COMPLEMENTARY FEEDING RECOMMENDED 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(250mls)	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 food and snacks	½ cup/bowl (250 ml)	Finely chopped family food 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.

ANNEX 19C: 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 giving 2-3 servings of foods.	Start with 2-3 table-spoonful 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 1/4 cup (250 ml cup). Show amount in cup brought by the mother.
From 9-11 months of age, breastfeed plus giving 4 servings of food or snacks per day.	Give finely chopped, mashed foods and finger foods. Increase gradually to 1/2 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 3/4 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.

ANNEX 20 A : THERAPEUTIC MILK LOOK UP TABLES FOR INFANTS LESS THAN 6 MONTHS WITH SAM (STABILIZATION PHASE)

Check the weight of the infant and see the volume of milk needed for 24 hours and frequency of feeds expected.

- Do not make adjustments for oedema
- Try at all costs to feed very small babies at least 8 times a day.

To give all the necessary volume in 24 hours, when the ideal frequency is impossible to follow, it is better to reduce the number of feed without reducing the total daily amount than to skip feeds

How total feed volumes are calculated for initial feeding

The lower the weight of the infant, the higher the volume of feed per kg required

As a guide, the average volume of feed/kg, according to weight in the stabilisation phase is:

Weight	Feed ml/kg/24 hours•
1.2 - 1.5 kg	180 ml/kg
1.6 - 1.9 kg	170 ml/kg
2.0 - 3.0 kg	155 ml/kg
3.1 - 3.5 kg	145 ml/kg
3.6 - 6.0 kg	130

*average rounded to nearest 5ml therefore absolute volumes per kg body weight may vary a little.

ANNEX 20B: THERAPEUTIC MILK REFERENCE CARD FOR INFANTS LESS THAN 6 MONTHS WITH SAM WHO ARE NOT BREASTFED (TRANSITION PHASE)

Weight of infant	Total feed volume in 24 hours	Volume of feed according to feed frequency (per 24 hours)					
		12 feeds	10 feeds	8 feeds	7 feeds	6 feeds	5 feeds
kg	ml	ml	ml	ml	ml	ml	ml
1.2	300	25	25	35	40	45	60
1.3	300	25	30	40	40	45	60
1.4	300	25	30	40	45	50	60
1.5	300	25	30	40	45	50	60
1.6	360	30	40	45	50	60	70
1.7	360	30	40	45	50	60	70
1.8	360	30	40	50	50	60	80
1.9	360	30	40	50	60	65	80
2	360	30	45	50	60	65	85
2.1	360	30	45	50	60	65	
2.2	480	40	45	60	65	80	90
2.3	480	40	45	60	65	80	90
2.4	480	40	45	60	65	80	90
2.5	540	45	50	65	70	85	100
2.6	540	45	50	65	70	85	100
2.7	540	45	50	65	70	85	100
2.8	540	45	50	70	80	90	105
2.9	540	45	50	70	80	90	105
3	600	50	60	80	85	100	110
3.1	600	50	60	80	85	100	110
3.2	600	50	60	80	85	100	110
3.3	600	50	60	80	85	100	110
3.4	600	50	60	80	85	100	110
3.5	600	50	65	85	90	105	125
3.6	600	50	65	85	90	105	125
3.7	600	50	65	85	90	105	125
3.8	600	50	65	85	90	105	125
3.9	600	50	65	85	90	105	125
4	720	60	70	90	100	110	145
4.4	720	60	70	90	100	110	145
4.5	780	65	80	105	125	125	155
4.9	780	65	80	105	125	125	155
5	960	80	90	115	130	145	170
5.4	960	80	90	115	130	145	170
5.5	960	80	105	130	145	155	195
5.9	960	80	105	130	145	155	195
6	1080	90	110	145	155	180	225

ANNEX20C: THERAPEUTIC MILK FEEDS IN THE RECOVERY PHASE FOR INFANTS LESS THAN 6 MONTHS WHO ARE NOT BEING BREASTFED.

Weight of infant	Total feed volume in 24 hours	Volume of feed according to feed frequency (per 24 hours)					
		12 feeds	10 feeds	8 feeds	7 feeds	6 feeds	5 feeds
mls	mls	Mls	Mls	mls	mls	mls	mls
1.2	360	30	30	40	50	55	70
1.3	360	30	40	50	50	55	70
1.4	360	30	40	50	55	65	70
1.6	420	35	40	50	60	70	80
1.6	480	40	50	55	65	70	90
1.7	480	40	50	55	65	70	90
1.8	480	40	50	65	65	70	95
1.9	480	40	50	65	70	80	95
2.0	480	40	55	65	70	80	105
2.1	480	40	55	65	70	80	105
2.2	600	50	55	70	80	95	110
2.3	600	50	55	70	80	95	110
2.4	600	50	55	70	80	95	110
2.5	660	55	65	80	90	105	120
2.6	660	55	65	80	90	105	120
2.7	660	55	65	80	90	105	120
2.8	660	55	65	90	95	110	130
2.9	660	55	65	90	95	110	130
3.0	780	65	70	95	105	120	135
3.1	780	65	70	95	105	120	135
3.2	780	65	70	95	105	120	135
3.4	780	65	70	95	105	120	135
3.5	780	65	80	105	110	130	150
3.6	780	65	80	105	110	130	150
3.7	780	65	80	105	110	130	150
3.8	780	65	80	105	110	130	150
3.9	780	65	80	105	110	130	150
4.0	840	70	90	110	120	135	175
4.4	840	70	90	110	120	135	175
4.5	960	80	95	130	145	150	190
4.9	960	80	95	130	145	150	190
5.0	1140	95	110	145	160	175	210
5.4	1140	95	110	145	160	175	210
5.5	1140	95	130	160	175	190	240
5.9	1140	95	130	160	175	190	240
6.0	1320	110	135	175	190	225	280

