



Government of Malawi  
Ministry of Health

# COMMUNITY-BASED MANAGEMENT OF ACUTE MALNUTRITION

**Job Aids for Community-  
and Facility-based  
Service Providers**

2nd Edition



JULY 2017



## Foreword

---

Despite past and on-going efforts, undernutrition remains a major contributing factor to child mortality worldwide. Globally, it is estimated that 3.1 million children die from malnutrition-related causes annually. The preliminary Malawi Demographic and Health Survey (DHS) 2015 reported a prevalence of acute malnutrition of 2.7 percent. Even though this is classified as *normal* according to the WHO classification of acute malnutrition, there are regional variations in Malawi. More recent nutrition surveys conducted in 2016 showed prominent disparities across the five livelihood zones of Malawi, with Lower Shire recording the highest Global Acute Malnutrition (GAM) prevalence of 6.6 percent which is classified as *poor*. The GAM prevalence in Shire Highlands was reported at 4.0 percent, Thyolo-Mulanje 3.4 percent, Lake Chirwa Phalombe Plain 3.1 percent, Rift Valley Escarpment 2.1 percent, Kasungu-Lilongwe 1.3 percent, and Central Karonga-Chitipa 1.1 percent.

A substantial proportion of children under 5 years of age diagnosed with acute malnutrition develop severe acute malnutrition (SAM) with medical complications due to delayed case detection, and underlying infections, including HIV/AIDS and TB. The Ministry of Health, therefore, adopted the Community-Based Management of Acute Malnutrition (CMAM) approach to ensure maximum coverage, timeliness, access, and provision of appropriate care to those in need. CMAM is part of the Government of Malawi Essential Health Care Package, whose aim is to deliver basic health services to the population, especially those living in the rural areas.

The Ministry of Health developed the first edition of Malawi CMAM Guidelines in 2012 after the Community Therapeutic Care (CTC) Interim Guidelines of 2006. In 2013, the World Health Organisation (WHO) provided updates on the management of SAM in infants and children, which necessitated the Ministry to update its 2012 CMAM Guidelines. The 2016 CMAM guidelines have been updated considering global and local scientific evidence on the management of acute malnutrition, and contextual and policy issues within Malawi.

The guidelines provide optimal guidance on delivery of the four components of CMAM, including Community Outreach, Supplementary Feeding for Moderate Acute Malnutrition (MAM), Outpatient Care for SAM without medical complications, and Inpatient Care for SAM with medical complications. The guidelines also provide guidance to service providers on comprehensive management of acute malnutrition in the context of HIV.

The Ministry of Health is appealing to all service providers, academic institutions, development partners, and individuals involved in the management of acute malnutrition in the country to use these guidelines as first point of reference.

The Ministry of Health sincerely acknowledges the financial, material, and technical support of different partners, individuals, and institutions in the review and finalization of these guidelines.

The Ministry of Health remains the custodian of these guidelines and commits itself to continue providing necessary leadership and creating an enabling environment for a holistic management of malnutrition in Malawi.



**Dr. Charles Mwansambo**  
**CHIEF OF HEALTH SERVICES**

## Acknowledgements

The Ministry of Health (MOH) led a rigorous process of reviewing and updating the Guidelines for Community-Based Management of Acute Malnutrition (CMAM), which involved several working sessions, stakeholder consultations and review of latest available evidence. The MOH worked closely with local and international nutritionists and paediatricians to inform the process.

The review of these guidelines was done under the guidance of the Directorate of Clinical Services and Department of Nutrition HIV and AIDS (DNHA). In this regard, the MOH would like to acknowledge policy direction from Dr George Chithope Mwale, Director of Clinical Services–MOH, Mr Felix Pensulo Phiri, Director of Nutrition–DNHA, and Mrs Janet Guta, Deputy Director of Clinical Services–Nutrition.

The MOH is also indebted to Mr Sylvester Kathumba, Principal Nutritionist in the Ministry, Dr Jaden Bendabenda, Deputy Project Manager at Food and Nutrition Technical Assistance III Project (FANTA), Alice Nkoroi, Country Project Manager at FANTA, Violet Orchardson at USAID, and Senior Lecturers and Professors at the University of Malawi, College of Medicine: Dr Ajib Phiri, Dr John Phuka, Professor Kenneth Maleta and Emeritus Professor Geert Tom Heikens for their leadership and technical guidance during the process of drafting, field testing, and production of these guidelines.

The following experts contributed technically to the guidelines:

Blessings Muwalo	DNHA
Frank Msiska	MOH
Urunji Mezuwa Banda	MOH–Nkhotakhota District Health Office (DHO)
Christopher Chirwa	MOH–Rumphi DHO
George Mtengowadula	MOH–Ntcheu DHO
George Mphasa	MOH–Dowa DHO
Isabel Potani	MOH–Queen Elizabeth Central Hospital (QECH)
Kondwani Mkandawire	Medical Council of Malawi
Thokozire Lipato	Nurses and Midwives Council
Dr Susan Kambale	WHO
Dr Sangita Jacobs	UNICEF
Kudakwashe Chimanya	UNICEF
Dr. Muhammad Shahid Hanif	UNICEF
Mabasa Farawo	UNICEF
Elsie Mawala	UNICEF
Samuel Kirichu	UNICEF
Vitowe Harazi	UNICEF/MOH
Lucy Chirwa Oguguo	UNICEF/MOH
Taonga Msiska	UNICEF/MOH
Emma Chimzukira	WFP
Martin Ahimbisibwe	WFP
Keisha Nyirenda	WFP
Chawanagwa Jere	FANTA/FHI 360
Phindile Lupafya	FANTA/FHI 360
Clement Banda	CHAI
Samuel Mpatula	Baylor, College of Medicine
Patience Musiwa	Baylor, College of Medicine
Catherine Mkangama	Save the Children International
Moses Mtumbuka	Save the Children International
Packson Tsiku	Action Against Hunger
Cristina Diaz	Action Against Hunger
Eva Maria Castello	Action Against Hunger
Rosalie Bartels	Malawi Liverpool Wellcome Trust
Mphatso Chisala	QECH
Jessica Chikwana	QECH
Wilfred Gaven	Malawi College of Health Sciences

The Ministry of Health acknowledges the financial support received from different partners and donors throughout the review process and specifically, USAID through FANTA/FHI 360 and UNICEF.

## Contents

---

CMAM Admission Criteria.....	1
CMAM Discharge Criteria .....	3
How to Measure MUAC.....	4
How to Assess for Bilateral Pitting Oedema.....	5
How to Measure Weight.....	6
How to Measure Length/Height.....	8
How to Calculate Weight-for-Height .....	10
Preparation of Porridge Using CSB++ or CSB+.....	15
Routine Medical Treatment for Children Admitted to OTP .....	16
Ready-to-Use Therapeutic Food (RUTF) Reference Table.....	18
OTP Action Protocol.....	19
Definition of SAM Medical Complications.....	20
Emergency Treatment for Children with SAM in Inpatient Care .....	21
Stabilisation Phase Reference Tables for F-75 for Children with Severe Wasting (Marasmus). 24	
Stabilisation Phase Reference Tables for F-75 for Children with Bilateral Pitting Oedema (+++). 26	
Reference Tables for Quantity of F-100 to Give an Individual Child per Feed .....	28
Reference Tables for Infants 0–6 Months and Older Infants Weighing Less Than 3.0 Kg .....	30
How to Prepare F-75, F-100, and F-100-Diluted using the Old Sachet-Packaged Therapeutic Milk .....	32
How to Prepare F-75, F-100, and F-100-Diluted Using the New Tin-Packaged Therapeutic Milk .....	34
Alternative Recipes for F-75, F-100, and ReSoMal Using Combined Mineral and Vitamin Mix (CMV) .....	36
Therapeutic Foods Specifications.....	38
Summary Chart: Antibiotics for Children with SAM in Inpatient Care .....	40
Medicine Protocol for Children with SAM in Inpatient Care .....	42
Infection Prevention Protocol in the Inpatient Care .....	45
Nasogastric Feeding.....	46
Toys for Children.....	48
Essential CMAM Equipment for SFP and OTP .....	49
Essential CMAM Equipment for NRU .....	50
Division of Responsibilities in SFP .....	52
Division of Responsibilities in OTP .....	53
Division of Responsibilities in NRU.....	55

## Abbreviations and Acronyms

---

ADC	Area Development Committee
AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Care
ANCC	Area Nutrition Coordination Committee
ART	Antiretroviral Treatment
ARV	Antiretroviral Drugs
AWD	Acute Watery Diarrhoea
BCG	Bacillus Calmette Guerin
BF	Breastfeeding
BMI	Body Mass Index
BMS	Breastmilk Substitute
CAG	Community Advisory Group
CBO	Community-Based Organisation
CCFLS	Community Complementary Feeding and Livelihood Support
CCP	Critical Care Pathway
CHW	Community Health Worker
CLAN	Community Leaders for Action on Nutrition
CMAM	Community-Based Management of Acute Malnutrition
CO	Clinical Officer
CPD	Continuous Professional Development
CSAS	Centric Systematic Area Sampling
CSB	Corn Soy Blend
CTC	Community Therapeutic Care
CMV	Combined Mineral and Vitamins
DBS	Dry Blood Spot
DHO	District Health Office
DHMT	District Health Management Team
DHS	Demographic and Health Survey
DNA	Deoxyribonucleic Acid
ENA	Essential Nutrition Actions
ETAT	Emergency Triage Assessment and Treatment
F-75	Formula 75 [Therapeutic Milk]
F-100	Formula 100 [Therapeutic Milk]
FBO	Faith-Based Organisation
GAM	Global Acute Malnutrition
GMP	Growth Monitoring and Promotion
HAG	Health Advisory Group
Hb	Haemoglobin
HIV	Human Immunodeficiency Virus
HSA	Health Surveillance Assistant
HTS	HIV Testing Services
IGA	Income-Generating Activity
IM	Intramuscular
IMCI	Integrated Management of Childhood Illnesses
ITN	Insecticide-Treated Net

IP	Infection Prevention
IPTP	Intermittent Preventive Treatment in Pregnancy
IV	Intravenous
IYCF	Infant and Young Child Feeding
LA	Lumefantrine/Artemether (combination drug)
LOS	Length of Stay
LQAS	Lot Quality Assurance Sampling
M2M	Mothers to Mothers
MAM	Moderate Acute Malnutrition
MCH	Maternal and Child Health
MCHN	Maternal and Child Health and Nutrition
MIP	Mother Infant Pair
MOH	Ministry of Health
mRDT	Malaria Rapid Diagnostic Test
MUAC	Mid-Upper Arm Circumference
NECS	Nutrition Education Strategy
NGO	Non-Governmental Organisation
NG	Nasogastric
NGT	Nasogastric Tube
NRU	Nutrition Rehabilitation Unit
OPD	Outpatient Department
ORS	Oral Rehydration Solution
OTP	Outpatient Therapeutic Programme
OVC	Orphans and Vulnerable Children
PCR	Polymerase Chain Reaction
PD	Positive Deviance
PDSA	Plan Do Study Act
PITC	Provider-Initiated Testing and Counselling
PLHIV	People Living with HIV
PMTCT	Prevention of Mother-to-Child Transmission
PSHD	Presumed Severe HIV Disease
QI	Quality Improvement
ReSoMal	Rehydration Solution for Malnourished Children
RUTF	Ready-to-Use Therapeutic Food
SAM	Severe Acute Malnutrition
SFP	Supplementary Feeding Programme
SLEAC	Simplified LQAS Evaluation of Access and Coverage
SQEAC	Semi-Quantitative Evaluation of Access and Coverage
TB	Tuberculosis
UTI	Urinary Tract Infection
VDC	Village Development Committee
VNCC	Village Nutrition Coordination Committee
WFH/L	Weight for Height/Length
WHO	World Health Organisation

# CMAM Admission Criteria

## Nutrition Rehabilitation Unit (NRU)

### A. Children >6 Months

Bilateral pitting oedema +++

**OR** Marasmic kwashiorkor, defined as any grade of bilateral pitting oedema and severe wasting:

- MUAC < 11.5 cm (6–59 months)
- MUAC < 13.0 cm (5–9 years)
- MUAC < 16.0 cm (10–15 years) or
- WFH/L z-score < -3

**OR** Bilateral oedema + or ++ or severe wasting:

- MUAC < 11.5 cm (6–59 months)
- MUAC < 13.0 cm (5–9 years)
- MUAC < 16.0 cm (10–15 years) or
- WFH/L z-score < -3

**WITH** Any of the following danger signs:

- Anorexia (no appetite)
- Intractable vomiting
- Convulsions
- Lethargy, not alert
- Unconsciousness
- Inability to drink or breastfeed
- High fever (> 39° C rectal or > 38.5° C axillary)

**OR WITH** Any of the following medical complications:

- Hypoglycaemia
- Hypothermia (< 35° C axillary or < 35.5° C rectal)
- Infections
- Severe dehydration
- Shock
- Very severe anaemia
- Cardiac failure
- Severe dermatosis
- Signs of vitamin A deficiency
- Diarrhoea
- Malaria

**OR Referrals from the OTP due to:**

- Deterioration in the child's medical condition, based on the Outpatient Care Action Protocol
- Increase in bilateral pitting oedema
- Weight loss for 3 consecutive weeks or static weight for 5 weeks
- Not responding to treatment after 3 months in the OTP programme

### B. Infants < 6 Months

WFL z-score < -3 (if > 45 cm)

**OR** Bilateral pitting oedema +, ++, or +++

**OR** Visible severe wasting (if infant is < 6 months and < 45 cm in length)

**OR** If infant is > 6 months and weighs < 3.0 kg

**OR** Too weak to suckle effectively (independent of weight-for-length)

**OR** Failure to gain weight\*

\* Children < 6 months whose growth is faltering or are below -3 z-scores on the weight-for-age growth curve must be referred to a clinician for further assessment. Children who do not gain weight following breastfeeding counselling and/or treatment of underlying medical conditions should be referred to the NRU.