ANNEX 21 : DAILY WARD FEED CHART

DATE: _____

WARD:

[illegible]

* F100 Diluted (SDTM) is for infants less than six months

**Divide daily amount by the number of times feeds are prepared each day. For example, if feeds are prepared every 12 hours, divide daily amount by 2.

ANNEX 22: WEIGHT GAIN TALLY SHEET FOR WARD

Week of:	Good weight gain 10 g/kg/day	Moderate weight gain 5 up to 10 g/kg/day	Poor weight gain < 5 g/kg/day
Number of children on F-100 for entire week:			
Totals			
% of children on F-100 on ward			

To complete the weight gain tally sheet:

- Identify the children who were on F-100 for the entire week. (Only children on F-100 are expected to gain weight.)
- Calculate the average daily weight gain for each of these children:
- Add the daily weight gains recorded on the child's CCP for the 7 days of the week being reviewed. Divide the total by 7.
- Determine if the patient's average daily weight gain was poor, moderate, or good during that week.
- Record the patient's name in the appropriate column of the tally sheet.
- When the process is complete for each child on F-100, total the columns.
- Determine what percentage of the patient on F-100 had poor, moderate, or good weight gain.

To do this:

- Divide total in each column by the total children on F-100.
- Express as a percentage.

Compare the results in the tally sheets from similar weeks in other months.

ANNEX 23: MONITORING CHECKLISTS

23A: CHECKLIST FOR MONITORING FEED PREPARATION

OBSERVE:	YES	NO	COMMENTS
Are ingredients for the recipes available?			
Are ingredients' expiry dates within acceptable ranges?			
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 F-75 and F-100 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 mixed in (i.e., not left stuck in the measuring container)?			
Is mineral mix or CMV 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.)			
Are feeds served at appropriate temperatures?			
Are the feeds consistently mixed when served (i.e. oil is mixed in, not separated)?			
Are correct amounts put in the cup for each child?			
Is leftover prepared food discarded promptly?			
Other:			

23B: 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			
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 F-75 kept the same throughout the initial			
After transition, are amounts of F-100 given freely			
Warming			
Is the room kept between 25-30 C (to the extent possible)?			
Are blankets provided and children kept covered at night?			
Are safe measures used for re-warming children?			
Are temperatures of patients taken and recorded correctly?			
Weighing			
Are scales functioning correctly?			
Are scales standardized monthly?			
Are children weighed at about the same time each day?			
Are they 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?			
Do staff immediately record weights on the CCPs			
Are weights correctly plotted on the Weight Chart?			

23B:CHECKLIST FOR MONITORING WARD PROCEDURES, continued

<i>Giving antibiotics, medications, supplements</i>			
Are antibiotics given as prescribed (correct dose at correct time)?			
When antibiotics are given, do staff immediately record on the CCP?			
Is folic acid given daily and recorded on the CCP?			
Is vitamin A given according to schedule?			
Is a multivitamin given daily and recorded on the CCP?			
After children are on F-100 for 2 days, is the correct dose of iron given twice daily and recorded on CCP?			
<i>Ward environment</i>			
Are surroundings welcoming and cheerful?			
Are mothers offered a place to sit and sleep?			
Are mothers taught/ encouraged to be involved in care?			
Are staffs consistently courteous?			
As children recover, are they stimulated and encouraged to move and play?			

23C: CHECKLIST FOR MONITORING HYGIENE

OBSERVE:	YES	NO	COMMENTS
<i>Hand washing</i>			
Are there functional hand washing facilities?ward?			
Do staff wash hands thoroughly with soap?			
Are their nails clean?			
Do they wash hands before handling food?			
Do they wash hands between each patient?			
<i>Mothers' cleanliness</i>			
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?			
<i>Bedding and laundry</i>			
Is bedding changed every day or when soiled/wet?			
Are diapers, soiled towels and rags, etc. stored in bag and disposed off properly?			
Is there a place for mothers to do laundry?			
Is laundry done in hot water?			
<i>General maintenance</i>			
Are floors mopped?			
Is trash disposed of properly?			
Is the ward kept as free as possible of insects and rodents? Are surfaces and walls dusted?			
<i>Food storage</i>			
Are ingredients and food kept covered and stored at the proper temperature?			
Are leftovers discarded?			
<i>Feeding Utensils washing</i>			
Are feeding Utensils washed after each feed?			
Are they washed in hot water with soap?			
<i>Toys</i>			
Are toys washable?			
Are toys washed regularly, and after each child uses them?			



Annex 24: REFERRAL FORM FOR ITP/OTP/TSFP

State: _____ County: _____ Payam: _____ Boma/Village: _____						
Date						
Referred from (Health Facility/Nutrition Site)						
Referred To						
REFERENCE:						
Name			Registration No:		Date of first visit:	
Age (months for children or years for adults)	Sex	☐ Male ☐ Female		Temperature (°C)		
Weight (kg)	Bilateral pitting Oedema	☐ No ☐ Yes	Grade ☐ + ☐ ++ ☐ +++		MUAC (cm) /WFL/H z-score	
Please attend to the above person who we are referring to your health facility for further action						
History and symptoms:						
Investigations done						
Diagnosis						
Treatment given before referral						
Vaccinations	Deworming		Vitamin A			
Reason for Referral						
Name of Clinician/Health Provider				Signature		

Annex 25: SITE TALLY SHEET

	SITE	OTP ITP	Communiy Payam County State			
Date of weeks						
Total start of week(A)						TOTAL MONTH
New cases SAM:children 6-59 months(B1)						
Other cases Adults,adolescents,children>5yrs,Infants<6months(B2)						
Old cases SAM: rEferred from OTP or ITP or returned defaulter(C)						
Total admissions(D), D= B1+ B2+C						
Discharged cured (for children 6 – 59months) E1						
Discharged died (for children 6 – 59months) E2						
Discharged defaulted (for children 6 – 59months)E3						
DischargedNon recovered (for children 6 – 59months)E4						
Total Discharges (E) E=E1+E2+E3+E4						
Referrals to OTP or ITP(F)						
Total Exits (G) (G= E+F) + add other age group						
Total End of Week (A+D-G)						
Gender New Admission (children 6-59 months(B1) M F						

Annex 26 SITE REPORT SHEET

MONTHLY SITE REPORT												
	SITE PAYAM COUNTY STATE				IMPLEMENTED BY	MOH		OTHER				
					MONTH							
					YEAR							
					TYPE	ITP		OTP				
	Total beginning of month	New Cases		Old cases	Total admissions (D) B+C=D	Discharges				Referrals (F)	Total Exits(G)	Total End of Month(H) A+D-G=H
		Children 6-59months(B1)	Other(adults, adolescents, children >5 years, Infants<6month(B2)	Referrals or Returned Defaulters		Discharged Cured(E1)	Discharged died(E2)	Discharged Defaulted(E3)	Discharged Non Recovered(E4)			
						%	%	%	%			
			Children 6-59 months			E ⁿ /E*100	E2/E*100	E3/E*100	E4/E*100			
			Targets Sphere minimum			>75%	-	<15%				
<i>E1: Discharged Cured = met discharge criteria</i> <i>E2: Discharged Died = died while in treatment</i> <i>E3: Discharged Defaulted = absented for three consecutive visits in outpatient care/two days in inpatient care</i> <i>E4: Discharged Non-recovered = did not meet discharge criteria after four months in outpatient care/ after two months in inpatient care</i>												
	GENDER NEW ADMISSIONS			M								
				F								
*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 27: Monthly County/State Reporting Sheet

MONTHLY REPORTING (SITES COMBINED)												
	PAYAM COUNTY STATE			Number of OTPs				IMPLEMENTING PARTNER				
				Number of ITPS				REPORTING PERIOD				
				Number of Communities								
				ESTIMATED TARGET <5 yr with SAM*		(WFH <-3Z score		MUAC<115mm		Oedema		
	Total beginning of month	New Cases		Old cases	Total admissions (D) B+C=D	Discharged children 6 – 59months**				Referrals (F)	Total Exits(G)	Total End of Month(H) A+D-G=H
		Children 6-59months(B1)	Other(adults, adolescents, children >5 years, Infants<6month(B2)	Referrals or Returned Defaulters		Discharged Cured(E1)	Discharged died(E2)	Discharged Defaulted(E3)	Discharged Non Recovered(E4)			
						%	%	%	%			
			Children 6-59 months			E ¹ /E*100	E2/E*100	E3/E*100	E4/E*100			
			Targets Sphere minimum			>75%	-	<15%				
<i>E1: Discharged Cured = met discharge criteria</i> <i>E2: Discharged Died = died while in treatment</i> <i>E3: Discharged Defaulted = absented for three consecutive visits in outpatient care/two days in inpatient care</i> <i>E4: Discharged Non-recovered = did not meet discharge criteria after four months in outpatient care/ after two months in inpatient care</i>												
	GENDER NEW ADMISSIONS			M								
				F								
*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 28 : FORECASTING NUTRITION PRODUCTS NEEDS

To provide quality services, it is critical to have a reliable supply chain for delivering basic nutrition supplies and equipment. An efficient system for ordering and managing nutrition supplies and equipment prevents stock-outs and reduces time loss, thereby building confidence in service management. Efforts should be made to utilize existing channels for ordering and management of other supplies, equipment, and consumables at different levels of health care system.