## Outpatient Therapeutic Program (OTP)

### Children 6–59 Months

MUAC < 11.5 cm

**OR** WFH/L z-score < -3

**OR** Bilateral pitting oedema + or ++

**AND** RUTF appetite test passed

No medical complications

Clinically well and alert

### If child is HIV positive, admit to OTP if:

MUAC < 12.5 cm

**OR** WFH/L z-score -3 to -2

**AND** RUTF appetite test passed

No medical complications

Clinically well and alert

### Children 5–15 Years

MUAC: 5–9 years < 13.0 cm

10–15 years < 16.0 cm

**OR** Bilateral pitting oedema + or ++

### If child is HIV positive, admit to the OTP with:

MUAC 5–9 years: 13.0–14.5 cm

10–15 years: 16.0–18.5 cm

**AND**

RUTF appetite test passed

No medical complications

Clinically well and alert

## Supplementary Feeding Program (SFP)

### Children 6–59 Months

MUAC 11.5–12.5 cm

**OR** WFH/L z-score -3 to -2

**OR** Discharged from SAM treatment in OTP or NRU

**NB: Admit HIV-positive children with MAM to OTP**

### Children 5–15 Years

MUAC: 5–9 years: 13.0–14.5cm

10–15 years: 16.0–18.5 cm

**OR** Discharged from SAM treatment in OTP or NRU

**NB: Admit HIV-positive children with MAM to OTP**

### Pregnant and Lactating Women

MUAC < 22.0 cm

**OR** Mothers of infants < 6 months old who are discharged from inpatient care



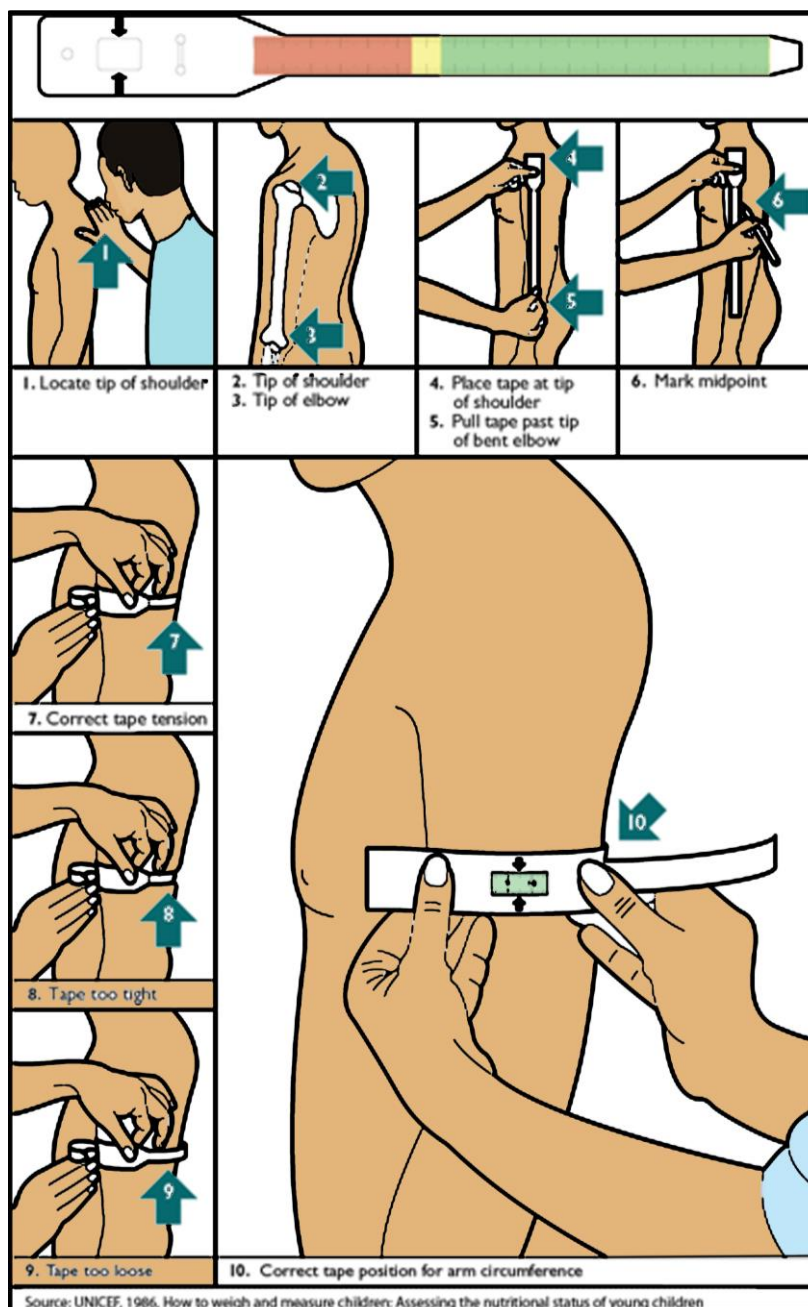
# CMAM Discharge Criteria

NRU	OTP	SFP
<p><b>STABILISED AND REFERRED TO OUTPATIENT CARE</b></p> <p>Appetite returned (passed appetite test for RUTF; the child is eating more than 75% of daily prescription of RUTF) and start of weight gain</p> <p><b>AND</b> Medical complications resolving</p> <p><b>AND</b> If bilateral pitting oedema on admission, bilateral pitting oedema decreasing</p> <p><b>AND</b> If marasmic kwashiorkor on admission, bilateral pitting oedema resolved</p> <p><b>AND</b> Clinically well and alert</p> <p><b>FULL RECOVERY IN INPATIENT CARE</b></p> <p><b><u>Children 6–59 Months</u></b></p> <ul style="list-style-type: none"> <li>• MUAC <math>\geq 12.5</math> cm</li> <li>• WFH/L z-score <math>\geq -2</math></li> <li>• No bilateral pitting oedema for 2 consecutive weeks</li> <li>• Clinically well and alert</li> </ul> <p><b><u>Children 5–15 Years</u></b></p> <ul style="list-style-type: none"> <li>• MUAC <math>\geq 14.5</math> cm (5–9 years)</li> <li>• MUAC <math>\geq 18.5</math> cm (10–15 years)</li> </ul> <p><b>AND</b></p> <ul style="list-style-type: none"> <li>• No bilateral pitting oedema for 2 consecutive weeks</li> <li>• Clinically well and alert</li> </ul> <p><b><u>Infants &lt; 6 Months (Breastfeeding)</u></b></p> <ul style="list-style-type: none"> <li>• Successful re-lactation with effective suckling</li> <li>• Good appetite, clinically well and alert</li> <li>• Weight gain with exclusive breastfeeding is satisfactory</li> </ul> <p><b><u>Infants &lt; 6 Months (Not Breastfeeding)</u></b></p> <ul style="list-style-type: none"> <li>• WFL z-score <math>\geq -2</math> for 2 consecutive weeks</li> <li>• No oedema for 2 consecutive weeks</li> <li>• Clinically well and alert, no medical problems</li> </ul>	<p><b><u>Children 6–59 Months</u></b></p> <p>MUAC <math>\geq 12.5</math> cm</p> <p><b>AND</b> WFH/L z-score <math>\geq -3</math></p> <p><b>AND</b> No bilateral pitting oedema for 2 consecutive weeks</p> <p><b>AND</b> Clinically well and alert</p> <p><b><u>Children 5–15 Years</u></b></p> <p>MUAC <math>\geq 14.5</math> cm (5–9 years)</p> <p>MUAC <math>\geq 18.5</math> cm (10–15 years)</p> <p><b>AND</b> No bilateral pitting oedema for 2 consecutive weeks</p> <p><b>AND</b> Clinically well and alert</p>	<p><b><u>Children 6–59 Months</u></b></p> <p>MUAC <math>\geq 12.5</math> cm</p> <p><b>AND</b> WFH/L z-score <math>\geq -2</math></p> <p><b>AND</b> No bilateral pitting oedema</p> <p><b>AND</b> Clinically well and alert for 2 consecutive visits</p> <p><b>NOTE:</b> Children referred to the SFP from the OTP or NRU should be discharged after 1 month of follow-up in the SFP</p> <p><b><u>Children 5–15 Years</u></b></p> <p>MUAC: 5–9 years: <math>\geq 14.5</math> cm</p> <p>10–15 years: <math>\geq 18.5</math> cm</p> <p><b>AND</b> No bilateral pitting oedema</p> <p><b>AND</b> Clinically well and alert for 2 consecutive visits</p> <p><b><u>Pregnant and Lactating Women</u></b></p> <p>MUAC <math>\geq 22.5</math> cm for 2 consecutive visits</p> <p><b>OR</b></p> <p>Child reaches 6 months of age</p>

# How to Measure MUAC

MUAC is a very useful body measurement, as it correlates well with muscle mass and body nutritional reserves. Moreover, MUAC correlates better with risk of death than WFH/L.

- Always measure MUAC on the left arm.
- Measure the length of the child's upper arm, between the bone at the top of the shoulder [2] and the tip of the elbow [3] **(the child's arm should be bent to easily locate the tip)**.
- Find the midpoint of the upper arm and mark it with a pen [6]. It is easier to use a string instead of the MUAC tape to find the midpoint.
- The child's arm should then be relaxed, falling alongside his or her body.
- Wrap the MUAC tape around the child's arm, so that all of it is in contact with the child's skin [7]. It should be neither too tight [8] nor too loose [9].
- Feed the end of the tape through the first opening and then through the second opening. The measurement is read from the window where the arrows point inward [10].
- Record the MUAC reading with a precision of 0.1 cm.



# How to Assess for Bilateral Pitting Oedema



Look and feel for a pit in each foot. Oedema in the feet only is classified as **mild (+1) oedema**.

If there is no oedema in the feet, STOP. Nutritional oedema always spreads from the feet upwards.



If oedema is present in the feet look for oedema in the lower legs. Use the same technique as for the feet checking both sides. Bilateral pitting oedema in the feet AND the lower legs is classified as **moderate (+2) oedema**.



If oedema is present in the feet and lower legs, check the hands. Use the same technique. If there is oedema in the feet, lower legs, and hands this is also classified as **moderate (+2) oedema**.



If moderate oedema is diagnosed, check for oedema around the eyes (periorbital oedema). Do not press on the eyes to look for pitting. If there is oedema around the eyes this is classified as **severe (+3) oedema**. Children with +3 oedema are at high risk of mortality and are always treated in the NRU.

# How to Measure Weight

## Weighing a Child Using a Hanging Scale (If the Child Weighs Less than 25 Kg)

Children who weigh less than 25 kg are weighed with a hanging salter scale, graduated to 0.1 kg (100 grams). Do not forget to re-adjust the scale to zero before weighing. Check the scale daily against a known weight. If the measurement is off by 100 g or more, change the springs or replace the scale.

- Hook the scale to a rope on the ceiling or a stand in the clinic at eye level for the measurer.
- Before weighing the child, have the mother take off all the child's clothes.
- Make sure the scale arrow is at 0 ('zero the scale') with the hammock or cloth that will be used hooked on the scale.
- Place child in the *chitenje*, hook it on the scale, and let the child hang freely, touching nothing. Make sure the child is safely in the *chitenje*.
- When the arrow is steady, the measurer reads the child's weight in kg at eye level to the nearest 100 g (for example, 6.4 kg).
- Have the assistant repeat the weight for verification and then record it.
- Do not hold

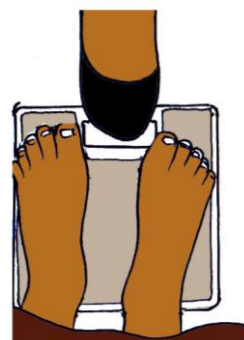
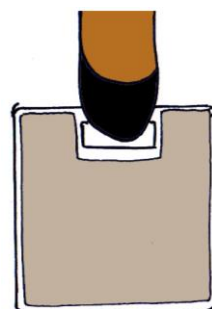




## Weighing a Child Using an Electronic Mother and Infant Scale

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

- Be sure that the scale is placed on a flat, hard, even surface.
- To turn on the scale and cover the solar panel for a second. When the number 0.0 appears, the scale is ready.
- Check to see that the mother has removed her shoes. You or someone else should hold the naked child wrapped in a *chitenje* or 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 area.
- Remind the mother to stay on the scale even after her weight appears, until the baby has been weighed in her arms.
- With the mother still on the scale and her weight displayed, tare the scale by covering the solar panel for a second. The scale is tared when it displays a figure of a mother and baby and the number 0.0.
- Gently hand the naked baby to the mother and ask her to remain still.
- The baby's weight will appear on the display. Record the weight of the baby.
- Be careful to read the numbers in the correct order (as though you were viewing them while standing on the scale, rather than upside-down).

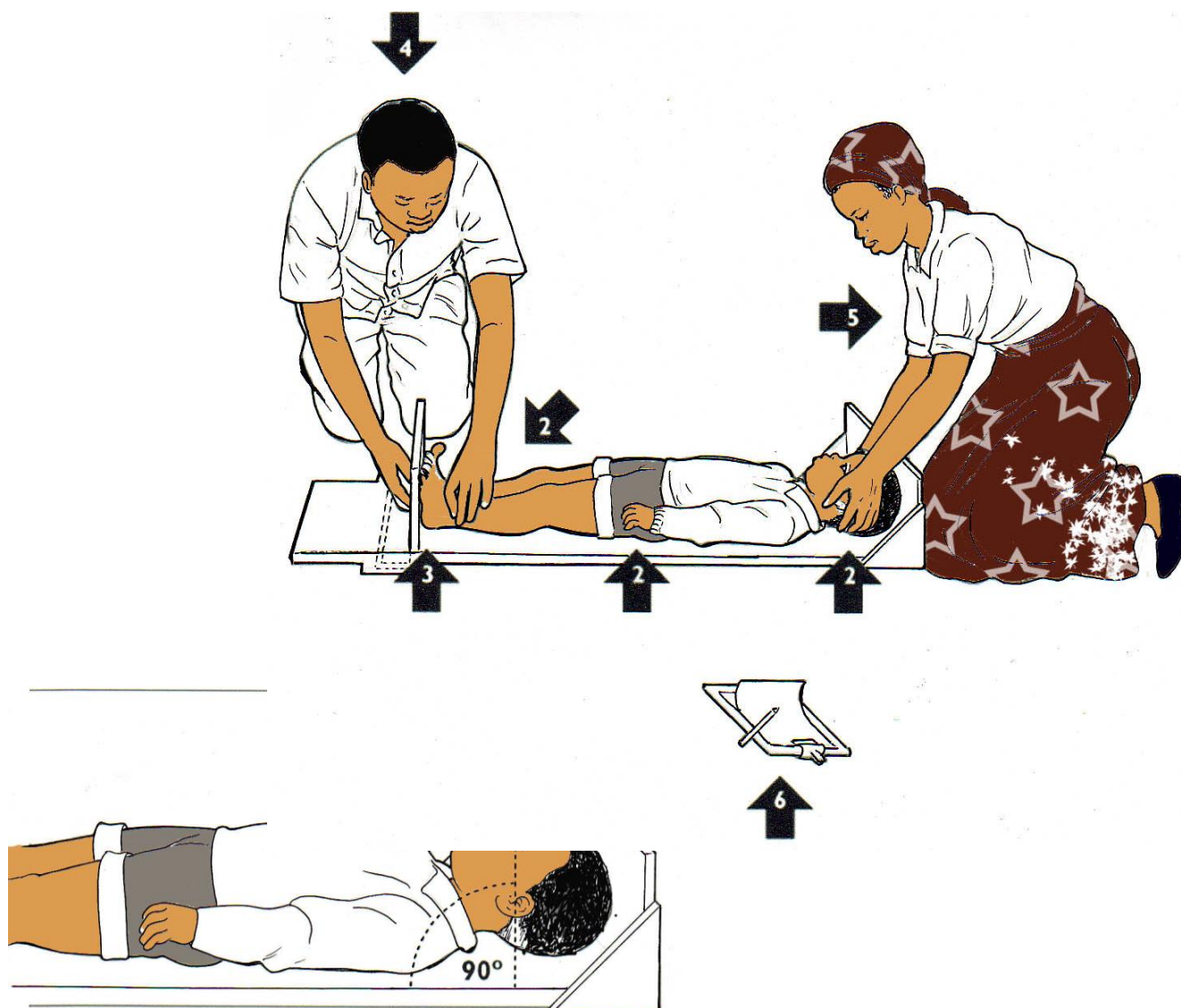


# How to Measure Length/Height

## Measuring Length

For children less than 87 cm in length, the measuring board is placed on the ground and the child is measured lying down.