Basic Supplies and Equipment for an ITP

A detailed list of supplies and equipment required for ITP is provided in *Annex 6*.

Ordering for Nutrition Supplies and Equipment

The amount to order depends on the following:

- Caseloads or expected cases based on trends of acute malnutrition;
- Amount of stock normally used;
- Frequency of ordering;
- Estimation of usage of Inpatient supplies;

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	Quantities needed to treat one child with SAM/kg	Quantities needed to treat 100 children with SAM
F75	Inpatient care(stabilization phase)	15%	5-10 days	2	200 x (15%)
F100	Inpatient care(rehabilitation phase)	<5%	4- 6 weeks	12-15 kg	1500 x (5%)
RUTF	Inpatient and outpatient care(Transition/rehabilitation phase)	>95%	6-8weeks	6-8 kg	1200 x (95%)
ReSoMal	Inpatient care	20%	-	-	17 x (20%)
CMV	Inpatient care	Dependent on use			

In in-patient therapeutic care:

- Treatment lasts 10 days,
- 2 kilograms (kg) (5 packets) of dry **F75** per child can be used (equivalent to 6 kg per month of dry F75) for 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 are admitted for SAM with medical complications
- 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.

ESTIMATING CASE LOAD FOR In-patient management of 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:

Case load = prevalence (take # of prevalent cases at start of program) + incidence (add new # of cases expected over a 12-month period)

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

Case load can be calculated by: prevalence + (prevalence x 1.6)

Account for the expected service coverage:

Assume 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

ANNEX 29: NUTRITION SUPPLIES AND EQUIPMENT ORDER FORM TEMPLATE

Date (dd/mm/yy) :		State:		County:				
Payam:		Name of health facility/nutrition site:			Organization:			
Requested by:		Organization:		Contact tel & e-mail:				
Item	Unit	Recommended no. units/treatment/ child or monthly ration	Buffer stock (%)	Case Load	Amount needed for programme	Amount of buffer stock	Total stock needed	Stock in cartons
Resomal, 42 sachet/1L/CAR-100	sachet 42g	0.2	10					
F75 therapeutic diet, sachet 102.5g/CAR-120	sachet 102.5g	12	10					
F100 therapeutic diet, sachet 114g/CAR-120	sachet 102.5g	4	10					
Therapeutic spread (RUTF), sachet 92g/CAR-150	sachet 92g	136	10					
Mother/baby electronic scales	PC		0					
Baby length/height board	PC		0					
Height board (adult)	PC		0					
MUAC tapes (child)	PAC		0					
MUAC tapes (adult)	PAC		0					
Retinol 100,000IU soft gel caps/PAC-500	Caps	1	10					
Retinol 200,000IU soft gel caps/PAC-500	Caps	1	10					
Mebendazole 500 mg tabs/PAC-100	Tab	1	10					
Folic acid 5mg tab								
Anti malaria								
Amoxici.pdr/oral sus 125mg/5ml/BOT-100ml								
Bed nets (LLITN) (pc)								
Soap for hand washing (Bars)								
RUSF, sachet 92g/CAR-150	sachet 92g	30	10					
CSB++, 1.5kg/CAR-10	PAC 1.5kg	4	10					

NOTES:

1. For therapeutic supplies, 10% buffer or emergency stock should be added to quantities needed for the program. 2. Amount needed for program is equal to number of children on program X Unit of item recommended/treatment/child. 3 Two months buffer stock should always be kept in the facility store or 4 months buffer stock in the warehouse

This list is not exhaustive, other items can be added if in use

Name and Title of Person requesting:	Signature:	Date:
Name and Title of Person approving:	Signature:	Date:

To be submitted min. two weeks in advance of expected delivery of items

Item	when to order	where to place a new supply order
Resomal, 42 sachet/1L/CAR-100	Every 2 months	through CHD /SMOH to MOH/UNICEF/WFP MOH
F75 therapeutic diet, sachet 102.5g/CAR-120	Every 2 months	
F100 therapeutic diet, sachet 114g/CAR-120	Every 2 months	
Therapeutic spread (RUTF), sachet 92g/CAR-150	Every 2 months	
Mother/baby electronic scales	based on need	
Baby length/height board	based on need	
MUAC tapes (child, 11.5 Red)	based on need	
Retinol 100,000IU soft gel caps/PAC-500	Should be part of MOH essential drugs list	
Retinol 200,000IU soft gel caps/PAC-500		
Mebendazole 500 mg tabs/PAC-100		
Albendazole 400mg tabs/PAC-100		
Amoxici.pdr/oral sus 125mg/5ml/BOT-100ml		

ANNEX 30: MONTHLY NUTRITION STOCK REPORT FORMAT

State:	County: Payam:								
Name of organization:	Name of health facility/nutrition site:						Reporting month:		
Compiled by:	Contact tel & e-mail:						Date (dd/mm/yy):		
Item	Code	Unit	Stock at the beginning of the month	New stock received during the reporting month	Stock utilized during the reporting month	Damaged /expired stock	Balance at the end of month	No. of days out of stock	Remarks
RUTF sachet CAR/ 92 g-150	S0000240	CAR							
Amoxillin pdr oral sus 125 mg bot 100 ml	S1505046	BOT							
Amox 250mg tab Pac 10	S1505045	PAC							
Amox 250mg tb Pac20	S1505044	PAC							
Weighing trousers pac	S0189000	PAC							
Micronutrients film tab Pac 1000	S1580100	PAC							
Albendazole 400 mg chew pac 1000	S1555370	PAC							
Scale inf. Spring	S0557000	PC							
ReSoMal 42 g sachet Car 100	S1561125	CAR							
F-100 therapeutic diet sachet 1114 g Car 90	S0000209	CAR							
F-75 therapeutic diet sachet 102 g Car 120	S0000208	CAR							
Portable bay/child length/height measure	S0114540	SET							
Portable adult height measure		SET							
Weighing scale mother child 150 kg x 25g	S0141021	EA							
Mebendazole 500 mg chew tab pack 100	S1555360	PAC							
MUAC child PAC-50	S0145620	PAC							
MUAC Adult PAC-50	S0145630	PAC							
Retinol 100 K IU soft gel PAC caps. PAC-500	S7800001	PAC							
Retinol 200 K IU soft gel PAC caps. PAC-500	S7800002	PAC							
Portable bay child L-H meas/SET-2	S0114530	SET							
Scale infant spring type 25 kg x100g	S0145555	EA							
Fe +folic acid 60+0.4 mg tab/PAC 1000	S1550025	PAC							
Multiple Micro. Nut pdr	S1580201	PAC							
Port. Baby chd L-H	S01145200	SET							
RUSF sachet CAR/ 92 g-150		CAR							
Soap for hand washing									
Bed net (LLITN)									
Antimalarials									

Note: This list is not exhaustive, other supplies and equipment can be added if in use

ANNEX 31: MONTHLY SUPPORTIVE SUPERVISION CHECKLIST

State:..... County:..... Payam.....

Health facility:.....

Date of visit (dd/mm/yy):

Name of staff (in-charge) interviewed during the visit

Name	Position	Cadre	Institution/Employer

Month of the last Supportive Supervision visit..... and By who?.....

Actions from previous Supportive Supervision

.....
.....

1. STAFF & TRAINING

1.1 Staff of the OTP/TSFP:

Number	Qualification	Responsible for:	1) Salaries 2) Incentives 3) Others (specify)	Training on SAM/MAM? If Yes, date of the last training	Present/Absent the day of the visit

Conclusion & Actions taken

.....

2. ACTION PROTOCOL

2.1.1 Copy of the up-to-date protocol? *yes / no*. If Yes, Year:....._

2.1.2 Posters/Job Aids displayed on the wall? *yes / no*. If Yes, which ones?.....

.....

2.2 Protocol READ? *yes / no* KNOWN? *yes / no* DIFFICULTIES in UNDERSTANDING? *Yes /No*. If Yes, which part?

.....

Conclusion & Actions taken.....

.....

3.TOOLS – MATERIALS – PRODUCTS

- 3.1 Register books available? *yes / no* 3.2 Charts/Job Aids available? *yes / no*. If No, which ones are missing?.....
- 3.3 In Patient Treatment Card available(CCP) ? *yes / no* 3.4 Referral forms available? *yes / no*
- 3.5 Safe drinking water available? *yes / no* If No, Actions taken.....
- 3.6 Sugar water available? *yes / no* If No, Actions taken
- 3.7 Health/Nutrition Education and Counselling materials available? *yes / no*
- 3.8 Anthropometric equipment present and in good condition? *yes / no*
If not, please specify for MUAC.....length-board.....Scale..... Others.....
- 3.9 Routine medications available? *yes / no* If not, which ones?.....
- 3.10 Therapeutic feeds available, for how long? *yes / no* ; if not why?
- 3.12 Structures: Any problem to report.....

Conclusion & Actions taken.....