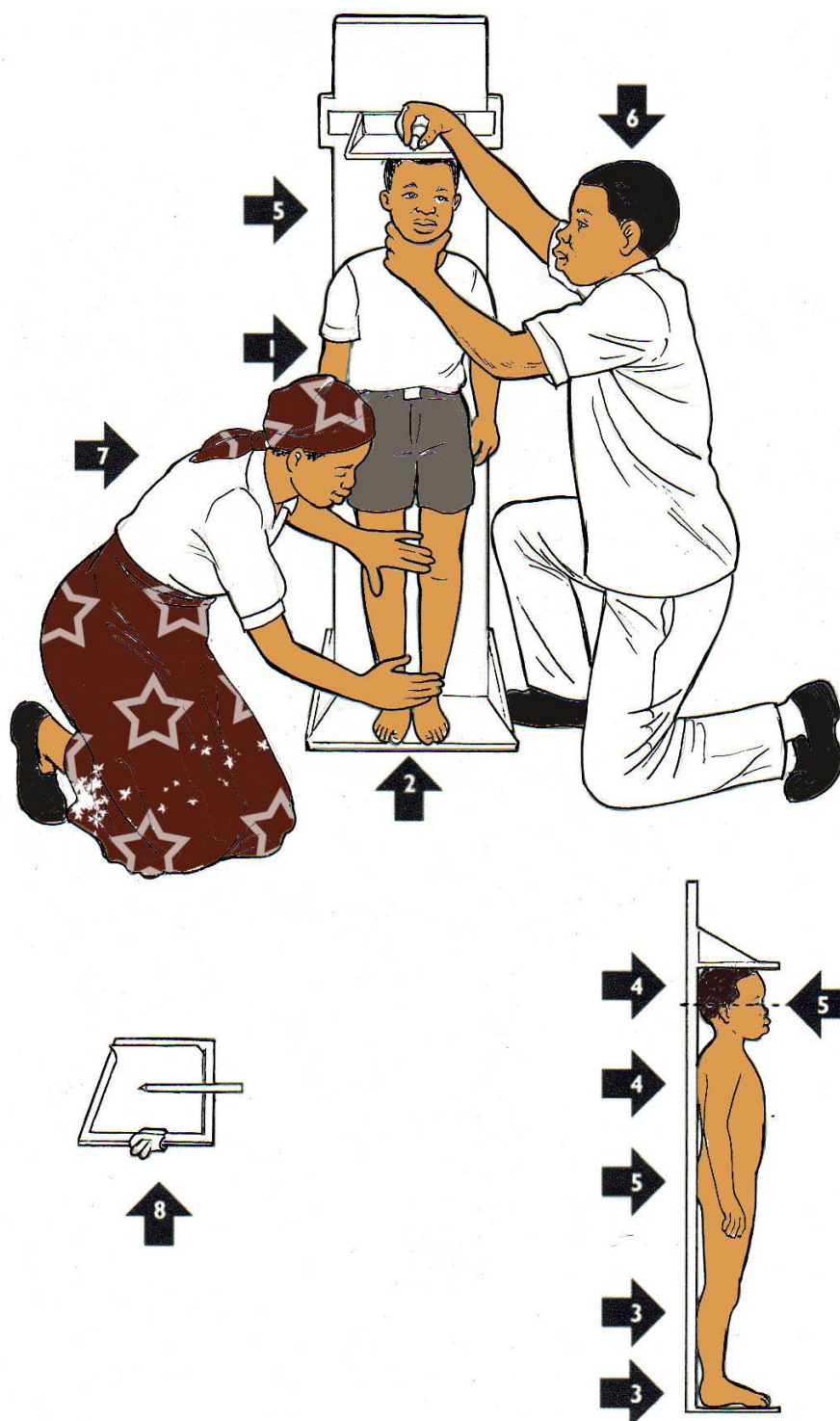
1. Lay the child down along the middle of the board.
2. The assistant holds the sides of the child's head while firmly touching the head against the fixed headboard with the hair compressed.
3. The measurer places his/her hands on the child's legs to prevent flexion.
4. With the legs immobilised, the moveable board is pushed firmly against the child's feet.
5. The footboard should be perpendicular to the axis of the board and vertical.
6. The length is read to the nearest 0.1 cm.



## Measuring Height

For children taller than 87 cm, height is measured with the child standing.

1. The child stands upright against the middle of the measuring board.
2. The assistant should check that the child's head, shoulders, buttocks, knees, and heels are touching the board.
3. The child should be looking straight ahead (neither up nor down).
4. The moveable headboard is pressed firmly against the head, compressing the hair.
5. The height is measured after checking that the headboard is level (the reading should be the same on both sides of the measuring board).



# How to Calculate Weight-for-Height

**Example 1: A boy is measured according to the methods described in Annexes 1-5 and 1-6.**

**Length: 63 cm      Weight: 5.6 kg**

1. Look up the table for a child 63 cm in length (measured lying down).

## Weight-for-Length

Boys Birth–2 Years (Z-Scores)				Length	Girls Birth–2 Years (Z-Scores)			
-3 Z	-2 Z	-1 Z	Median	cm	Median	-1 Z	-2 Z	-3 Z
5.2	5.7	6.1	6.7	62.5	6.5	5.9	5.4	5.0
5.3	5.8	6.2	6.8	63.0	6.6	6.0	5.5	5.1
5.4	5.9	6.4	6.9	63.5	6.7	6.2	5.6	5.2

2. Read the table on the same line to the left (for boys) and look for the figure closest to 5.6 kg.
3. In this case, the child's weight of 5.6 kg is less than 5.8 kg, the figure in the yellow column (-2 z), but more than 5.3 kg, the figure in the red column (-3 z). This means the child's weight is between -2 z and -3 z. Therefore, the child has moderate acute malnutrition (MAM) according to his weight-for-length.

**Example 2: A girl is measured according to the methods described in Annexes 1-5 and 1-6.**

**Height: 92.7 cm      Weight: 10.2 kg**

1. Look up the table for a child 92.7 cm in height (measured standing). In this case, the child's height of 92.7 cm needs to be rounded to the nearest 0.5 cm, or to 92.5 cm.

## Weight-for-Height

Boys 2–5 Years (Z-Scores)				Height	Girls 2–5 Years (Z-Scores)			
-3 Z	-2 Z	-1 Z	Median	cm	Median	-1 Z	-2 Z	-3 Z
10.6	11.4	12.3	13.4	92.0	13.1	12.0	11.1	10.2
10.7	11.5	12.4	13.5	92.5	13.3	12.1	11.2	10.3
10.8	11.6	12.6	13.6	93.0	13.4	12.3	11.3	10.4

2. Look along the row to the right of 92.5 cm (for girls) and look for 10.2 kg. This is less than 10.3 kg in the -3 Z column. Therefore, this child has severe acute malnutrition (SAM) according to her weight-for-height.

The WHO tables for children from **birth–2 years of age** and from **2–5 years of age** are found in Annexes 1-9 and 1-10, respectively.



## Weight-for-Length Reference Tables from Birth to 2 Years of Age

Boys				Length	Girls			
-3 Z	-2 Z	-1 Z	Median	cm	Median	-1 Z	-2 Z	-3 Z
1.9	2.0	2.2	2.4	45.0	2.5	2.3	2.1	1.9
1.9	2.1	2.3	2.5	45.5	2.5	2.3	2.1	2.0
2.0	2.2	2.4	2.6	46.0	2.6	2.4	2.2	2.0
2.1	2.3	2.5	2.7	46.5	2.7	2.5	2.3	2.1
2.1	2.3	2.5	2.8	47.0	2.8	2.6	2.4	2.2
2.2	2.4	2.6	2.9	47.5	2.9	2.6	2.4	2.2
2.3	2.5	2.7	2.9	48.0	3.0	2.7	2.5	2.3
2.3	2.6	2.8	3.0	48.5	3.1	2.8	2.6	2.4
2.4	2.6	2.9	3.1	49.0	3.2	2.9	2.6	2.4
2.5	2.7	3.0	3.2	49.5	3.3	3.0	2.7	2.5
2.6	2.8	3.0	3.3	50.0	3.4	3.1	2.8	2.6
2.7	2.9	3.1	3.4	50.5	3.5	3.2	2.9	2.7
2.7	3.0	3.2	3.5	51.0	3.6	3.3	3.0	2.8
2.8	3.1	3.3	3.6	51.5	3.7	3.4	3.1	2.8
2.9	3.2	3.5	3.8	52.0	3.8	3.5	3.2	2.9
3.0	3.3	3.6	3.9	52.5	3.9	3.6	3.3	3.0
3.1	3.4	3.7	4.0	53.0	4.0	3.7	3.4	3.1
3.2	3.5	3.8	4.1	53.5	4.2	3.8	3.5	3.2
3.3	3.6	3.9	4.3	54.0	4.3	3.9	3.6	3.3
3.4	3.7	4.0	4.4	54.5	4.4	4.0	3.7	3.4
3.6	3.8	4.2	4.5	55.0	4.6	4.2	3.8	3.5
3.7	4.0	4.3	4.7	55.5	4.7	4.3	3.9	3.6
3.8	4.1	4.4	4.8	56.0	4.8	4.4	4.0	3.7
3.9	4.2	4.6	5.0	56.5	5.0	4.5	4.2	3.8
4.0	4.3	4.7	5.1	57.0	5.1	4.6	4.3	3.9
4.1	4.5	4.9	5.3	57.5	5.2	4.8	4.4	4.0
4.3	4.6	5.0	5.4	58.0	5.4	4.9	4.5	4.1
4.4	4.7	5.1	5.6	58.5	5.5	5.0	4.6	4.2
4.5	4.8	5.3	5.7	59.0	5.6	5.1	4.7	4.3
4.6	5.0	5.4	5.9	59.5	5.7	5.3	4.8	4.4
4.7	5.1	5.5	6.0	60.0	5.9	5.4	4.9	4.5
4.8	5.2	5.6	6.1	60.5	6.0	5.5	5.0	4.6
4.9	5.3	5.8	6.3	61.0	6.1	5.6	5.1	4.7
5.0	5.4	5.9	6.4	61.5	6.3	5.7	5.2	4.8
5.1	5.6	6.0	6.5	62.0	6.4	5.8	5.3	4.9
5.2	5.7	6.1	6.7	62.5	6.5	5.9	5.4	5.0
5.3	5.8	6.2	6.8	63.0	6.6	6.0	5.5	5.1
5.4	5.9	6.4	6.9	63.5	6.7	6.2	5.6	5.2
5.5	6.0	6.5	7.0	64.0	6.9	6.3	5.7	5.3
5.6	6.1	6.6	7.1	64.5	7.0	6.4	5.8	5.4
5.7	6.2	6.7	7.3	65.0	7.1	6.5	5.9	5.5
5.8	6.3	6.8	7.4	65.5	7.2	6.6	6.0	5.5
5.9	6.4	6.9	7.5	66.0	7.3	6.7	6.1	5.6
6.0	6.5	7.0	7.6	66.5	7.4	6.8	6.2	5.7
6.1	6.6	7.1	7.7	67.0	7.5	6.9	6.3	5.8
6.2	6.7	7.2	7.9	67.5	7.6	7.0	6.4	5.9

Boys				Length	Girls			
-3 Z	-2 Z	-1 Z	Median	cm	Median	-1 Z	-2 Z	-3 Z
6.3	6.8	7.3	8.0	68.0	7.7	7.1	6.5	6.0
6.4	6.9	7.5	8.1	68.5	7.9	7.2	6.6	6.1
6.5	7.0	7.6	8.2	69.0	8.0	7.3	6.7	6.1
6.6	7.1	7.7	8.3	69.5	8.1	7.4	6.8	6.2
6.6	7.2	7.8	8.4	70.0	8.2	7.5	6.9	6.3
6.7	7.3	7.9	8.5	70.5	8.3	7.6	6.9	6.4
6.8	7.4	8.0	8.6	71.0	8.4	7.7	7.0	6.5
6.9	7.5	8.1	8.8	71.5	8.5	7.7	7.1	6.5
7.0	7.6	8.2	8.9	72.0	8.6	7.8	7.2	6.6
7.1	7.6	8.3	9.0	72.5	8.7	7.9	7.3	6.7
7.2	7.7	8.4	9.1	73.0	8.8	8.0	7.4	6.8
7.2	7.8	8.5	9.2	73.5	8.9	8.1	7.4	6.9
7.3	7.9	8.6	9.3	74.0	9.0	8.2	7.5	6.9
7.4	8.0	8.7	9.4	74.5	9.1	8.3	7.6	7.0
7.5	8.1	8.8	9.5	75.0	9.1	8.4	7.7	7.1
7.6	8.2	8.9	9.6	75.5	9.2	8.5	7.8	7.1
7.6	8.3	8.9	9.7	76.0	9.3	8.5	7.8	7.2
7.7	8.3	9.0	9.8	76.5	9.4	8.6	7.9	7.3
7.8	8.4	9.1	9.9	77.0	9.5	8.7	8.0	7.4
7.9	8.5	9.2	10.0	77.5	9.6	8.8	8.1	7.4
7.9	8.6	9.3	10.1	78.0	9.7	8.9	8.2	7.5
8.0	8.7	9.4	10.2	78.5	9.8	9.0	8.2	7.6
8.1	8.7	9.5	10.3	79.0	9.9	9.1	8.3	7.7
8.2	8.8	9.5	10.4	79.5	10.0	9.1	8.4	7.7
8.2	8.9	9.6	10.4	80.0	10.1	9.2	8.5	7.8
8.3	9.0	9.7	10.5	80.5	10.2	9.3	8.6	7.9
8.4	9.1	9.8	10.6	81.0	10.3	9.4	8.7	8.0
8.5	9.1	9.9	10.7	81.5	10.4	9.5	8.8	8.1
8.5	9.2	10.0	10.8	82.0	10.5	9.6	8.8	8.2
8.6	9.3	10.1	10.9	82.5	10.6	9.7	8.9	8.2
8.7	9.4	10.2	11.0	83.0	10.7	9.8	9.0	8.3
8.8	9.5	10.3	11.2	83.5	10.9	9.9	9.1	8.4
8.9	9.6	10.4	11.3	84.0	11.0	10.1	9.2	8.5
9.0	9.7	10.5	11.4	84.5	11.1	10.2	9.3	8.6
9.1	9.8	10.6	11.5	85.0	11.2	10.3	9.4	8.7
9.2	9.9	10.7	11.6	85.5	11.3	10.4	9.6	8.8
9.3	10.0	10.8	11.7	86.0	11.5	10.5	9.7	8.9
9.4	10.1	11.0	11.9	86.5	11.6	10.6	9.8	9.0
9.5	10.2	11.1	12.0	87.0	11.7	10.7	9.9	9.1
9.6	10.4	11.2	12.1	87.5	11.8	10.9	10.0	9.2

## Weight-for-Height Reference Tables for Children from 2–5 Years of Age

Boys				Height	Girls			
-3 Z	-2 Z	-1 Z	Median	cm	Median	-1 Z	-2 Z	-3 Z
9.8	10.6	11.5	12.4	88.0	12.1	11.1	10.2	9.4
9.9	10.7	11.6	12.5	88.5	12.3	11.2	10.3	9.5
10.0	10.8	11.7	12.7	89.0	12.4	11.4	10.4	9.6
10.1	10.9	11.8	12.8	89.5	12.5	11.5	10.5	9.7
10.2	11.0	11.9	12.9	90.0	12.6	11.6	10.6	9.8
10.3	11.1	12.0	13.0	90.5	12.8	11.7	10.7	9.9
10.4	11.2	12.1	13.1	91.0	12.9	11.8	10.9	10.0
10.5	11.3	12.2	13.2	91.5	13.0	11.9	11.0	10.1
10.6	11.4	12.3	13.4	92.0	13.1	12.0	11.1	10.2
10.7	11.5	12.4	13.5	92.5	13.3	12.1	11.2	10.3
10.8	11.6	12.6	13.6	93.0	13.4	12.3	11.3	10.4
10.9	11.7	12.7	13.7	93.5	13.5	12.4	11.4	10.5
11.0	11.8	12.8	13.8	94.0	13.6	12.5	11.5	10.6
11.1	11.9	12.9	13.9	94.5	13.8	12.6	11.6	10.7
11.1	12.0	13.0	14.1	95.0	13.9	12.7	11.7	10.8
11.2	12.1	13.1	14.2	95.5	14.0	12.8	11.8	10.8
11.3	12.2	13.2	14.3	96.0	14.1	12.9	11.9	10.9
11.4	12.3	13.3	14.4	96.5	14.3	13.1	12.0	11.0
11.5	12.4	13.4	14.6	97.0	14.4	13.2	12.1	11.1
11.6	12.5	13.6	14.7	97.5	14.5	13.3	12.2	11.2
11.7	12.6	13.7	14.8	98.0	14.7	13.4	12.3	11.3
11.8	12.8	13.8	14.9	98.5	14.8	13.5	12.4	11.4
11.9	12.9	13.9	15.1	99.0	14.9	13.7	12.5	11.5
12.0	13.0	14.0	15.2	99.5	15.1	13.8	12.7	11.6
12.1	13.1	14.2	15.4	100.0	15.2	13.9	12.8	11.7
12.2	13.2	14.3	15.5	100.5	15.4	14.1	12.9	11.9
12.3	13.3	14.4	15.6	101.0	15.5	14.2	13.0	12.0
12.4	13.4	14.5	15.8	101.5	15.7	14.3	13.1	12.1
12.5	13.6	14.7	15.9	102.0	15.8	14.5	13.3	12.2
12.6	13.7	14.8	16.1	102.5	16.0	14.6	13.4	12.3
12.8	13.8	14.9	16.2	103.0	16.1	14.7	13.5	12.4
12.9	13.9	15.1	16.4	103.5	16.3	14.9	13.6	12.5
13.0	14.0	15.2	16.5	104.0	16.4	15.0	13.8	12.7
13.1	14.2	15.4	16.7	104.5	16.6	15.2	13.9	12.8
13.2	14.3	15.5	16.8	105.0	16.8	15.3	14.0	12.9
13.3	14.4	15.6	17.0	105.5	17.0	15.5	14.2	13.0
13.4	14.5	15.8	17.2	106.0	17.1	15.6	14.3	13.1
13.5	14.7	15.9	17.3	106.5	17.3	15.8	14.5	13.3
13.7	14.8	16.1	17.5	107.0	17.5	15.9	14.6	13.4
13.8	14.9	16.2	17.7	107.5	17.7	16.1	14.7	13.5
13.9	15.1	16.4	17.8	108.0	17.8	16.3	14.9	13.7
14.0	15.2	16.5	18.0	108.5	18.0	16.4	15.0	13.8
14.1	15.3	16.7	18.2	109.0	18.2	16.6	15.2	13.9
14.3	15.5	16.8	18.3	109.5	18.4	16.8	15.4	14.1
14.4	15.6	17.0	18.5	110.0	18.6	17.0	15.5	14.2
14.5	15.8	17.1	18.7	110.5	18.8	17.1	15.7	14.4

Boys				Height	Girls			
-3 Z	-2 Z	-1 Z	Median	cm	Median	-1 Z	-2 Z	-3 Z
14.6	15.9	17.3	18.9	111.0	19.0	17.3	15.8	14.5
14.8	16.0	17.5	19.1	111.5	19.2	17.5	16.0	14.7
14.9	16.2	17.6	19.2	112.0	19.4	17.7	16.2	14.8
15.0	16.3	17.8	19.4	112.5	19.6	17.9	16.3	15.0
15.2	16.5	18.0	19.6	113.0	19.8	18.0	16.5	15.1
15.3	16.6	18.1	19.8	113.5	20.0	18.2	16.7	15.3
15.4	16.8	18.3	20.0	114.0	20.2	18.4	16.8	15.4
15.6	16.9	18.5	20.2	114.5	20.5	18.6	17.0	15.6
15.7	17.1	18.6	20.4	115.0	20.7	18.8	17.2	15.7
15.8	17.2	18.8	20.6	115.5	20.9	19.0	17.3	15.9
16.0	17.4	19.0	20.8	116.0	21.1	19.2	17.5	16.0
16.1	17.5	19.2	21.0	116.5	21.3	19.4	17.7	16.2
16.2	17.7	19.3	21.2	117.0	21.5	19.6	17.8	16.3
16.4	17.9	19.5	21.4	117.5	21.7	19.8	18.0	16.5
16.5	18.0	19.7	21.6	118.0	22.0	20.0	18.2	16.6
16.7	18.2	19.9	21.8	118.5	22.2	20.1	18.4	16.8
16.8	18.3	20.0	22.0	119.0	22.4	20.3	18.5	16.9
16.9	18.5	20.2	22.2	119.5	22.6	20.5	18.7	17.1
17.1	18.6	20.4	22.4	120.0	22.8	20.7	18.9	17.3

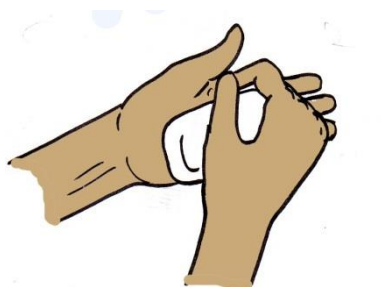
# Preparation of Porridge Using CSB++ or CSB+

- Wash hands thoroughly using soap, if available.

Step 1:



Step 2:



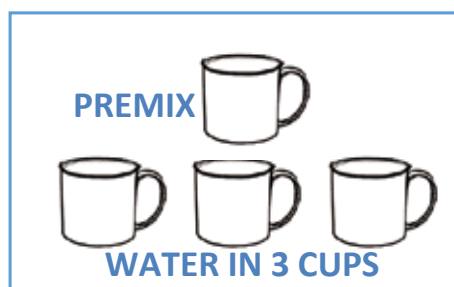
Step 3:



Step 4:



- Add water to the premix.
- Add 1 part/volume (e.g., cup) of premix to 3 parts/volume (e.g., cups) of water.
- Boil for 15 minutes and simmer for 5 minutes.
- Serve warm.



# Routine Medical Treatment for Children Admitted to OTP

## Antibiotic Treatment with Amoxicillin

- Give oral amoxicillin for 7 days.
- The first dose should be taken during the admission process under the supervision of the health care provider.
- Explain to the caregiver how to complete the treatment at home.

Weight of the Child	Syrup 125 mg / 5 ml	Syrup 250 mg / 5 ml	Tablets 250 mg
≤ 6.0 kg	62.5 mg (2.5 ml) 3 x per day	62.5 mg (1.25 ml) 3 x per day	62.5 mg (¼ tablet) 3 x per day
6.0–9.9 kg	125 mg (5 ml) 3 x per day	125 mg (2.5 ml) 3 x per day	125 mg (½ tablet) 3 x per day
10.0–30.0 kg	250 mg (10 ml) 3 x per day	250 mg (5 ml) 3 x per day	250 mg (1 tablet) 3 x per day
> 30.0 kg	Not appropriate (give tablets)	Not appropriate (give tablets)	500 mg (2 tablets) 3 x per day

\*Always check the label on the bottle for dosage and dilution instructions. Where amoxicillin is not available, cotrimoxazole may be used as a substitute. Dosages should follow the national Integrated Management of Childhood Illnesses (IMCI) guidelines. If a child is HIV-positive or HIV-exposed and taking cotrimoxazole prophylaxis, amoxicillin should also be given.

**NOTE:** Children who are HIV-positive or HIV-exposed should be linked to HIV treatment and care. Refer to the current *Malawi Guidelines on Clinical Management of HIV in Children and Adults* for details on the eligibility for starting ART.

## Malaria Treatment

- Test all children for malaria using a rapid diagnostic test (mRDT).
- If in clinical doubt, repeat the mRDT the following week.
- If malaria diagnostic test is positive, give oral Lumefantrine Artemether (LA), which contains 120 mg Lumefantrine and 20 mg Artemether as follows in the table below.

Weight of the Child	Dose
< 15.0 kg	1 tablet 2 x per day/3 days
15–24.9 kg	2 tablets 2 x per day/3 days
25–35 kg	3 tablets 2 x per day/3 days
> 35 kg	4 tablets 2 x per day/3 days

**NOTE: DO NOT give quinine to a SAM child.** Refer severe malaria cases for inpatient management.

## Deworming Treatment (Anti-Helminth)

Give a single dose of Albendazole or Mebendazole on the second visit (i.e., after 7 days in OTP). See the table below for dosages.

Age	Albendazole*	Mebendazole*
< 12 months	None	None
12–23 months	200 mg single dose	100 mg twice daily for 3 days
24–59 months	400 mg single dose	100 mg twice daily for 3 days

\*Repeat after 6 months

## Measles Vaccination

Give a single dose of measles vaccine in the fourth week of OTP (fourth visit) for children 6–59 months if they do not have a record of receiving a previous vaccination.<sup>1</sup>

## Vitamin A

Do not give additional vitamin A to SAM children in the OTP. Children with SAM do not require a high dose of vitamin A because RUTF contains adequate amounts.

If a child shows signs of vitamin A deficiency or measles, refer the child for inpatient care in the NRU.

## Iron and Folic Acid

Iron and folic acid should not be given to children in the OTP. They are available in the RUTF.

If IMCI signs of severe anaemia are present, refer the child for inpatient care. Iron and folic acid should not be provided with a malaria treatment.

## Zinc

Do not give zinc supplements to treat diarrhoea in SAM children in the OTP. RUTF contains adequate amounts of zinc.

## Oral Rehydration Solution (ORS)

ORS contains high sodium and is inappropriate (and potentially fatal) for children with SAM. In OTP, mild and moderate dehydration can be treated adequately with RUTF and water. Children who require treatment for severe dehydration should be referred for inpatient care. In inpatient care, children with dehydration are treated with Rehydration Solution for Malnutrition (ReSoMal). The use of ReSoMal is inappropriate in an outpatient setting.

<sup>1</sup> If there is a measles epidemic in the area, provide a measles vaccination upon admission to outpatient care.

# Ready-to-Use Therapeutic Food (RUTF) Reference Table

Reference Table for Amounts of RUTF to Give Children per Day or Week, Based on 92 g Packets Containing 500 Kcal		
Weight of the Child (kg)	Packets per Day	Packets per Week
3.5–3.9	1.5	10
4.0–4.4	1.5	11
4.5–4.9	1.75	12
5.0–5.9	2	14
6.0–6.9	2.5	18
7.0–7.9	3	21
8.0–8.9	3.25	23
9.0–9.9	3.75	26
10.0–11.9	4	28
≥ 12.0	5	35

## Key CMAM Messages

- RUTF is a food and medicine for severely malnourished individuals. It should not be shared.
- Sick children often don't like to eat. Give small amounts of RUTF regularly and encourage the child to eat often until the day's ration is finished.
- RUTF should never be added to or mixed with porridge or any other food.
- Your child should have (x) packets a day.
- For young children, continue breastfeeding on demand. Always breastfeed fully before giving the child RUTF.
- Always give the child RUTF after breastfeeding but before other food, including *Likuni Phala*.
- Always give the child plenty of breast milk or safe water to drink while eating RUTF. Children will need to drink more than normal.
- Use soap to wash the child's hands and ensure that the child is clean before feeding. Keep food clean and covered.
- Children who are malnourished get cold quickly. Always keep the child covered and warm.
- Do not stop feeding when the child has diarrhoea. Refer children with diarrhoea for clinical assessment. Increase the frequency of breastfeeding. After feeding the child RUTF, give him/her extra clean water.



# OTP Action Protocol

Sign	Referral to Inpatient Care	Home Visit
General Condition	Deteriorating	Child is absent or defaulting
Bilateral Pitting Oedema	Grade +++	
	Any grade of bilateral pitting oedema with severe wasting (marasmic kwashiorkor)	Child is not gaining weight or losing weight on follow-up visit
	Increase in bilateral pitting oedema	
	Bilateral pitting oedema not reducing by week 3	
Anorexia *	Poor appetite or unable to eat; failed appetite test	Bilateral pitting oedema is not subsiding
Vomiting *	Intractable vomiting	
Convulsions *	Ask mother if the child had convulsions since the previous visit	
Lethargy, Not Alert *	Child is difficult to wake	
Unconsciousness *	Child does not respond to painful stimuli	Child has returned from inpatient care or refuses referral to inpatient care
Hypoglycaemia	A clinical sign in a child with SAM is eyelid retraction: child sleeps with eyes slightly open	
	Low level of <u>blood glucose</u> < 3 mmol/L, < 54 mg/dl	
Dehydration	Severe dehydration based primarily on recent history of diarrhoea, vomiting, fever, or sweating and on recent appearance of clinical signs of dehydration, as reported by the mother/caregiver	
High Fever	Axillary temperature $\geq 38.5^{\circ}\text{C}$ , rectal temperature $\geq 39^{\circ}\text{C}$ taking into consideration the ambient temperature	Child has returned from inpatient care or refuses referral to inpatient care
Hypothermia	Axillary temperature $< 35^{\circ}\text{C}$ , rectal temperature $< 35.5^{\circ}\text{C}$ taking into consideration the ambient temperature	
Respiration Rate	$\geq 60$ respirations/minute for children under 2 months	
	$\geq 50$ respirations/minute for children 2–12 months	
	$\geq 40$ respirations/minute for children 1–5 years	
	$\geq 30$ respirations/minute for children over 5 years	
	Any chest in-drawing	
Anaemia	Palmar pallor or unusual paleness of skin	
Skin Lesions	Broken skin, fissures, flaking of skin	
Superficial Infection	Any infection requiring intramuscular antibiotic treatment	
Weight Changes	Below admission weight on week 3 (for non-oedematous children)	
	Weight loss for three consecutive visits (for non-oedematous children)	
	Static weight for five consecutive visits	
Requests	Mother/caregiver requests treatment of child in inpatient care for social reasons (decided by supervisor)	Child that is not responding to treatment is referred to inpatient care or a hospital for further medical investigation
Not Responding	Child that is not responding to treatment is referred to inpatient care or a hospital for further medical investigation	

\* Integrated Management of Childhood Illnesses (IMCI) danger sign

# Definition of SAM Medical Complications

Medical Complication	Definition
Anorexia, Poor Appetite*	Unable to drink or breastfeed. Child failed a RUTF appetite test.
Intractable Vomiting*	Child vomits after every oral intake.
Convulsions*	Uncontrollable movements of the limbs and/or face and/or rolling eyes and/or loss of consciousness. Ask the mother if the child has had any convulsions during this current illness.
Lethargy, Not Alert*	Child is difficult to wake. Ask the mother if the child is drowsy, shows no interest in what is happening around him/her, does not look at the mother or watch her face when talking, or is unusually sleepy.
Unconsciousness*	Child does not respond to painful stimuli.
Hypoglycaemia	There are often no clinical signs for hypoglycaemia. One sign that occurs in children with SAM is eyelid retraction (children sleep with eyes slightly open).
High Fever	Child has a high body temperature—axillary temperature $\geq 38.5^{\circ}\text{C}$ or rectal temperature $\geq 39^{\circ}\text{C}$ —taking into consideration the ambient temperature.
Hypothermia	Child has a low body temperature—axillary temperature $< 35^{\circ}\text{C}$ or rectal temperature $< 35.5^{\circ}\text{C}$ —taking into consideration the ambient temperature.
Severe Dehydration	For children with SAM, diagnosis of severe dehydration is based on recent history of diarrhoea, vomiting, high fever, or sweating, and on recent appearance of clinical signs of dehydration, as reported by the caregiver.
Persistent Diarrhoea	An episode of diarrhoea that starts acutely and lasts at least 14 days.
Lower Respiratory Tract Infection	Child has a cough with difficult and/or fast breathing (in children 2–12 months: 50 breaths per minute or more; in children 12 months–5 years: 40 breaths per minute or more), or chest in-drawing.
Severe Anaemia	Child has palmar pallor or unusual paleness of the skin (compare the colour of the child's palm with the palms of other children); haemoglobin (Hb) $< 4$ grams per decilitre (g/dl), or if there is respiratory distress, Hb between 4 and 6 g/dl.
Signs of Vitamin A Deficiency	Dry, opaque, and dull conjunctiva, with or without Bitot's spots (foamy material on the conjunctiva) and/or corneal ulceration.
Skin Lesions	Child has broken skin, fissures, or flaking of skin.