2. ACTIVITIES observed (on patients and/or written on the charts)

Observed or reviewed from records of the last 2 months	Directly observed	Record review	Adequate? Y/N	Quality		Remarks
				Good +1	Poor +0	
1.Handly gently the patient						
2. Flow of the beneficiaries						
3. Passive screening in the facility?						
4. Is bilateral pitting oedema checked for?						
5. Is oedema graded?						
6. Is MUAC measurement taken correctly?						
7. Is weight measurement taken correctly?						
8. Are Length/height measurement taken where needed and feasible?						
19. Is additional assessment with WFH/L Z-score correctly conducted?						
10. Is admission criteria correct?						
11. Is transfer criteria correct?						
12. Is registration # given correctly?						
13. Are routine medications given and recorded correctly?						
14. Are therapeutic feeds (F75 & F100) given & recorded correctly?						
15. Frequency of anthropometric measurements?						
16. Is Health & Nutrition Education						

provided?						
17. Is failure to respond to treatment diagnosed and action taken correctly?						
18. Are absentees and defaulters noted in the register books, and then traced?						
19. Are referral slips used for all referrals?						
20. Is exit outcome recorded on the treatment card and in the register book?						
21. Are register books & treatment cards well kept at the facility ?						
22. Are Stock cards of nutrition therapeutic supplies kept and updated correctly?						
23. Are WASH facilities available?						
24. Is the Monthly report compiled correctly?						
25. Is the Monthly report submitted on time						
Total score				= ____x100 25 = ____%		

Conclusion & Actions taken.....

1. STORAGE STRUCTURE

Shelter: *yes / no* Hygiene: *yes / no* Other:

Adequate Storage: *yes / no* If No, explain.....

2. COORDINATION

Date of the last ward/facility Meeting/...../.....

Date of the last delivery of therapeutic feeds and other supplies/...../.....

Remarks:

3. Beneficiaries/Mothers/caregivers' perceived views on ITP services

Remarks

Remarks

CONCLUSION & ACTION TO BE TAKEN FOR THE NEXT MONTH

Name and signature of the interviewed staff in charge:

Name and signature of Supervisor:.....

ANNEX 32: HEALTH FACILITY INTEGRATED QUARTERLY SUPPORTIVE SUPERVISION CHECKLIST

State:..... County:..... Payam:.....

Health facility/Nutrition Site:..... Date of visit (dd/mm/yy):

Name of the interviewed staff in-charge _____ Contact Telephone # _____

BASIC INFORMATION

1. Name of Health facility/Nutrition site: _____
2. Type (PHCU, PHCC or Hospital): _____
3. Ownership (Government, Partners)? _____
4. Number of villages/Bomas attached to this Health facility? _____
5. Catchment population of the Health facility? _____

ORGANIZATION AND MANAGEMENT

1. Reception/waiting area at ITP available and well organized? _____
2. Water, Sanitation and Hygiene (WASH) of the health facility:
 - Latrines for patients and caregivers available and functional? _____
 - Latrines for staff available and functional? _____
 - Refuse disposal facilities in place? _____
 - Medical waste disposal facilities in place? _____
 - Compound tidy? _____
 - Hand washing facility (with soap) available? _____
 - What is the main source of water? _____

3. STAFFING (please insert types of cadres)

a) Health and Nutrition staff

Cadres	#Available	Gap	#Trained on nutrition service delivery	Comments

b) Support staff

Cadres	#Available	Gap	Comments

4. HHP/volunteer functionality? (e.g. No. of active HHPs/volunteers per facility, No. of referrals made in a quarter, feedback meetings held) _____
5. Attendance register book in place and properly filled? _____
6. Leave roster in place? _____
7. Duty roster in place? _____
8. Minutes of staff meetings available? _____
9. Minutes of the health facility management committee meetings available? _____
10. Any minutes of other relevant meetings? (specify) _____
11. Reports from weekly/bi-weekly and monthly supportive supervision visits available and acted on? Yes/No. **Comments:** _____

SERVICES

A: NUTRITION SERVICES

- Evidence of nutrition assessment at different care points (general OPD, ANC/PNC, OPD, Maternal and Child Health Clinics, paediatric wards, maternity, HIV/AIDS/TB/Kala Azar care points etc.):

- Is Bilateral pitting Oedema checked and recorded correctly? _____
- Is MUAC taken and recorded correctly? _____
- Is Weight taken and recorded correctly? _____
- Are Height/length taken and recorded correctly? _____
- Are Medical complications identified and recorded correctly⁸? _____
- Interpretation done correctly? _____
- Referral for nutrition services conducted as necessary?⁹ _____

- OTP available and functional? _____
- ITP/SC available and functional (if applicable)? _____
- Waiting area at the OTP/TSFP:** Is there a seating area available, Triage conducted correctly? Is health and nutrition education conducted? _____

- Are cases with acute malnutrition and mothers/caregivers handled properly (served timely, staff attitude, clear instructions on what to do)? _____

- Facilities for stimulation/play therapy (e.g. playground for children, play materials/toys) available? Yes/No.

Comments : _____

- Facilities for health /nutrition education and counselling (counselling room, demonstration materials and equipment) available? Yes/No.

Comments : _____

- Kitchen garden for demonstrations to mothers/caregivers of children under five years available? Yes/No.