\* Integrated Management of Childhood Illnesses (IMCI) danger sign

# Emergency Treatment for Children with SAM in Inpatient Care

Condition	Immediate Action
Dehydration	<p><b>If a child with SAM and acute diarrhoea or severe vomiting has any signs of dehydration</b> (e.g., sunken eyes with recent onset of diarrhoea), <b>and is <u>not</u> lethargic or unconscious:</b></p> <p><b>DO NOT GIVE IV FLUID; rehydrate orally as follows:</b></p> <ul style="list-style-type: none"> <li>• Give 50 ml 10% glucose or sugar water (infants: 25 ml) orally or by nasogastric tube (NGT).</li> <li>• Give ReSoMal 5 ml/kg every 30 minutes for 2 hours orally (if child is too ill, give ReSoMal by NGT).</li> <li>• Monitor pulse and respiration rate every 30 minutes during rehydration.</li> <li>• Then, give ReSoMal 5–10 ml/kg every 2 hours in alternate hours with F-75 10 ml/kg every 2 hours for up to 10 hours.</li> </ul> <p><b>STOP if the child displays signs of hydration:</b> clinically well and alert, normal eyes, tears, moist tongue, and drinks normally.</p> <p><b>STOP if the child shows signs of over-hydration (which may lead to congestive heart failure):</b> fast breathing, increase in both respiratory rate (by <math>\geq 5</math> breaths/min) <b>AND</b> pulse rate (by <math>\geq 25</math> beats/min).</p>
Shock	<p><b>If the child has signs of shock</b> (cold hands with slow capillary refill longer than 3 seconds and/or weak or fast pulse) <b>and is lethargic or unconscious:</b></p> <ul style="list-style-type: none"> <li>• Give oxygen, 1–2 litres/minute.</li> <li>• Keep the child warm.</li> <li>• Give sterile 10% glucose 5 ml/kg IV.</li> <li>• Give IV fluid at 15 ml/kg for 1 hour, using one of the following solutions (in order of preference): <ul style="list-style-type: none"> <li>○ Half-strength Darrow's solution with 5% dextrose, or</li> <li>○ Ringer's lactate with 5% dextrose* <ul style="list-style-type: none"> <li>* Add sterile potassium chloride (20 mmol/L).</li> </ul> </li> </ul> <p>(Or if above not available use 0.45% saline with 5% glucose*)</p> <p><b>DO NOT GIVE AS A BOLUS</b></p> <li>• Monitor pulse and respiration rate every 10 minutes.</li> <li>• Give antibiotics.</li> </li></ul> <p><b>STOP IV if the child shows signs of over-hydration (may lead to congestive heart failure):</b> fast breathing, increase in both respiratory rate (<math>\geq 5</math> breaths/min) <b>AND</b> in pulse rate (<math>\geq 25</math> beats/min). Other signs of heart failure are: distension of the jugular veins, enlarged liver, eyelid oedema, gallop rhythm, fine crackling in the lungs.</p> <p><b>If there are signs of improvement after giving IV fluid for an hour,</b> continue to give IV fluid at 15 ml/kg for a second hour.</p>

	<p><b>If there are NO signs of improvement after the first hour of IV fluid, assume the child has septic shock.</b> In this case:</p> <ul style="list-style-type: none"> <li>• Give maintenance fluids at 4 ml/kg/hour IV while waiting for blood.</li> <li>• Order 10 ml/kg fresh whole blood and when blood is available, stop oral intake and IV fluids.</li> <li>• Give furosemide 1 ml/kg IV at the start of the transfusion.</li> <li>• Transfuse whole fresh blood at 10 ml/kg slowly over 3 hours. If there are signs of heart failure, give 7 ml/kg packed cells instead of whole blood.</li> </ul>
	<p><b>If the child with SAM has signs of shock, but is <u>not</u> lethargic or unconscious:</b></p> <ul style="list-style-type: none"> <li>• Keep the child warm.</li> <li>• Give 10% glucose 5 ml/kg or 50 ml 10% glucose or sugar water (infants 25 ml) orally or by NGT.</li> <li>• Give antibiotics.</li> <li>• Proceed immediately to full assessment and treatment; initiate oral or nasogastric feeding with F-75.</li> </ul>
<b>Hypoglycaemia</b>	<p><b>If the child with SAM has hypoglycaemia</b> (blood glucose &lt; 3 mmol/L or &lt; 54 mg/dl):</p> <ul style="list-style-type: none"> <li>• Give sterile 10% glucose 5 ml/kg IV, then 50 ml 10% glucose or sugar water (infants 25 ml) by NGT, or what is first available.</li> <li>• Keep the child warm.</li> <li>• Give antibiotics.</li> <li>• Start feeding with F-75.</li> </ul>
<b>Hypothermia</b>	<p><b>If the child with SAM has signs of hypothermia</b> (&lt; 35°C axillary temperature):</p> <ul style="list-style-type: none"> <li>• Warm the child.</li> <li>• Give sterile 10% glucose 5 ml/kg IV or 50 ml 10% glucose or sugar water (infants 25 ml) by NGT.</li> <li>• Give antibiotics.</li> <li>• Start feeding with F-75.</li> </ul>
<b>Severe Pneumonia</b>	<p><b>If the child with SAM has signs of severe pneumonia</b> (central cyanosis, severe respiratory distress, inability to drink or retain fluids (i.e., vomiting everything), convulsions, low chest wall in-drawing, stridor (in a calm child), or fast breathing):</p> <ul style="list-style-type: none"> <li>• Give oxygen, 1-2 litres/minute.</li> <li>• Keep the child warm.</li> <li>• Give antibiotics.</li> <li>• Initiate cautious feeding with F-75 by NGT.</li> </ul>
<b>Convulsions</b>	<p><b>If the child with SAM has signs of convulsions:</b></p> <ul style="list-style-type: none"> <li>• Give diazepam or paraldehyde rectally.</li> <li>• Turn the unconscious child onto his/her side to reduce the risk of aspiration and stabilise the body position.</li> <li>• Give sterile 10% glucose 5 ml/kg by IV.</li> </ul>
<b>Severe Anaemia</b>	<p><b>If the child with SAM has very severe anaemia</b> (Hb &lt; 4 g/dl or &lt; 6 g/dl with respiratory distress), a blood transfusion is required:</p> <ul style="list-style-type: none"> <li>• Give whole fresh blood 10 ml/kg body weight slowly over 3 hours. If there are signs of anaemic heart failure, give 7 ml/kg packed cells over 3 hours rather than whole blood.</li> <li>• Stop all oral intake and IV fluids during the transfusion.</li> <li>• Give furosemide 1 ml/kg IV at the start of the transfusion.</li> </ul>

<b>Congestive Heart Failure</b>	<p><b>If the child with SAM develops signs of fluid overload or heart failure during rehydration</b> (the first sign is fast breathing; other danger signs are increases in respiratory rate (<math>\geq 5</math> breaths/min) and in pulse rate (<math>\geq 25</math> beats/min), distension of the jugular veins, an enlarged liver, eyelid oedema, gallop rhythm, and fine crackling in the lungs):</p> <ul style="list-style-type: none"> <li>• Stop all food intake and IV fluids. Do not give any fluids until the heart failure has improved.</li> <li>• Give furosemide 1 mg/kg IV. Monitor the child closely when giving furosemide and reassess the child frequently until symptoms improve.</li> </ul> <p>Give Digoxin 15 µg/kg IV only if the diagnosis of heart failure is unmistakable (elevated jugular venous pressure).</p>
<b>Signs of Blindness</b>	<p><b>If the child with SAM has dry conjunctiva or cornea, corneal clouding or ulceration, Bitot's spots, or keratomalacia:</b></p> <ul style="list-style-type: none"> <li>• Give vitamin A immediately (&lt; 6 months 50,000 IU, 6–12 months 100,000 IU, &gt; 12 months 200,000 IU) and repeat on day 2 and day 15.</li> <li>• For corneal ulceration, instil 1 drop of Atropine (1%) into the affected eyes for pain and to prevent the lens from pushing out.</li> <li>• Administer Chloramphenicol eye drops every 3 hours or apply Tetracycline eye ointment every 4 hours and bandage the child's eyes when he/she is stable.</li> </ul> <p>NOTE: Children with vitamin A deficiency are likely to be photophobic and will keep their eyes closed. It is important to examine the eyes very gently to prevent corneal rupture.</p>

# Stabilisation Phase Reference Tables for F-75 for Children with Severe Wasting (Marasmus)

Weight of Child (kg)	Volume of F-75 per Feed (ml) <sup>a</sup>			Daily Total (130 ml/kg)	80% of Daily Total <sup>a</sup> (Minimum)
	Every 2 Hours <sup>b</sup> (12 Feeds)	Every 3 Hours <sup>c</sup> (8 Feeds)	Every 4 Hours (6 Feeds)		
2.0	20	35	45	260	210
2.2	25	35	50	286	230
2.4	25	40	50	312	250
2.6	30	40	55	338	270
2.8	30	45	60	364	290
3.0	35	50	65	390	310
3.2	35	50	70	416	335
3.4	35	55	75	442	355
3.6	40	60	80	468	375
3.8	40	60	80	494	395
4.0	45	65	85	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	50	80	105	624	500
5.0	55	80	110	650	520
5.2	55	85	115	676	540
5.4	60	90	115	702	560
5.6	60	90	120	728	580
5.8	65	95	125	754	605
6.0	65	100	130	780	625
6.2	65	100	135	806	645
6.4	70	105	140	832	665
6.6	70	105	145	858	685
6.8	75	110	145	884	705
7.0	75	115	150	910	730
7.2	80	115	155	936	750
7.4	80	120	160	962	770
7.6	80	125	165	988	790
7.8	85	125	170	1014	810
8.0	85	130	175	1040	830
8.2	90	135	180	1066	855
8.4	90	135	180	1092	875
8.6	95	140	185	1118	895
8.8	95	145	190	1144	915
9.0	100	145	195	1170	935
9.2	100	150	200	1196	955
9.4	100	155	205	1222	980
9.6	105	155	210	1248	1000
9.8	105	160	210	1274	1020
10.0	110	165	215	1300	1040
10.2	110	165	220	1326	1060
10.4	115	170	225	1352	1080
10.6	115	170	230	1378	1100
10.8	115	175	235	1404	1125
11.0	120	180	240	1430	1145
11.2	120	180	245	1456	1165
11.4	125	185	245	1482	1185
11.6	125	190	250	1508	1205
11.8	130	190	255	1534	1225

Weight of Child (kg)	Volume of F-75 per Feed (ml) <sup>a</sup>			Daily Total (130 ml/kg)	80% of Daily Total <sup>a</sup> (Minimum)
	Every 2 Hours <sup>b</sup> (12 Feeds)	Every 3 Hours <sup>c</sup> (8 Feeds)	Every 4 Hours (6 Feeds)		
12.0	130	195	260	1560	1250
12.2	130	200	265	1586	1270
12.4	135	200	270	1612	1290
12.6	135	205	275	1638	1310
12.8	140	210	275	1664	1330
13.0	140	210	280	1690	1350
13.2	145	215	285	1716	1375
13.4	145	220	290	1742	1395
13.6	145	220	295	1768	1415
13.8	150	225	300	1794	1435
14.0	150	230	305	1820	1455
14.2	155	230	310	1846	1475
14.4	155	235	310	1872	1500
14.6	160	235	315	1898	1520
14.8	160	240	320	1924	1540
15.0	165	245	325	1950	1560
15.2	165	245	330	1976	1580
15.4	165	250	335	2002	1600
15.6	170	255	340	2028	1620
15.8	170	255	340	2054	1645
16.0	175	260	345	2080	1665
16.2	175	265	350	2106	1685
16.4	180	265	355	2132	1705
16.6	180	270	360	2158	1725
16.8	180	275	365	2184	1745
17.0	185	275	370	2210	1770
17.2	185	280	375	2236	1790
17.4	190	285	375	2262	1810
17.6	190	285	380	2288	1830
17.8	195	290	385	2314	1850
18.0	195	295	390	2340	1870
18.2	195	295	395	2366	1895
18.4	200	300	400	2392	1915
18.6	200	300	405	2418	1935
18.8	205	305	405	2444	1955
19.0	205	310	410	2470	1975
19.2	210	310	415	2496	1995
19.4	210	315	420	2522	2020
19.6	210	320	425	2548	2040
19.8	215	320	430	2574	2060
20.0	215	325	435	2600	2080

<sup>a</sup> Volumes in these columns are rounded to the nearest 5 ml.

<sup>b</sup> Give 2-hourly feeds for at least the first day. When there is little or no vomiting, moderate diarrhoea (< 5 watery stools per day), and the child finishes most feeds, change to 3-hourly feeds.

<sup>c</sup> After a day on 3-hourly feeds, if there is no vomiting, less diarrhoea, and the child finishes most feeds, change to 4-hourly feeds.

# Stabilisation Phase Reference Tables for F-75 for Children with Bilateral Pitting Oedema (+++)

Weight with +++ Oedema (kg)	Volume of F-75 per Feed (ml) <sup>a</sup>			Daily Total (100 ml/kg)	80% of Daily Total (Minimum)
	Every 2 Hours <sup>b</sup> (12 Feeds)	Every 3 Hours <sup>c</sup> (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	55	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
12.2	100	155	205	1220	975
12.4	105	155	205	1240	990
12.6	105	160	210	1260	1010
12.8	105	160	215	1280	1025
13.0	110	165	215	1300	1040
13.2	110	165	220	1320	1055



Weight with +++ Oedema (kg)	Volume of F-75 per Feed (ml) <sup>a</sup>			Daily Total (100 ml/kg)	80% of Daily Total (Minimum)
	Every 2 Hours <sup>b</sup> (12 Feeds)	Every 3 Hours <sup>c</sup> (8 Feeds)	Every 4 Hours (6 Feeds)		
13.4	110	170	225	1340	1070
13.6	115	170	225	1360	1090
13.8	115	175	230	1380	1105
14.0	115	175	235	1400	1120
14.2	120	180	235	1420	1135
14.4	120	180	240	1440	1150
14.6	120	185	245	1460	1170
14.8	125	185	245	1480	1185
15.0	125	190	250	1500	1200
15.2	125	190	255	1520	1215
15.4	130	195	255	1540	1230
15.6	130	195	260	1560	1250
15.8	130	200	265	1580	1265
16.0	135	200	265	1600	1280
16.2	135	205	270	1620	1295
16.4	135	205	275	1640	1310
16.6	140	210	275	1660	1330
16.8	140	210	280	1680	1345
17.0	140	215	285	1700	1360
17.2	145	215	285	1720	1375
17.4	145	215	290	1740	1390
17.6	145	220	295	1760	1410
17.8	150	225	295	1780	1425
18.0	150	225	300	1800	1440
18.2	150	230	305	1820	1455
18.4	155	230	305	1840	1470
18.6	155	235	310	1860	1490
18.8	155	235	315	1880	1505
19.0	160	240	315	1900	1520
19.2	160	240	320	1920	1535
19.4	160	240	325	1940	1550
19.6	165	245	325	1960	1570
19.8	165	250	330	1980	1585
20.0	165	250	335	2000	1600

<sup>a</sup> Volumes in these columns are rounded to the nearest 5 ml.

<sup>b</sup> Give 2-hourly feeds for at least the first day. When there is little or no vomiting, moderate diarrhoea (< 5 watery stools per day), and the child finishes most feeds, change to 3-hourly feeds.

<sup>c</sup> After a day on 3-hourly feeds, if there is no vomiting, less diarrhoea, and the child finishes most feeds, change to 4-hourly feeds.

# Reference Tables for Quantity of F-100 to Give an Individual Child per Feed

Weight of Child (kg)	Range of Volumes per 3-Hourly Feed of F-100 (8 Feeds Daily) *		Range of Volumes per 4-Hourly Feed of F-100 (6 Feeds Daily) *		Range of Daily Volumes of F-100	
	Minimum ml	Maximum ml	Minimum ml	Maximum ml	Minimum (150 ml/kg/day)	Maximum (220 ml/kg/day)
2.0	40	55	50	75	300	440
2.2	40	60	55	80	330	484
2.4	45	65	60	90	360	528
2.6	50	70	65	95	390	572
2.8	55	75	70	105	420	616
3.0	55	85	75	110	450	660
3.2	60	90	80	115	480	704
3.4	65	95	85	125	510	748
3.6	70	100	90	130	540	792
3.8	70	105	95	140	570	836
4.0	75	110	100	145	600	880
4.2	80	115	105	155	630	924
4.4	85	120	110	160	660	968
4.6	85	125	115	170	690	1012
4.8	90	130	120	175	720	1056
5.0	95	140	125	185	750	1100
5.2	100	145	130	190	780	1144
5.4	100	150	135	200	810	1188
5.6	105	155	140	205	840	1232
5.8	110	160	145	215	870	1276
6.0	115	165	150	220	900	1320
6.2	115	170	155	225	930	1364
6.4	120	175	160	235	960	1408
6.6	125	180	165	240	990	1452
6.8	130	185	170	250	1020	1496
7.0	130	195	175	255	1050	1540
7.2	135	200	180	265	1080	1584
7.4	140	205	185	270	1110	1628
7.6	145	210	190	280	1140	1672
7.8	145	215	195	285	1170	1716
8.0	150	220	200	295	1200	1760
8.2	155	225	205	300	1230	1804
8.4	160	230	210	310	1260	1848
8.6	160	235	215	315	1290	1892
8.8	165	240	220	325	1320	1936
9.0	170	250	225	330	1350	1980
9.2	175	255	230	335	1380	2024
9.4	175	260	235	345	1410	2068
9.6	180	265	240	350	1440	2112
9.8	185	270	245	360	1470	2156
10.0	190	275	250	365	1500	2200
10.2	190	280	255	375	1530	2244
10.4	195	285	260	380	1560	2288
10.6	200	290	265	390	1590	2332
10.8	205	295	270	395	1620	2376
11.0	205	305	275	405	1650	2420
11.2	210	310	280	410	1680	2464
11.4	215	315	285	420	1710	2508
11.6	220	320	290	425	1740	2552

11.8	220	325	295	435	1770	2596
12.0	225	330	300	440	1800	2640
12.2	230	335	305	445	1830	2684
12.4	235	340	310	455	1860	2728
12.6	235	345	315	460	1890	2772
12.8	240	350	320	470	1920	2816
13.0	245	360	325	475	1950	2860
13.2	250	365	330	485	1980	2904
13.4	250	370	335	490	2010	2948
13.6	255	375	340	500	2040	2992
13.8	260	380	345	505	2070	3036
14.0	265	385	350	515	2100	3080
14.2	265	390	355	520	2130	3124
14.4	270	395	360	530	2160	3168
14.6	275	400	365	535	2190	3212
14.8	280	405	370	545	2220	3256
15.0	280	415	375	550	2250	3300
15.2	285	420	380	555	2280	3344
15.4	290	425	385	565	2310	3388
15.6	295	430	390	570	2340	3432
15.8	295	435	395	580	2370	3476
16.0	300	440	400	585	2400	3520
16.2	305	445	405	595	2430	3564
16.4	310	450	410	600	2460	3608
16.6	310	455	415	610	2490	3652
16.8	315	460	420	615	2520	3696
17.0	320	470	425	625	2550	3740
17.2	325	475	430	630	2580	3784
17.4	325	480	435	640	2610	3828
17.6	330	485	440	645	2640	3872
17.8	335	490	445	655	2670	3916
18.0	340	495	450	660	2700	3960
18.2	340	500	455	665	2730	4004
18.4	345	505	460	675	2760	4048
18.6	350	510	465	680	2790	4092
18.8	355	515	470	690	2820	4136
19.0	355	525	475	695	2850	4180
19.2	360	530	480	705	2880	4224
19.4	365	535	485	710	2910	4268
19.6	370	540	490	720	2940	4312
19.8	370	545	495	725	2970	4356
20.0	375	550	500	735	3000	4400

\* Volumes per feed are rounded to the nearest 5 ml.

## Reference Tables for Infants 0–6 Months and Older Infants Weighing Less Than 3.0 Kg

Reference Table for Maintenance Amounts of F-100-Diluted to Give to an Individual Infant per Feed	
Bodyweight (kg)	F-100-Diluted (ml per Feed) (Assumes 8 Feeds per Day, Given 3-Hourly)
≥ 1.2	25
1.3–1.5	30
1.6–1.7	35
1.8–2.1	40
2.2–2.4	45
2.5–2.7	50
2.8–2.9	55
3.0–3.4	60
3.5–3.9	65
4.0–4.4	70

Reference Table for Amounts of F-100-Diluted (Marasmus) or F-75 (Kwashiorkor) to Give to Non-Breastfed Infants in the Stabilisation Phase	
Bodyweight (kg)	F-100-Diluted or F-75 (ml per Feed), 8 Feeds per Day, No Breastfeeding (3-Hourly Feeds)
≤ 1.5	30
1.6–1.8	35
1.9–2.1	40
2.2–2.4	45
2.5–2.7	50
2.8–2.9	55
3.0–3.4	60
3.5–3.9	65
4.0–4.4	70

**Reference Table for Amounts of F-100-Diluted to Give to Non-Breastfed Infants 0–6 Months or Older Infants Weighing Less Than 3.0 Kg in the Transition Phase**

Bodyweight (kg)	F-100-Diluted (ml per Feed), 8 Feeds per Day, No Breastfeeding (3-Hourly Feeds)
≤ 1.5	45
1.6–1.8	53
1.9–2.1	60
2.2–2.4	68
2.5–2.7	75
2.8–2.9	83
3.0–3.4	90
3.5–3.9	96
4.0–4.4	105

**Reference Table for Amounts of F-100-Diluted to Give to Non-Breastfed Infants 0–6 Months or Older Infants Weighing Less Than 3.0 kg in the Rehabilitation Phase**

Bodyweight (kg)	F-100-Diluted (ml per Feed), 6 to 8 Feeds per Day, No Breastfeeding
≤ 1.5	60
1.6–1.8	70
1.9–2.1	80
2.2–2.4	90
2.5–2.7	100
2.8–2.9	110
3.0–3.4	120
3.5–3.9	130
4.0–4.4	140

# How to Prepare F-75, F-100, and F-100-Diluted using the Old Sachet-Packaged Therapeutic Milk

When preparing therapeutic milk from the old commercial sachets, follow the instructions on the package, and follow these procedures:

1. Decide the type of milk and total amount that needs to be prepared and put it in a clean mixing jug or bowl. The amount will be based on the number of children who are on F-75, F-100, or F-100-Diluted.
2. Boil water to make it safe for drinking.
3. Cool the water. The water should be cooled because adding boiling water to the powdered ingredients may create lumps.
4. Add the water to the powder.
5. Whisk the mixture vigorously until the powder dissolves in the water.
6. Give the feeding based on the child's body weight.

Preparation of F-75		
Scoops of F-75	Water (ml)	
1	20	
2	40	
3	60	
4	80	
5	100	
6	120	
7	140	
8	160	
9	180	
10	200	
Sachets of F-75	Water (ml)	Volume F-75 Milk (ml)
1 sachet	500	600
2 sachets	1,000	1,200
3 sachets	1,500	1,800
4 sachets	2,000	2,400

Preparation of F-100		
Scoops of F-100	Water (ml)	
1	18	
2	36	
3	54	
4	72	
5	90	
6	108	
7	126	
8	144	
9	162	
10	180	
Sachets of F-100	Water (ml)	Volume of F-100 Milk (ml)
1 sachet	500	600
2 sachets	1,000	1,200
3 sachets	1,500	1,800
4 sachets	2,000	2,400

Preparation of F-100-Diluted		
Scoops of F-100	Water (ml)	
1	24	
2	28	
3	72	
4	96	
5	120	
6	144	
7	168	
8	192	
9	216	
10	240	
Sachets of F-100	Water (ml)	Volume of F-100-Diluted (ml)
1 sachet	670	700
2 sachets	1,350	1,500

# How to Prepare F-75, F-100, and F-100-Diluted Using the New Tin-Packaged Therapeutic Milk

When preparing therapeutic milk from the new commercial tin packages, follow the instructions on the package, and follow these procedures:

1. Decide the type of milk and total amount that needs to be prepared and put the milk powder in a clean mixing jug or bowl. The amount will be based on the number of children who are on F-75, F-100, or F-100-Diluted.
2. Boil water to make it safe for drinking.
3. Ensure that the water temperature is not below 70°C (**i.e. cooled for not less than 3 – 5 minutes after boiling**).
4. Add the water to the powder.
5. Whisk the mixture vigorously until the powder dissolves in the water.
6. Cool the prepared milk to feeding temperature before administering.
7. Give the feed based on the child's body weight.

Preparation of F-75		
White Scoops of F-75	Water (ml)	*Volume of F-75 Milk (ml)
1	25	28
2	50	56
3	75	84
4	100	112
5	125	140
6	150	168
7	175	196
8	200	224
9	225	252
10	250	280
20	500	560
Tins of F-75	Water (ml)	*Volume of F-75 Milk (ml)
1 Tin (400 grams)	2200	2480
2 Tins (800 grams)	4400	4960

\* Note that the F-75 milk volumes provided are estimates; the health care provider should measure the amount of milk to feed the child based on his/her body weight.



Preparation of F-100		
Blue Scoops of F-100	Water (ml)	*Volume of F-100 Milk (ml)
1	25	29
2	50	58
3	75	87
4	100	117
5	125	145
6	150	174
7	175	203
8	200	234
9	225	261
10	250	290
20	500	580
Tins of F-100	Water (ml)	*Volume of F-100 Milk (ml)
1 Tin (400 grams)	2200	2158
2 Tins (800 grams)	4400	4316

\* Note that the F-100 milk volumes provided are estimates; the health care provider should measure the amount of milk to feed the child based on his/her body weight.

Preparation of F-100-Diluted		
Blue Scoops of F-100	Water (ml)	*Volume of F-100-Diluted Milk (ml)
1	35	40
2	70	75
3	100	105
4	135	140
5	170	175
6	205	210
7	235	240
8	270	275
9	305	310
10	340	345
20	680	685
Tins of F-100	Water (ml)	*Volume of F-100-Diluted Milk (ml)
1 Tin (400 grams)	2970	2913
2 Tins (800 grams)	5940	5826

\* Note that the F-100-Diluted milk volumes provided are estimates; the health care provider should measure the amount of milk to feed the child based on his/her body weight.

# Alternative Recipes for F-75, F-100, and ReSoMal Using Combined Mineral and Vitamin Mix (CMV)

It is possible to make F-75 and F-100 from a variety of ingredients if a commercial product is not available. The table below contains recipes for making F-75 and F-100 using dry skimmed milk (DSM), dry whole milk (DWM), or fresh cow's milk. Sugar and oil are added to all recipes. Three of the recipes include the addition of cereal powder (maize flour) when preparing F-75. Add cooled, boiled water to all the recipes.

## Recipes to Make F-75 and F-100

Alternatives	Ingredients	Amount for F-75
If you have dried skimmed milk	Dried skimmed milk Sugar Cereal flour Vegetable oil Combined mineral and vitamin mix (CMV)* Water	25 g 70 g 35 g 30 g ½ levelled scoop 1,000 ml
If you have dried whole milk	Dried whole milk Sugar Cereal flour Vegetable oil CMV* Water	35 g 70 g 35 g 20 g ½ levelled scoop 1,000 ml
If you have fresh cow's milk, or full-cream (whole) milk	Fresh cow's milk, or full-cream (whole) milk Sugar Cereal flour Vegetable oil CMV* Water	300 ml 70 g 35 g 20 g ½ levelled scoop 1,000 ml
If you do not have cereal flour, or there are no cooking facilities, use one of the following recipes for F-75:		
Alternatives	Ingredients	Amount for F-100
If you have dried skimmed milk	Dried skimmed milk Sugar Vegetable oil CMV** Water	80 g 50 g 60 g ½ levelled scoop 1,000 ml
If you have dried whole milk	Dried whole milk Sugar Vegetable oil CMV* Water	110 g 50 g 30 g ½ levelled scoop 1,000 ml
If you have fresh cow's milk, or full-cream (whole) milk	Fresh cow's milk, or full-cream (whole) milk Sugar Vegetable oil CMV* Water	880 ml 75 g 20 g ½ levelled scoop 1,000 ml

**\* Important note about adding water:** Add just the amount of water needed to make 1,000 ml of formula. (This amount will vary from recipe to recipe, depending on the other ingredients.) Do not simply add 1,000 ml of water, as this will make the formula too dilute. A mark for 1,000 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.

**\*\*** Where CMV is not available, use 20 ml of mineral and vitamin mix.

Mix the sugar, oil, cereal, and milk to make a paste, then slowly add the cooled, boiled water. Make up to 2 litres. If available, use a food blender or whisk to make the mix. Use the red scoop found inside the CMV tin to measure the amount of CMV to add to the prepared F-75 or F-100. **Add one scoop of CMV (6.35 g) to 2 litres of ‘made’ F-75 or F-100.**

When using cereal in the F-75, add the CMV after the cereal mix has been cooked to prevent the loss of minerals and vitamins during the cooking process. Maize meal, rice flour, among others, may be used for the cereal flour. Mix the flour, milk or milk powder, sugar, oil, and mineral mix in a 1-litre jug. Slowly add cooled, boiled water up to 1,000 ml. Boil the mixture gently for 4 minutes, then transfer it back to the measuring jug after cooling and add enough boiled, cooled water to make 1,000 ml.