Comments: _____

- Availability and functionality of anthropometric equipment (MUAC tapes, Weighing scales, Height boards) (Tick appropriately where applicable)

Anthropometric equipment	Availability	Functionality	Comments
MUAC tapes (children)	Yes/No	Yes/No	
MUAC tapes (adults)	Yes/No	Yes/No	
Weighing scales (children)	Yes/No	Yes/No	
Weighing scales (adults)	Yes/No	Yes/No	
Height boards (children)	Yes/No	Yes/No	
Height boards (adults)	Yes/No	Yes/No	

- Demonstrate the ability to properly use the anthropometric equipment

Anthropometric equipment	Comments on Demonstrated ability on use:
MUAC tapes	
Weighing scales (Digital)	
Height boards	

⁸ Medical complications including hypothermia, hypoglycemia, diarrhoea and dehydration, shock, infections, severe Vitamin A deficiency, cardiac failure, very severe anemia, severe dermatosis

⁹ Medical complications including hypothermia, hypoglycemia, diarrhoea and dehydration, shock, infections, severe Vitamin A deficiency, cardiac failure, very severe anemia, severe dermatosis

11. Availability of IEC materials on nutrition/health

IEC materials	Comments on Availability:
MIYCN	
WASH	
Family planning	
GMP	
Others (specify)	

12. Documentation of Health/Nutrition Education and Counselling sessions held (group/individual): Yes/No. **Comments**

13. Is there Evidence of behaviour change as a result nutrition counselling (e.g. success stories etc.). Yes/No.

Comments : _____

14. Availability and proper usage of therapeutic /supplementary foods/supplies (stock out, prescription, preparation, feeding utensils, feeding frequency, supervision, personnel, state of the kitchen)?

Therapeutic Nutrition Supplies/Facilities	Comments on Availability and proper usage:
Routine medications	
F75	
F100	
Resomal	
RUTF	
Feeding utensils	
Kitchen	
Protective gear	
Others (specify)	

15. Are national guidelines/protocols¹⁰ available and in use in the facility? Yes/NO _____

Comments: _____

16. Nutrition supplies management and stock control:

- File for delivery notes in place? _____
- File for routine medications and other supplies orders¹¹ in place? _____
- Are Store issue vouchers available and appropriately filled? _____
- Are stock cards present and updated correctly? _____
- Is the Dispensing Log for supplies present and duly filled? _____
- Stores organised and supplies sorted appropriately? _____
- Equipment and other materials available and in good condition? _____
- Equipment inventory available and updated? _____
- Comment on conditions of storage of supplies (expiry dates, shelves, pallets, SLFO/FEFO¹², fumigation schedule, ventilation, accessibility, security) _____

j) Are expired/damaged/obsolete drugs, nutrition therapeutic supplies and equipment stored separately and disposed of appropriately? _____

17. Nutrition Data Collection, Management, and Use:

- Timely compilation of accurate, shared, complete program data¹³ (look at CMAM register books and monthly reports for confirmation), and place of submission

¹⁰ CMAM/MIYCN/PMTCT/iCCM/TB/MALARIA/ANC/REPRODUCTIVE HEALTH/IMNCI
Functionality: in line with Inpatient guidelines for treating SAM guidelines.

¹¹ To include nutrition supplies; RUTF, F100, F75, Resomal, CMV, I

¹² SLFO: Shortest Life First Out; FEFO: First Expiry first Out

¹³ Emphasis is on proper filling of all M & E tools

Programme data source	Comments on accuracy and completeness of program data/share/submission:
Inpatient (ITP) register books	
ITP monthly reports	

- b) Are performance indicators in line with minimum standards (SPHERE Standards) (cure rate, death rate, defaulter rate: Quarterly average). Yes/No.
Comments: _____
- c) Are nutrition data forms uploaded onto the District Health Information System (DHIS 2) and updated? Yes/No **Comments:** _____
- d) Through routine screenings, are monthly trends of new cases with acute malnutrition identified, plotted on a graph, and displayed at the health facility? Yes/No
Comments: _____
- e) Is Home visit data used (analysed and compiled into summary, discussed during monthly meetings with HHPs/volunteers) and shared with relevant clusters e.g. WASH, FSL?

B: EXPANDED PROGRAMME OF IMMUNIZATION (EPI) SERVICES

- EPI Outreach projection for the month available? _____
- EPI Outreach tally sheets for the last month available? _____
- EPI fridge functional, temperature monitoring chart available and updated? _____
- EPI fridge and vaccine carriers well organized? _____
- Is the vaccine control book in place and correctly filled? _____
- How is the coverage for EPI? _____
- Integration of nutrition into EPI services? Yes/No.
Comments: _____

C: REPRODUCTIVE HEALTH SERVICES

- ANC outreach program available and followed? _____
- ANC register in place and appropriately filled? _____
- Are reproductive health commodities¹⁴ available? _____
- Deliveries register in place and appropriately filled? _____
- Integration of nutrition into reproductive services? Yes/No.
Comments: _____

PROBLEMS, SOLUTIONS AND RECOMMENDATIONS

No.	Gaps identified	Solutions proposed	Time frame	People responsible

Overall comments on the support supervision visit

Name of supervisor _____ Signature _____

Organisation/Institution _____

Note :Ensure a copy of support supervision form is kept at the health facility

¹⁴ Include the following: Iron/folate supplementation, deworming tablets (anthelmintic), Tetanus Toxoid (TT)

ANNEX 33 : SAMPLE DISCHARGE CARD



DISCHARGE CARD
For Child Recovering from Severe Malnutrition
Hospital Name _____

Child's name: _____ M F Date of birth: _____
Address: _____

Admission	Discharge	Date:	Weight (kg)	HT/length (cm)	% weight-for- height



Instructions for Feeding at Home

What to feed? (Include recipe if needed) _____

How much and how often? _____

Medications and Supplements

Give _____ drops _____ (multivitamin preparation) with food once daily.