If CMV is not available, prepare mineral and vitamin mix as described in Appendix 4 of the WHO’s Physicians Manual on *Management of Severe Malnutrition* (WHO 1999).

Recipe to Make ReSoMal	
Ingredients	Amounts
Water (boiled and cooled)	2 litres
Standard WHO-ORS	One 1-litre packet
CMV	1 red scoop (6 g) or 40 ml
Sugar	50 g

**NOTE:** ReSoMal contains approximately 45 mmol Na, 40 mmol K, and 3 mmol Mg per litre.

# Therapeutic Foods Specifications

## F-75 and F-100 Therapeutic Milk Specifications

### Nutrition Composition

Constituent	F-75 Amount in 100 ml	F-100 Amount in 100 ml
Energy	75 kcal	100 kcal
Protein	1 g (5% of total energy)	3 g (11% of total energy)
Lipids	2.5 g (32% of total energy)	5.8 g (53% of total energy)
Carbohydrate	12 g (64% of total energy)	9 g (36% of total energy)
Lactose	1.4 g max	4.2 g max
n-6 fatty acid	6.5% of total energy	6.5% of total energy
n-3 fatty acid	1.5% of total energy	2.8% of total energy
Ash	Max 4%	Max 4%
Moisture	Max 4%	Max 2.5%

## F-75 and F-100 Therapeutic Milk Specifications

### Minerals

Constituent	F-75 Amount in 100 ml	F-100 Amount in 100 ml
Sodium	17 mg maximum	55 mg maximum
Potassium	122–156 mg	210–270 mg
Calcium	50–100 mg	55–115 mg
Phosphorous*	50–100 mg	55–115 mg
Magnesium	8.5–11 mg	15–25 mg
Iron	0.05 mg maximum	0.05 mg maximum
Zinc	1.8–3.0 mg	2.0–3.0 mg
Copper	0.2–0.3 mg	0.25–0.35 mg
Selenium	3.5–7 mcg	3.5–7.7 mcg
Iodine	12.3–24.5 mcg	13–27 mcg

\* excluding phytate in F-100

## F-75 and F-100 Therapeutic Milk Specifications

### Vitamins

Constituent	F-75 Amount in 100 ml	F-100 Amount in 100 ml
Vitamin A	0.1–0.3 mg	0.15-0.32 mg
Vitamin D3	2.5–5.0 mcg	3.0-5.3 mcg
Vitamin E	3.3–6.5 mg	4-6.5 mg
Vitamin K	2.5 mcg minimum	3 mcg minimum
Thiamine	0.8 mg minimum	0.1 mg minimum
Riboflavin	0.3 mg minimum	0.3 mg minimum
Ascorbic acid	10 mg minimum	9.6 mg minimum
Vitamin B6	0.1 mg minimum	0.1 mg minimum
Vitamin B12	0.3 mcg minimum	0.3 mcg minimum
Folic acid	35 mcg minimum	38 mcg minimum
Niacin	0.8 mg minimum	1.0 mg minimum
Pantothenic acid	0.5 mg minimum	0.6 mg minimum
Biotin	10 mcg minimum	11 mcg minimum

### Mean Nutritional Value of RUTF

	For 100 g	Per 92 g Sachet		For 100 g	Per 92 g Sachet
Energy	545 kcal	500 kcal	Vitamin A	910 mcg	840 mcg
Protein	13.6 g	12.5 g	Vitamin D	16 mcg	15 mcg
Fat	35.7 g	32.86 g	Vitamin E	20 mg	18.4 mg
Calcium	300 mg	276 mg	Vitamin C	53 mg	49 mg
Phosphorus	300 mg	276 mg	Vitamin B1	0.6 mg	0.55 mg
Potassium	1,111 mg	1,022 mg	Vitamin B2	1.8 mg	1.66 mg
Magnesium	92 mg	84.6 mg	Vitamin B6	0.6 mg	0.55 mg
Zinc	14 mg	12.9 mg	Vitamin B12	1.8 mcg	1.7 mcg
Copper	1.8 mg	1.6 mg	Vitamin K	21 mcg	19.3 mcg
Iron	11.5 mg	10.6 mg	Biotin	65 mcg	60 mcg
Iodine	100 mcg	92 mcg	Folic acid	210 mcg	193 mcg
Selenium	30 mcg	27.6 mcg	Pantothenic acid	3.1 mg	2.85 mg
Sodium	< 290 mg	< 267 mg	Niacin	5.3 mg	4.88 mg

# Summary Chart: Antibiotics for Children with SAM in Inpatient Care

IF:	GIVE:	
<b>NO MEDICAL COMPLICATIONS</b>	<b>Amoxicillin</b> oral (15 mg/kg) every 8 hours for 5 days	
<b>MEDICAL COMPLICATIONS</b> (shock, hypoglycaemia, hypothermia, dermatosis with raw skin/fissures, respiratory or urinary tract infections, or lethargic/sickly appearance)	<b>Gentamicin</b> IV or IM (7.5 mg/kg) once daily for 7 days, <b>plus:</b>	
	<b>Benzylpenicillin</b> IV or IM (50,000 iu/kg) every 6 hours for 2 days	Followed by: <b>Amoxicillin</b> oral (15 mg/kg) every 8 hours for 5 days
<b>Resistance to Amoxicillin and Benzylpenicillin and Presence of Medical Complications</b>	In the case of <b>sepsis or septic shock</b> , give: IV/IM <b>ceftriaxone</b> (children or infants over 1 month of age (100 mg/kg once a day)	
	If <b>suspected staphylococcal infection</b> , add: IV/IM <b>cloxacillin</b> (25–50 mg/kg/dose four times a day, depending on the severity of the infection). If out of stock, give oral flucloxacillin 25–50 mg/kg every 6 hours	
<b>No Improvement after 48 Hours on Benzylpenicillin and Gentamicin</b>	<b>Ceftriaxone</b> 100 mg/kg IV or IM once a day for 5 days (Infants <3 kg: 50 mg/kg)	
<b>Specific Infection Requires an Additional Antibiotic</b>	Add <b>specific antibiotic</b> as per standard treatment guidelines for Malawi	
<b>Child is HIV-Positive or Exposed.</b>	<b>Cotrimoxazole</b> oral according to the Malawi Guidelines for Clinical Management of HIV	

## Specific Formulations and Body Weight Ranges for Antibiotics for SAM Children in Inpatient Care

ROUTE/DOSE/ FREQUENCY/ DURATION	FORMULATION	DOSE ACCORDING TO CHILD’S WEIGHT		
		3 up to 6 kg	6 up to 8 kg	8 up to 10 kg
Amoxicillin				
Oral: 15 mg/kg body weight every 8 hours for 5 days	Syrup, 125 mg/5 ml	2.5 ml	5 ml	5 ml
	Syrup, 250 mg/5 ml	1.5 ml	2 ml	2.5 ml
Benzylpenicillin				
IV or IM: 50,000 units/kg body weight every 6 hours for 5 days	IV: vial of 600 mg mixed with 9.6 ml sterile water to give 1,000,000 IU/10 ml	2 ml	3.5 ml	4.5 ml
	IM: vial of 600 mg mixed with 1.6 ml sterile water to give 1,000,000 IU/2 ml	0.4 ml	0.7 ml	0.9 ml

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



# Medicine Protocol for Children with SAM in Inpatient Care

Name of Medication	When to Give	Age or Weight	Dosage	Special Instructions
Amoxicillin	Children with SAM without medical complications ( <i>1<sup>st</sup> line antibiotic</i> )	All ages	15 mg/kg orally 3 times per day for 5 days (Infants <3 kg: 15 mg/kg/dose every 12 hours)	Note that majority of children admitted to inpatient care will have medical complications.  If Amoxycillin is not available, use Cotrimoxazole according to IMCI protocol
Benzylpenicillin <i>and</i> Gentamicin	All children with SAM <b>with</b> medical complications ( <i>1<sup>st</sup> line antibiotic</i> )	All ages	Benzylpenicillin: 50,000 iu/kg 6 hourly IV/IM for 48 hours, then oral amoxicillin 15 mg/kg 8 hourly for 5 days	If child is transferred to from NRU to OTP before drug regimen has been completed, NRU staff should provide instructions for continuing antibiotic treatment at in OTP
			Gentamicin: 7.5 mg/kg/dose IV (or IM) once a day for 7 days (including for infants from the 2 <sup>nd</sup> week of life onwards)	
Ceftriaxone	<b>IF</b> no improvement with 1 <sup>st</sup> line antibiotic after 48 hours ( <i>2<sup>nd</sup> line antibiotic</i> )		100 mg/kg IV (or IM) (Infants <3 kg: 50 mg/kg IV (or IM) once a day for 5 days	Give as a single daily dose
Cloxacillin	<b>IF</b> no improvement with 1 <sup>st</sup> line antibiotic after 48 hours and <b>IF</b> suspected staphylococcal infection		25–50 mg/kg/dose IV (or IM or orally) every 6 hours (Infants <3 kg: 25–50 mg/kg/dose every 8 hours) for 5 days	Depends on the severity of the infection
Ciprofloxacin	( <i>example of 3<sup>rd</sup> line antibiotic</i> )		10 mg/kg/dose IV every 8 hours for 5 days, or 15 mg/kg/dose orally every 12 hours for 5 days	Do only give to infants <3 kg in case of life saving measure
Albendazole or Mebendazole	At the start of phase 2 (after 7 days), for presumptive treatment <b>OR</b> Immediate, for treatment of cases of severe infestation	≥10 kg	Albendazole: 1–2 years: 200 mg, once a day for 3 days >2 years: 400 mg, once a day for 3 days Mebendazole: 1–2 years: 100 mg, once a day for 3 days >2 years: 100 mg, 2 times a day for 3 days	Should be given routinely to all children from 12 months since many malnourished children may be infested with worms.
LA (Contains 120 mg Lumefantrinerine and 20 mg Artemether)	For treatment of malaria. LA should only be prescribed if there is a positive diagnostic test. Do not use quinine. Iron and folic acid		5–14.9 kg: 1 tablet 2x/day/3 days 15–24.9 kg: 2 tablets 2x/day/3 days 25–35 kg: 3 tablets 2x/day/3 days >35 kg: 4 tablets 2x/day/3 days	A rapid diagnostic test for malaria should be done on all children admitted to NRU.

	should never be provided together with a malaria treatment; malaria is treated first			
10% Glucose 10% Sucrose (Sugar Water*)	For the treatment of hypoglycaemia (low blood glucose, <3 mmol/L) or as a preventive dose	All ages	<u>If not lethargic or unconscious</u> , give 10% glucose or sucrose 50 ml (infants <6 months: 5 ml/kg or 25 ml) orally or by NG tube <u>If lethargic or unconscious</u> , give sterile 10% glucose 5 ml/kg IV, followed by 10% glucose or sucrose 50 ml (infants <6 months: 25 ml) by NG tube to prevent re-bound hypoglycaemia. If IV fluids will be given for shock, no need to give the NG bolus as glucose is included in the IV fluids	10% sucrose or sugar water is obtained by solving 1 teaspoon of sugar in 3 table spoons water
ReSoMal	For oral treatment of dehydration (diarrhoea and recent sunken eyes) without shock, give in prescribed amounts. Monitor danger signs every 30 minutes. After rehydration, give as maintenance fluid in prescribed amounts after each loose stool	All ages	<u>Treatment fluid</u> : 5 ml/kg/30 minutes orally or by NG tube in first 1–2 hours, then alternate hourly 5–10 ml/kg/2 hourly with F-75 for 10 hours or until minimum two signs of hydration appear <u>Maintenance fluid</u> : if wasted give 15–30 ml/kg/loose stool (or <2 years: 50–100 ml, ≥2 years: 100–200 ml), if oedema give 30 ml/loose stool	A diagnosis of dehydration needs to be associated with a definite recent history of significant fluid loss; watery diarrhoea (not just soft or mucoid) and frequent (more than 3 stools per day) with a recent onset.  It is recommended that low osmolarity ORS is used instead of ReSoMal where cholera or Acute Watery Diarrhoea (AWD) has been diagnosed.
IV Fluid: Half-strength Darrow's with 5% dextrose, or half strength Ringer's lactate with 5% dextrose	For IV treatment of shock with lethargy or unconsciousness	All ages	<u>Treatment fluid</u> : 15 ml/kg/hour for 1 <sup>st</sup> hour, reassess the child, and continue 2 <sup>nd</sup> hour if the child has improved <u>Maintenance fluid</u> : 4 ml/kg/hour  If no improvement after 1 <sup>st</sup> hour of rehydration, assume that the child has septic shock	Monitor danger signs every 10 minutes. (If no Darrow's or Ringer's, use half-strength saline (0.45% NaCl) with 5% dextrose**)(**Add sterile potassium chloride 20 mmol/L to the solution)
Oxygen	For treatment of pneumonia, respiratory distress, shock	All ages	1–2 litres per minute.	
Blood Transfusion (and Furosemide)	For treatment of septic shock after failure to respond after 1 hour rehydration, and for treatment of very severe anaemia. Monitor danger signs every 10 minutes	All ages	10 ml/kg safe fresh whole blood given slowly over 3 hours Give furosemide just prior to the blood infusion at 1 mg/kg IV. If signs of heart failure, give 7 ml/kg packed blood cells instead and consider giving digoxin.	Depends on the severity of the infection
Tetracycline Eye Ointment or Chloramphenicol Eye Drops	For treatment of eye infections. Wash hands before and after application.		1 drop tetracycline every 8 hours, or 1 drop chloramphenicol every 6 hours until 2 days after the condition has resolved	Wash hands before and after use; wash eyes before application; continue for 2 days after disappearance of signs of infection

Atropine 1%	For corneal ulceration, to relieve pain as pupil dilatation stops ciliary muscle spasms		1 drop every 8 hours (morning, afternoon, and before sleep)	May be used to relieve pain as pupil dilatation stops ciliary muscle spasms
Nystatin	For treatment of candidiasis. Use dropper and show mother how to use it		100,000 units (1 ml) every 6 hours after food for 7 days	Use dropper and show caregiver how to use it
Benzyl Benzoate	For topical treatment of scabies. Avoid eye contact; do not use on broken or secondary infected skin		Apply over whole body; repeat without bathing on following day; wash off 24 hours later	Avoid eye contact; do not use on broken or secondary infected skin
Whitfields	For topical treatment of ringworm, taenia, or fungal infections of the skin.		Apply two times a day until condition has resolved	Continue treatment until condition has completely resolved
Gentian Violet	For topical treatment of minor abrasions or fungal infections of the skin		Apply once a day until condition has resolved	Can be repeated; continue until condition has resolved
1% Potassium Permanganate	For topical treatment of dermatosis. To make a 1% solution, dissolve a crystal in enough water so that the colour is slightly purple and still transparent		Bathe daily for 10–15 minutes. Sponge the solution onto affected areas while the child is sitting in a basin.	

# Infection Prevention Protocol in the Inpatient Care

- All health care workers should exercise handwashing:
  - Before and after handling a patient
  - When conducting a clean/aseptic procedure
  - After conducting procedures involving risk of exposure to bodily fluids
- Health care workers should wear gloves for all procedures involving potential contact with bodily fluids.
- Keep all decontaminated utensils and equipment in well-covered storage containers, such as basin/buckets with lids.
- Label all decontamination and storage containers with their correct labels.
- During health talks, responsible staff should educate caregivers on handwashing before preparing food, feeding their children, administering oral drugs, and administering oral rehydration fluids. Caregivers should also wash their hands before and after changing an infant's nappy and after using the toilet.
- Health care workers should treat all reusable utensils such as oxygen tube connectors, prongs, and suction tubes by soaking in 0.5% chlorine solution for 10 minutes. Then, they should be cleaned with soapy water, rinsed, and allowed to air dry.
- Decontaminate and clean medical equipment such as tubes in separate basins from feeding/kitchen utensils.
- Responsible staff should ensure caregivers and children with SAM maintain high standards of personal hygiene by educating caregivers on hygiene and sanitation and providing clean linens and clean water for personal hygiene.

# Nasogastric Feeding

## Before Insertion

- Nasogastric (NG) feeding is usually received poorly by mothers, since it is considered invasive. Mothers should be counselled on:
  - How the tube will assist the child
  - Anticipated discomfort during insertion
  - Improved comfort after insertion
- Educate the mother on the path the nasogastric tube will take (i.e., an already existing connection from the nose, through the throat, and into the stomach). Allow the mother to express her fears, concerns, and questions to facilitate acceptance and adherence.
- This is a clean procedure; health care workers should, therefore, wash their hands thoroughly with soap prior to putting on gloves in readiness for the insertion. The child's face and torso should also be washed with soap and rinsed.
- Once correctly inserted, conduct a confirmatory test to ensure the NGT tube is in the stomach by:
  - Aspirating abdominal contents and testing on a litmus paper. A pH of less than 7 confirms stomach placement.
  - Pushing in air using the feeding syringe and listening to the abdomen for air sounds as you push in the air.



*Child with gastric tube.*

## Feeding Using a Nasogastric Tube

- Emphasise the following messages with the caregiver: good hygiene practices, washing hands before feeds, and keeping utensils clean and dry.
- Assist the primary caregiver with administering the first feed. Demonstrate the correct feeding position, which is the fowlers/upright position.
- After attaching the feeding syringe to the nasogastric tube, milk should be poured in and allowed to flow downward freely using gravity. In cases where the free flow of milk is not achieved, raise up the feeding syringe and NG tube apparatus to a higher position.
- The NG tube can also be squeezed for several seconds and then released to facilitate the flow.
- **ONLY** when these attempts fail should a plunger be used in a slow, twisting motion. This will aid in pushing the milk downward with minimal air entry.
- Caregivers should be allowed to feed the child using the NG tube once given a demonstration on how to feed correctly using a NG tube.
- Feeding should be done when the child is calm to avoid backflow of gastric contents; if the child is still breastfeeding, allow the child to be breastfed.

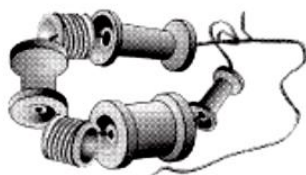
- Change the tube if blocked. Do not plunge F-75 through the NG tube; let it drip in or use gentle pressure.
- Abdominal distension can occur with oral or NG feeding, but it is more likely with NG feeding. If the child develops a hard, distended abdomen with very little bowel sound, give 2 ml of a 50% solution of magnesium sulphate intramuscular (IM).
- Remove the NG tube when the child either takes:
  - 80% of the day's amount orally **or**
  - Two consecutive feeds fully by mouth

*Exception:* If a child takes two consecutive feeds fully by mouth during the night, wait until morning to remove the NG tube, just in case it is needed again in the night.

# Toys for Children

## Ring on a string (from 6 months)

Thread cotton reels and other small objects (e.g. cut from the neck of plastic bottles) on to a string. Tie the string in a ring, leaving a long piece of string hanging.



## Rattle (from 12 months)

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



## Drum (from 12 months)

Any tin with a tightly fitting lid.

## Mirror (from 18 months)

A tin lid with no sharp edges.

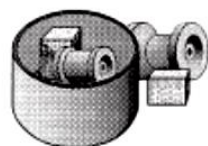
## Posting bottle (from 12 months)

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



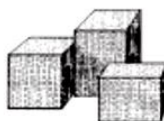
## In-and-out toy (from 9 months)

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



## Blocks (from 9 months)

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



## Push-along toy (from 12 months)

Make a hole in the centre of the base and lid of a cylindrical-shaped tin. Thread a piece of wire (about 60 cm long) through each hole and tie the ends inside the tin. Put some metal bottle tops inside the tin and close the lid.



## Stacking bottle tops (from 12 months)

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



## Pull-along toy (from 12 months)

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



## Nesting toys (from 9 months)

Cut off the bottom of two bottles of identical shape, but different size. The smaller bottle should be placed inside the larger bottle.



## Puzzle (from 18 months)

Draw a figure (e.g. a doll) in a crayon on a square- or rectangular-shaped piece of cardboard. Cut the figure in half or quarters.



## Doll (from 12 months)

Cut out two doll shapes from a piece of cloth and sew the edges together, leaving a small opening. Turn the doll inside-out and stuff with scraps of materials. Stitch up the opening and sew or draw a face on the doll.



## Book (from 18 months)

Cut out three rectangular-shaped pieces of the same size from a cardboard box. Glue or draw a picture on both sides of each piece. Make two holes down one side of each piece and thread string through to make a book.



WHO 97402

# Essential CMAM Equipment for SFP and OTP

Tools, Materials, and Other OTP/SFP Supplies	Minimum Amount per Clinic
Strong files to store treatment cards	4
Small clocks or watch with second hand	2
Buckets – plastic, graduated, lid, 8.5 litres	2
Jugs – transparent plastic, graduated, 1 litre	2
Marker pens (permanent ink)	12
Notebooks	4
Metal spoons	4
Teaspoons	12
Nail clippers	4
Water carriers – plastic, 20 litres	4
Water jugs (with lids)	4
Small metal bowls	4
Thermometers – electronic	2
Hanging scale with 100 g indications	1
Adult scale/electronic scale	1
Height board	1
MUAC bands for children	20
Calculators	2
Weight-for-height chart	1
Additional height board	1
Scissors	1
Stapler and staples	1
Beakers – orange plastic (500 ml)	2
Copies of CMAM guidelines	2
Sets of cups and spoons	6
Wooden pallets for food	10
Cooking pot for SFP demonstration	1
MUAC tapes for adults	5
SFP and OTP monitoring cards	
OTP register	
OTP report	
SFP registers – one for children and one for mothers	
SFP monthly report booklet	
Supplementary and Therapeutic	Minimum Amount
Sugar to make 10% sugar solution	500g
RUTF	
CSB++	
CSB+	
Vegetable oil	
Routine Medicines for OTP	Amount
Amoxicillin syrup 125 mg/5 ml	500 bottles
Albendazole or Mebendazole 100 mg	4 tins
Paracheck (malaria rapid test)	200
HIV test kit	



# Essential CMAM Equipment for NRU

Tools, Materials, and Other NRU Supplies	Minimum Amount per Clinic
Strong files for treatment cards	4
Small clocks or watches with second hand	2
Buckets – plastic, graduated, lid, 8.5 litres	2
Jugs – transparent plastic, graduated, 1 litre	2
Marker pens (permanent ink)	12
Notebooks	4
Metal spoons	4
Teaspoons	12
Nail clippers	4
Water carriers – plastic, 20 litres	4
Water jugs (with lid)	4
Small metal bowls	4
Hanging scale with 100 g indications	1
Adult scale/electronic scale	1
MUAC bands	20
Calculators	2
Weight-for-height chart	1
Height board	1
Scissors	1
Stapler and staples	1
Beakers – orange plastic (500 ml)	2
Sets of communication materials for counselling on health and nutrition	2
Job aids for staff	1
Copy of CMAM guidelines	1
Registration book	1
Monthly reporting form	1
NRU treatment card	
Sets of cups and spoons	6
Infant scale with 10 g indications	1
Food scale (up to 10 kg) for weighing milk powder	1
Electric kettle	1
Beds (that can sleep mother and baby)	20
Thermos flask	1
Blankets	1
Wall thermometer (room thermometer)	1
Hand whisk	1
Syringes (for measuring small milk feeds)	50
Room heaters	2
Resuscitator hand, infant/child set	1
Insecticide-treated bed nets (ITN)	20
<b>Therapeutic Foods</b>	
F-75 milk	
F-100 milk	
RUTF	
Sugar	
CMV	

<b>Routine and Essential Drugs</b>	
Vitamin A	
Folic acid	
Ferrous sulphate	
Amoxicillin	
Cotrimoxazole	
Gentamicin	
Benzylpenicillin	
Cefotaxime	
Ceftriaxone	
Ciprofloxacin	
Cloxacillin	
Tetracycline eye ointment	
Chloramphenicol eye drops	
1% Atropine eye drops	
Nystatin (oral suspension)	
Fluconazole	
Benzyl benzoate (12.5%)	
Whitfields	
Gentian violet	
Silver sulfadiazine	
Zinc oxide ointment (10%).	
Paraffin gauze	
Measles vaccine	
10% Dextrose	
Metronidazole	
Blood for transfusion	
Albendazole or mebendazole	
Anti-malarial drugs – lumefantrine artemether -LA (oral)	
Antiretroviral therapy (ART)	
TB drugs	
<b>Medical Supplies</b>	
ReSoMal	
Malaria test kit	
HIV test kit	
Hb test strips	
IV kits	
NG tubes	
Mixing syringes (50–60 ml)	
Glucometer or glucose test kit	
IV fluids: Half-strength Darrow's or Ringer's lactate	
Thermometer (for measuring body temperature)	

## Division of Responsibilities in SFP

Position	Responsibilities
Clinician/Nurse	<p>Performs overall supervision and case management at the SFP site.</p> <p>Carries out initial physical examination.</p> <p>Prescribes routine and additional medications according to protocol.</p> <p>Refers caregivers for HTS, ANC, and immunisation services.</p> <p>Supervises SFP staff.</p> <p>Discharges beneficiaries according to protocols.</p> <p>Manages logistics.</p> <p>Reviews, consolidates, and submits monthly reports to the DHO.</p> <p>Monitors programme indicators at the facility level.</p>
HSAs	<p>Organise set-up of SFP and ensure smooth flow of patients.</p> <p>Provide health education sessions.</p> <p>Take anthropometric measurements.</p> <p>Register beneficiaries.</p> <p>Organise cooking demonstrations.</p> <p>Monitor hygiene and sanitation situation.</p> <p>Check and administer vaccinations.</p> <p>Distribute rations.</p> <p>Conduct follow-up visits.</p> <p>Complete tally sheets and monthly report forms.</p>
Volunteers	<p>Screen children at household level and refer to the health facility if meeting referral criteria.</p> <p>Conduct follow-up visits.</p> <p>Keep records.</p>

# Division of Responsibilities in OTP

Position	Responsibilities
<p>Clinician/Nurse</p> <p>One clinician/nurse should be responsible for overall supervision and case management at the OTP site.</p> <p>The clinician may be a clinical officer, medical assistant, or other medically trained professional.</p>	<p>Investigates medical history through caregiver interview.</p> <p>Carries out initial physical examination.</p> <p>Reviews child's growth and health at each follow-up OTP session.</p> <p>Records medical history and examination results on OTP monitoring card.</p> <p>Refers children for further medical care/NRU treatment, if necessary.</p> <p>Prescribes routine and additional medications according to protocol.</p> <p>Identifies non-responders for follow-up.</p> <p>Refers non-responding HIV-positive children for ARV staging.</p> <p>Refers caregivers for HTC, ANC, and immunisation services.</p> <p>Allocates duties to staff.</p> <p>Supervises OTP staff.</p> <p>Manages logistics (stock management, transport for referrals, storage and supply of RUTF).</p> <p>Maintains good filing system.</p> <p>Tracks children through various components of CMAM programme.</p> <p>Reviews accuracy of monitoring cards at the end of the OTP session.</p> <p>Reviews, consolidates, and submits monthly reports to the DHO.</p> <p>Monitors programme indicators at the facility level.</p>
<p>Health Surveillance Assistants (HSA)/Senior HSA</p> <p>At least 2 HSAs are required at each OTP session. An additional HSA may be used at busy OTPs.</p> <p>1 HSA should have the responsibility of coordinating volunteer/outreach activities.</p>	<p>Organise set-up of OTP and ensure smooth flow of patients.</p> <p>Provide health education sessions to caregivers at OTP sessions.</p> <p>Measure, weigh, and check MUAC and oedema for all children attending OTP session.</p> <p>Determine W/H%.</p> <p>Administer vaccinations.</p> <p>Record registration information on monitoring and ration cards.</p> <p>Assign OTP beneficiaries to the nearest volunteer/outreach worker for follow-up.</p> <p>Distribute RUTF rations.</p> <p>Discharge children and refer to SFP, if available.</p> <p>Identify absentees and defaulters for follow-up.</p> <p>Complete weekly tally sheet and submit to CO.</p> <p>Discuss follow-up cases with assigned volunteer/outreach worker.</p> <p>Review follow-up visit checklists and report results to CO.</p> <p>Coordinate regular meetings with volunteers/outreach workers to refresh training, share information, and discuss performance.</p> <p>Give feedback to village headman or committee on volunteer performance and CMAM progress.</p> <p>Involve influential community groups in case-finding (women's groups, CBOs, religious groups).</p>

<p>Volunteer/ outreach worker</p> <p>1 volunteer per village</p>	<p>Case finding in the community: Checks for oedema and measures MUAC.</p> <p>Refers cases to the nearest health facility.</p> <p>Visits absentee or defaulter children in their homes and encourages them to return to the OTP/NRU.</p> <p>Follows up children who are not responding in their homes, as requested.</p> <p>Records home visits and reports to the health centre on a timely basis.</p> <p>Conducts community sensitisation meetings.</p> <p>Gives monthly verbal feedback to village headman or committee on number of CMAM beneficiaries, defaults, deaths, and other issues.</p>
--	---

# Division of Responsibilities in NRU

Position	Responsibilities
Clinicians/Doctors	Conduct initial medical assessments (triage, history taking, examinations, investigations, and treatment) of SAM patients with complications.
One clinician should be responsible for overall case management at the NRU.	Conduct daily ward rounds to ensure drugs and feeds are administered appropriately and monitor progress of recovery.
	Assess any patients that fail to respond to treatment or present diagnostic difficulty and manage complications.
The clinician may be a medical doctor, clinical officer, medical assistant, or other medically trained professional	Take actions to transfer children to OTP if recovering or to critical care if their condition is worsening.
	Triage and admit the SAM patients with complications to the inpatient care.
	Register patients using their registration numbers given by the OTP. The details are entered into the registration book and multi-chart.
	Ask the clinician to review patients daily in the inpatient care.
Nurses or Nurse In-charge	Administer and document all medications, including administration of ReSoMal.
	Give a phone call to the OTP when transferring patients to inform them of arrival and discuss any details that are not recorded on the transfer form.
One Nurse should be allocated for night duty in the NRU.	Ensure all 10 steps in the inpatient management of children with SAM are followed.
	Ensure inpatient care (NRU) procedures are followed all the time in the inpatient care.
	Allocate, mentor, and supervise home craft workers and ward support staff (cleaners, ward attendants, ward clerks, etc.).
	Compile monthly reports and submit them to the DHO.
	Weigh and measure patients according to the protocol.
	Prepare and give feeds.
	Record information on feeding on the NRU treatment chart.
Home Craft Workers (or any other health/ward assistants)	Give daily health and nutrition education session following outlined topics agreed by the nurse-in-charge.
	Support caregivers in appropriate feeding practices while in inpatient care and upon discharge.
	Assist caregivers in providing tender loving care, play, and stimulation to children with SAM.