Give 1 tablet folic acid once daily for _____ days.

Give _____ iron twice daily for 1 month.

Other: _____

Danger Signs – Bring Child for Immediate Care if:

Not able to drink or breastfeed
Stops feeding !



Diarrhoea more than 1 day
or blood in stool



Swelling in feet,
hands, legs, or arms



Come for Scheduled Follow-Up Visits

Next Planned Follow-Up:		Record of Visits:		Weight	% wt-for ht
Date	Place	Date	HT/length		

Vitamin A – Bring Child for a Dose Every Six Months

Next Dose Vitamin A:		Record of Doses Received:	
Date	Place	Date	Dose

Immunizations Given

Tick or record date given:

BCG	DPT 1	OPV 2
OPV 0	DPT 2	OPV 3

Next Immunization

Date	Dose(s) needed

ANNEX 34: MINIMAL REPORTING GUIDANCE FOR ITP

The report should give the following outline

- Introduction
- Performance, Process and Output indicators
- Comment on Overall performance

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 /transfers
- Number of beneficiaries in treatment
- Number and percentage discharged cured/transferred
- 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
- 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 transferred patients in a particular month

- Average length of stay (LOS) (expressed in days)
- Referral rate
- Categories of admission: bilateral pitting oedema, severe wasting -MUAC or WFH z-score
- Number of patients stabilized and transferred to outpatient care

Figures

- Figure (graph) with trends of key performance and output indicators:
 - o Bars with new admissions, discharges/transfers, beneficiaries in treatment
 - o Lines for transfers to OTP, 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/ transfer 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: EMOTIONAL AND PHYSICAL STIMULATION

Severely malnourished children have delayed mental and behavioral development, which, if not treated, can become the most serious long-term result of malnutrition. Emotional and physical stimulation through play programmes that start during rehabilitation and continue after discharge can substantially reduce the risk of permanent mental retardation and emotional impairment.

The following are taken into consideration:

The environment

The atmosphere in the ward should be relaxed, cheerful and welcoming.

Toys should always be available. Toys should be safe, washable and appropriate for the child's age and level of development. Inexpensive toys made from cardboard boxes, plastic bottles, tin cans and similar materials are best, because caregivers can copy them. Examples of suitable toys are described below.

Play activities

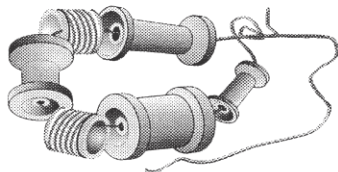
After the initial phase of treatment, the child should be initiated on play activities. Activities should be selected to develop both motor and language skills and new activities and materials should be introduced regularly. Play activities, are arranged by level of development.

Physical activities

Physical activities promote the development of essential motor skills and may also enhance growth during rehabilitation. The duration and intensity of physical activities should increase as the child's nutritional status and general condition improve.

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.

**Drum (from 12 months)**

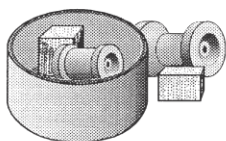
Any tin with a tightly fitting lid.

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.

**In-and-out toy (from 9 months)**

Any plastic or cardboard container and small objects (not small enough to be swallowed).

**Mirror (from 18 months)**

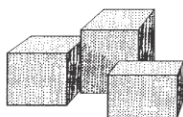
A tin lid with no sharp edges.

Posting bottle (from 12 months)

A large transparent plastic bottle with a small neck and small long objects that fit through the neck (not small enough to be swallowed).

**Blocks (from 9 months)**

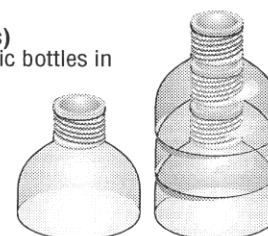
Small blocks of wood. Smooth the surfaces with sandpaper and paint in bright colours, if possible.

**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)**

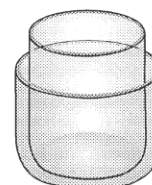
Cut at least three identical round plastic bottles in half and stack them.

**Pull-along toy (from 12 months)**

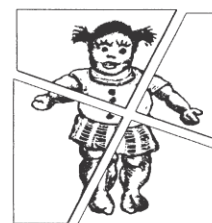
As above, except that string is used instead of wire.

**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.



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